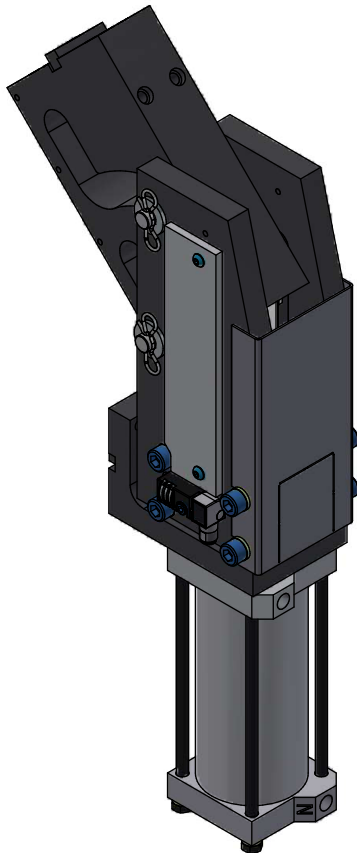


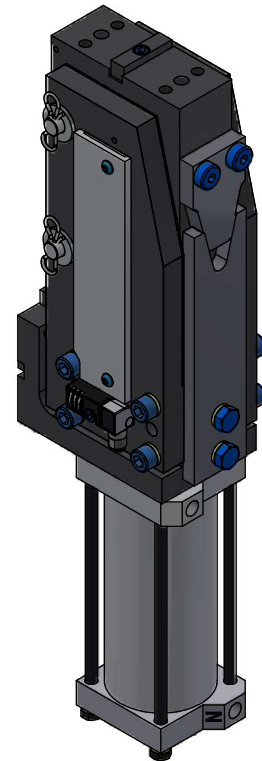


ISO 9001:2015 REGISTERED  
**ENGINEERED PRODUCTS**

# ***MAINTENANCE MANUAL UPE/SPE PART EJECTORS LST/SST PART POSITIONERS***



**UPE/SPE**



**LST/SST**

# 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.

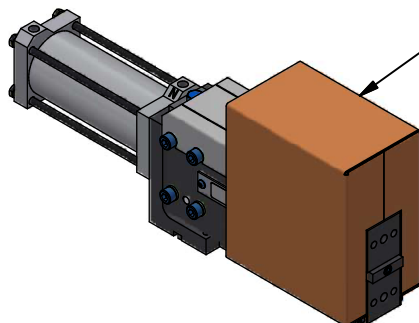
**CYLINDER CLEVIS ASSEMBLY:** Lubrication is required via the grease port (under side cover plate) 1CC of MOBIL XHP222 or equivalent every 6 months or 100,000 cycles, whichever comes first. NOTE: Clevis assembly with lube port is not present on older units.

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

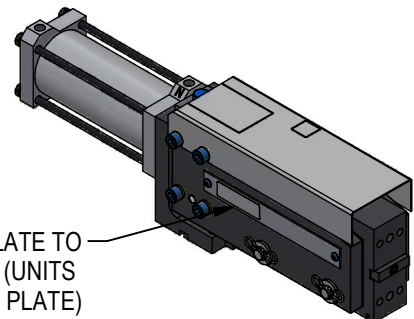
WELKER RECOMMENDS IN-PLANT RECERTIFICATION AFTER SERVICE/REPAIR/REPLACEMENT.

# TROUBLESHOOTING

FAILURE	POSSIBLE CAUSE	SOLUTION
Tip plate does not extend/retract	Cylinder 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. Check air supply and cylinder orifice for contamination.
	Switch failure	Check switch for proper operation. Replace as needed.
	Improper load	Check working load to be sure it is within recommended capacity.
	Tip plate/clevis failure	Inspect tip plate slots for wear. Maintain grease in slots and on tip plate. Inspect clevis assembly, replace if needed. Clevis pin and bearing are included in unit repair kit.
	Cam slot contamination	Clean out cam slot. If slot contamination is a recurring problem, consider adding extra tip plate shrouding (Shroud Option 1 in catalog). See illustration below. Cam slot contamination can also cause no read on switch by blocking full tip plate movement.
Unit cycles too slow	Insufficient air pressure	Check/correct air pressure. Check orifice/flow controls.
	Roller failure	Replace roller bearings.
Unit cycles too fast or throws part	No flow controls Flow controls not adjusted	Part ejectore and positioners have fixed flow orifices, additional flow controls may be required. Additional flow controls must be adjusted by the customer to match application.



EXTRA TIP PLATE SHROUDING  
RECOMMENDED FOR  
MIG/ARC WELDING APPLICATIONS



REMOVE COVER PLATE TO  
ACCESS LUBE PORT (UNITS  
WITH STICKER ON COVER PLATE)

