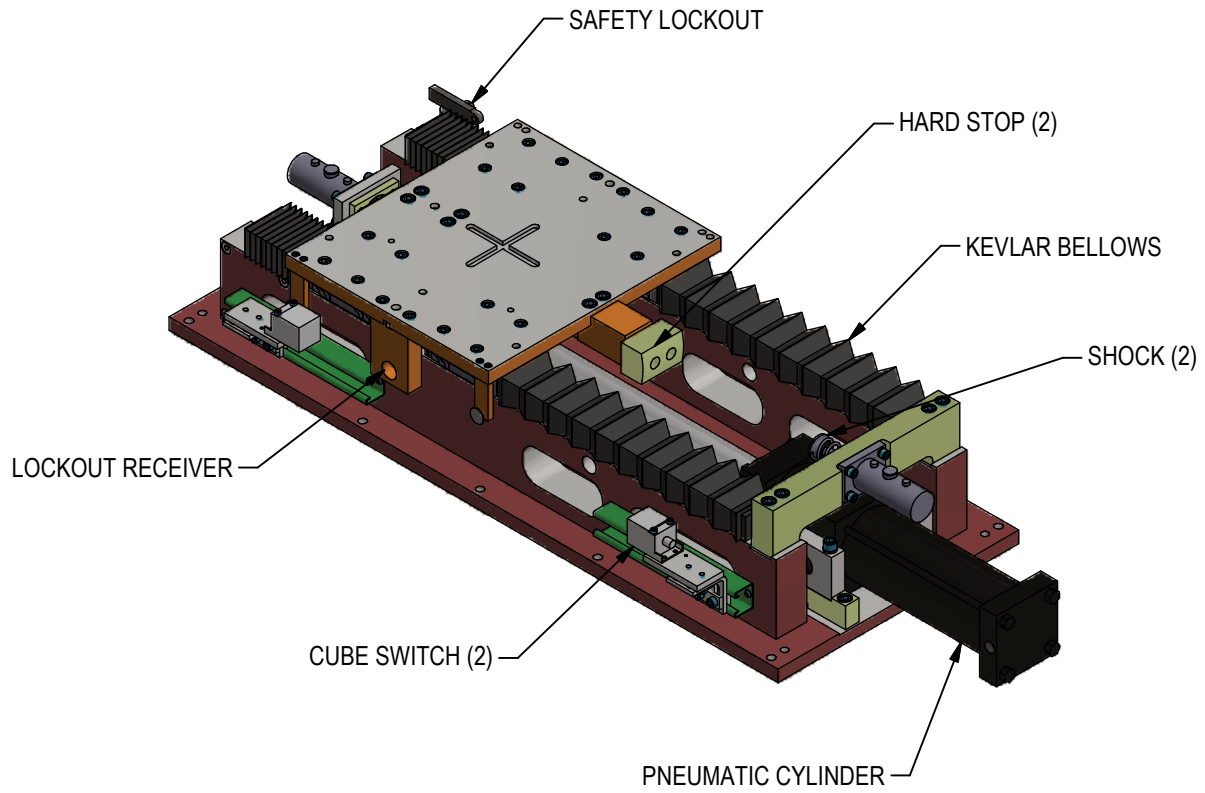


## MAINTENANCE MANUAL S01430 RAIL SLIDE



# 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, 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: 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.

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

BELLOWS: Replace when damaged or torn.

