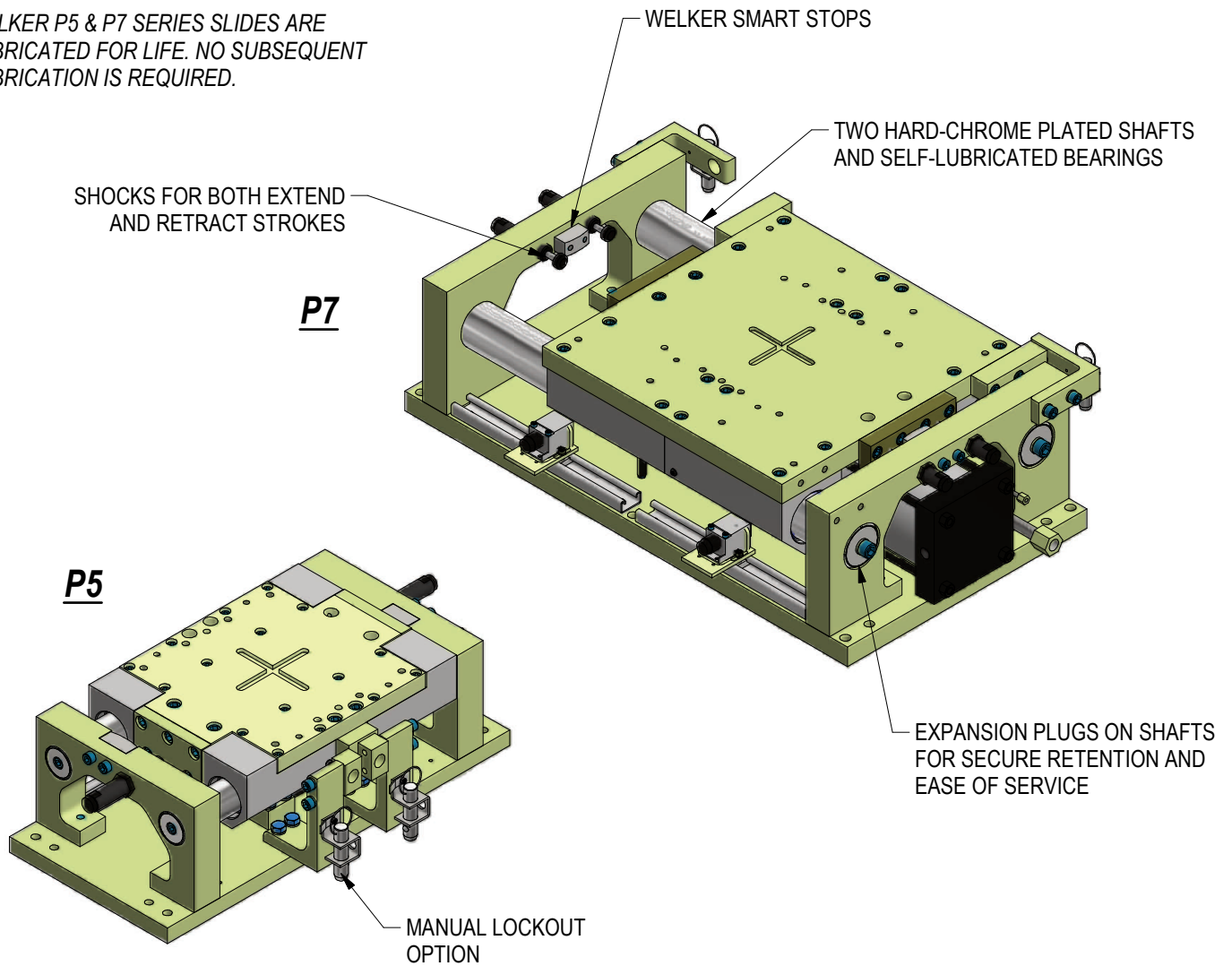


## MAINTENANCE MANUAL P5 & P7 POWER SLIDES

WELKER P5 & P7 SERIES SLIDES ARE LUBRICATED FOR LIFE. NO SUBSEQUENT LUBRICATION IS REQUIRED.