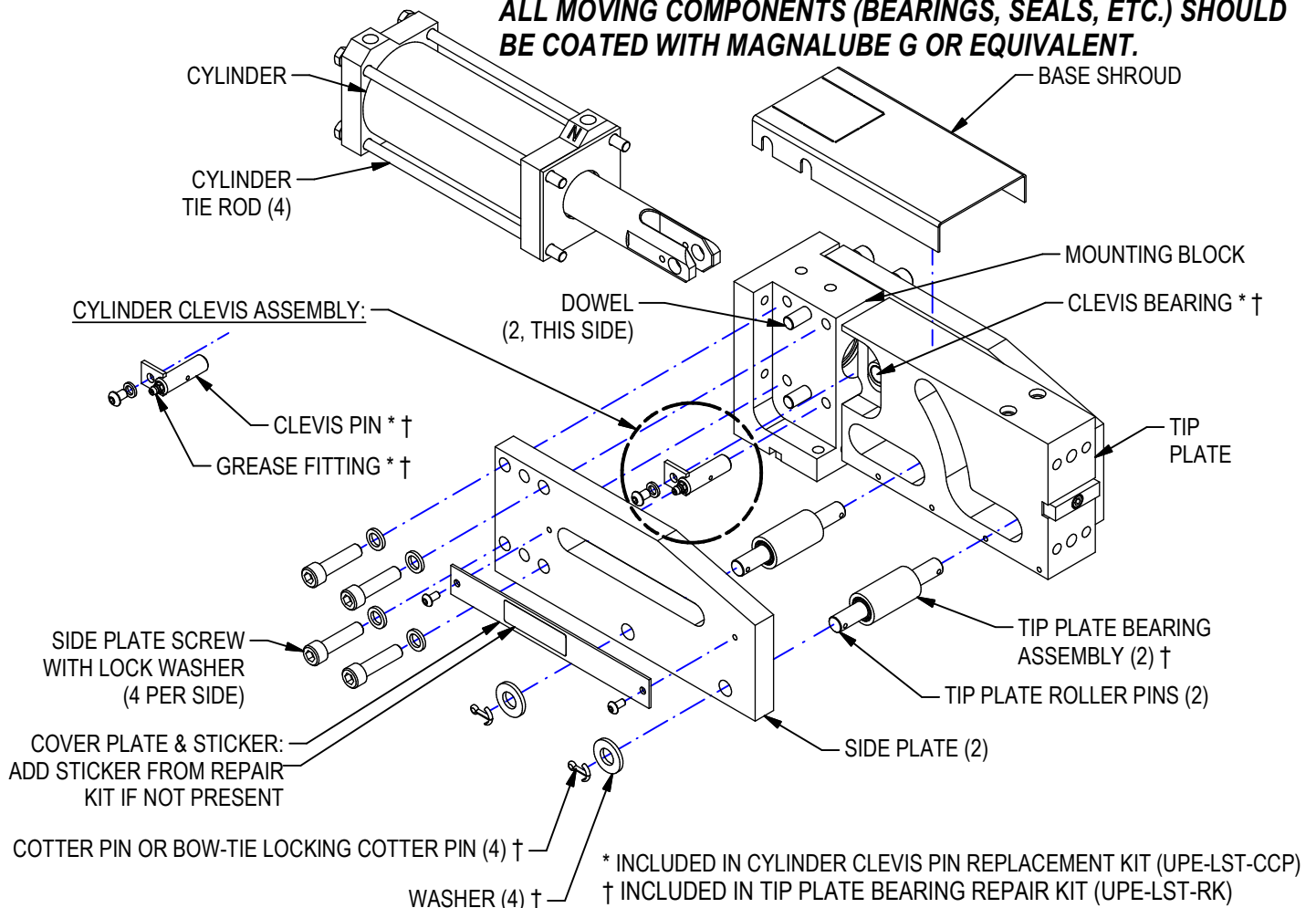
# TIP PLATE MAINTENANCE AND REPAIR

QTY	STOCK*	DESCRIPTION	ORDER AS
2		TIP PLATE ROLLER BEARING ASSEMBLY (WITH PIN)	UPE-RB-ASSY
2		TIP PLATE ROLLER BEARING ASSEMBLY (WITHOUT PIN)	UPE45E09-ASSY
	1	CYLINDER CLEVIS PIN REPLACEMENT KIT	UPE-LST-CCP
	1	TIP PLATE BEARING REPAIR KIT	UPE-LST-RK
2		TIP PLATE ROLLER PIN	UPE45E18
1		CLEVIS BEARING	UPE45E25

\*Recommended spare parts to keep in stock.

1. Remove shrouds and cylinder switch if applicable. Remove cover plate. Remove cotter pins & washers. Remove side plate screws & lock washers. Remove the side plate.
2. Remove cylinder clevis assembly. Loosen cylinder tie rods (approx 20mm) to release cylinder from mounting block, noting port orientation.
3. Replace clevis bearing (in tip plate), greasing with Magnalube G or equivalent.
4. Remove tip plate roller pins. Replace tip plate roller bearing assemblies. Replace/install tip plate roller pins. Pack with Magnalube G or equivalent. >> *To replace cylinder seals & wiper, continue on next page >>*
5. Install cylinder to mounting block. Tighten cylinder tie rods to torques and pattern shown on Sheet 6.
6. Install switch dog and grease fitting to clevis pin. Switch dog replaces shoulder screw, if present.
7. Install cylinder clevis assembly. Make sure pin is thru clevis bearing in tip plate.
8. Coat tip plate surfaces and slots with Magnalube G or equivalent.
9. Lubricate clevis pin via grease fitting: 1CC of MOBIL XHP222 or equivalent. Install sticker to cover plate.
10. Install side plate with screws/lock washers. Secure rollers with cotter pins/washers.

**ALL MOVING COMPONENTS (BEARINGS, SEALS, ETC.) SHOULD BE COATED WITH MAGNALUBE G OR EQUIVALENT.**



# CYLINDER MAINTENANCE AND REPAIR: ACTUATOR 01, 02

STOCK*	ACTUATOR	CYLINDER	DESCRIPTION	ORDER AS
1	01, 02	WCW-2182	WC-2182 SEAL KIT	WCW-2182-CSK

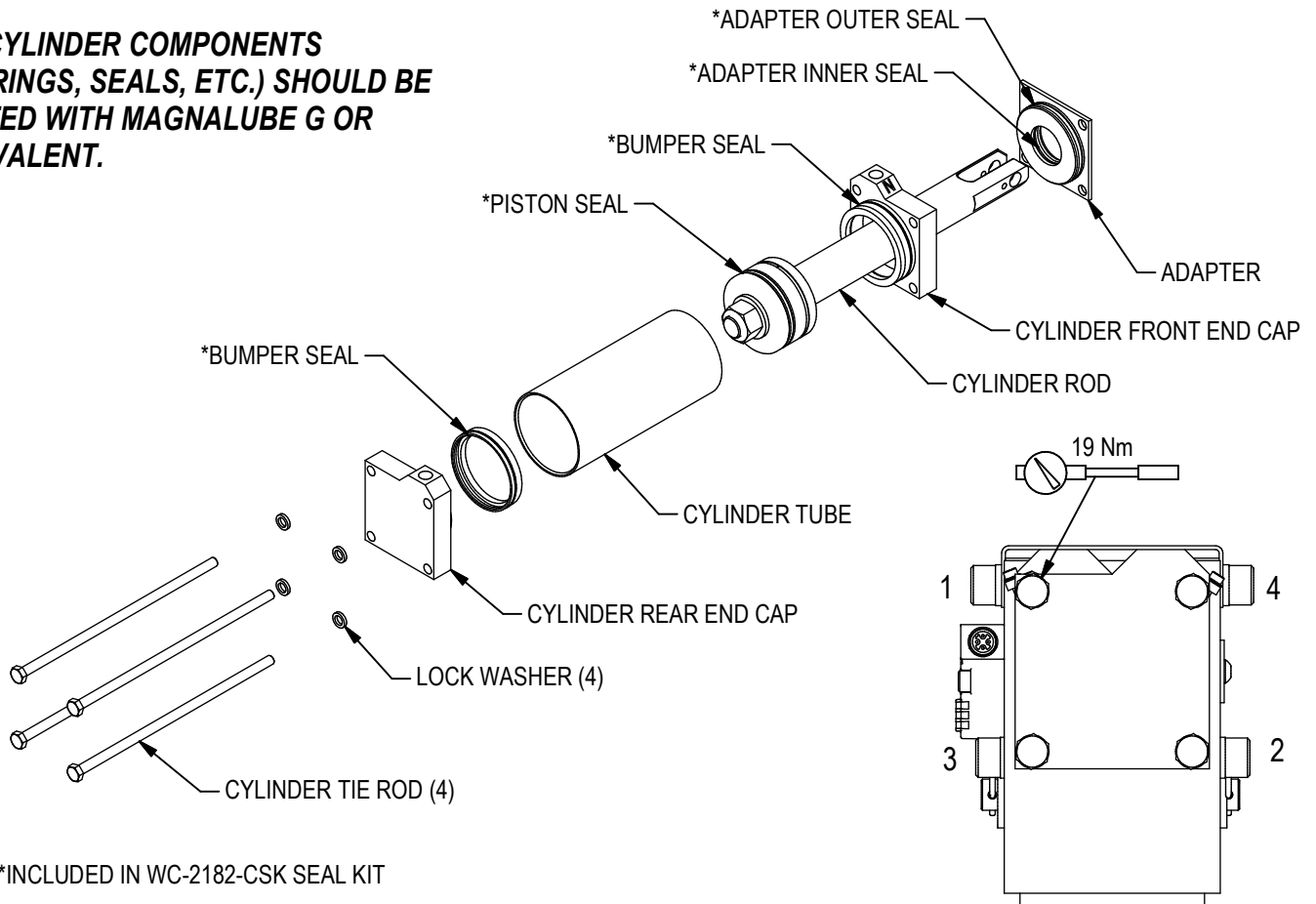
\*Recommended spare parts to keep in stock.