# TROUBLESHOOTING

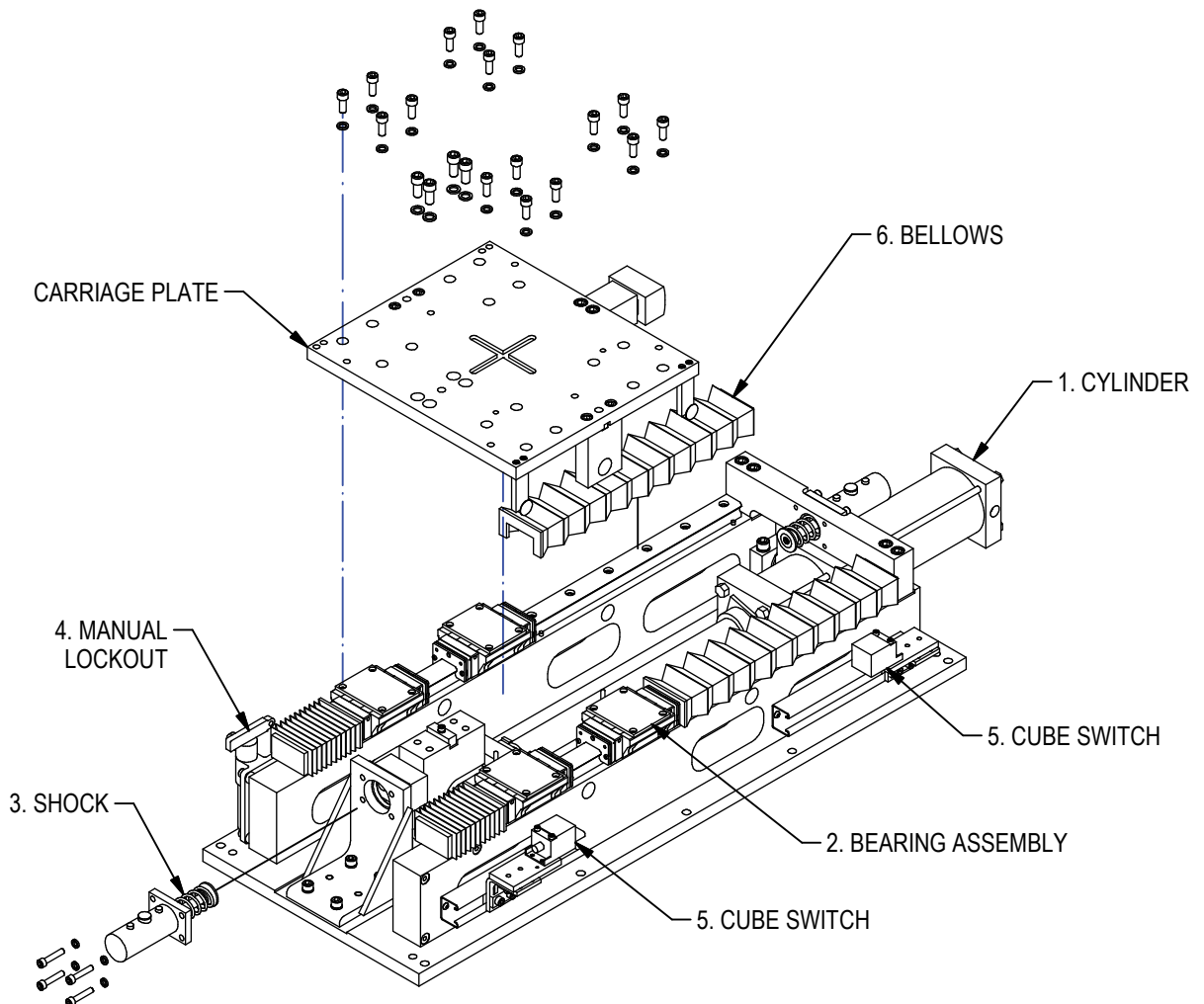
FAILURE	POSSIBLE CAUSE	SOLUTION
Slide carriage does not move or does not fully extend/retract	Cylinder failure	Check plant air supply for proper pressure; too little will result in lack of cylinder movement. Seals may be worn, damaged or deteriorating. Replace as needed. If cylinder has been serviced, be sure tie rod nuts have been tightened to torque specifications.
	Debris/contamination in slide	Inspect unit for dirt/debris. Clean, remove debris. Inspect bellows, replace if damaged.
	Stray metal parts in slide	Remove.
	Lockout pin engaged	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.
Rail damage	Bearing failure Contaminants inside bearing assembly	Replace bearing assembly (includes 1 rail and 2 carriages)
	Bellows torn	Replace bellows
Cube switch LEDs do not light up	Cylinder stroke not completing	Inspect unit for debris blocking full cylinder stroke. Clean, remove debris. Check cylinder operation.
	Switch failure, loose wire	Check switch for proper operation and secure connection. Replace if required.