# 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. SECURE SLIDE WITH LOCKOUT PIN TO PREVENT MOTION.

PREVENTATIVE MAINTENANCE: Regularly inspect unit to verify proper operation. Check for debris build up especially between ends of shafts and end blocks as too much contamination can jam debris into bearing block, past seals. Clean as needed. Inspect all pneumatic, electrical, and mounting connections; make 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 or repair kit on hand. \*\*

STOPS: Shims (if applicable) may require adjustments; be sure to make adjustments to each location equally. Welker Smart Stop requires replacement upon failure. Welker Smart Stops use standard NAAMS (3) hole shims and spacers.\*\*

SHOCKS: Shocks are subject to wear under normal operating conditions and should be replaced when worn or cracked. \*\*

BEARINGS & SHAFT: Bearing assemblies feature long wearing, maintenance-free bearings that require no lubrication. Visually inspect slide for shaft wear and damage.\*\*

\*\* The following pages contain component repair/replacement instructions.

# TROUBLESHOOTING

FAILURE	POSSIBLE CAUSE	SOLUTION
Slide carriage does not move or falls short	Cylinder failure Lockout pin engage Metal part or debris in slide	Inspect unit for dirt/debris/parts blocking carriage path. Clean. Check plant air supply for proper pressure; too little will result in lack of cylinder movement and too much can result in cylinder seal failure. 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. Check lockout pin.
Bent, broken, or worn cylinder rod	Misaligned load or load in excess of capacity	Make sure load is properly aligned and within design limits. Please call Welker for cylinder service or replacement.
Shaft damage	Bearing failure Contaminants inside bearing assembly	Replace bearing assembly and/or shaft. Replace shaft O-ring.
Welker Smart Stop LEDs do not light up	Cylinder failure Switch failure Loose wire	Check switch for proper operation and secure connection. See above for Cylinder failure.

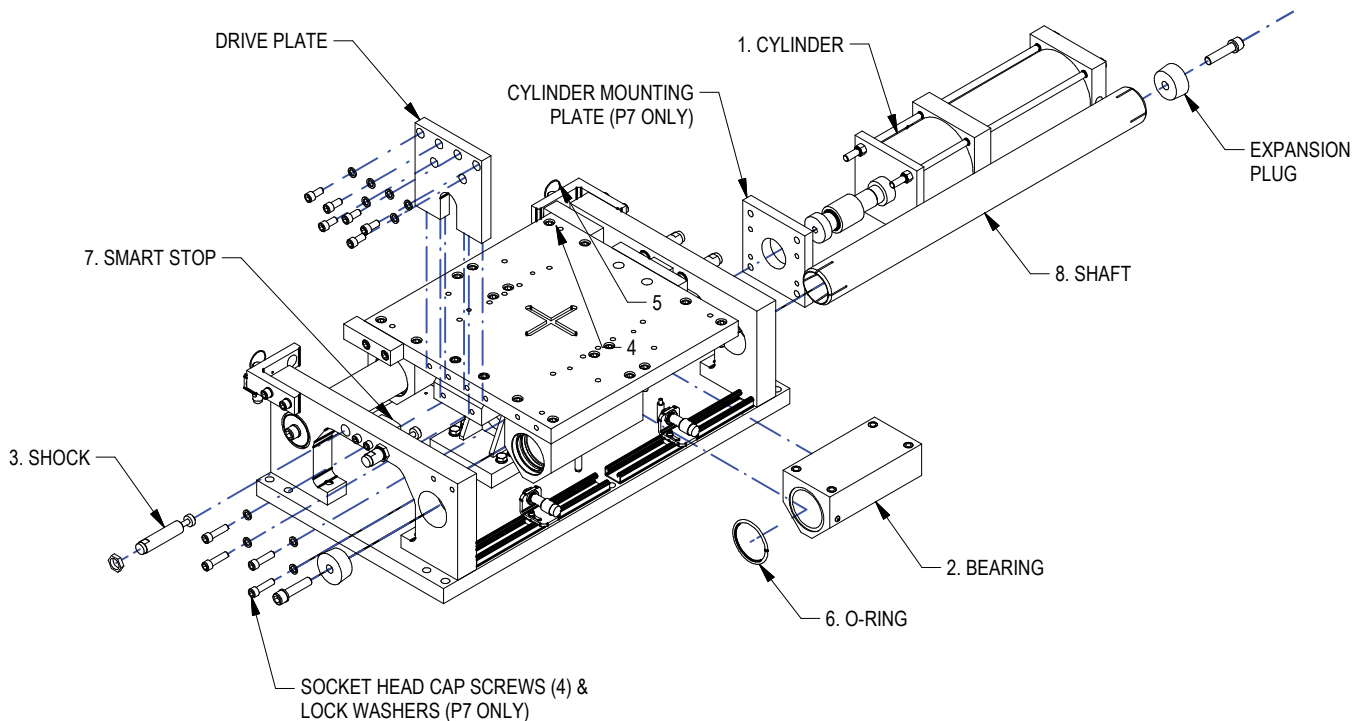
# REPLACEMENT PARTS

**NOTE A:** When ordering cylinder repair/seal kits, please have the unit's Welker Job Number available and/or the cylinder model & serial number.

