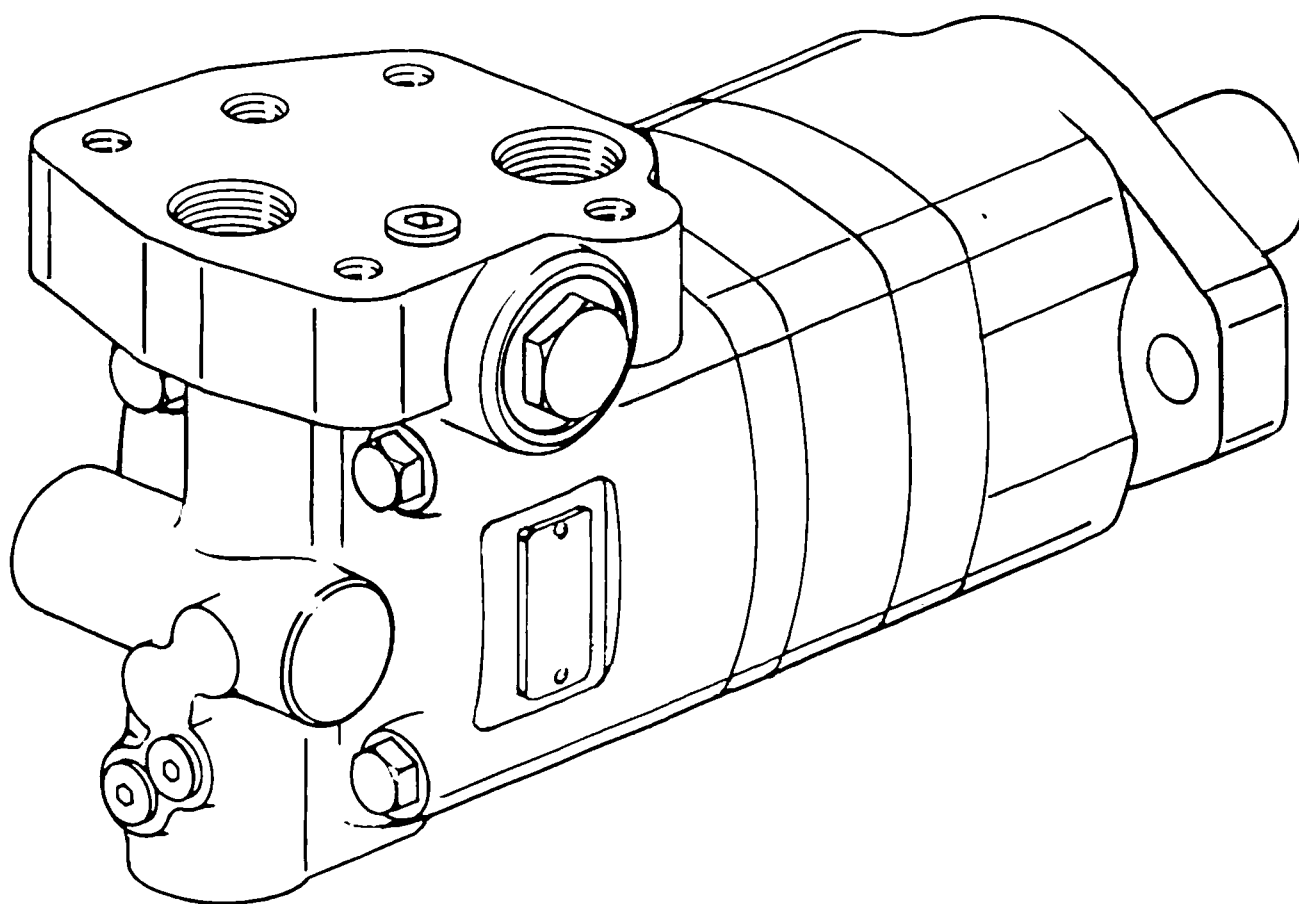


**Eaton
Hydraulics
Division**

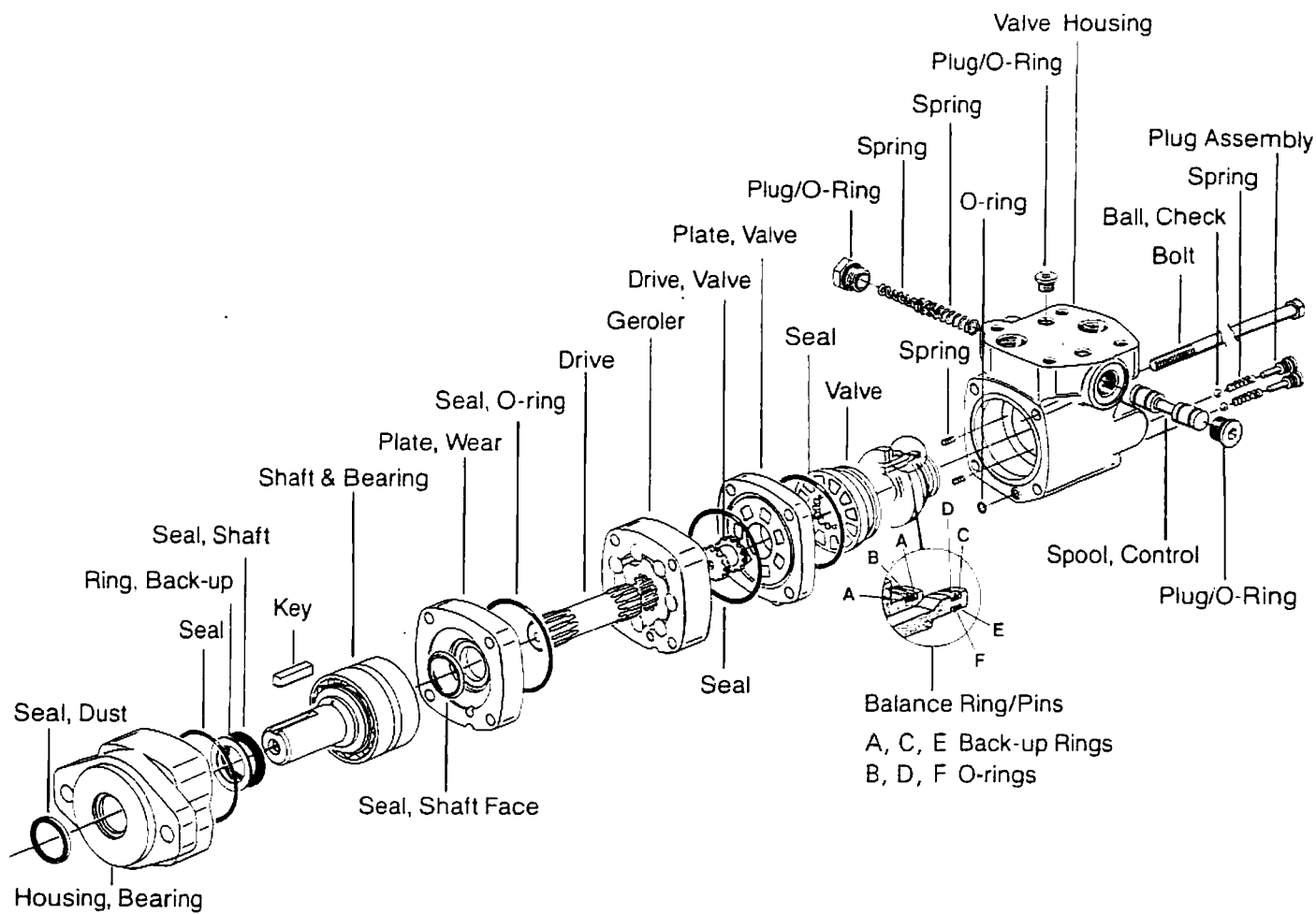
Repair Information

2000 Series Char-Lynn™ Motors –Two Speed

001



EAT•N



Tools required for disassembly and reassembly:

- Torque wrench 500 lb-in [60 Nm]* capacity
- 12 in. to 16 in. [300mm to 450mm] breaker bar
- 9/16 in. and 7/8 in. sockets
- Small blade screwdriver, 6 in. to 8 in. long [150mm to 200mm]
- 5/32 in. and 3/16 in. hex keys
- Press

Special tools:

- Small internal bearing puller, sliding hammer type
- Shaft seal installation tool, P/N 600496
- Bullet for 1 in. diameter shafts, P/N 600465

* Metric equivalents given in [brackets].