# 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	R2 PART NUMBER
1	1	1	PNEUMATIC CYLINDER	SEE CHART NEXT PAGE
2	2		BEARING ASSEMBLY: BEARING CARRIAGE (2) & RAIL (1)	SEE CHART NEXT PAGE
3	2	1	SHOCK	HP-6000-RF-M-NC
4	1		MANUAL LOCKOUT	SP25Y100T000201
5	2	1	CUBE SWITCH	TURCK #1627297
6	4	2	BELLOWS, KEVLAR	42714 (FOR STROKES 5-500mm) 42715 (FOR STROKES 501-1060mm)
	1	1	CYLINDER REPAIR KIT	SEF3577-CSK

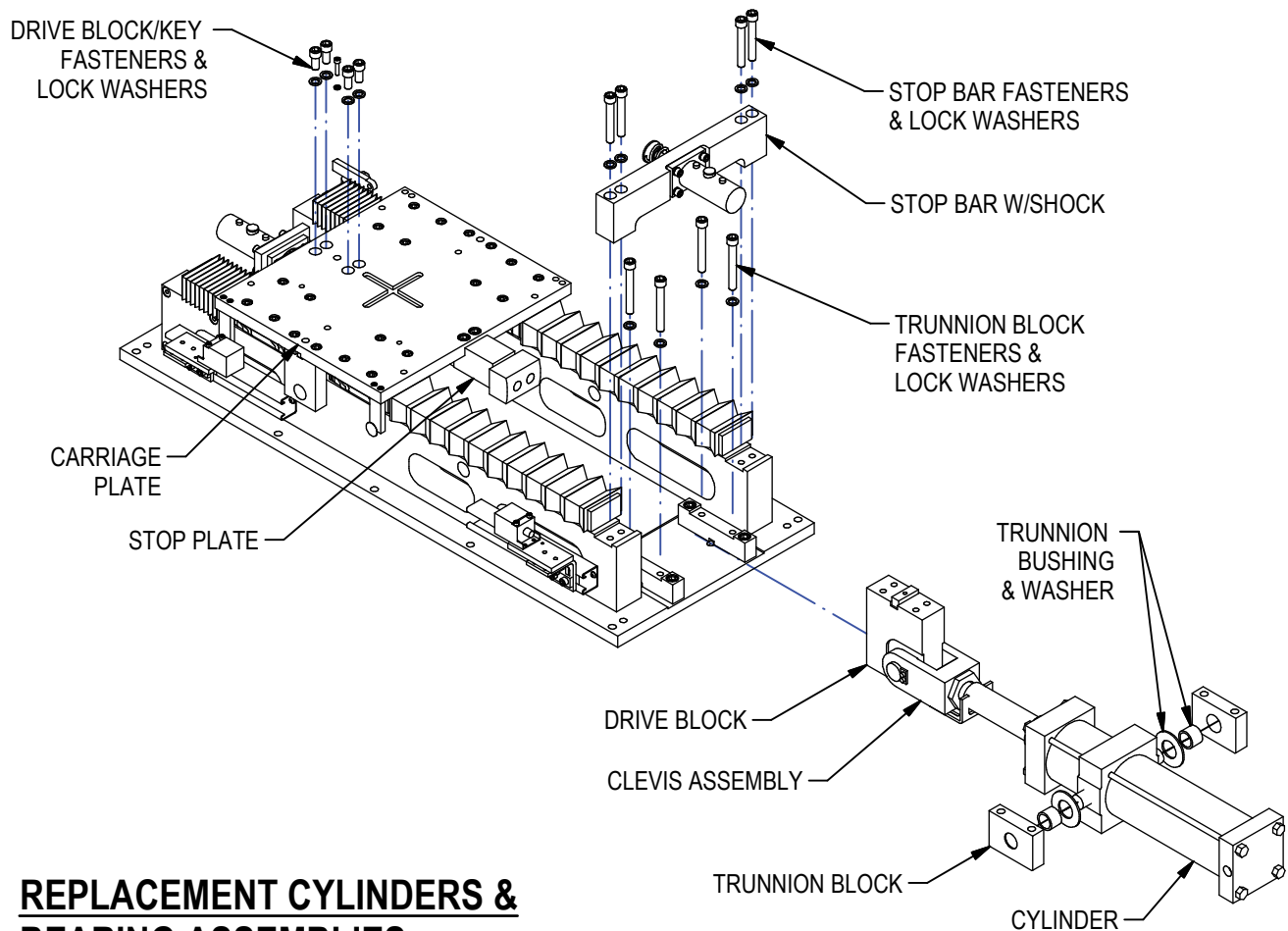
\* RECOMMENDED SPARE PARTS TO KEEP IN STOCK