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.

WC-2182-CSK - Cylinder Seal Kit includes: (2) Bumper seals, (1) piston seal, (1) adapter inner seal and (1) adapter outer seal.

- To access cylinder seals, please follow Step 1 and 2 of TIP PLATE MAINTENANCE AND REPAIR instructions, Sheet 4.
- Remove the cylinder tie rods & washers. Remove rear cap, tube and bumper seals. Clean seal grooves thoroughly. Replace bumper seals.
- Remove piston seal using plastic or brass tool. NOTE ORIENTATION OF SEALS. Inspect parts for wear. Clean piston and install new seal.
- Remove adapter. Replace adapter outer seal, adapter inner seal, and rod wiper.
- Align adapter, front end cap, tube, and rear end cap on cylinder rod and install to mounting block with cylinder tie rods & lock washers. Be sure cylinder ports are in proper position and tube seals are seated properly in grooves, not being pinched.
- Install cylinder clevis assembly.
- Install side plates with screws/lock washers. Secure rollers with cotter pins/washers. Tighten tie rods to torques and pattern shown.

**ALL CYLINDER COMPONENTS (BEARINGS, SEALS, ETC.) SHOULD BE COATED WITH MAGNALUBE G OR EQUIVALENT.**



\*INCLUDED IN WC-2182-CSK SEAL KIT

# CYLINDER REPLACEMENT ACTUATOR 01, 02

## REPLACEMENT CYLINDER ORDERING INFORMATION



**Positioner / Ejector**

**LST** Part Positioner

**UPE** Part Ejector

**Angle**

**045** Optional angles: 11, 22, 31, 39 & 45 deg

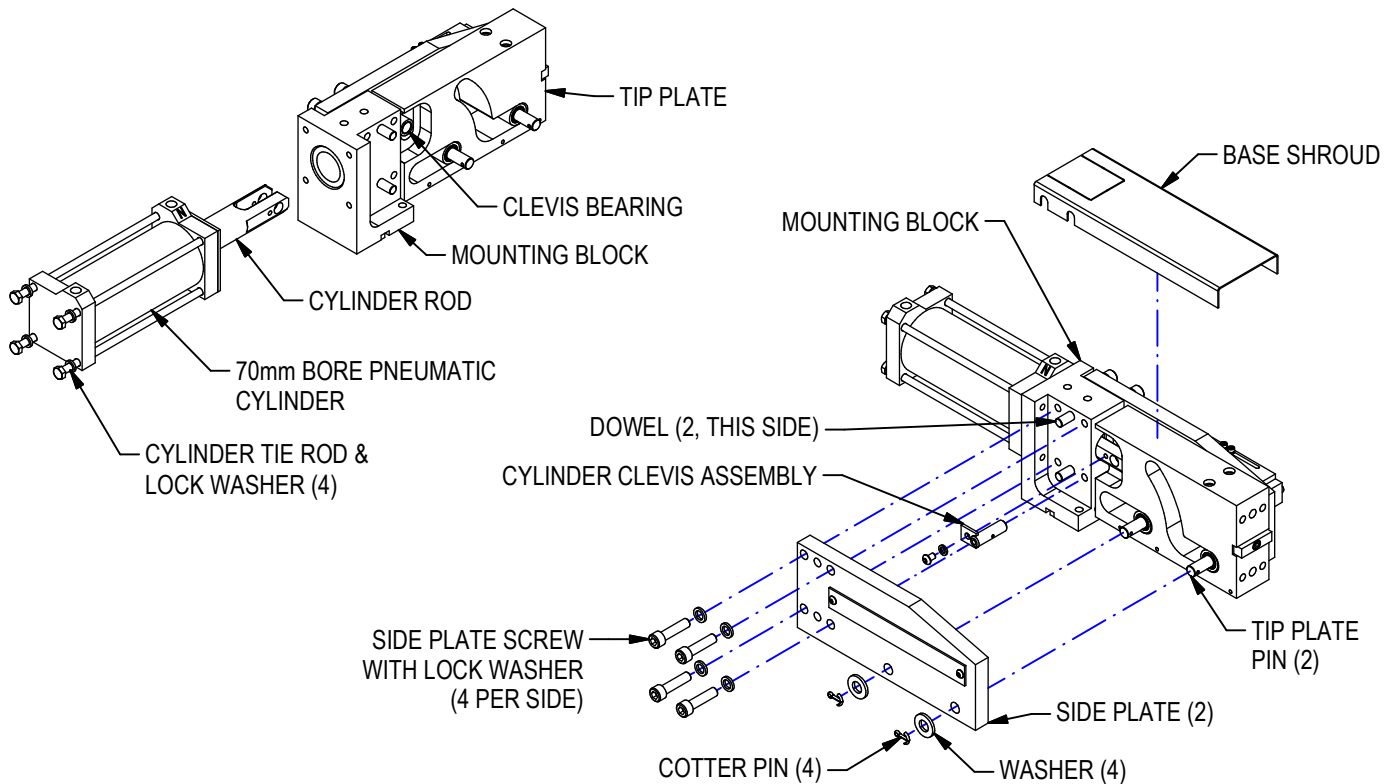
**Actuator**

**01** Welker 70mm Bore with NPT Ports

**02** Welker 70mm Bore with G Ports

1. To access cylinder, please follow Step 1 and 2 of TIP PLATE MAINTENANCE AND REPAIR on Sheet 3.
2. Remove cylinder switch if present, noting position on cylinder tie rods.
3. Loosen cylinder tie rods approximately 20mm to release from mounting block.
4. Align new cylinder to mounting block. Install clevis pin making sure it's going thru clevis bearing in tip plate.
5. Secure cylinder to mounting block. Secure cylinder clevis assembly. Reassemble unit.
6. Apply grease to all moving components: Magnalube G or equivalent.
7. Tighten tie rods to torques and pattern shown on Sheet 4.

