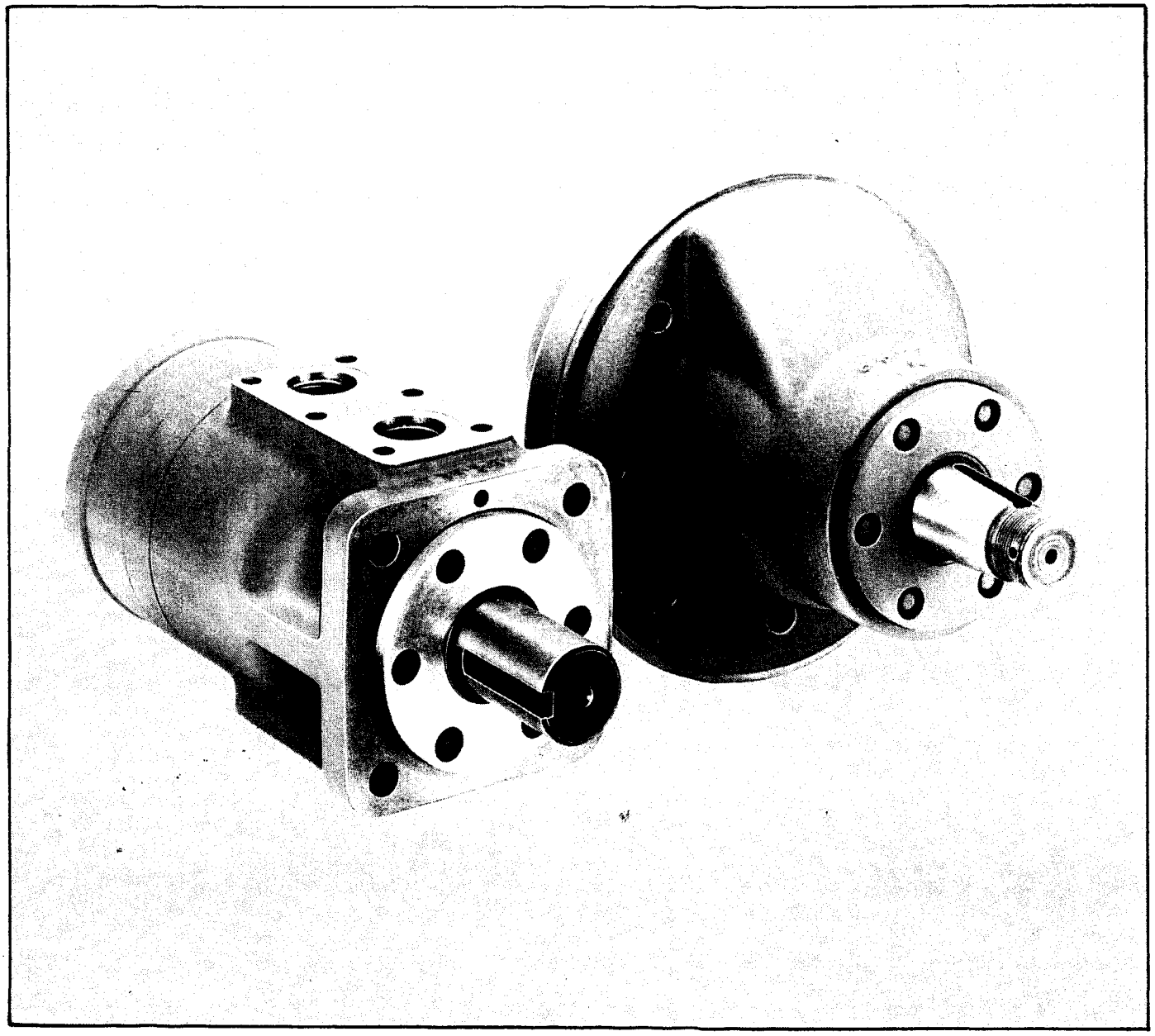
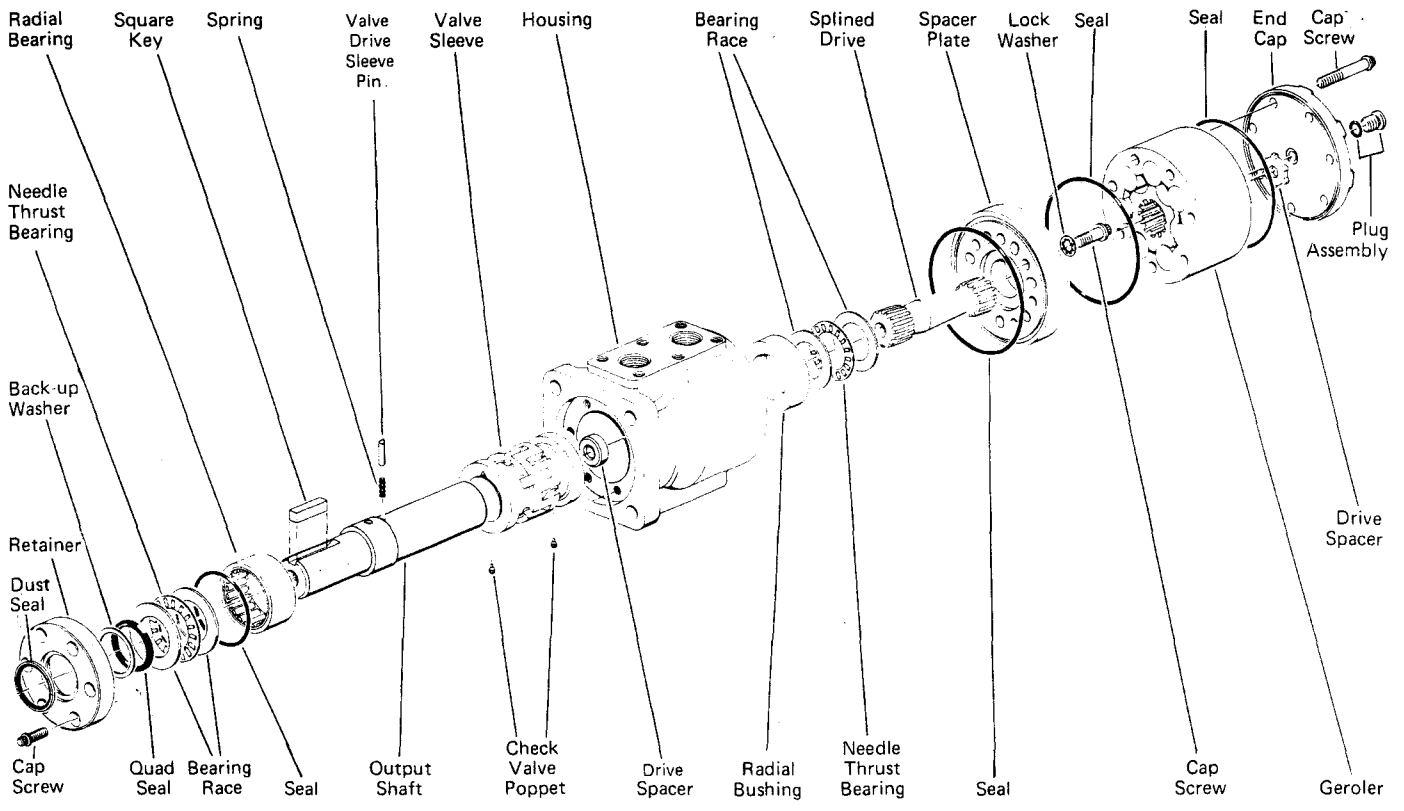
CHAR-LYNN®
HYDRAULIC MOTOR
3000 SERIES
REPAIR MANUAL
NO. 7-114