# CYLINDER MAINTENANCE

## TO REMOVE CYLINDER/CLEVIS ASSEMBLY

1. Release air pressure from system and remove air lines from cylinder. Secure slide with lockout pin to prevent motion.
2. Remove drive block fasteners and lock washers from carriage plate; remove drive block key screw & lock washer. Be sure to retrieve key as it will be loose.
3. Remove fasteners & lock washers from stop block. Remove stop block with shock.
4. Remove fasteners & lock washers at cylinder trunnion blocks.
5. Remove fasteners from drive block.
6. Lift cylinder to clear cylinder block and lower clevis end, sliding out cylinder assembly.

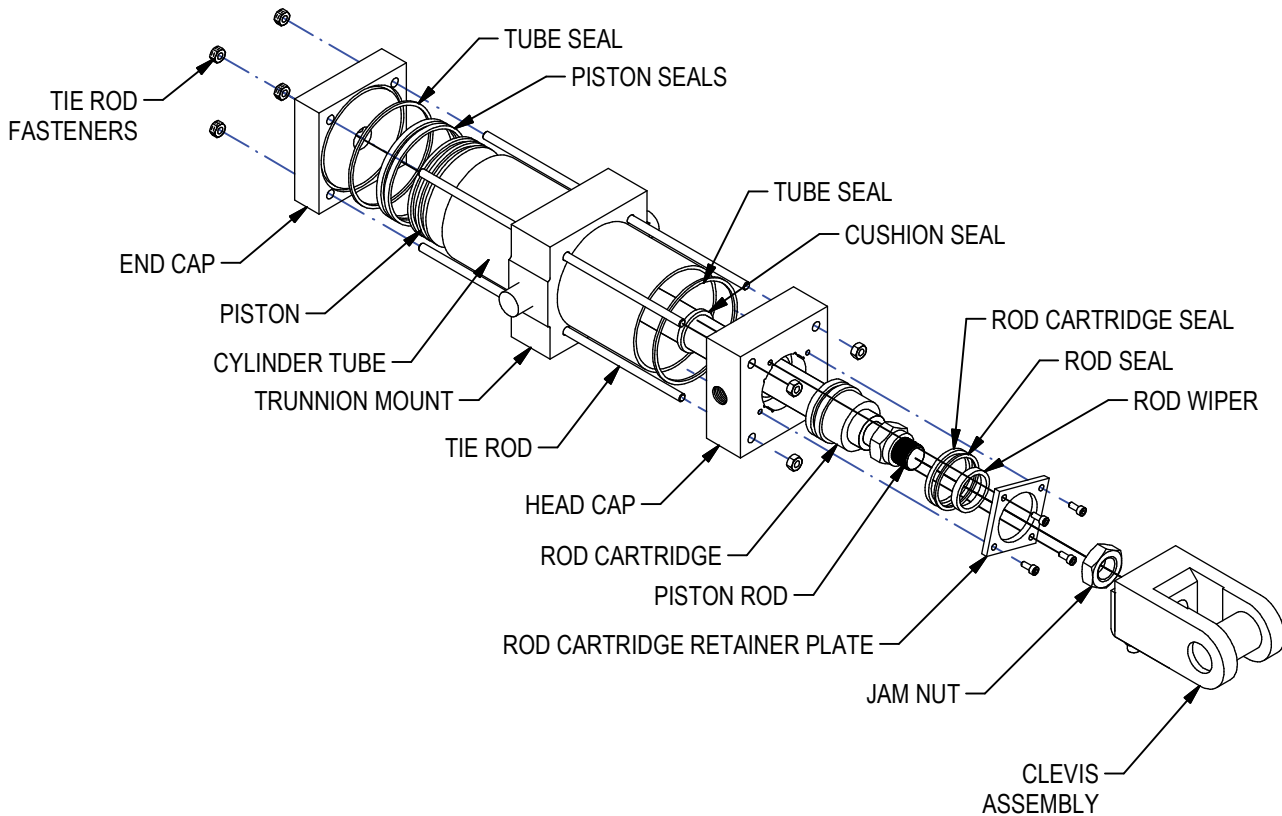


## REPLACEMENT CYLINDERS & BEARING ASSEMBLIES

BASE	STROKE	CYLINDER	BEARING ASSEMBLY
A	5mm to 100mm	SEF3577-5.00"	S01430-ASSM-680
B	101mm to 180mm	SEF3577-8.00"	S01430-ASSM-760
C	181mm to 260mm	SEF3577-11.25"	S01430-ASSM-840
D	261mm to 340mm	SEF3577-14.50"	S01430-ASSM-920
E	341mm to 420mm	SEF3577-17.50"	S01430-ASSM-1000
F	421mm to 500mm	SEF3577-20.5"	S01430-ASSM-1080
G	501mm to 580mm	SEF3577-24.00"	S01430-ASSM-1240
H	581mm to 660mm	SEF3577-27.00"	S01430-ASSM-1320
J	661mm to 740mm	SEF3577-30.25"	S01430-ASSM-1400
K	741mm to 820mm	SEF3577-33.25"	S01430-ASSM-1480
L	821mm to 900mm	SEF3577-36.50"	S01430-ASSM-1560
M	901mm to 980mm	SEF3577-39.50"	S01430-ASSM-1640
N	981mm to 1060mm	SEF3577-43.00"	S01430-ASSM-1720

# 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.



## TO REPLACE CYLINDER SEALS

**Note:** It is very important to note the orientation of the rod wiper and seals in the seal grooves. The new seals must be oriented the exact same way during replacement.

1. Remove clevis assembly: loosen jam nut, unscrew clevis assembly from cylinder rod. Remove cylinder bellows.