REPLACEMENT PARTS					
ITEM	QTY	STOCK*	DESCRIPTION	P5 PART NUMBER	P7 PART NUMBER
1	1		PNEUMATIC CYLINDER WITH COUPLER	SEE CYLINDER OPTIONS	SEE CYLINDER OPTIONS
2	4		BEARING ASSEMBLY	PWS50E14-ASSY	PWS75E14-ASSY
3	2	1	SHOCK ABSORBER: P5	SC650M-9	
3	4	2	SHOCK ABSORBER: P7		SC650M-9
4	2		MANUAL LOCKOUT PIN	FPC12-20R	FPC12-20R
5	2		MANUAL LOCKOUT PIN CABLE	FPC-8	FPC-8
6	4		O-RING: P5	OR-568-034BN70	
6	2		O-RING: P7		OR-339BN70
7	2	1	SMART STOP	ASC021-PD	ASC021-PD
8	2		GUIDE SHAFT ~ OVERALL LENGTH	PWS50E10-SLIDE STROKE	PWS75E10-SLIDE STROKE
	1	1	CYLINDER REPAIR KIT	(SEE NOTE A)	(SEE NOTE A)

\* RECOMMENDED SPARE PARTS TO KEEP IN STOCK

## P7 SHOWN:



# REPLACEMENT CYLINDERS

P5 SLIDE CYLINDERS				
Cylinder	Ports	Cyl Type	Brake	Cylinder Model
01	NPT	STANDARD	Non-Locking	WC-2018-(Stroke + 25*)-P5 (*Minimum 225)
02	SAE	STANDARD	Non-Locking	WC-2019-(Stroke + 25*)-P5 (*Minimum 225)
03	G	STANDARD	Non-Locking	WC-2036-(Stroke + 25*)-P5 (*Minimum 225)
04	NPT	STANDARD	Locking	WC-2020-(Stroke + 25*)-P5 (*Minimum 125)
05	SAE	STANDARD	Locking	WC-2021-(Stroke + 25*)-P5 (*Minimum 125)
06	G	STANDARD	Locking	WC-2037-(Stroke + 25*)-P5 (*Minimum 125)
07	NPT	DUPLEX	Non-Locking	WC-2042-(Total Stroke + 13)-(Sub Stroke + 7.5)-P5
08	SAE	DUPLEX	Non-Locking	WC-2043-(Total Stroke + 13)-(Sub Stroke + 7.5)-P5
09	G	DUPLEX	Non-Locking	WC-2044-(Total Stroke + 13)-(Sub Stroke + 7.5)-P5
10	NPT	DUPLEX	Locking	WC-2045-(Total Stroke + 13)-(Sub Stroke + 7.5)-P5
11	SAE	DUPLEX	Locking	WC-2046-(Total Stroke + 13)-(Sub Stroke + 7.5)-P5
12	G	DUPLEX	Locking	WC-2047-(Total Stroke + 13)-(Sub Stroke + 7.5)-P5

P7 SLIDE CYLINDERS				
Cylinder	Ports	Cyl Type	Brake	Cylinder Model
01	NPT	STANDARD	Non-Locking	WC-2022-(Stroke + 25*)-P7 (*Minimum 350)
02	SAE	STANDARD	Non-Locking	WC-2023-(Stroke + 25*)-P7 (*Minimum 350)
03	G	STANDARD	Non-Locking	WC-2038-(Stroke + 25*)-P7 (*Minimum 350)
04	NPT	STANDARD	Locking	WC-2024-(Stroke + 25*)-P7 (*Minimum 225)
05	SAE	STANDARD	Locking	WC-2025-(Stroke + 25*)-P7 (*Minimum 225)
06	G	STANDARD	Locking	WC-2039-(Stroke + 25*)-P7 (*Minimum 225)
07	NPT	DUPLEX	Non-Locking	WC-2048-(Total Stroke + 25)-(Sub Stroke + 17.5)-P7
08	SAE	DUPLEX	Non-Locking	WC-2049-(Total Stroke + 25)-(Sub Stroke + 17.5)-P7
09	G	DUPLEX	Non-Locking	WC-2050-(Total Stroke + 25)-(Sub Stroke + 17.5)-P7
10	NPT	DUPLEX	Locking	WC-2051-(Total Stroke + 25)-(Sub Stroke + 17.5)-P7
11	SAE	DUPLEX	Locking	WC-2052-(Total Stroke + 25)-(Sub Stroke + 17.5)-P7
12	G	DUPLEX	Locking	WC-2053-(Total Stroke + 25)-(Sub Stroke + 17.5)-P7

## STROKE NOTES

The first stroke in the slide part # is the Sub Stroke while the Total Stroke is the sum of the two strokes in the slide part #

Some cylinders have a minimum stroke. For shorter stroke slides order the MIN stroke cylinder.