Char-Lynn

3000 Series Repair Manual





Tools required for disassembly and reassembly

* Torque wrench (300 inch pound capacity)
* 12"–16" breaker bar
* 5/16" and 1/4" sockets. Must be 12 point.
* Small screwdriver(6"–8" long, 1/4" flat blade) for seal removal tool.
* 7/8" Allen wrench
* Plastic or rubber hammer

The following tools are not necessary for disassembly and reassembly, but are extremely helpful

* Seal sleeve or bullet (for tapered shafts only)
* Tool for compressing valve drive pin.

Petroleum Jelly (Vaseline)
Hydraulic Fluid (See "Hydraulic Fluid" service bulletin no. 1010)

Disassembly

Cleanliness is extremely important when repairing these motors. Work in a clean area. Before disconnecting the lines, clean port area of motor. Remove key when used. Check shaft and key slot, remove burrs, nicks or sharp edges and polish around the key slot. Before starting disassembly, drain oil from motor.

Geroler End

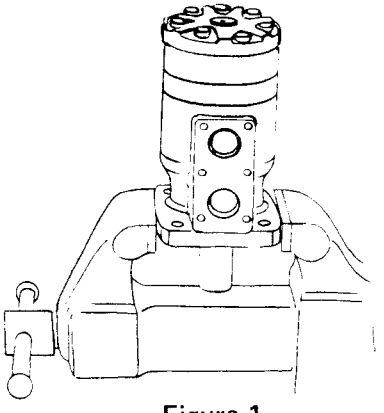


Figure 1

1 Place motor in vise with output shaft down. Clamp across edge of mounting area, not on housing, see Fig. 1. When clamping, use protective device on vise, such as special soft jaws, pieces of hard rubber or board.

Caution: Be extremely careful when clamping on housing. External pressure can cause distortion of the inside diameter of the housing.

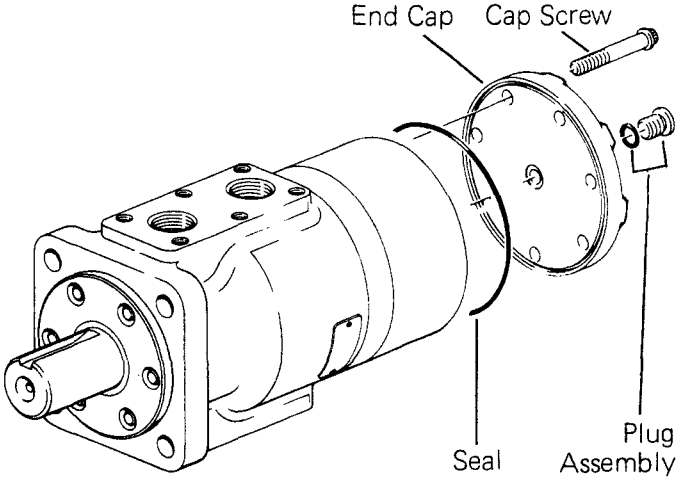


Figure 2

4

2 A case drain plug in the end cap is standard. If external case drain is not used, it is not necessary to replace the seal unless leakage occurs.