**ALL MOVING COMPONENTS (BEARINGS, PINS, TIP PLATE) SHOULD BE COATED WITH MAGNALUBE G OR EQUIVALENT.**



# CYLINDER MAINTENANCE AND REPAIR: ACTUATOR 05, 06

STOCK*	ACTUATOR	CYLINDER	DESCRIPTION	ORDER AS
	05	WCP-2136	WCP-2136 CYLINDER SEAL KIT	WCP-2136-CSK
	06	WCP-2137	WCP-2137 CYLINDER SEAL KIT	WCP-2136-CSK
	05, 06	WCY-2136	WCY-2136 CYLINDER SEAL KIT	WCY-2136-CSK
1	05, 06	WCW-2192	WCW-2192 CYLINDER SEAL KIT	WCW-2192-CSK

\*Recommended spare parts to keep in stock.

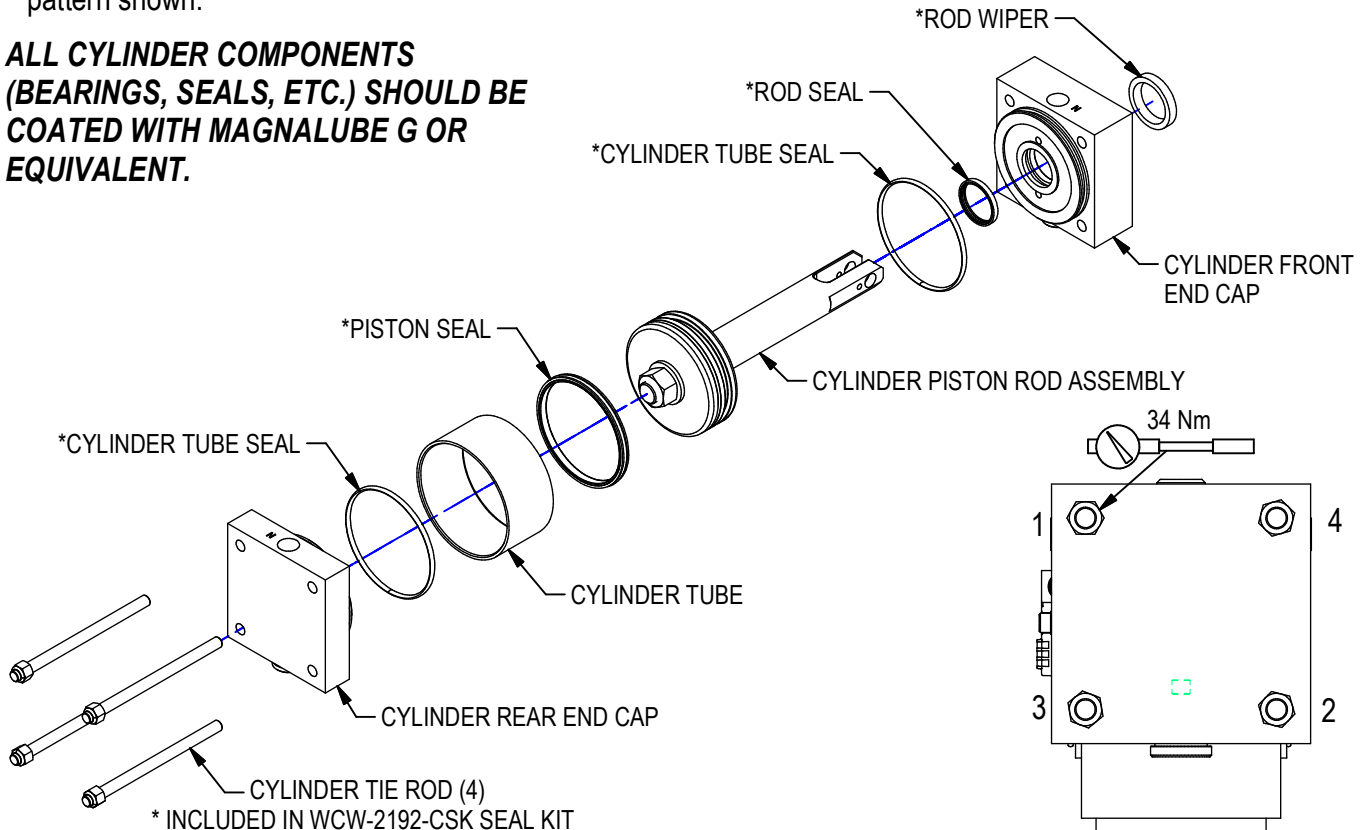
Seals should be replaced routinely to avoid cylinder failure. Please have cylinder model information and/or Welker job number ready when ordering seal kits or repair kits. This information is located on the unit's tag and on the cylinder.

WCW-2192-CSK - Cylinder Seal Kit includes: (2) Cylinder tube seals, (1) piston seal, (1) cylinder rod seal, (1) cylinder wiper.

## WCW-2192 Cylinder Maintenance Instructions

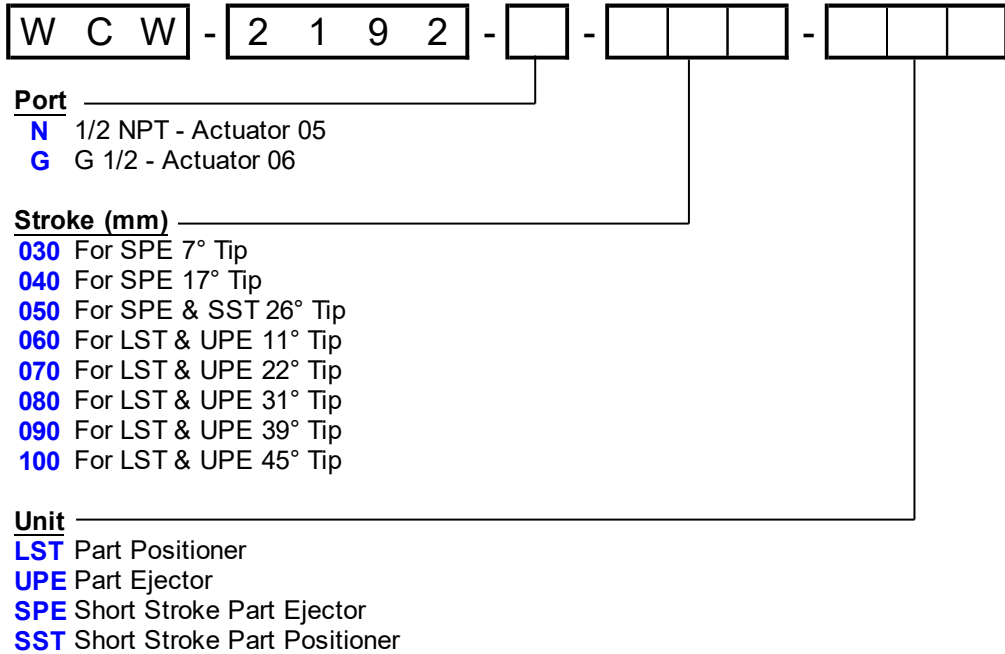
- To access cylinder seals, please follow Step 1 and 2 of TIP PLATE MAINTENANCE AND REPAIR instructions on Sheet 4.
- Remove the cylinder tie rods. Remove rear cap, cylinder tube seal. Clean seal grooves thoroughly. Replace cylinder tube seal.
- Remove piston seal using plastic or brass tool. NOTE ORIENTATION OF SEALS. Inspect parts for wear. Clean piston and install new seal.
- Remove front cap, cylinder tube seal, rod seal and rod wiper. Clean seal grooves thoroughly. Replace cylinder tube seal, rod seal, and rod wiper.
- Align front end cap, tube, and rear end cap on cylinder rod and install to mounting adapter plate with cylinder tie rods. Be sure cylinder ports are in proper position and tube seals are seated properly in grooves, not being pinched.
- Install cylinder clevis assembly.
- Install side plates with screws/lock washers. Secure rollers with cotter pins/washers. Tighten tie rods to torques and pattern shown.

