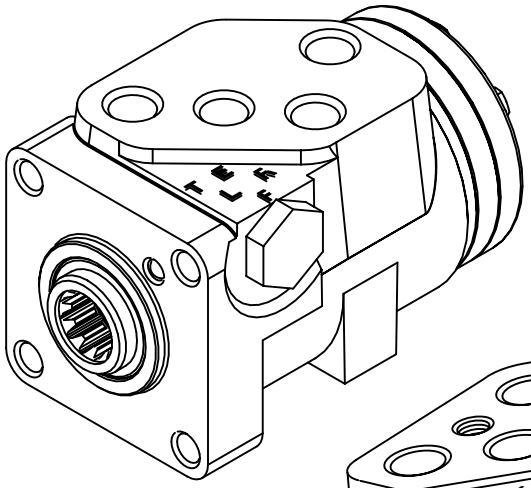
EATON | Char-Lynn

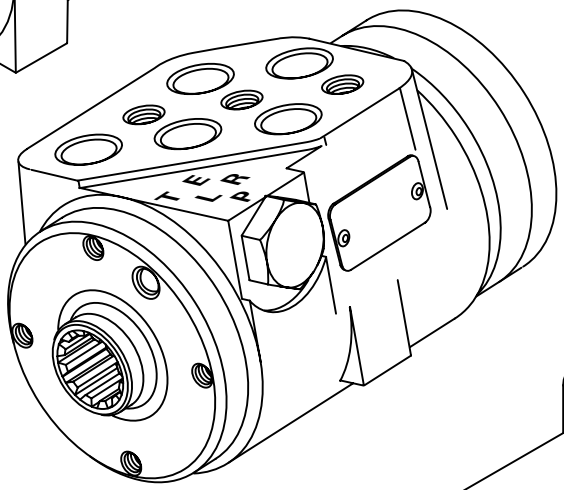
Power Steering
Repair Information

5 Series
Steering
Control Units
001

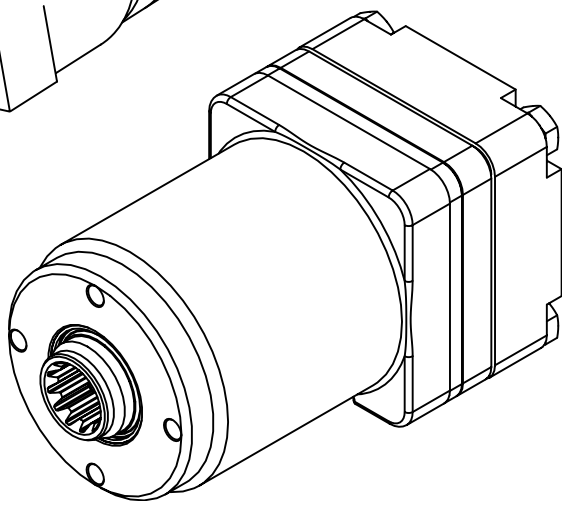
Square Housing with Side Ports



Round Housing with Side Ports



Round Housing with End Ports



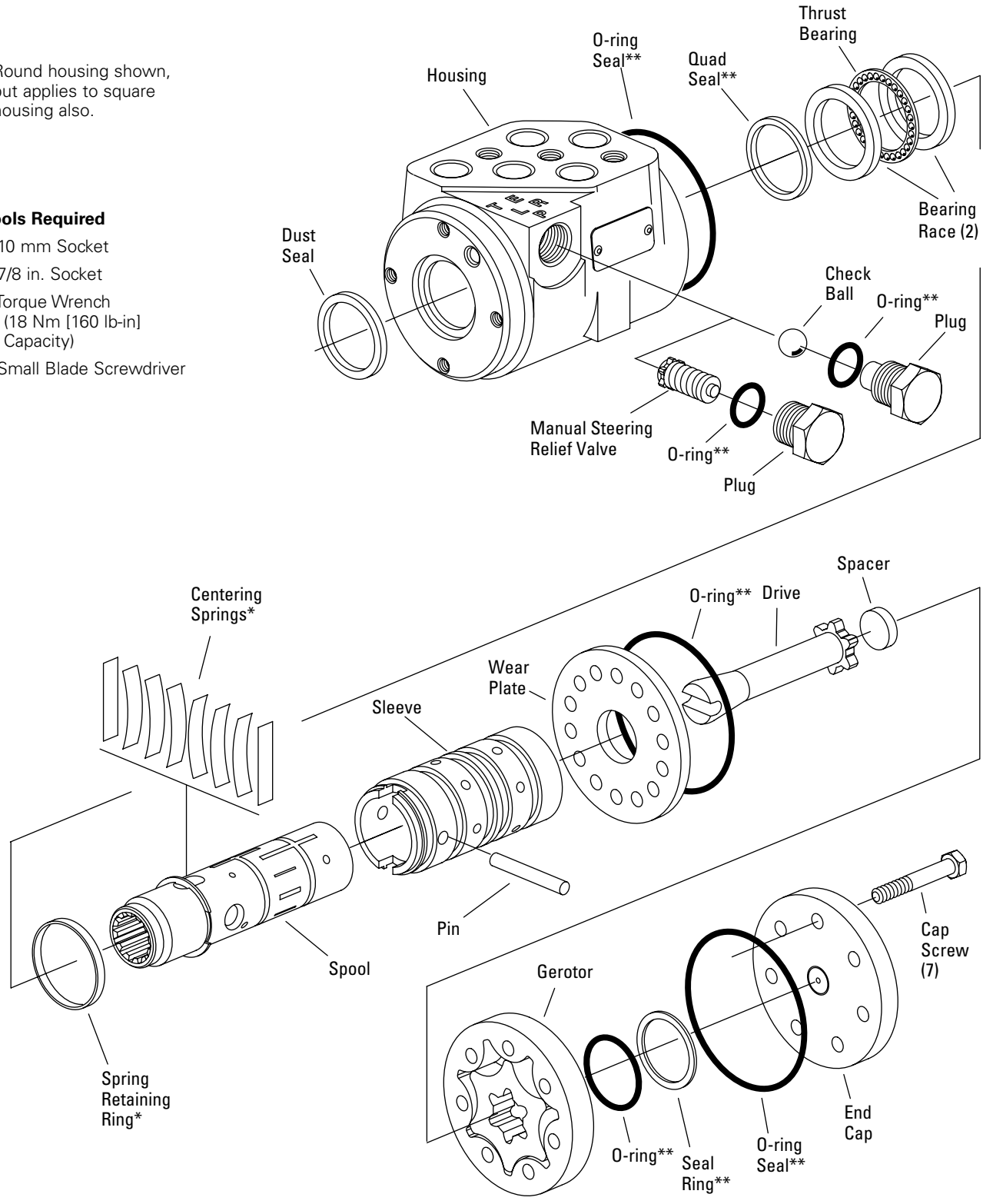
Char-Lynn®

Round Housing and Square Housing with Side Ports

*Round housing shown, but applies to square housing also.

Tools Required

- 10 mm Socket
- 7/8 in. Socket
- Torque Wrench (18 Nm [160 lb-in] Capacity)
- Small Blade Screwdriver



REPLACEMENT PART NO.	DESCRIPTION
64456-00	Centering Spring Kit (contains parts with *)
64455-00	Seal Kit (contains parts with **)

Round Housing and Square Housing with Side Ports

Disassembly

Cleanliness is extremely important when repairing hydraulic Steering Control Units (SCU). Work in a clean area. Before disconnecting the hydraulic lines, clean the port area of the SCU. Before disassembly, drain the oil, then plug the ports and thoroughly clean the exterior of the SCU. During repairs, always protect machined surfaces.

1. Remove the seven cap screws and disassemble the SCU as shown in figure 1.
2. Remove the plug and manual steering check as shown in figure 1. **Note:** The manual steering check may be a check ball or a check/relief valve.
3. Slide the spool and sleeve from the housing, see figure 2.
4. Remove the thrust bearing and bearing races.
5. Remove the quad seal.
6. Using a small blade screwdriver, carefully pry the dust seal from the housing. **Important:** Do not damage the dust seal seat.