## EXAMPLES:

Slide unit P500010002B0000P: Order cylinder **WC-2019-225-P5**

Slide unit P500025005B0000P: Order cylinder **WC-2021-275-P5**

Slide unit P510027511X0000P: Order cylinder **WC-2046-388-107.5-P5**

# CYLINDER MAINTENANCE

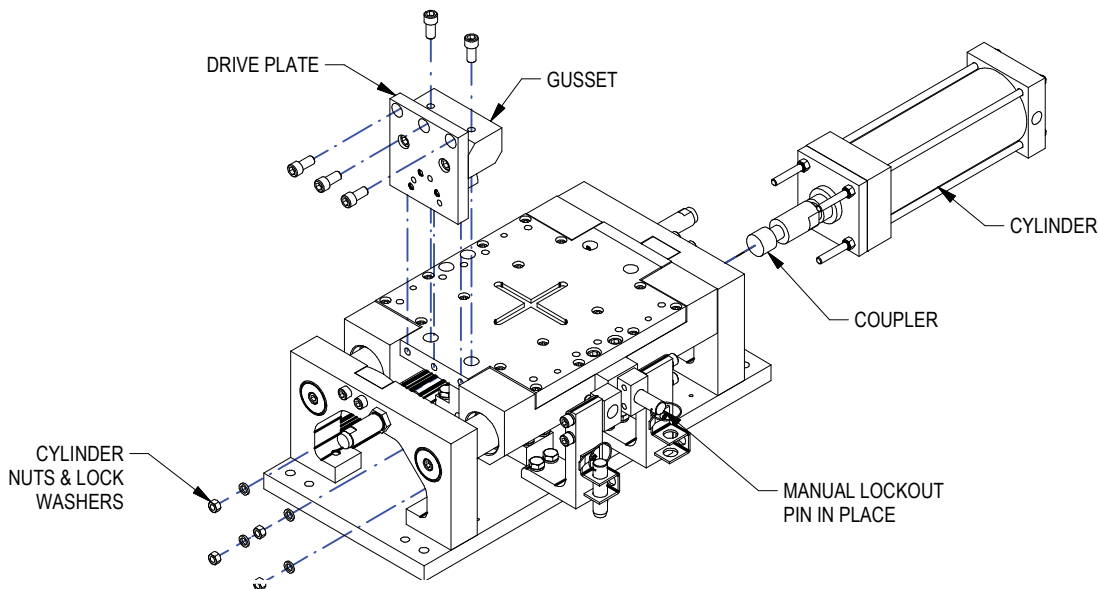
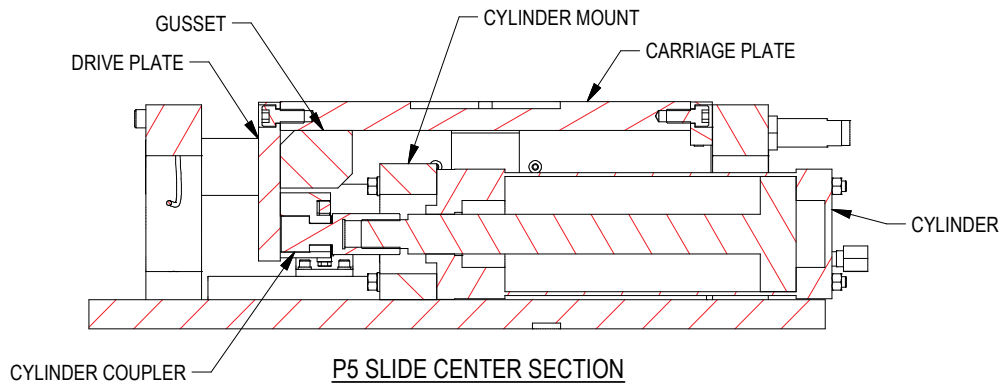
Welker pneumatic cylinders are lube free and require very little maintenance. Preventative maintenance includes inspection of rod and cylinder surfaces for abnormal wear or damage.

Be sure that the compressed air supply to the cylinder is free of contaminants, fittings are in good condition, and operating loads are within limits.