**ALL CYLINDER COMPONENTS (BEARINGS, SEALS, ETC.) SHOULD BE COATED WITH MAGNALUBE G OR EQUIVALENT.**



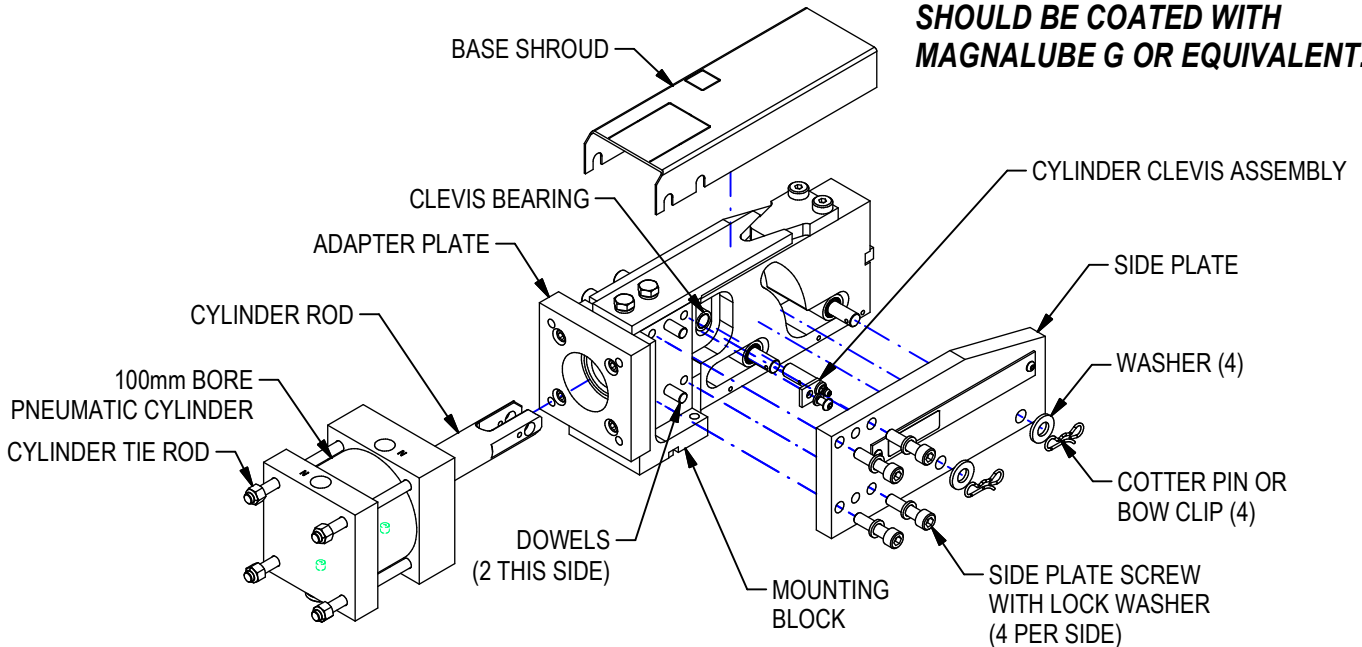
# CYLINDER REPLACEMENT ACTUATOR 05, 06

## REPLACEMENT CYLINDER ORDERING INFORMATION



1. To access cylinder, please follow Step 1 and 2 of TIP PLATE MAINTENANCE AND REPAIR on Sheet 3.
2. Remove cylinder switch if present, noting position on cylinder tie rods.
3. Loosen cylinder tie rods approximately 20mm to release from adapter plate.
4. Align new cylinder to mounting block. Install clevis pin making sure it's going thru clevis bearing in tip plate.
5. Secure cylinder to adapter plate. Secure cylinder clevis assembly. Reassemble unit.
6. Apply grease to all moving components: Magnalube G or equivalent.
7. Tighten tie rods to torques and pattern shown on Sheet 6.

**ALL MOVING COMPONENTS  
(BEARINGS, PINS, TIP PLATE)  
SHOULD BE COATED WITH  
MAGNALUBE G OR EQUIVALENT.**

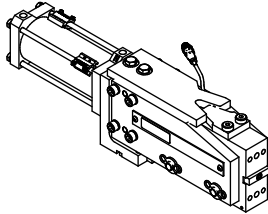


## SWITCH REPLACEMENT PARTS

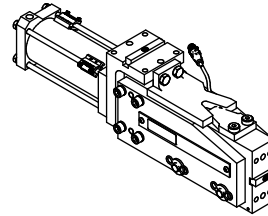
**NOTE:** When ordering switches, please have the unit's Welker Part Number available.

STOCK*	DESCRIPTION	PART NUMBER
1	V-BLOCK SWITCH FOR LST WITH MOUNT A	LST-VBS-A
1	V-BLOCK SWITCH FOR LST WITH MOUNT B	LST-VBS-B
1	V-BLOCK SWITCH FOR SST WITH MOUNT A	SST-VBS-A
1	V-BLOCK SWITCH FOR SST WITH MOUNT B	SST-VBS-B

LST SHOWN WITH  
V-BLOCK SWITCH  
& MOUNT A



LST SHOWN WITH  
V-BLOCK SWITCH  
& MOUNT B



## REPLACEMENT CYLINDER SWITCH

See Sheet 9

Original ordering part number	Replacement part number	Part Number	Manufacturer	Description
L3	SWITCH L3	SWITCH L3	WELKER	4-Wire, 4-Pin, DC M12 X 1 (PNP)
L5	SWITCH L5	MK5113	ifm Efector	3-Wire, 4-Pin, DC M12 X 1 (NPN)