3 Remove cap screws.

4 Remove end cap.

5 Remove seal from end cap.

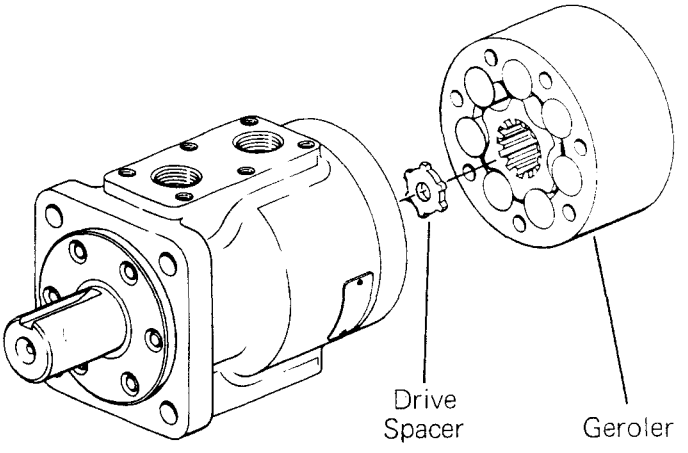


Figure 3

6 Remove Geroler. Retain rollers in outer Geroler ring, see Fig. 3.

7 Remove drive spacer (not used on 6.0 cubic inch displacement motor).

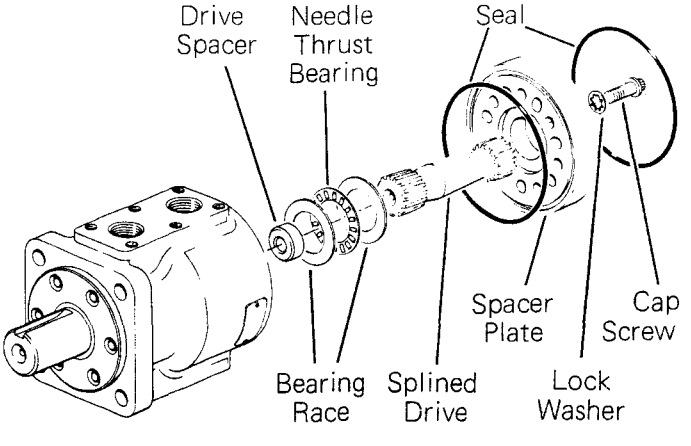


Figure 4

8 Remove seal from Geroler side of spacer plate, see Fig. 4.

9 Remove cap screws and lock washers.

10 Remove spacer plate.

11 Remove seal from housing side of spacer plate.

12 Remove 2 bearing races and the needle thrust bearing from spacer plate, see Fig. 4.

13 Remove splined drive.

14 Remove housing from vise. Remove drive spacer from inside of output shaft. Drain oil from motor.

Shaft End

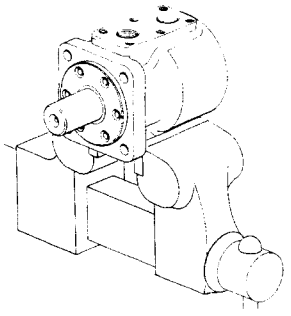


Figure 5

15 Clamp motor in vise as shown in Fig. 5. Remove cap screws.

16 Remove retainer. If retainer sticks, pull shaft outward to free retainer.

17 The dust seal, back-up washer, quad seal, and seal will come off with retainer. Use a seal removal tool, like the one shown in Fig. 6 to remove the dust seal. Use care to avoid damage to the retainer dust seal pocket. Do not use a hammer.

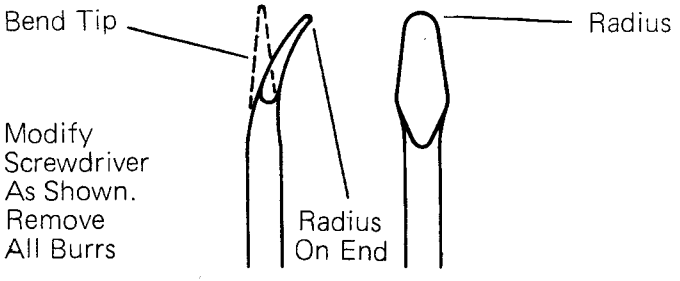


Figure 6

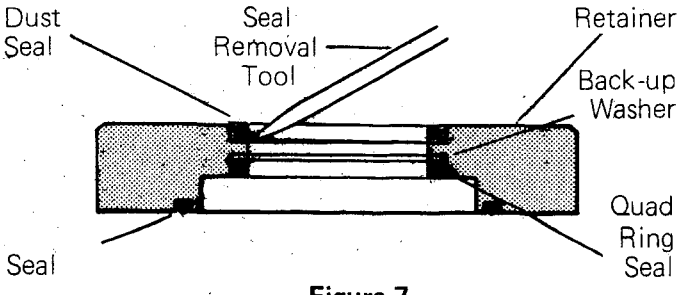


Figure 7

Work the nose of the tool between the dust seal and the retainer. Pry the seal partway. Remove the tool and repeat at a point 180° away. Push the seal completely out of the cavity, see Fig. 7.