Seals are subject to wear under normal operating conditions. It is recommended to keep a spare cylinder seal kit on hand and replace them routinely.

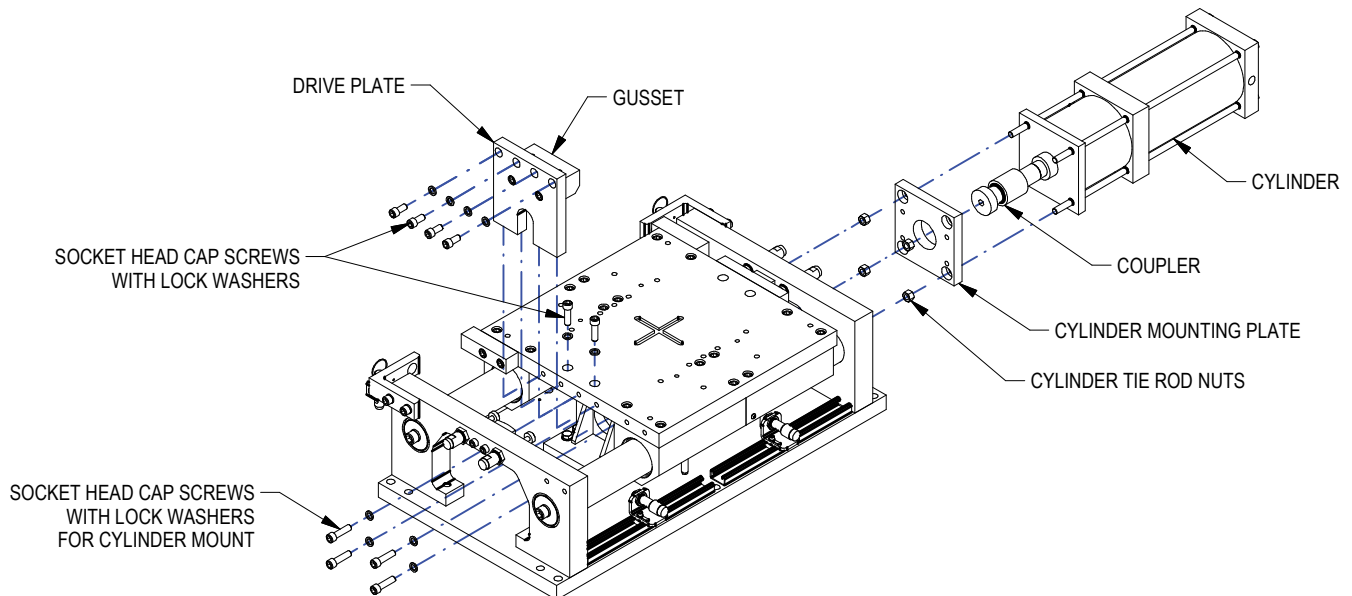
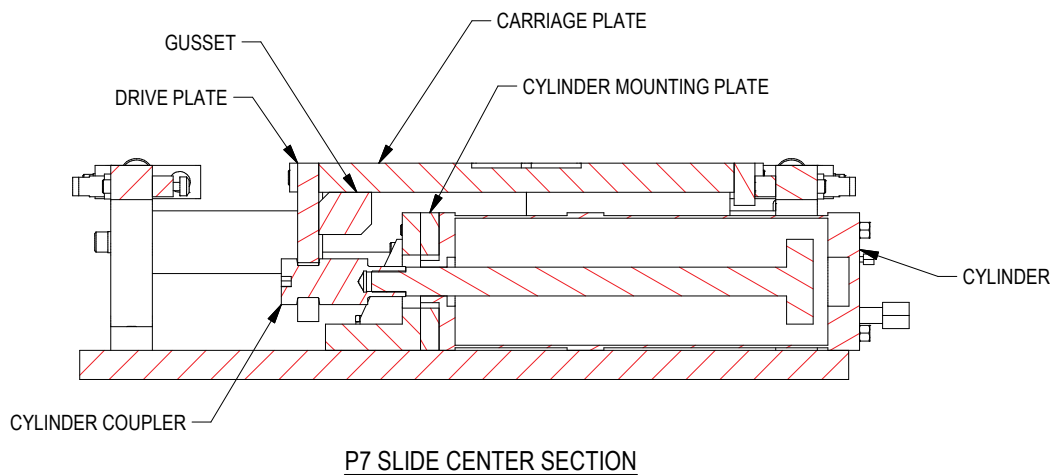
## TO REMOVE/REPLACE CYLINDER: P5 SLIDE (P7 on following page)

1. Fully retract the slide assembly and lockout the slide to prevent motion
2. Remove air lines from the cylinder.
3. Remove (3) socket head cap screws securing the drive plate to the carriage plate.
4. Remove (2) socket head cap screws securing gusset to the carriage plate.
5. Extend the cylinder with the drive plate
6. Lift the drive plate, disengaging the cylinder coupler.
7. For the P5 Slide: Remove (4) nuts and lock washers securing the cylinder to the cylinder mount. Pull the cylinder out. Replace/reinstall cylinder. Reinstall lock washers and nuts.
8. Lower drive plate onto the cylinder coupler and reinstall fasteners to carriage plate.
9. Reinstall air lines, making sure they are free of contaminants.