Figure 1

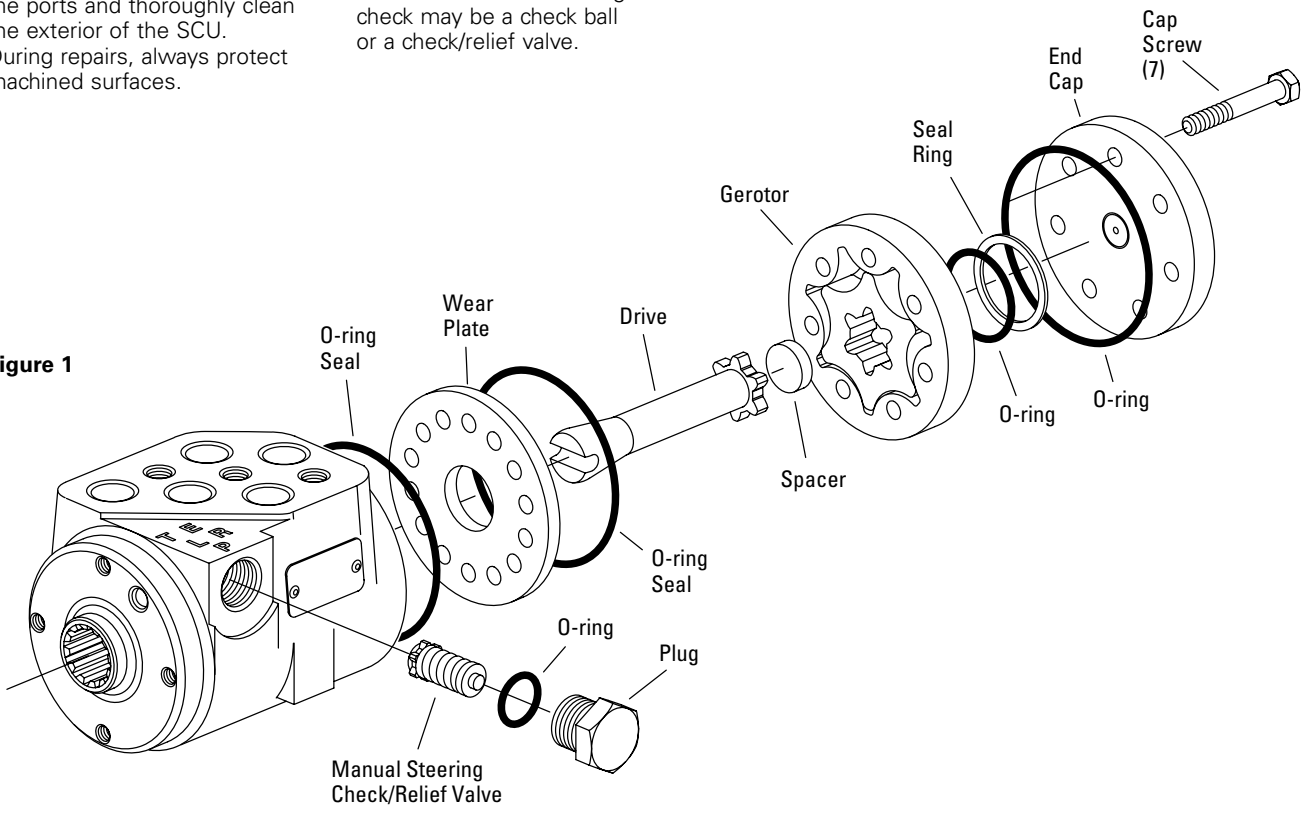
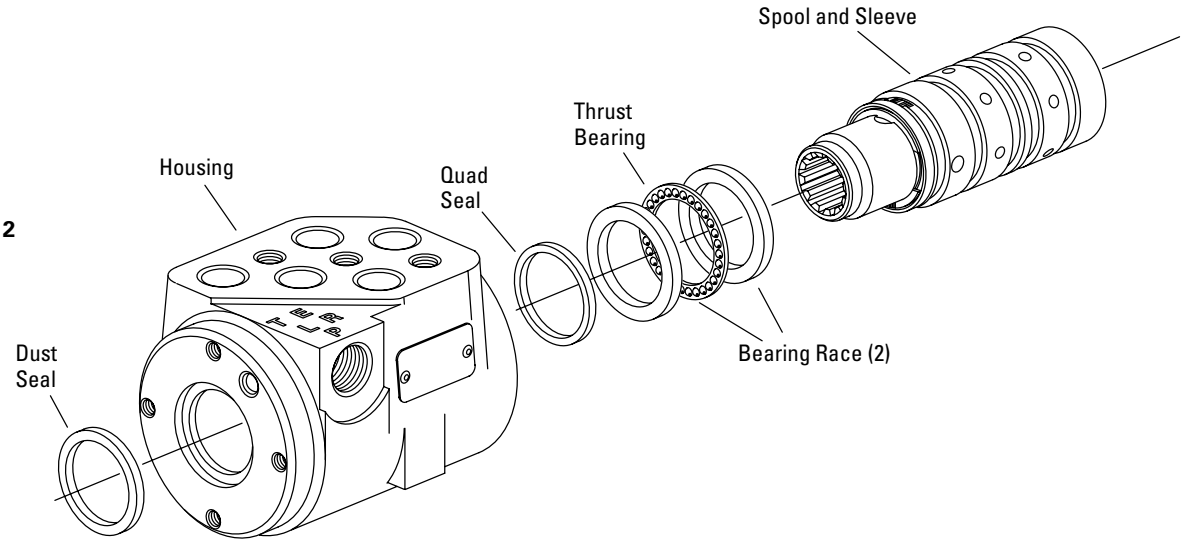