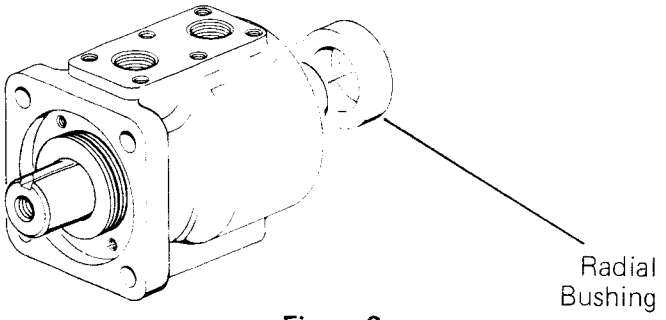


Figure 8

18 Push output shaft partially out of Geroler end of housing, then remove radial bushing, see Fig. 8.

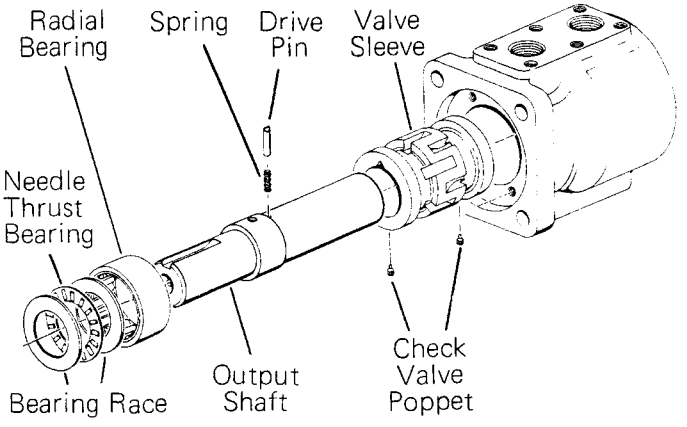


Figure 9

19 Pull output shaft group from housing. Remove 2 bearing races, needle thrust bearing, and radial bearing.

20 Remove 2 check valve poppets, see Fig. 9.

21 Pull shaft and sleeve apart.
Caution: Spring force can propel pin out of its position very rapidly.

22 Remove valve sleeve pin and spring from shaft.

Reassembly

Shaft End

Check all mating surfaces. Replace any parts that have scratches or burrs that could cause leakage or damage. Clean all metal parts in clean solvent. Blow dry with air. Do not wipe with a cloth or a paper towel because lint or other matter can get into the hydraulic system and cause damage. Check around the keyslot and chamfered area of the shaft for burrs, nicks or sharp edges that can damage the seals when reassembling the retainer. Nicks or burrs may be removed with a hard, smooth stone (such as an Arkansas stone). Do not try to file or grind these parts.

Note: Lubricate all seals prior to installation, (except quad ring seal and dust seal) with petroleum jelly such as Vaseline. Use new seals when reassembling the motor. Refer to parts list 6-115 for proper seal kit number.

Important: Do not stretch seals before installing.

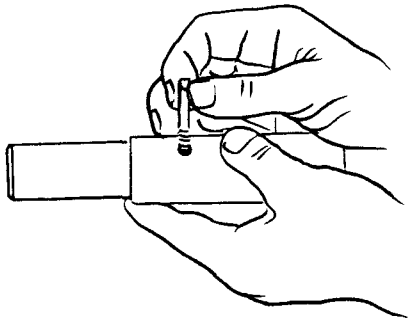


Figure 10

23 Install spring and valve sleeve drive pin in shaft. spring first, see Fig. 10.

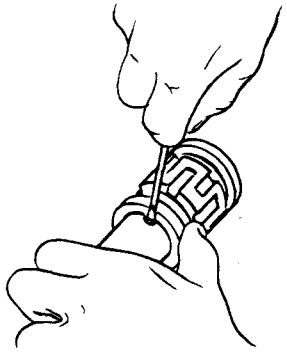
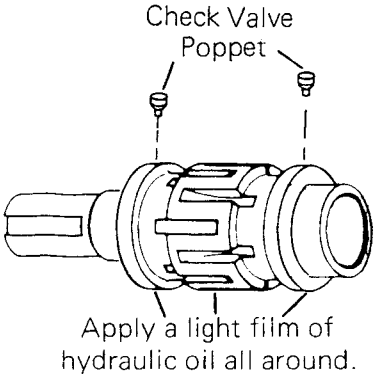


Figure 11

24 Align pin groove of sleeve with pin. Compress pin and spring, then slide sleeve into place.

6

25 Apply clean grease to check valve poppet holes. Install poppets in check valve holes of sleeve, see drawing below.



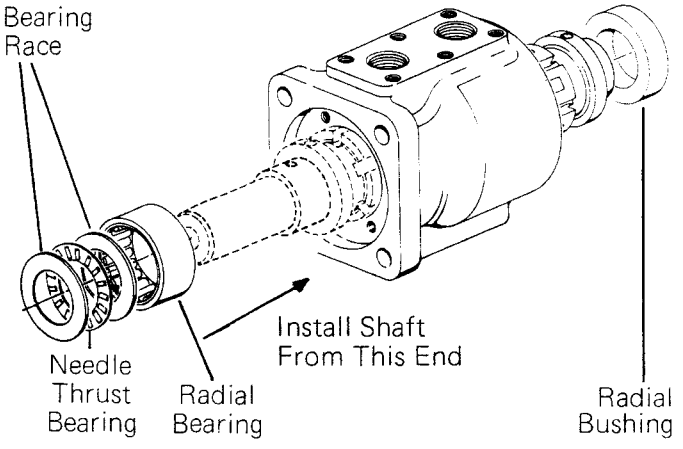


Figure 12

Note: Before installing output shaft, see Fig. 19 for timing information.(Ref. A).

26 Apply a light film of hydraulic oil to the valve sleeve lands. Install output shaft in housing. To prevent poppets from falling out of sleeve, locate poppets on top of sleeve when reassembling, see Fig. 12.

27 Push shaft and sleeve assembly through the housing far enough to install radial bushing, see Fig. 12. Push shaft and bushing back in housing together until bushing is appoximately 1/4" below housing end face.

28 Install radial bearing, see Fig. 12. Push bearing and output shaft in housing together until bearing is flush with housing.