## UPE & LST REPLACEMENT WORLD SWITCH

See Sheets 10, 11, 12

Original ordering part number	Replacement part number	Part Number	Manufacturer	Description
ZE / ZR	SWITCH SWZ	WWS001A	WELKER	4-Wire, 4-Pin, DC M12 X 1 (PNP)
SE / SR	SWITCH SWS	Ni2-Q6.5-AP6-0.16-FS 4.4X3/S304	Turck	4-Wire, 4-Pin, DC M12 X 1 (PNP)
TE / TR	SWITCH SWT	Ni2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304	Turck	4-Wire, 5-Pin, AC/DC 1/2-20 (N.O.)
UE / UR	SWITCH SWU	Ni2-Q6.5-AN6-0.16-FS 4.4X3/S304	Turck	3-Wire, 4-Pin, DC M12 X 1 (NPN)
VE / VR	SWITCH SWV	NBN2-F581-160S6-E8-V1	Pepperl & Fuchs	4-Wire, 4-Pin, DC M12 X 1 (PNP)
WE / WR	SWITCH	BES-Z02KR2-PSC20F-P165-S04-V	Balluff	3-Wire, 4-Pin, DC M12 X 1 (PNP)
YE / YR	SWITCH SWY	IN5375	Efector	3-Wire, 4-Pin, DC M12 X 1 (PNP)

## SPE & SST REPLACEMENT WORLD SWITCH

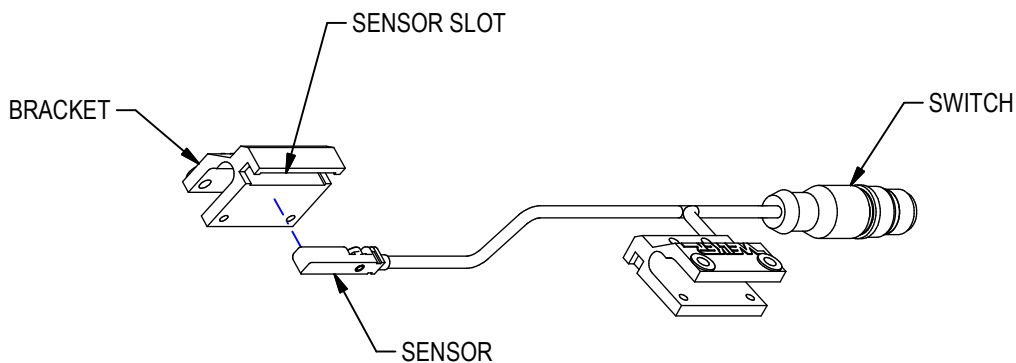
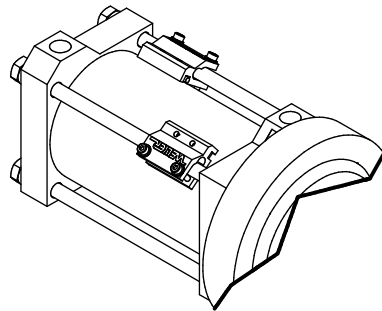
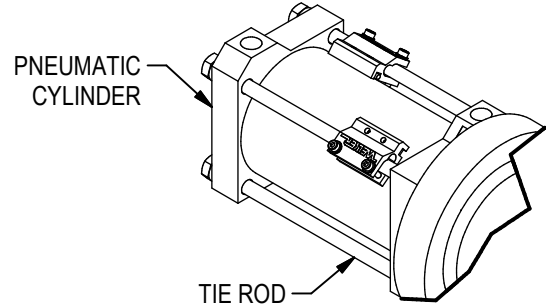
See Sheet 14

Original ordering part number	Replacement part number	Part Number	Manufacturer	Description
ZE / ZR	SWITCH SWZ	WWS001A	WELKER	4-Wire, 4-Pin, DC M12 X 1 (PNP)
AE / AR	SWITCH SWA	Ni2-Q6.5-AP6-0.1-FS 4.4X3/S304	Turck	4-Wire, 4-Pin, DC M12 X 1 (PNP)
BE / BR	SWITCH SWB	Ni2-Q6.5-ADZ32-0.1-FSB 5.4X4/S304	Turck	4-Wire, 5-Pin, AC/DC 1/2-20 (N.O.)
CE / CR	SWITCH SWC	Ni2-Q6.5-AN6-0.1-FS 4.4X3/S304	Turck	4-Wire, 4-Pin, DC M12 X 1 (NPN)
DE / DR	SWITCH SWD	NBN2-F581-100S6-E8-V1	Pepperl & Fuchs	4-Wire, 4-Pin, DC M12 X 1 (PNP)
EE / ER	SWITCH SWE	BES-Z02KR2-PSC20F-P100-S04-V	Balluff	3-Wire, 4-Pin, DC M12 X 1 (PNP)
HE / HR	SWITCH SWH	Ni2-Q6.5-0.1M-BDS-2AP6X3-H1141/S34	Turck	4-Wire, 4-Pin, DC M12 X 1 (PNP)
JE / JR	SWITCH SWJ	IN5374	Efector	3-Wire, 4-Pin, DC M12 X 1 (PNP)



## 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 the 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 onto the tie rod. Secure with bolts and washers.
6. Test Switch.