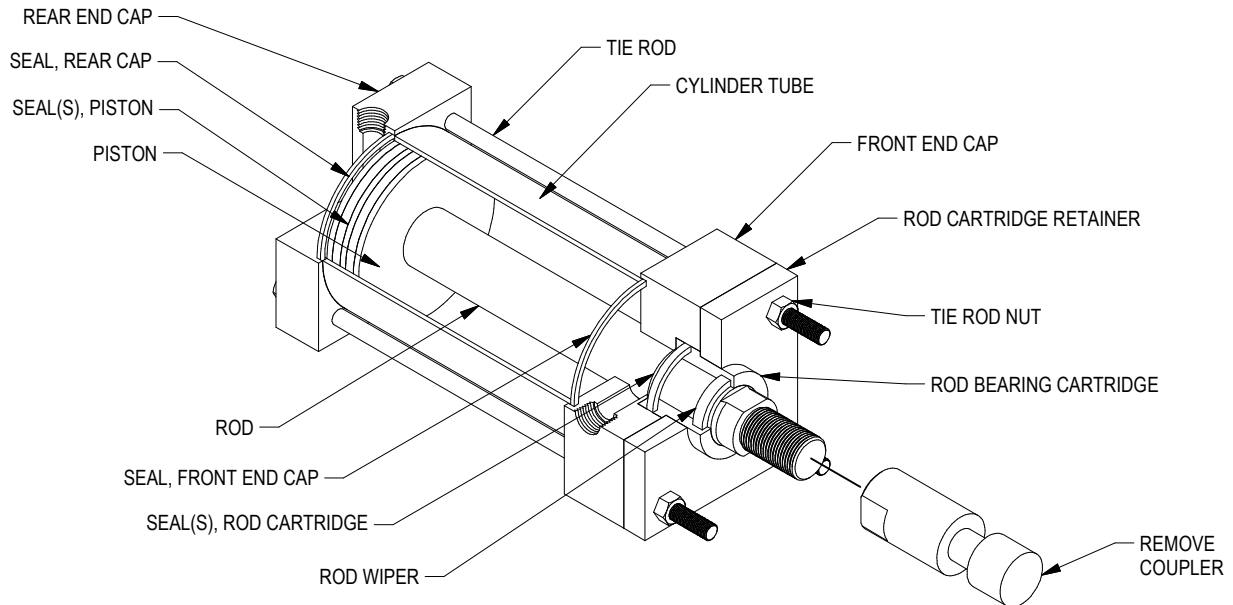
## TO REMOVE/REPLACE CYLINDER: P7 SLIDE

1. Fully retract the slide assembly and lockout the slide to prevent motion.
2. Remove air lines from the cylinder.
3. Remove (4) socket head cap screws & lock washers securing the drive plate to the carriage plate.
4. Remove (2) socket head cap screws & lock washers securing gusset to the carriage plate.
5. Extend the cylinder with the drive plate
6. Lift the drive plate, disengaging the cylinder coupler.
7. For the P7 Slide: Remove (4) socket head cap screws and lock washers. Pull the cylinder out. Remove tie rod nuts from mounting spacer; remove mounting spacer from cylinder, reinstall tie rod nuts on the cylinder. Remove tie rod nuts from the rod end of the replacement cylinder and reinstall mounting spacer. Reinstall tie rod nuts. Tighten to torque requirements. Carefully install replacement cylinder. Reinstall socket head cap screws with lock washers.
8. Lower drive plate onto the cylinder coupler and reinstall fasteners/lock washers to carriage plate.
9. Reinstall air lines, making sure they are free of contaminants.

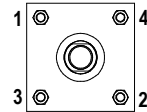


# CYLINDER SEAL MAINTENANCE

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.