29 Apply petroleum jelly to needle thrust bearing and bearing races. Posiiton needle thrust bearing between 2 bearing races, see Fig. 12. Install all 3 parts flush against radial bearing.

See cross section drawing – Page 10.

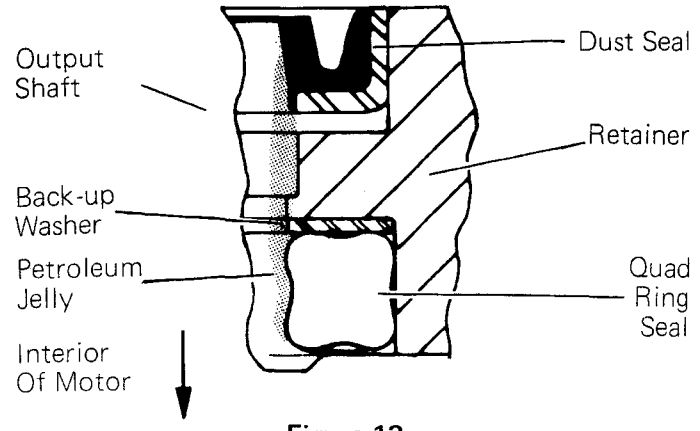


Figure 13

30 Clean retainer to remove all loose metalic chips, particles, dirt or other contamination. Install dust seal in retainer as shown in Fig. 13. Press the seal into place carefully, using a tool which will provide proper guiding and positioning to eliminate damage to the rubber portion or distortion of the metal container.

31 Install new back-up washer in retainer, see note below. Must be dry when installed.

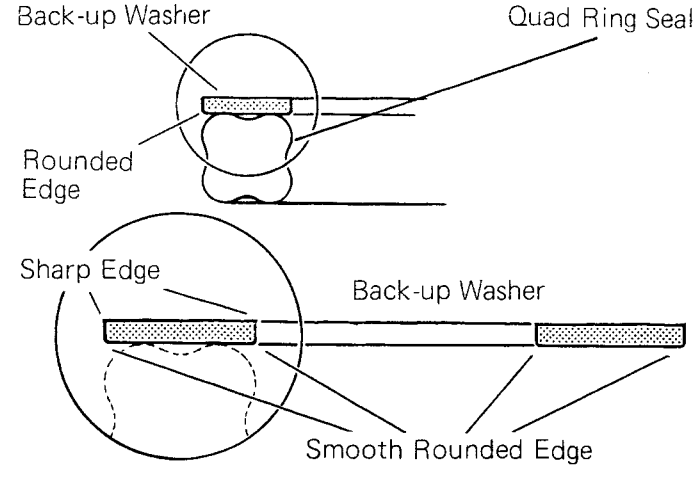


Figure 14

Note: The back-up washer has a smooth rounded edge on one side. Install washer with smooth rounded edge toward seal, see Fig. 14,

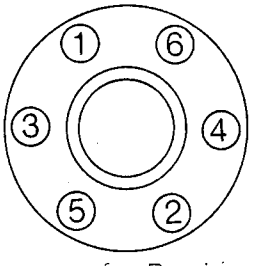
32 Lay dry quad ring seal in pocket, then run finger around periphery to work seal in pocket. Check for twisting of the cross section.

Note: The correct quad ring seal O.D. is approximately .06 inches larger than the bore of the retainer. Do not use any ring that falls freely into pocket.

33 Install 2-1/4 diameter seal in retainer.

34 Apply petroleum jelly to inside diameter of dust seal and quad ring seal, see Fig. 13. To prevent seal damage, install retainer over shaft with a twisting motion.

Note: A protective sleeve or bullet can be used on tapered shafts.



Torquing Sequence for Retainer Cap Screws

Figure 15

35 Install cap screw in retainer. Set motor on clean bench. Torque screws to 125 inch pounds in sequence shown in Fig. 15.

36 Place motor in vise with output shaft down, see step 1 for clamping procedure.

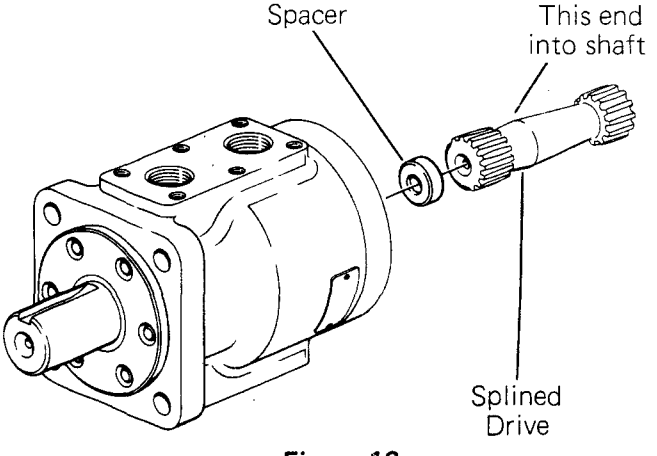


Figure 16

37 Install spacer in output shaft (use pencil to guide spacer into position).

See cross section drawing—Page 10.

