

SEAL KITS FOR TYPE N CYLINDERS

ISSUE:
October/87

SEAL KIT P/N 119-0082 for N40-120 and N40-190 Cylinders contains:

- 2: 11-216006 Rod Seals
- 2: 11-216007 Piston Seals
- 2: 11-106124 Cylinder End Seals
- 1: 720-0052 Piston Wear Ring

SEAL KIT P/N 119-0083 for N50-190 and N50-300 Cylinders contains:

- 2: 11-216001 Rod Seals
- 2: 11-216002 Piston Seals
- 2: 11-106131 Cylinder End Seals
- 1: 10-800034 Piston Wear Ring

SEAL KIT P/N 119-0084 for N80-190 and N80-300 Cylinders contains:

- 2: 11-216004 Rod Seals
- 2: 11-216008 Piston Seals
- 2: 11-106150 Cylinder End Seals
- 2: 11-106218 Cylinder Backup Seals
- 1: 10-800006 Piston Wear Ring

DISASSEMBLING THE CYLINDER

1. Remove the steering cylinder from the vessel.
 2. Extend the piston rod and clamp it in wooden or soft copper-lined vise jaws. Tighten vise to grip rod firmly, but do not crush. See Fig. 1.
- NOTE: The piston rod must be handled very carefully. Any nicks or scratches will likely damage the new seals and cause them to leak immediately.
3. Remove the rod end cotter pin and unscrew the rod end counterclockwise.

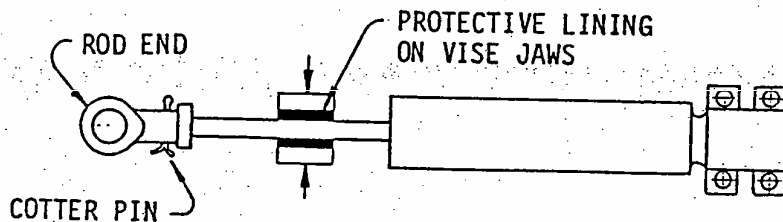


Fig. 1.

4. With the piston rod in the extended position, lightly clamp the cylinder barrel at the trunnion end. DO NOT CRUSH! See Fig. 2.
5. Remove both bleed fittings from the cylinder barrel.
6. Rotate the trunnion until the hole through the ball is visible through the bottom of the trunnion. Insert a screwdriver and rotate the entire trunnion assembly counterclockwise until it is completely unscrewed. Slide the trunnion assembly off the piston rod.

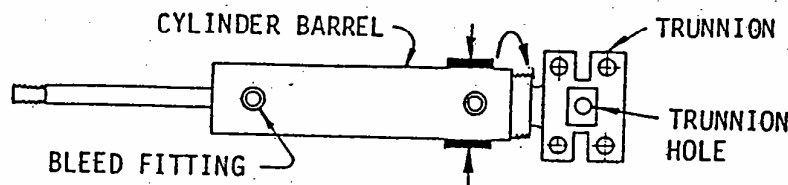
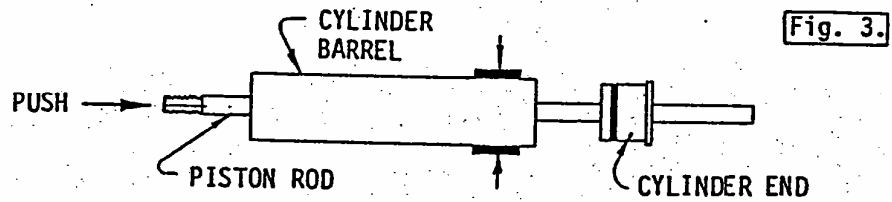
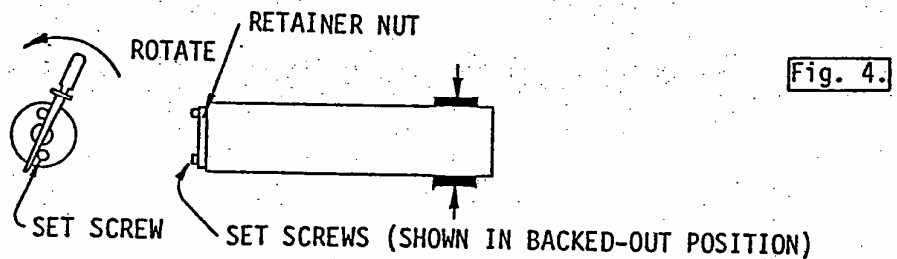


Fig. 2.

