Cylinder Maintenance

Suggested cylinder maintenance includes the replacement of seals subject to wear under normal operating conditions and the inspection of vital rod, bearing, and tube surfaces for abnormal wear or damage resulting from misalignment, particle contamination, or accidental abuse.

When maintenance is to be performed, the cylinder should be removed to a clean work area. The unit should be disassembled as described below to replace desired seal items.

Prior to reassembly, it is recommended that all cylinder surfaces and replacement parts be thoroughly cleaned and lubricated.

ROD SEAL REPLACEMENT

1. Extend cylinder rod several inches and provide adequate support to avoid cocking the piston inside tube.

2. Inspect rod wrench flat area and remove any burrs to prevent damage to rod bearing upon its removal.

3. Remove fasteners and detach bearing retainer plate.

4. Remove bearing from rod by pulling with a slow twisting motion.

5. Remove v-ring rod seals from cylinder end cap using a hook tool or thin screwdriver. Use care not to scratch head surfaces. Low pressure air may be applied thru front port to assist in seal removal. If used, rod should be fully retracted before such pressure is applied.

6. Remove rod wiper, clean, and inspect inner surface of the rod bearing. If finish of bore is not uniform, measure for variations in size. If wear is apparent, replace rod bearing in addition to seal components.

7. After cleaning cylinder surfaces and lubricating replacement seals, install v-ring packing set into front head cavity.

8. Install new rod wiper, lubricate, and slide bearing onto rod using a slow twisting motion.

9. Reattach bearing retainer using appropriate fasteners. Torque requirements for proper reassembly are included on this page.

PISTON AND TUBE END SEAL REPLACEMENT

1. Pull cylinder rod to its fully extended position and provide adequate support to avoid cocking the piston inside tube.

2. Remove tie rod fasteners from end of unit most convenient for service purposes.

3. Remove rear end cap and separate front head from cylinder tube. Tubing must be supported to prevent cocking against piston during disassembly.

4. Slide piston out of cylinder tube to expose both seals. Remove packing by inserting blunt screwdriver under heel section and stretching seals over face of piston.

5. Clean piston and cylinder bore surfaces. Install new piston seals with cup form of each facing in opposite directions away from each other.

6. Remove tube end seal (either gasket or square-ring/o-ring), clean head surface, and install replacement component. Lubricate prior to reassembly.

7. Insert piston into tube by depressing lip of seal with a blunt edge tool around circumference using care not to nick or scratch seal surface.

8. Align tube ends squarely with end cap pilots, slide together, and reattach tie rod fasteners. Use care not to shear square-ring/o-ring when applicable.

9. With piston rod in fully extended position, hand tighten tie rod fasteners. Torque gradually to recommended level by alternately tightening fasteners in a diagonal, corner crossing pattern.

10. If cylinder size permits, push piston rod to rear of unit to check alignment. If binding occurs, loosen tie rods and repeat torquing procedure. Cylinders with cushions should be assembled with the front cushion fully engaged. When assembled, proper alignment will allow full rotation of rod within the cushion at each end of cylinder.

11. After reassembly is complete, the cylinder should be pressure tested to inspect operating condition and checked for leakage before being placed back in service.

Torque Specifications

When tie rod nuts are removed to perform cylinder maintenance, they must be reassembled with proper torque to secure the assembly.

To prevent twisting, attach vice grip pliers or a locking clamp to tie rod near end of unit where torque will be applied. Recommended torque values apply to lubricated threads.

Cyl. Bore	1 1/2	2	2 1/2	3 1/4	4	5
Tie Rod Dia.	1/4	5/16	5/16	3/8	3/8	1/2
Torque Ft. Lbs.	8	18	18	34	34	62

Cyl. Bore	6	8	10	12	14
Tie Rod Dia.	1/2	5/8	3/4	3/4	7/8
Torque Ft. Lbs.	78	115	185	220	280

Bearing retainers are secured by various size and style fasteners in different model cylinders.
The chart below shows torque value applicable to each type used.

All fasteners are secured with breakable bond locking adhesive to insure against self disassembly.

Thread Size	1/4-28	5/16-24	3/8-24	1/2-20	5/18-18
Hex. Hd. C.S.	7	14	26	64	128
Soc. Hd. C.S.	14	27	48	114	222
Low Hd. C.S.	6.6	13	23	52	---