Reassembly

38 Pour approximately 35 cc of hydraulic oil in output shaft.

39 Lubricate and install 3-5/8"diameter seal on side of spacer plate with bearing recess.

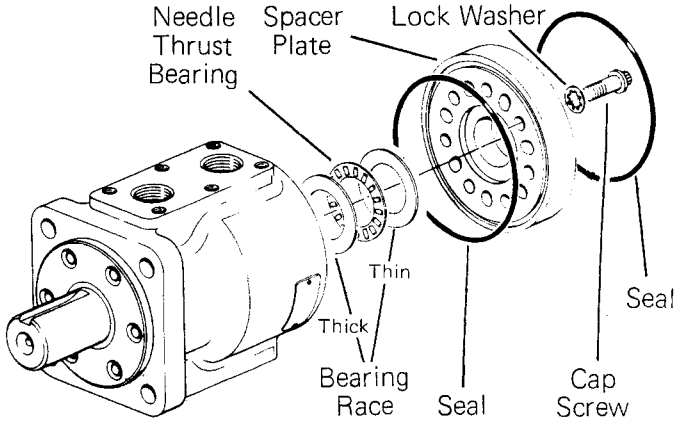
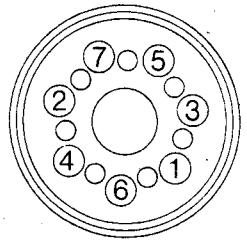


Figure 17

40 Apply petroleum jelly to the needle thrust bearing and the 2 bearing thrust races. Place needle thrust bearing between 2 bearing races. Install them in the spacer plate, insert thinest race first, see Fig. 17 and Fig. 24.

41 Install spacer plate with seal and bearings toward motor housing. See fig. 17. Hold bearings in place with index finger through the center hole. Align bolt holes in spacer plate with holes in housing. Be sure bearing, races and seal are properly seated.

42 Install lock washers and cap screws in spacer plate. Finger tighten cap screws, then torque screws to 300 inch pounds in sequence shown in Fig. 18.



Torquing Sequence for Spacer Plate Cap Screws

Figure 18

43 Install drive as shown in Fig. 16. Observe proper timing procedures as shown in Fig. 19. (Ref. B).

44 Install 3-5/8" diameter seal in spacer plate.

45 Carefully place Geroler on spacer plate (chamfered side of Geroler toward spacer plate). Observe proper timing procedures, see Fig. 19. (Ref. C).

46 Install drive spacer (not used on 6.0 cu. in. displacement motors, see Fig. 21.

Timing Procedure

The timing procedure outlined here uses timing marks, make the marks on the parts indicated before assembly, see Fig. 19.

Install output shaft in housing.
Install spacer plate. (See steps 39-42).
Install drive with timing mark on drive tooth aligned with mark in shaft.
Install Geroler with any star tooth aligned with timing mark on drive.
Turn the Geroler to line up with the holes for bolts, be careful not to disengage star from drive or to dislodge seal from groove.

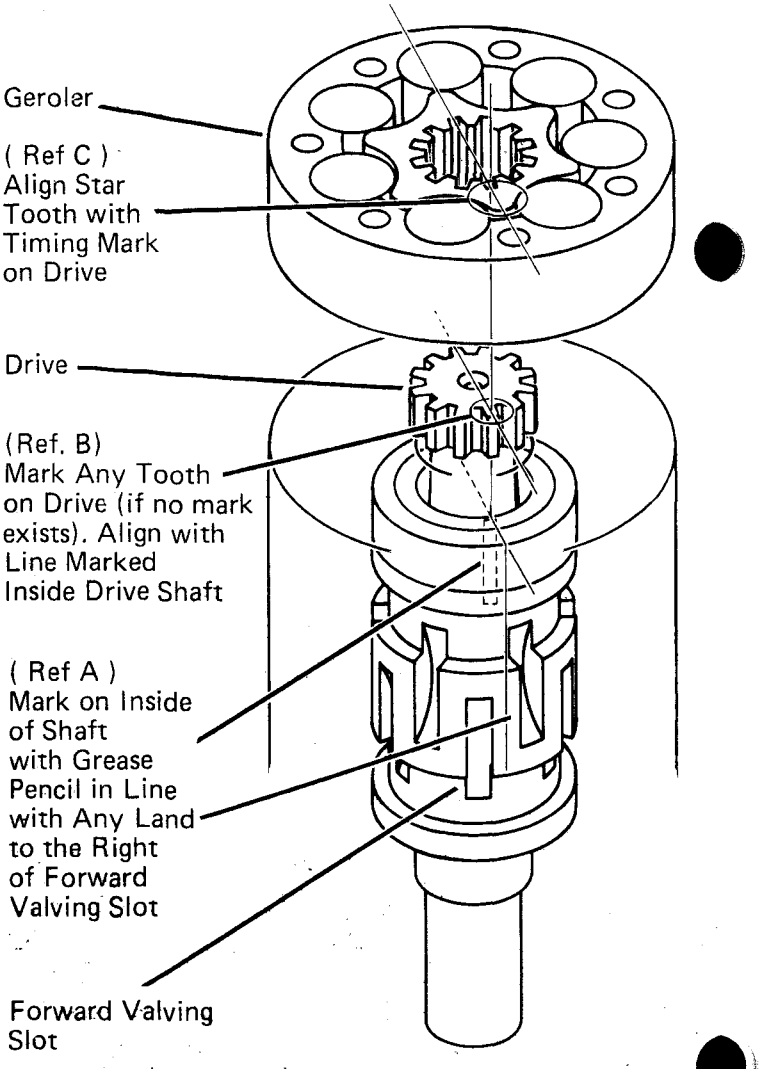


Figure 19

With this orientation, the output shaft will rotate as shown with the ports pressurized as shown in Fig. 20.