Figure 2

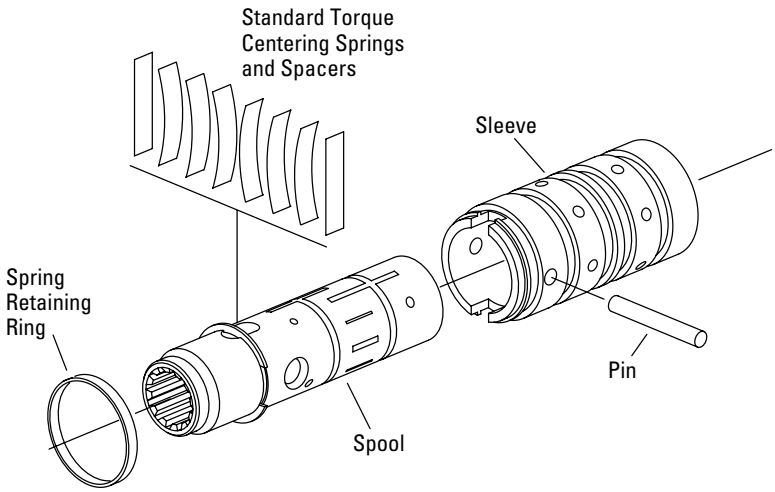


Round Housing and Square Housing with Side Ports

Disassembly cont.

7. Remove the pin that holds the spool and sleeve together, see figure 3.
8. Carefully slide the spool out of the sleeve. The springs and retaining ring will stay with the spool as it's removed.
9. Remove the retaining ring and springs.
   Caution: The centering springs are under tension; remove the retaining ring carefully.

Figure 3



Reassembly

Check all mating surfaces. Replace any parts with scratches or burrs that could cause leakage. Wash all metal parts in clean solvent. Blow them dry with pressurized air. Do not wipe parts dry with paper towels or cloth as lint in a hydraulic system will cause damage.

Note: Always use new seals when reassembling hydraulic steering control units. Refer to page 2 for seal kit part numbers.

Important: During reassembly lubricate the new seals with a petroleum jelly such as Vaseline®. Also lubricate machined surfaces and bearings with clean hydraulic fluid.

10. Install the quad seal:
    - Put one of the bearing races and sleeve into the housing.
    - Together, the housing and bearing race create a groove into which the quad seal will be installed.
    - Hold the bearing race tightly against the input end of the housing by pushing on the gerotor end of the sleeve.
    - Fit the quad seal into its seat through the input end of the housing. Be sure the seal is not twisted.
    - Remove the sleeve and bearing race.
11. Lubricate and install the dust seal (see Figure 4 for correct seal orientation).
12. Install the centering springs in the spool. It is best to install the two flat pieces first. Next, install the curved pieces, three at a time.
13. Fit the retaining ring over the centering springs.
14. Apply a light coating of clean hydraulic fluid to the spool and slide it into the sleeve. Be sure the centering springs fit into the notches in the sleeve.
15. Install the pin (see Figure 3).
16. Apply a light coating of petroleum jelly to the inner edge of the dust and quad seals.
17. Put the thrust bearing and races into the housing. The thrust bearing goes between the two races (see Figure 2).
18. Apply a light coating of clean hydraulic fluid to the spool and sleeve assembly and slide it into the housing.
    Important: Do not damage the dust or quad seals.
19. Clamp the housing in a vise as shown in Figure 5. Use just enough clamping force to hold the housing securely.

Figure 4

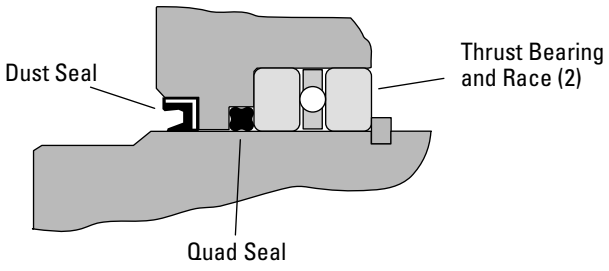
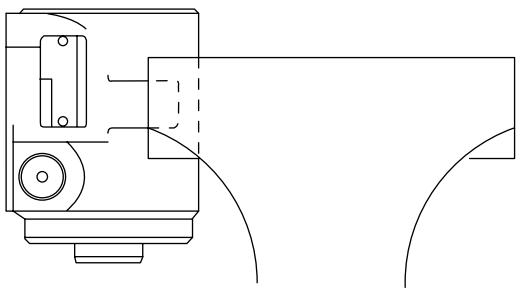