7. Push the piston rod completely out of the cylinder barrel as shown. This will also push the cylinder end out of the cylinder barrel. See Fig. 3.



8. Back out the setscrews on the retainer nut with a screwdriver 3 - 4 turns counterclockwise. See Fig. 4.
9. Insert the screwdriver between the two setscrews as shown and unscrew the retainer nut counterclockwise.
10. Remove the cylinder end, located under the retainer nut.



REMOVING THE OLD SEALS

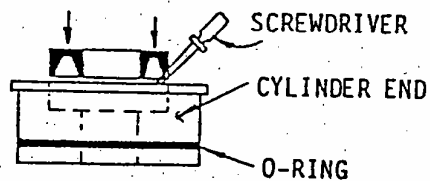
O-Rings from the cylinder ends may be removed by hand.

U-Cups can be removed with the aid of a screwdriver, if necessary.

Do not scratch or gouge the cylinder ends when removing the oil seals.

INSTALLING THE NEW SEALS See Fig. 5.

1. Piston rod U-Cups must be inserted with the aid of a blunt screwdriver or similar tool. The lip of these seals is larger in diameter than the hole they must enter, consequently, the tool is required to spring the lip inward while slowly working around the circumference of the seal. Be certain the seal is installed pointing in the correct direction (as shown).
2. An O-Ring should be installed on the outside of each cylinder end (as shown).



3. Install piston wear ring around center groove of piston before installing piston rod assembly into cylinder barrel. For position of wear ring see Fig. 6.

ASSEMBLING THE CYLINDER

1. Insert the piston rod into the cylinder barrel so that one-half of the piston is visible. The piston seal is started in its groove and slowly worked around the circumference with a screwdriver. Use care when doing this operation so as not to damage the new seal or the piston. Be certain to install the piston seal pointing in the correct direction (as shown). See Fig. 6.

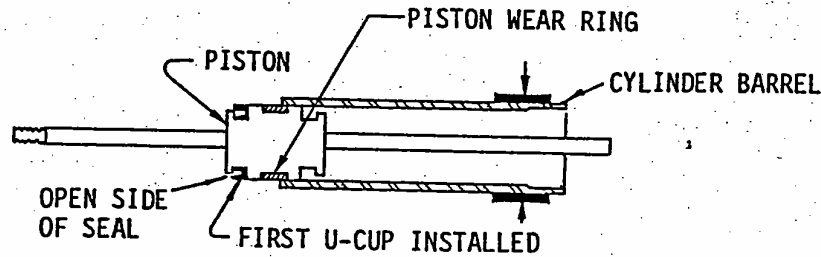


Fig. 6.

2. Push the piston rod to the opposite end of the cylinder so that only the empty U-Cup groove is exposed. If the piston rod is moved too far to the right, the U-Cup first installed will fall into an under cut inside the cylinder barrel and it will be impossible to move the piston rod back to the left without damaging the seal. See Fig. 7.

Install the second piston U-Cup in the same manner as the first one.

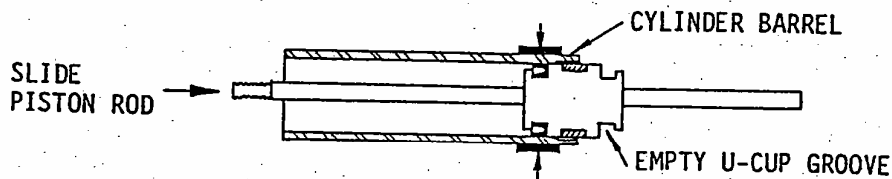


Fig. 7.