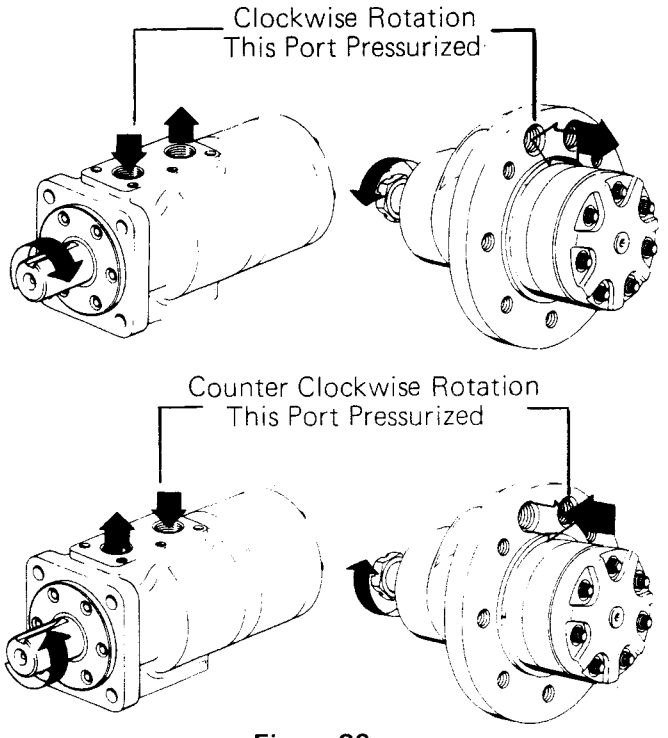


Figure 20

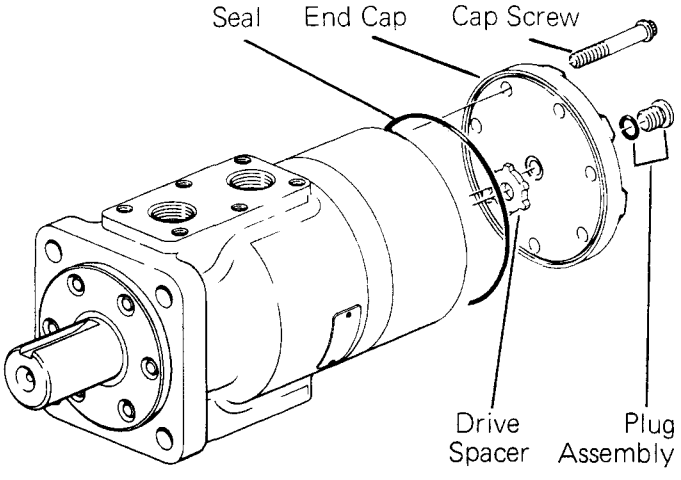
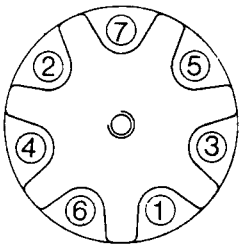


Figure 21

47 Lubricate and install 3-5/8" diameter seal in end cap.

48 Install end cap on Geroler. Be sure seal is seated properly.

49 Install cap screws in end cap. Torque cap screws to 300 inch pounds in sequence shown in Fig. 22.



Torquing Sequence

Figure 22

50 Install 7/16" diameter seal on case drain plug. Install plug in end cap.

Wheel Motor

On Wheel motors, a different housing is used see Fig. 23. Other than this, the parts are the same as the standard motor and the same disassembly and reassembly procedures apply.