Figure 5



Round Housing and Square Housing with Side Ports

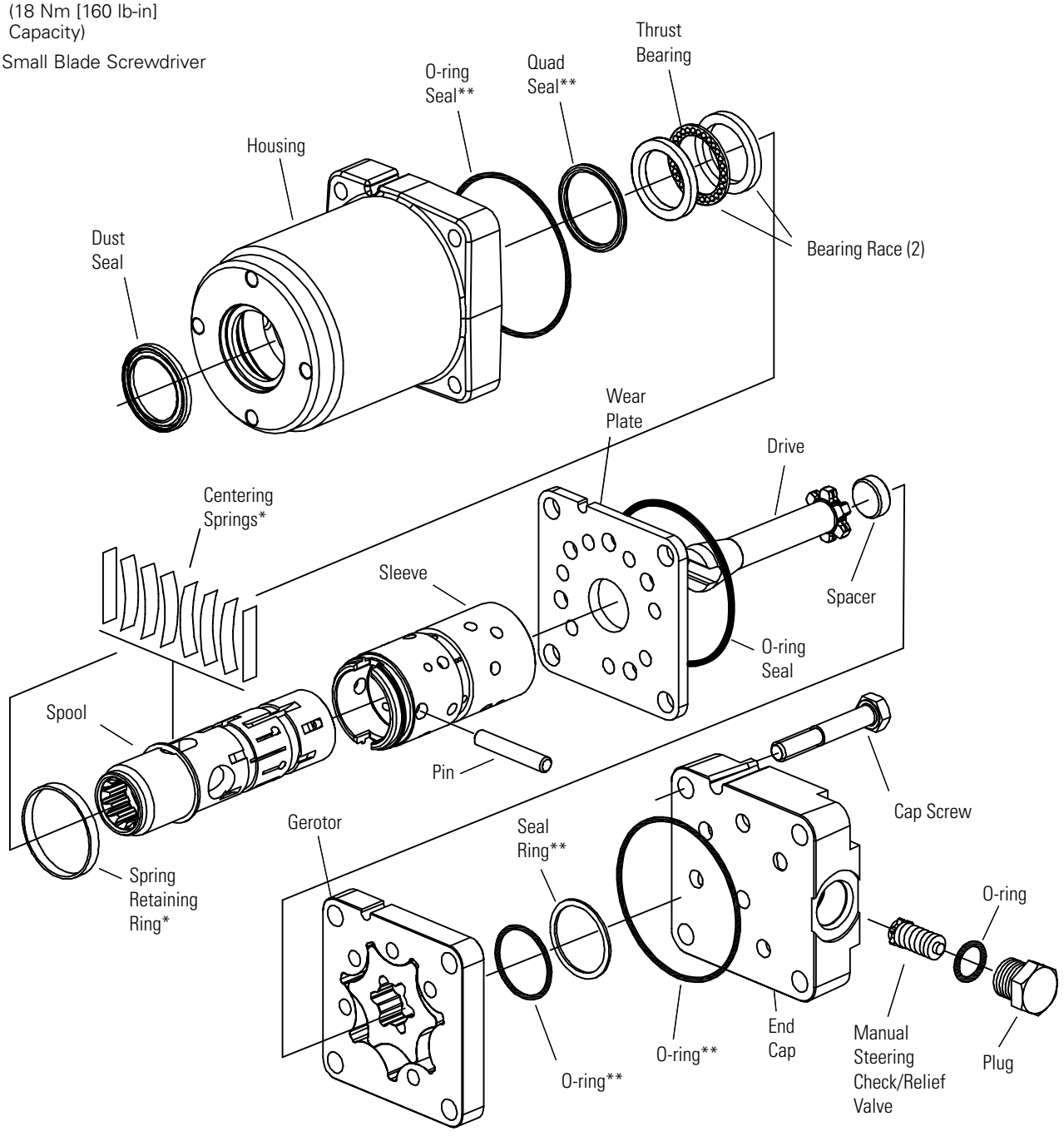
Reassembly cont.