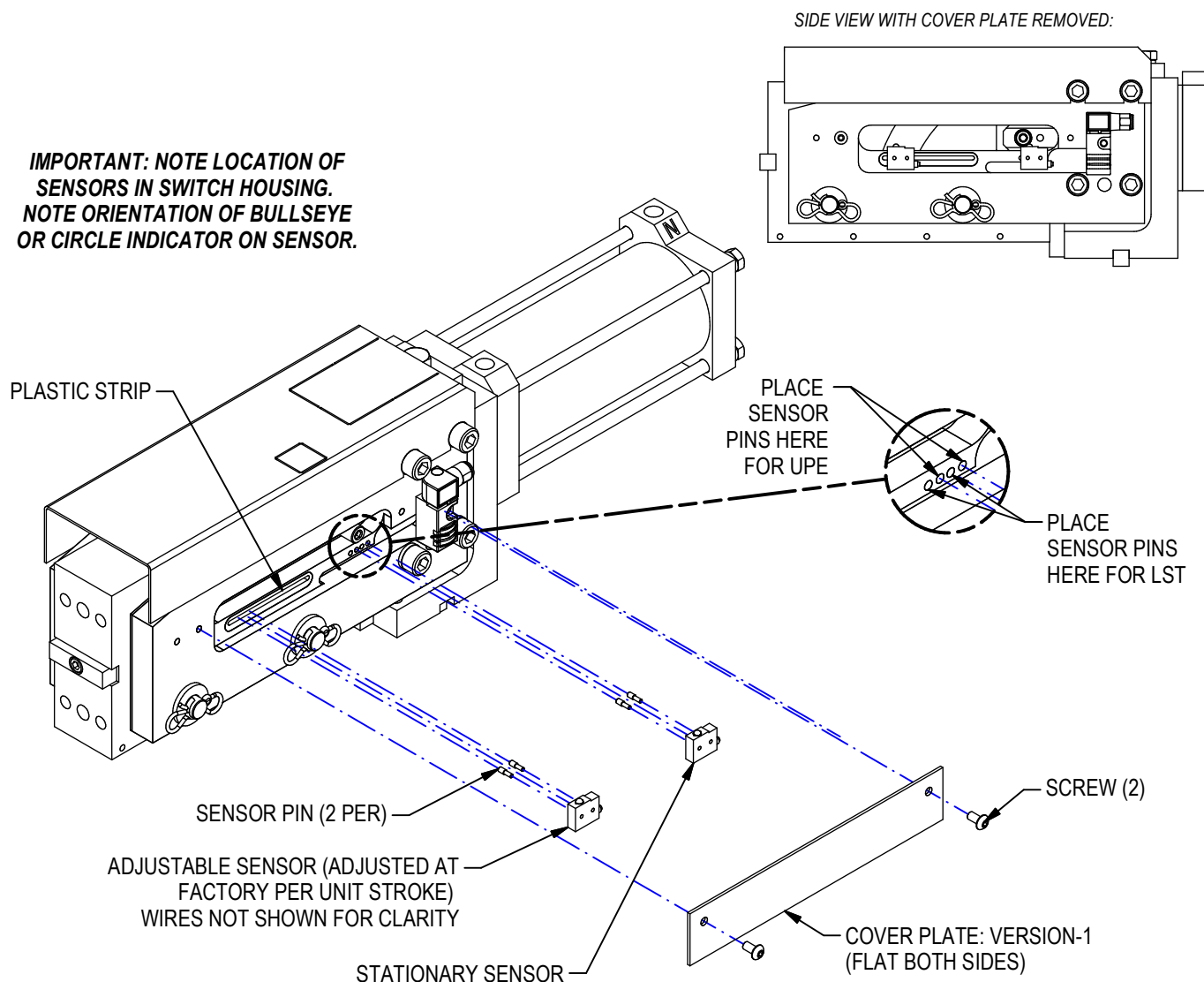


# REPLACING INTEGRATED WORLD SWITCH VERSION-1: LST & UPE

VERSION-1 COVER PLATE IS FLAT ON BOTH SIDES. VERSION-2 COVER PLATE HAS SENSOR MOUNT.

1. Remove switch connector. Remove cover plate from side plate (2 screws).
2. Before removing switch sensors: note location of sensors in switch housing. Note orientation of bullseye or circle indicator on sensor. (take photo for reference). Trace outline of adjustable sensor on switch housing to easily locate new sensor.
3. Sensor pins are press fit into plastic strip and will come out of adjustable sensor upon removal.
4. Remove sensor pins from stationary sensor.
5. Remove switch fastener from switch housing. Remove switch and sensors. Note: a small rubber wire retainer may be in place, depending on the switch.
6. Install new sensors & switch to proper location and orientation. Secure loose wires being sure wires do not interfere with internal switch dog shoulder screw. Use wire retainer if present.
7. Clean surfaces. Install cover plate to unit side plate with screws (2).
8. Install connector to switch. Test switch.

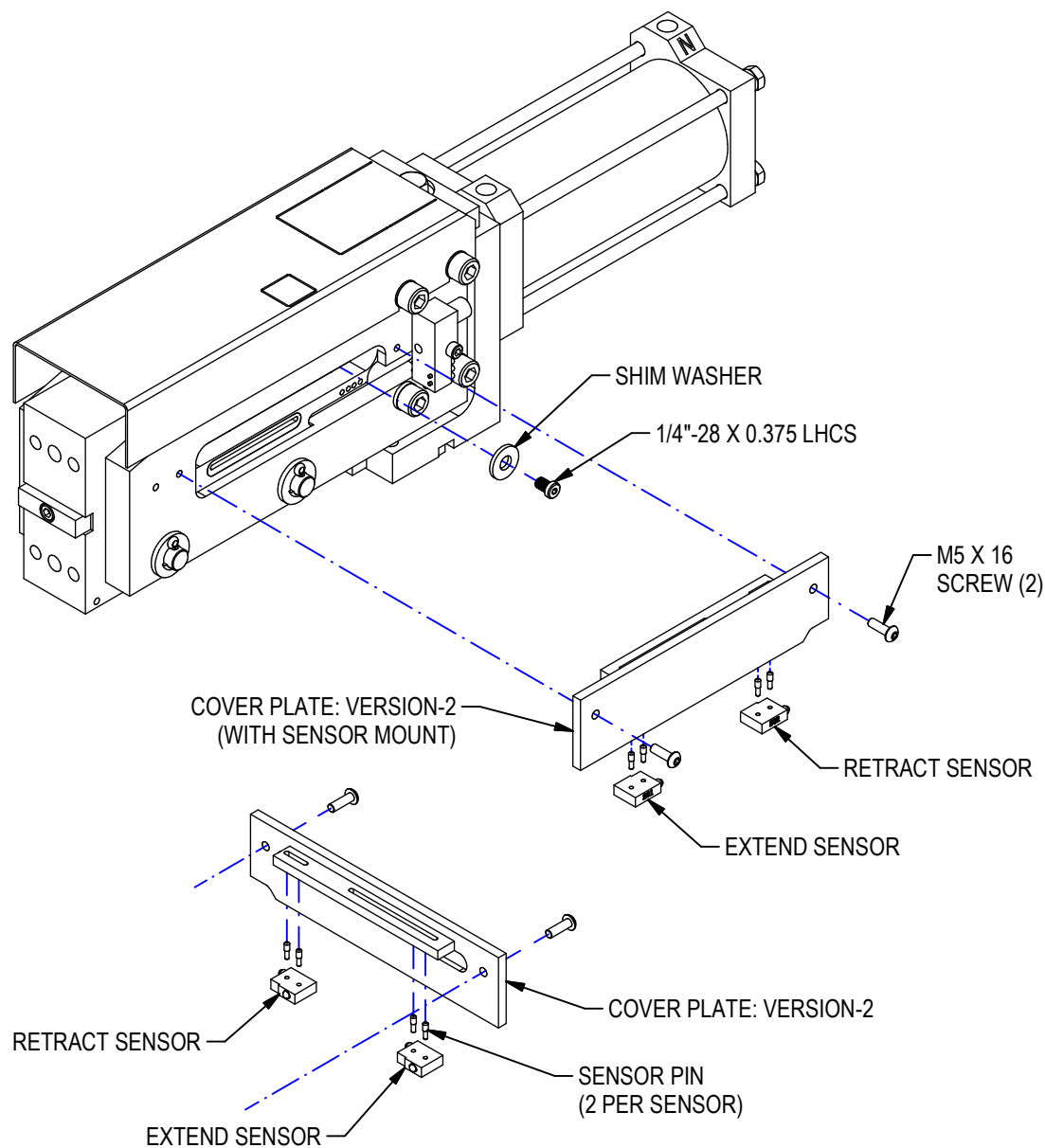
**IMPORTANT: NOTE LOCATION OF SENSORS IN SWITCH HOUSING. NOTE ORIENTATION OF BULLSEYE OR CIRCLE INDICATOR ON SENSOR.**