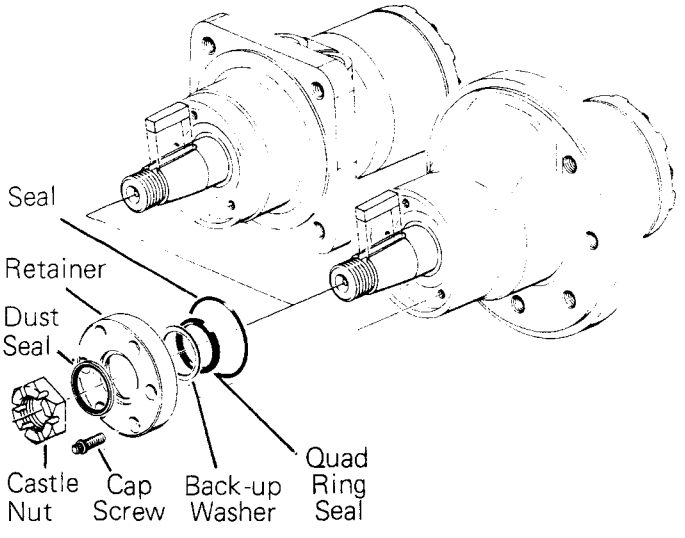


Figure 23

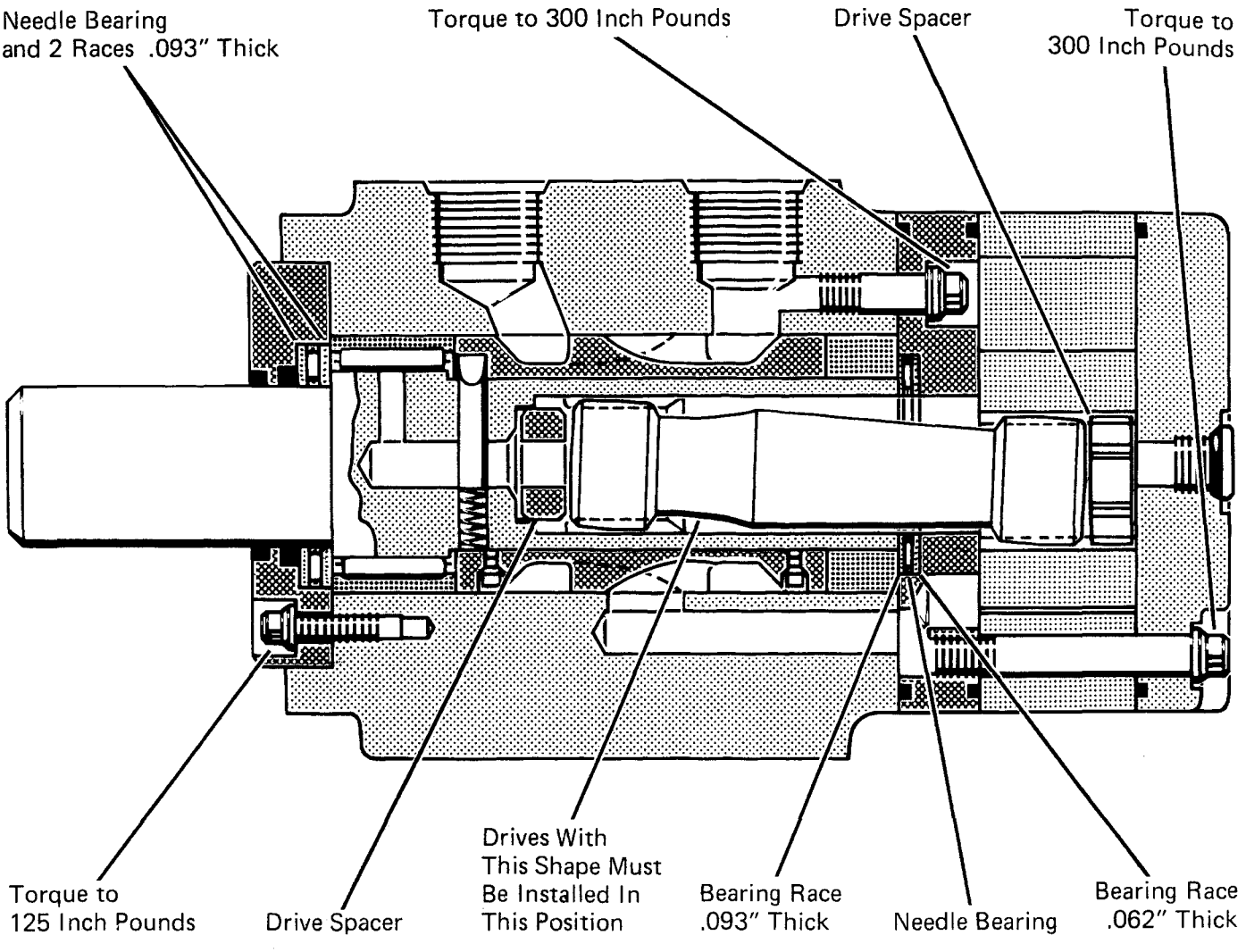


Figure 24

Notes:

CHAR-LYNN®
HYDRAULIC MOTOR
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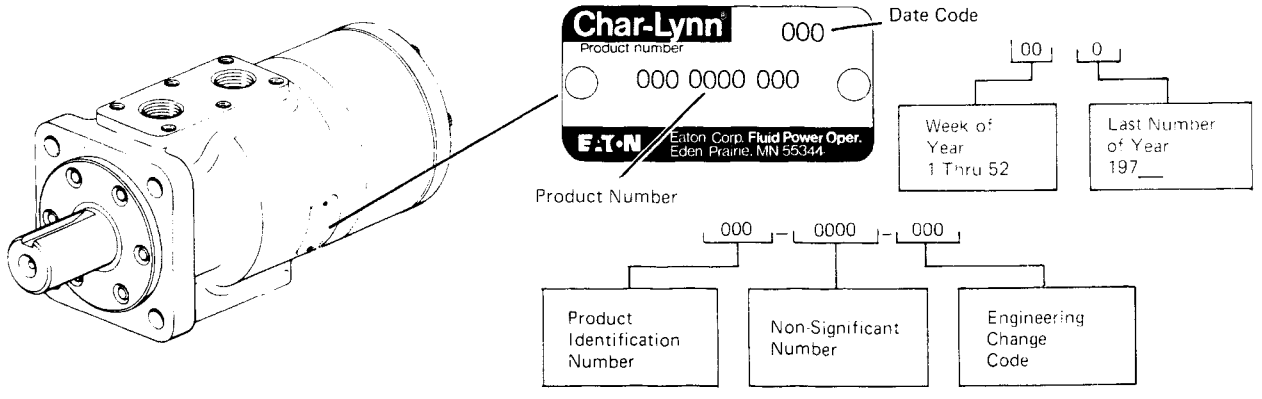
Each Order Must Include
the Following Information

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

Refer to parts list 6—115 for replacement parts and seal kits.

Type of Motor	Type of Shaft	Displacement (cu. in./rev.) Product Number					
		6.0	9.9	11.5	14.3	17.2	23.0
Standard	Straight	107-1006-004	107-1007-004	107-1008-004	107-1009-004	107-1010-004	107-1031-004
	Splined	107-1001-004	107-1002-004	107-1003-004	107-1004-004	107-1005-004	107-1033-004
	Tapered	107-1011-004	107-1012-004	107-1013-004	107-1014-004	107-1015-004	107-1032-004
Wheel (Square Flange)	Tapered	108-1001-004	108-1002-004	108-1003-004	108-1004-004	108-1005-004	108-1011-004
Wheel (Round Flange)	Tapered	108-1006-004	108-1007-004	108-1008-004	108-1009-004	108-1010-004	108-1012-004



Standard Motor 107-
Wheel Motor 108-

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EATON Fluid Power Products

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