20. Lubricate and install a new o-ring seal in the groove in the housing.
21. Install the wear plate and align the holes in the wear plate with threaded holes in the housing.
    Note: The holes in the wear plate are symmetrical.
22. Install the drive, be sure the slot in the drive engages the pin.
23. Lubricate and install a new o-ring seal in the groove in the wear plate.
24. Install the gerotor and align the screw holes.
25. Lubricate and install a new o-ring seal in the groove in the gerotor ring.
26. Lubricate and install a new o-ring and seal ring in the groove in the gerotor star.
27. Install the spacer.
28. Install end cap and seven cap screws. Tighten cap screws, in a crisscross pattern, to 16 -18 Nm [140 -160 lb-in].
29. Remove the SCU from the vise.
30. Install the relief valve/check or check ball and plug. Use a new o-ring and tighten the plug to 17 Nm [150 lb-in].

Round Housing with End Ports

Tools Required

- 10 mm Socket
- 7/8 in. Socket
- Torque Wrench (18 Nm [160 lb-in] Capacity)
- Small Blade Screwdriver



REPLACEMENT PART NO.	DESCRIPTION
64456-000	Centering Spring Kit (contains parts with *)
64455-000	Seal Kit (contains parts with **)

Round Housing with End Ports

Disassembly

Cleanliness is extremely important when repairing hydraulic Steering Control Units (SCU). Work in a clean area. Before disconnecting the hydraulic lines, clean the port area of the SCU. Before disassembly, drain the oil, then plug the ports and thoroughly clean the exterior of the SCU. During repairs, always protect machined surfaces.

1. Remove the plug and inlet relief as shown in figure 1. **Note:** The manual steering check is part of the inlet relief valve. If inlet relief valve is not present, the manual steering check is located in the housing.
2. Remove the four cap screws and disassemble the SCU as shown in figure 1.
3. Slide the spool and sleeve from the housing, see figure 2.
4. Remove the thrust bearing and bearing races.
5. Remove the seal.
6. Using a small blade screwdriver, carefully pry the dust seal from the housing. **Important:** Do not damage the dust seal seat.

Figure 1

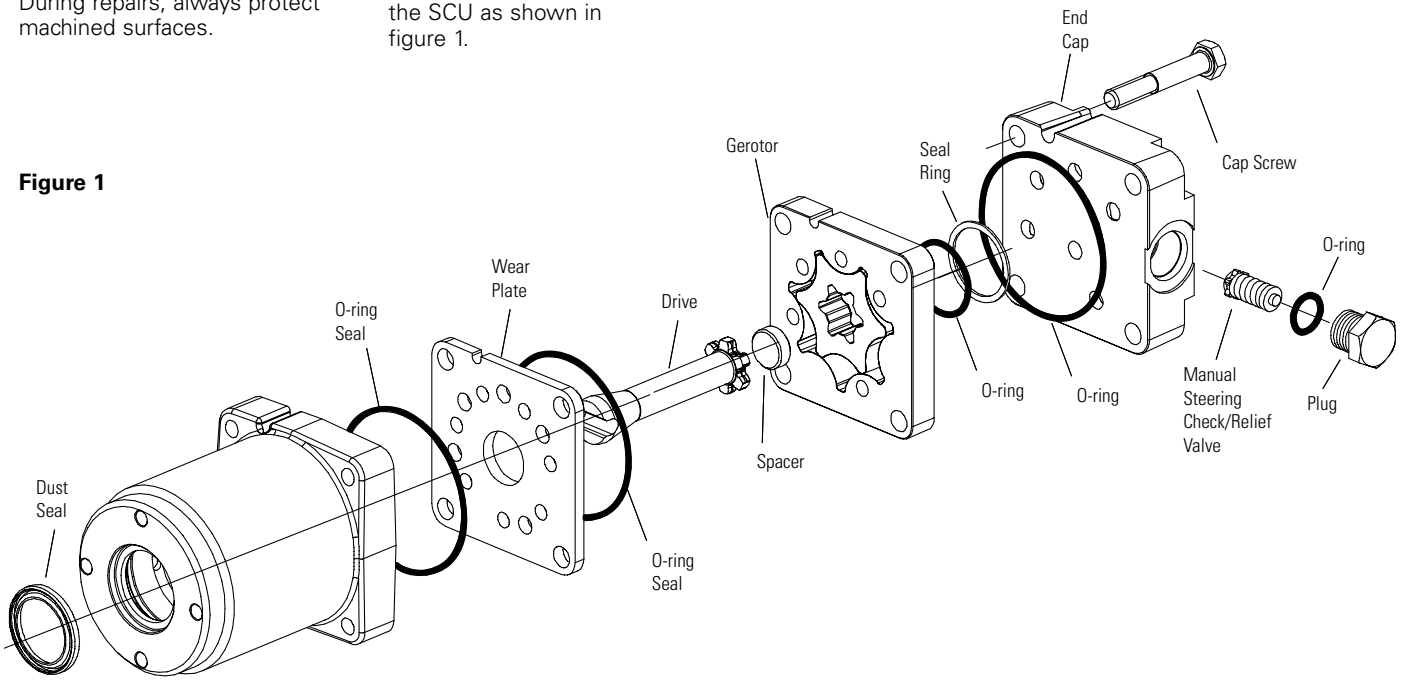
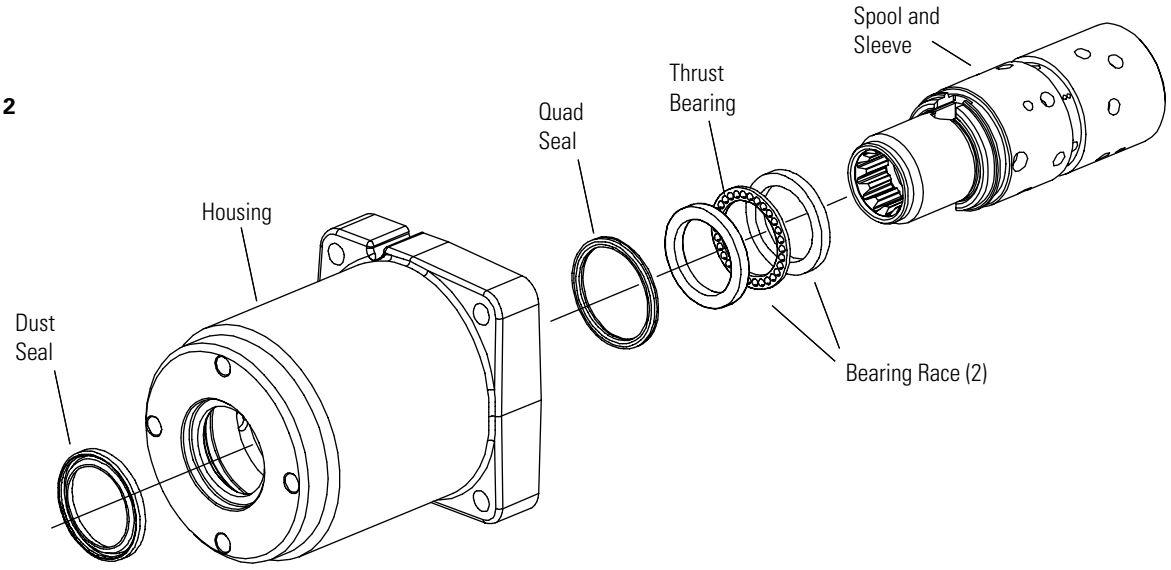