2. Remove rod cartridge retainer plate/fasteners. Remove rod wiper. Remove rod cartridge by pulling straight out while twisting slightly. Clean the rod cartridge and inspect for it for excessive wear or scoring.
3. Replace rod cartridge seal, rod seal and cushion seal if applicable. Coat the I.D. of the rod cartridge with Acrolube grease. Replace rod cartridge into head cap with a slight twisting motion. Replace rod wiper. Replace rod cartridge retainer plate, torque fasteners to values shown in chart on sheet 6.
4. To access front tube seal and piston seals, remove fasteners at head cap tie rods. Remove head cap. Remove old seals and clean grooves thoroughly. Replace tube seal making sure it is fully seated in seal groove.
5. Remove piston seals from grooves with brass or plastic tool, avoiding tools that may damage seal groove surfaces. Remove wearband and inspect for wear, replacing if necessary. Wearband is split and snaps into groove on piston.
6. Clean piston and cylinder tube with suitable solvent; blow dry with compressed air. Inspect parts for wear or scoring, replace if necessary. Fill lubrication groove (below wearband groove) with grease.
7. Install new piston seal. Lightly coat seals and tube I.D. with grease (Acrolube). Install piston assembly into tube being careful to avoid damage to piston seals.
5. Install head cap with tie rod fasteners. Hand tighten then torque to values shown in chart on sheet 6.
6. To access rear tube seal, remove fasteners at end cap tie rods. Remove end cap. Replace tube seal.
7. Replace cushion seal if applicable.
8. Install end cap with tie rod fasteners. Hand tighten then torque to values shown below.

## CYLINDER TORQUE CHART

1. Tie rod threads and nuts mating surface must be well lubricated with Loctite Anti Seize - it prevents binding when tightening the nuts and allows even pressures.