TORQUE TIE ROD NUTS IN ORDER SHOWN. TORQUE TO (FT/LB): 22

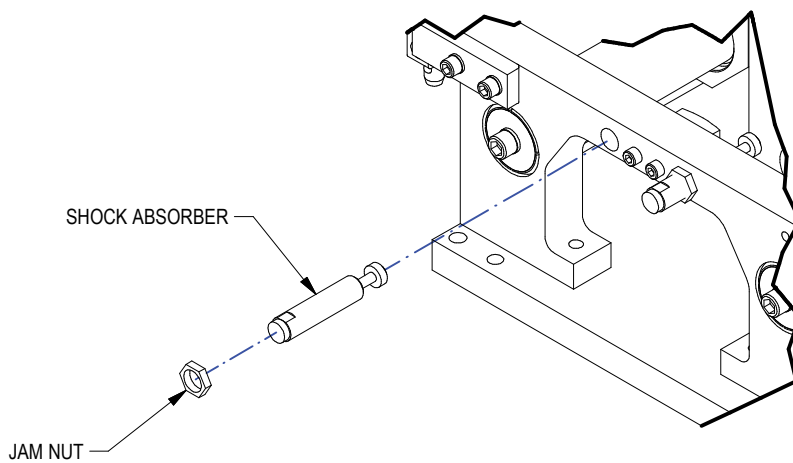


## TO REPLACE THE ROD CARTRIDGE SEALS

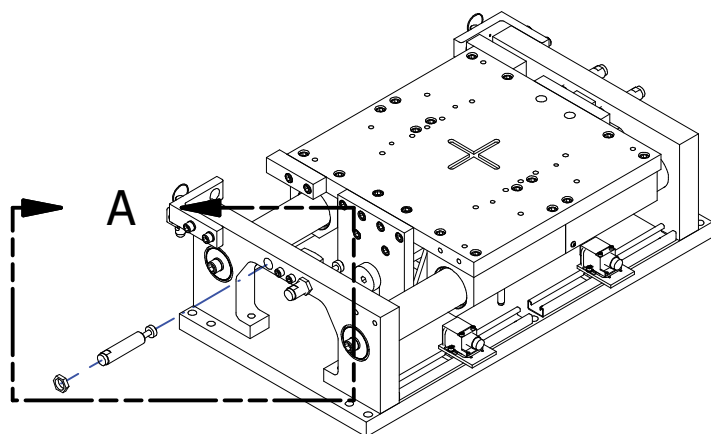
1. Remove cylinder coupler/adaptor. Coupler adapter is affixed to cylinder rod with permanent Loctite. To remove, first extend the cylinder rod to move the coupler adapter away from cylinder body. Then apply heat to the coupler to soften the thread locker. Use caution so as not to overheat the cylinder rod seals!
2. Remove the tie rod nuts.
3. Remove the rod cartridge retainer.
4. Remove the rod bearing cartridge from the front end cap by pulling straight out while twisting slightly.
5. Remove the rod wiper, the rod seal and the rod cartridge O-ring seal. It is very important to note the orientation of the rod wiper and the rod seal in the seal grooves. The new seals must be oriented the exact same way during replacement.
6. Clean the rod bearing cartridge and inspect for it for excessive wear or scoring. Replace the rod bearing cartridge if necessary.
7. Install a new rod wiper, rod seal, and rod cartridge O-ring seal into the rod bearing cartridge. Coat the I.D. of the rod bearing cartridge with Acrolube grease.
8. Check the piston rod end for burrs in the thread areas and wrench flats. Remove and polish sharp edges as required.
9. Install the reassembled rod cartridge assembly over the piston rod end with a slight twisting motion. Push the rod cartridge assembly into the bored cavity in the front end cap.
10. Install the rod cartridge retainer.
11. Install tie rod nuts, hand tighten then torque to the values shown. Use MoS2 grease or equivalent on both the threads and bearing surface. Should lubricant not be available, torque values should be increased by 50%.

## SHOCK ABSORBER REPLACEMENT

1. Lockout slide to prevent motion.
2. Remove jam nut from shock absorber
3. Unscrew shock absorber from installation.
4. 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".
5. Tighten jam nut.