# REPLACING INTEGRATED WORLD SWITCH VERSION-2: LST & UPE

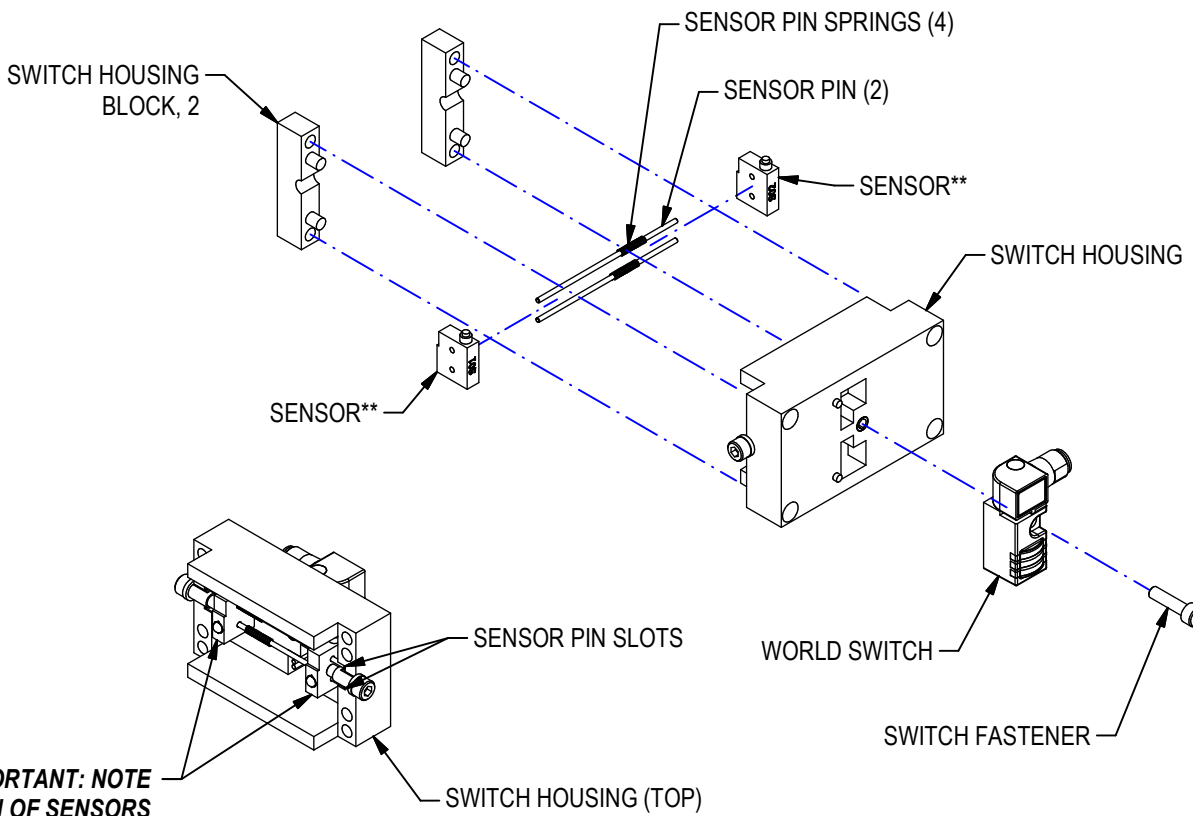
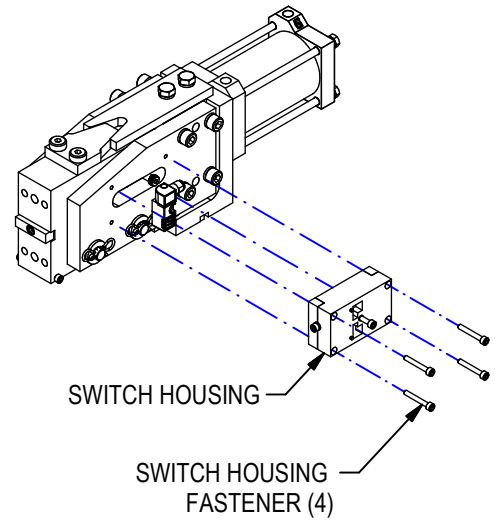
VERSION-1 COVER PLATE IS FLAT ON BOTH SIDES. VERSION-2 COVER PLATE HAS SENSOR MOUNT.

1. Remove switch connector. Remove cover plate from side plate (2 screws).
2. Before removing switch sensors: note location of sensors in switch housing. Note orientation of bullseye or circle indicator on sensor. (take photo for reference). Trace outline of adjustable sensor to easily locate new sensor.
3. Remove sensor pins.
4. Remove switch fastener from switch housing. Remove switch and sensors.
5. Install sensors & switch to proper location and orientation.
6. Clean surfaces. Install cover plate to unit side plate with screws (2).
7. Install connector to switch. Test switch.



# REPLACING WORLD SWITCH: SST & SPE

1. Remove shroud (if applicable). Remove switch housing from tip plate (4 screws).
2. Note location of sensors in switch housing. Note orientation of bullseye or circle indicator on sensor. (take photo for reference)
3. Separate switch housing from blocks. Remove sensor/sensor pin assembly.
4. Remove sensors from sensor pins, leaving springs on pins.
5. Remove switch fastener from switch housing. Remove switch and sensors.
6. Install new sensors & switch to proper location and orientation. Sensor pins rest in slots at either end of switch housing.
7. Clean any debris from unit tip plate. Install reassembled switch housing to unit tip plate with housing fasteners (4)



**IMPORTANT: NOTE LOCATION OF SENSORS IN SWITCH HOUSING. NOTE ORIENTATION OF BULLSEYE OR CIRCLE INDICATOR ON SENSOR.**

\*\* WIRES NOT SHOWN FOR CLARITY

# REPLACE SIDE PLATE

Units designed for horizontal applications have composite-lined side plates, which are wear items.

QTY	STOCK*	DESCRIPTION	ORDER AS
1	1	SIDE PLATE WITH COMPOSITE LINING LH	UPE45E06L
1	1	SIDE PLATE WITH COMPOSITE LINING RH	UPE45E06R

\*Recommended spare parts to keep in stock.

1. Remove shrouds, if applicable. Remove cover plate.
2. Remove World Switch housing, if applicable (2 screws). Note the rubber strip in switch housing that holds sensor wires in place. See Sheet 10 & 11 for removing integrated World Switch.
3. Remove cotter pins & washers. Remove side plate screws & lock washers. Remove the side plate.
4. Clean side plate contact surfaces. Do not remove grease from inside of tip plate slots. If grease is contaminated, remove and pack with Magnalube G or equivalent.
5. Install side plate with screws/lock washers. Secure rollers with cotter pins/washers.
6. Install cover plate (2 screws) or World Switch housing.
7. Tighten tie rods to torques shown on sheet 4 for actuators 01 & 02 or sheet 6 for actuators 05 & 06.