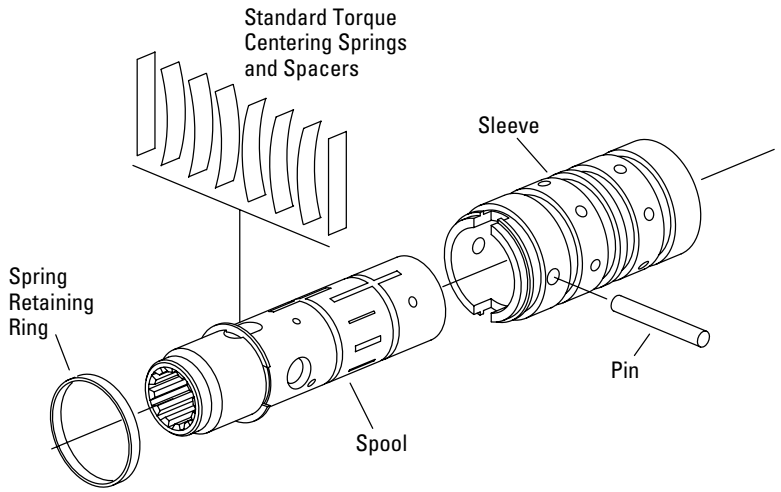
Figure 2



Disassembly cont.

7. Remove the pin that holds the spool and sleeve together, see figure 3.
8. Carefully slide the spool out of the sleeve. The springs and retaining ring will stay with the spool as it's removed.
9. Remove the retaining ring and springs.
   Caution: The centering springs are under tension; remove the retaining ring carefully.

Figure 3



Reassembly

Check all mating surfaces. Replace any parts with scratches or burrs that could cause leakage. Wash all metal parts in clean solvent. Blow them dry with pressurized air. Do not wipe parts dry with paper towels or cloth as lint in a hydraulic system will cause damage.

Note: Always use new seals when reassembling hydraulic steering control units. Refer to seal kit part numbers on page 6.