2. Use vise grips to hold the tie rods while snugging up the nuts to the tie rods and the cap. Use a criss cross pattern when snugging up the nuts. Sometimes hits from a rubber mallet are needed to snug up the end caps and tubes.

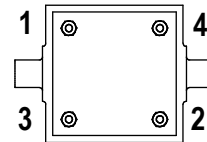
3. Still use the vise grips to hold the tie rods when torque to the first third of the spec requirements.

**Always remember to torque in a criss cross pattern to bring the tie rod pressure up evenly.**

4. After torque to 33% of spec, then the vise grips are not needed for the remaining 2.3 torque spec.

5. On the final torque of all the tie rods, go back to the first tie rod nut and assure that it is still at full spec. Sometimes the first tie rod will loosen up when the others have been torqued.

CYLINDER BORE	THREAD SIZE	TORQUE
4.00"	3/8-24	25 FT LBS
6.00"	1/2-20	35 FT LBS



## CYLINDER ROD RETAINER PLATE TORQUE CHART

1. Clean threads with brake cleaner to remove grease and dirt.

2. Blue loctite (removable type) on threads.

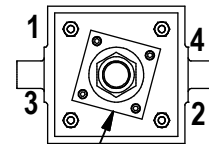
3. Hand start all socket head cap screws to hold retainer in place then use air gun to snug up each one.

4. Set torque value on the wrench from the chart according to cylinder size.

**Always remember to torque in a criss cross pattern to bring the torque pressure up evenly.**

5. On the final torque all of the cap head screws, go back to the first one and assure that it is still at full spec. (Sometimes the first one will loosen up when the others have been torqued.)

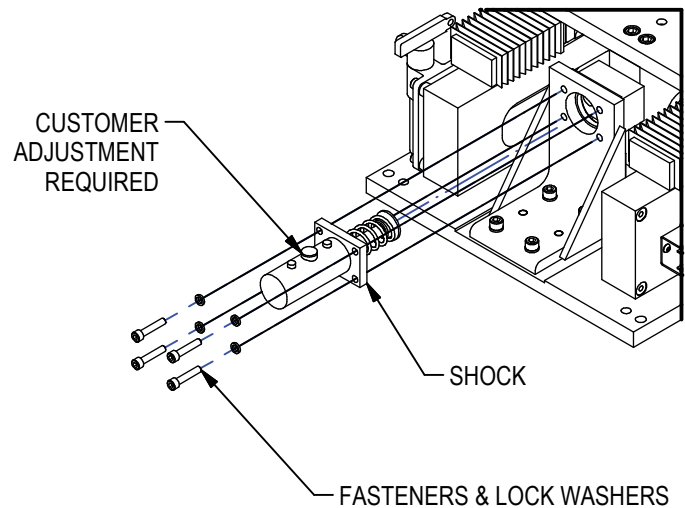
CYLINDER BORE	THREAD SIZE	LENGTH	TORQUE
4.00"	5/8-24	1.24"	160 FT LBS
6.00"	1-14	1.74"	720 FT LBS