DETAIL A ~ P7 SLIDE IS SHOWN



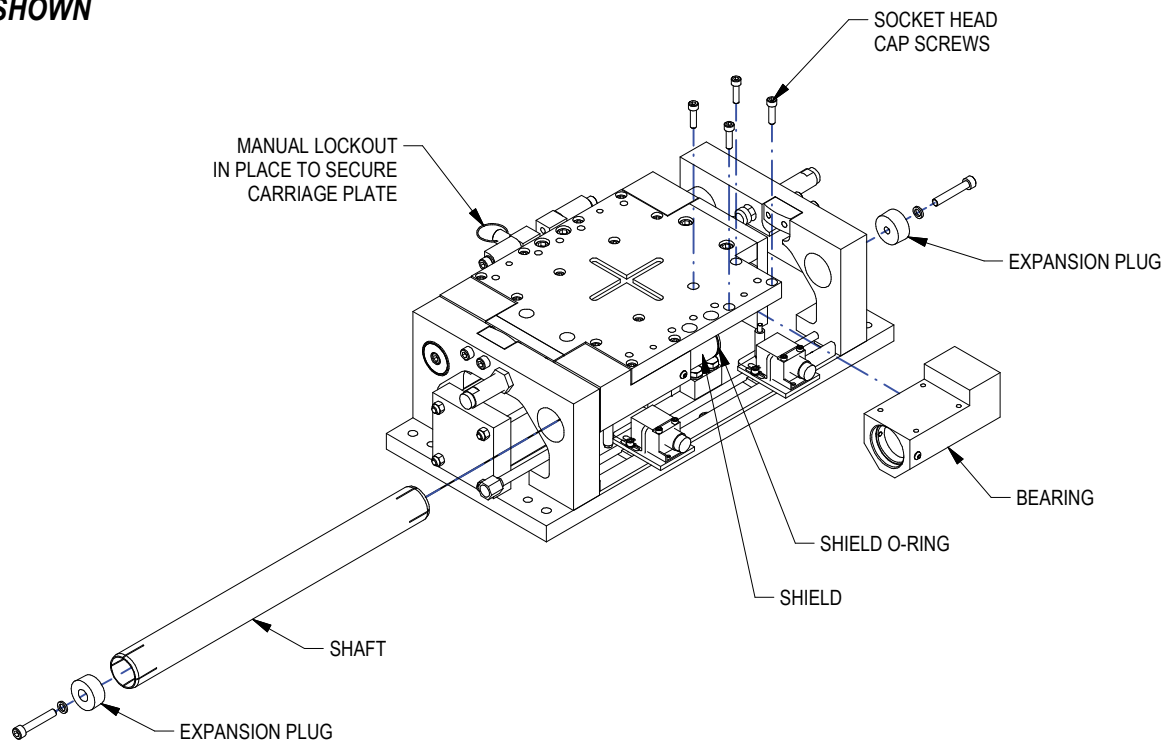


# BEARING & SHAFT MAINTENANCE

## **REPLACING BEARINGS AND/OR SHAFTS**

1. Cut off air supply to unit making sure there are no "trapped air" conditions. Use manual lockout to prevent motion of the carriage. Carriage is to be locked in a position leaving access to the bearing to be replaced.
2. If bearing fasteners are not accessible, tooling may need to be removed from the carriage plate.
3. If the tooling is still on the carriage, block up the carriage so it will not drop when the bearing is removed.
4. Remove socket head cap screws from the ends of the shaft.
5. Expansion plugs must be removed from ends of shaft. Remove plug from **first end** by threading M12x1.75 bolt into expansion plug. Pull to disengage plug from shaft. Secure **this end** by placing a thick washer over end of shaft: 2.25"O.D. x 3/8" min thickness. Secure to shaft with M10 bolt. Remove expansion plug from **opposite end** of shaft using M12 bolt.
6. Pull or push the shaft back disengaging it from the end plate and leaving enough room to remove the bearing. (If there is a load on the carriage, the carriage **MUST** be supported.) If the shaft is to be replaced, pull it fully out of the slide.
7. If a bearing is to be replaced, remove four socket head cap screws securing the bearings.
8. Disengage the bearing from shield (between the two bearings, P5 unit only). Slide the bearing off of the shaft.
9. Inspect O-ring. Replace if needed.
10. Slide the new bearing onto the shaft and onto the shield (P5 unit only).
11. Replace the bearing fasteners but do not tighten.
12. Push the shaft back into place, equally supported in the end plates.
13. Tighten the bearing fasteners.
14. Reinstall the taper plugs using anti-seize compound to prevent galling.

### **P5 SHOWN**



## TO REPLACE WELKER SMART STOP

There are four (4) LED lights on the Smart Stop's cable end: (2) green power-on lights and (2) yellow switch engagement lights. When lights fail, replace switch.

1. Release air pressure from system. Locate carriage plate to access Smart Stop, secure slide with lockout pin to prevent motion.
2. Disconnect cable.
3. Remove (2) socket head cap screws from stop block. Remove old switch.
4. Clean block location surface.
5. Install new stop block using (2) socket head cap screws. Be sure cable is in the proper orientation.
6. Reconnect cable.