Important: During reassembly lubricate the new seals with a petroleum jelly such as Vaseline®. Also lubricate machined surfaces and bearings with clean hydraulic fluid.

10. Install the quad seal:
    - Put one of the bearing races and sleeve into the housing.
    - Together, the housing and bearing race create a groove into which the quad seal will be installed.
    - Hold the bearing race tightly against the input end of the housing by pushing on the gerotor end of the sleeve.
    - Fit the quad seal into its seat through the input end of the housing. Be sure the seal is not twisted.
    - Remove the sleeve and bearing race.
11. Lubricate and install the dust seal (see Figure 4 for correct seal orientation).
12. Install the centering springs in the spool. It is best to install the two flat pieces first. Next, install the curved pieces, three at a time.
13. Fit the retaining ring over the centering springs.
14. Apply a light coating of clean hydraulic fluid to the spool and slide it into the sleeve. Be sure the centering springs fit into the notches in the sleeve.
15. Install the pin (see Figure 3).
16. Apply a light coating of petroleum jelly to the inner edge of the dust and quad seals.
17. Put the thrust bearing and races into the housing. The thrust bearing goes between the two races (see Figure 2).
18. Apply a light coating of clean hydraulic fluid to the spool and sleeve assembly and slide it into the housing.
    Important: Do not damage the dust or quad seals.
19. Clamp the housing in a vise as shown in Figure 5. Use just enough clamping force to hold the housing securely.

Figure 4

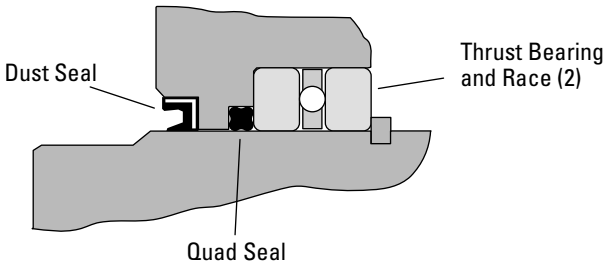
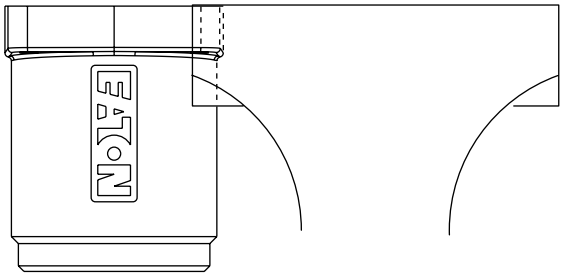


Figure 5



Round Housing with End Ports

Reassembly cont.

20. Install manual steering check ball and pin into housing, if no relief valve is present.
21. Lubricate and install a new o-ring seal in the groove in the housing.
22. Install the wear plate and align the timing groove on plate with the timing groove on the housing. **Note:** The holes in the wear plate are not symmetrical.
23. Install the drive, be sure the slot in the drive engages the pin.
24. Lubricate and install a new o-ring seal in the groove in the wear plate.
25. Install the gerotor and align the timing groove with the timing groove in the wear plate.
26. Lubricate and install a new o-ring seal in the groove in the gerotor ring.
27. Lubricate and install a new o-ring and seal ring in the groove in the gerotor star.
28. Install the spacer.
29. Install end cap and four cap screws. Align timing groove on endcap with timing groove on gerotor. Tighten cap screws, in a crisscross pattern, to 16 -18 Nm [250 lb-in].
30. Install the relief valve/check if present. Use a new o-ring and tighten the plug to 17 Nm [150 lb-in].
31. Remove the SCU from the vise.
32. Check SCU and confirm all timing grooves are in line. **Note:** If timing grooves are not aligned properly, SCU will not function.

How to Order Replacement Parts

Each Order Must Include the Following:

1. Product Number
2. Date Code
3. Part Name
4. Part Number
5. Quantity of Parts

For More Detailed Information Contact Eaton Corp.
Hydraulics Division
15151 Highway 5
Eden Prairie, MN 55344

- Specifications and performance data, Catalog No. 11-872

Eaton
14615 Lone Oak Road
Eden Prairie, MN 55344
USA
Tel: 952 937-9800
Fax: 952 974-7722
www.hydraulics.eaton.com

Eaton
20 Rosamond Road
Footscray
Victoria 3011
Australia
Tel: (61) 3 9319 8222
Fax: (61) 3 9318 5714

Eaton
Dr.-Reckeweg-Str. 1
D-76532 Baden-Baden
Germany
Tel: (49) 7221 682-0
Fax: (49) 7221 682-788

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