ROD RETAINER PLATE

## SHOCK ABSORBER REPLACEMENT

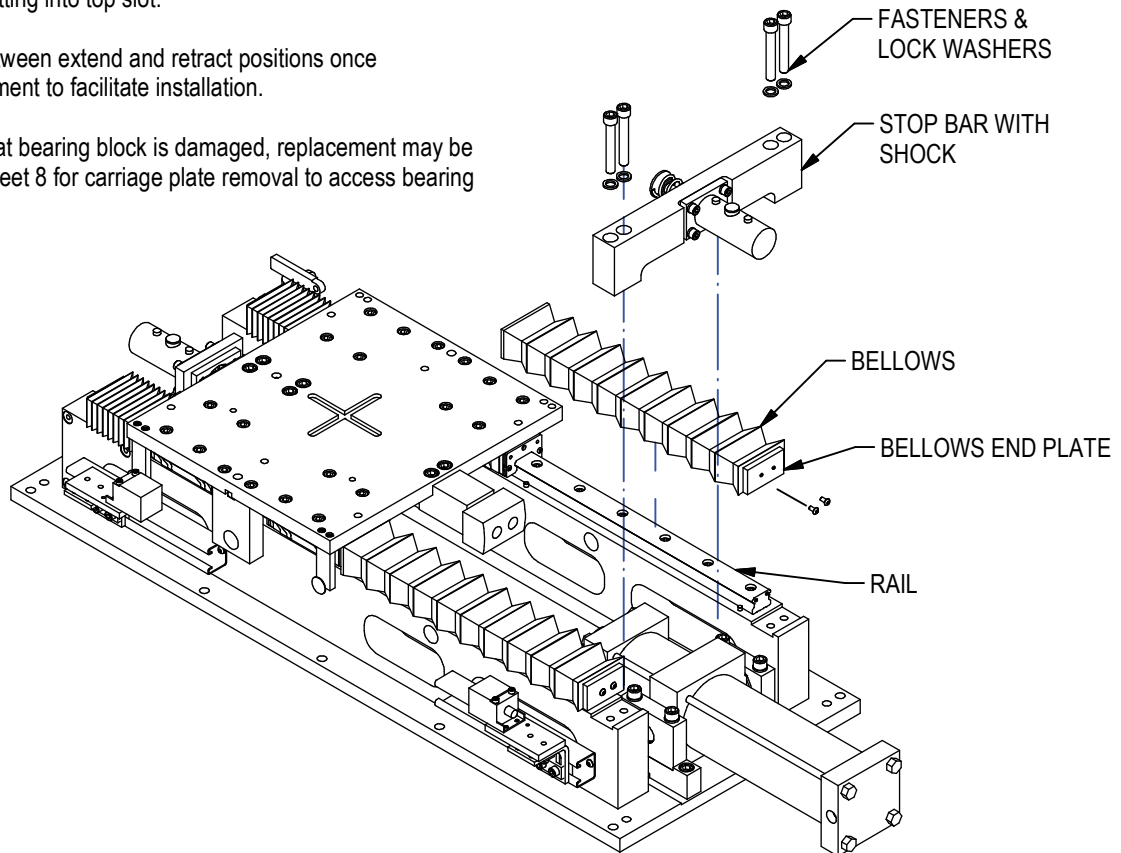
1. Lockout slide to prevent motion.
2. Remove fasteners & lock washers from shock.
3. Remove old shock, install new shock.
4. Secure with lock washers & fasteners.
5. Adjust shock to application.



## REPLACING KEVLAR BELLOWS

1. Lockout slide to prevent motion.
2. Remove stop bar with shock.
3. Remove bellows end plate from rail (2 screws).
4. Remove bellows from end plate and bearing block\*.
5. Install one end of new bellows to end plate, mount to rail (2 screws).
6. Install other end of new bellows to bearing block by sliding each side in slot and fitting into top slot.
7. Index slide between extend and retract positions once during replacement to facilitate installation.

\*If bellows plate at bearing block is damaged, replacement may be required. See Sheet 8 for carriage plate removal to access bearing block.



# BEARING & RAIL REPLACEMENT

1. Release air pressure from system.
2. Remove drive block/key fasteners & lockwashers. Remove fasteners & lockwashers from all bearings (4 bolts per bearing, 4 bearings) at carriage plate. Remove carriage plate.
3. Remove bellows.
4. Remove bearing spacers. Remove fasteners that anchor rail to base plate. Slide bearing assembly out of the way for bolt access as needed.
5. Remove rail and bearing assembly. Remove cam screws. Clean unit as needed.
6. Set new rail/bearing assembly in place, being careful to keep the bearings on the rail at all times. Ground side of rail must go against heel dowels.
7. Reinstall the cam screws that hold the rail against dowels. Install bolts in the new rail so that the rail is making light contact with the base plate, sliding bearings as needed for access. Do not tighten!
8. Tighten with just enough force to hold the rail firmly. Do not over-tighten.
9. Tighten rail bolts using torque wrench, working from the center of the rail to the ends. Torque to 22.4 lb ft. (3040 N-cm)
10. Install bellows. Place key in drive block.
11. Align carriage plate. Install bearing fasteners & lockwashers following the sequence in diagram below. Install drive block/key fasteners & lockwashers.