3. Insert either cylinder end (they are identical) into the end of the cylinder barrel as illustrated in Fig. 8, taking care not to damage the rod seal when sliding over the rod threads. Once again, be certain that the piston rod does not move too far to the right as cautioned above. Make sure the threaded hole aligns with hole in barrel.
4. Apply teflon tape or pipe fitting compound to external bleed fitting threads. Do not put tape or compound on the first two threads as this may contaminate the hydraulic fluid.
5. Screw the bleed fitting through the cylinder barrel and into the cylinder end until finger tight.

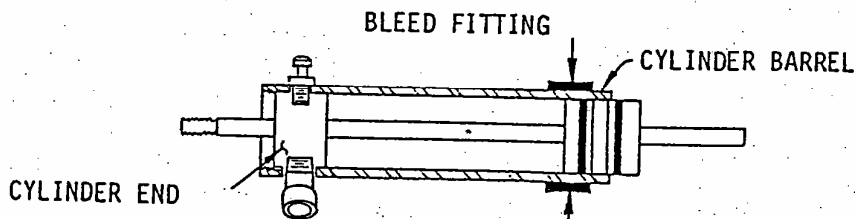


Fig. 8.

6. Thread the retainer nut into the end of the cylinder barrel. Use the set screws and a screwdriver to tighten the nut securely. See Fig. 9.

7. Tighten the set screws securely. The screws should be flush with, or below, the surface of the retainer nut.

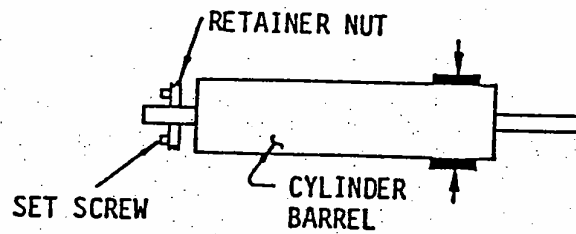


Fig. 9.

8. Push the piston rod into the cylinder barrel as shown in Fig. 10 (approximately centered).
9. Insert the other cylinder end as described in 3. above.
10. Install the other bleed fitting as described in 4. and 5. above.

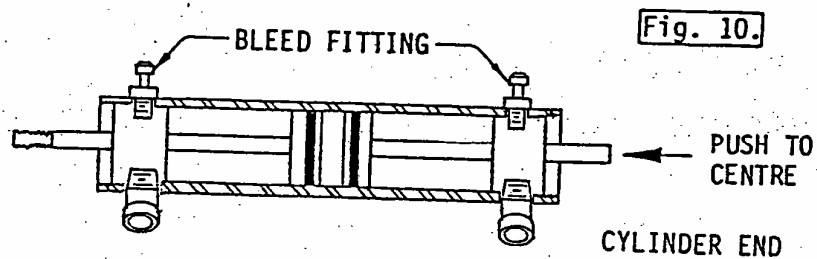


Fig. 10.

11. Push the piston rod all the way to the end of the cylinder barrel as shown in Fig. 11.

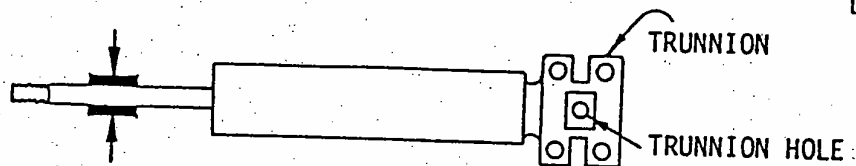


Fig. 11.

12. Thread the trunnion assembly into the cylinder barrel. With a screwdriver placed in the hole, tighten the trunnion assembly securely.
13. Firmly tighten both bleed fittings into the cylinder.
14. Release the cylinder barrel from the vise and reclamp the piston rod as initially done.
15. Screw on the rod end until the hole in the piston rod lines up with the hole in the rod end.
16. Insert the cotter pin through the rod end and piston rod. Bend the cotter pin over to prevent it from falling out.
17. Release the piston rod from the vise and reinstall the cylinder in the vessel. The cylinder may seem tight to stroke back and forth initially until the new seals wear in.