Disassembly

Cleanliness is extremely important when repairing hydraulic motors, so work in a clean area. Before disconnecting the oil lines clean the port areas of the motor thoroughly. After the oil lines have been disconnected plug the motor's ports to prevent dirt from entering. Use a wire brush to remove dirt and debris from the exterior of the motor. Check the key way and chamfered area of the output shaft; remove any nicks, burrs, or sharp edges that could damage the shaft seals during reassembly. Before beginning disassembly drain the oil from the motor.

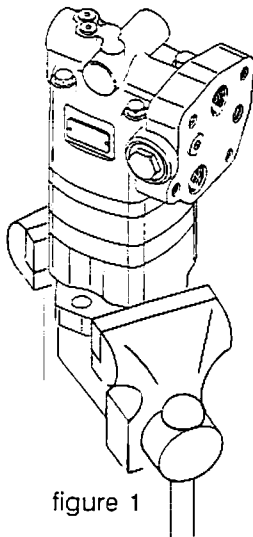


figure 1

1 Place the motor in a vise with the output shaft down. Clamp on the motor's mounting flange; not the bearing housing. Excessive clamping force will cause distortion. When clamping protect the mounting flange with soft vise jaws, hard rubber, or wood.

Note: Even though not all of the drawings show the motor in a vise, it is recommended that the motor be kept clamped in the vise during disassembly and reassembly.

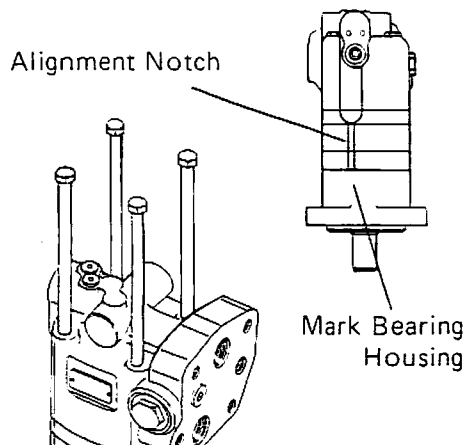


figure 2

2 Make a scribe mark on the bearing housing by the alignment notch so that the original alignment of the mounting flange and the port face can be retained when the motor is reassembled. Remove the 4 hex head bolts from the motor.

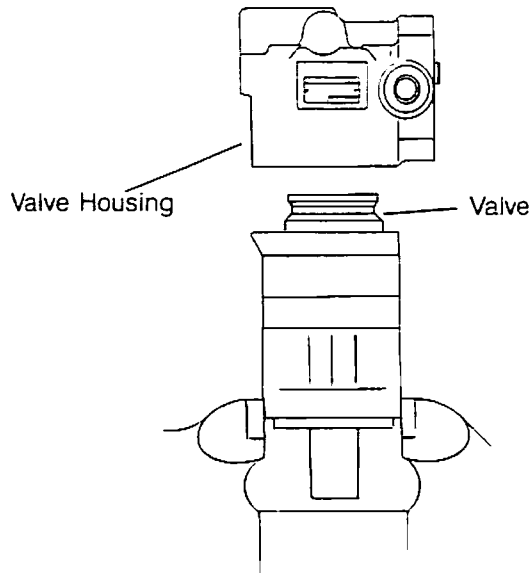


figure 3

3 Carefully lift the valve housing straight up. The balance ring should lift away with the valve housing. The valve will remain on the valve plate.

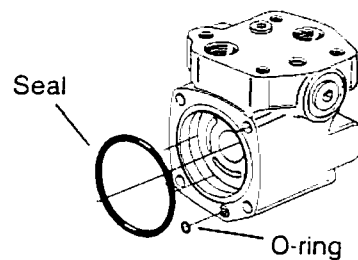


figure 4

4 Set the valve housing on a clean work bench. Be sure to protect its mating surfaces. Remove the 2 3/4 in. [70mm] seal and 3/8 in. [9,5mm] o-ring.

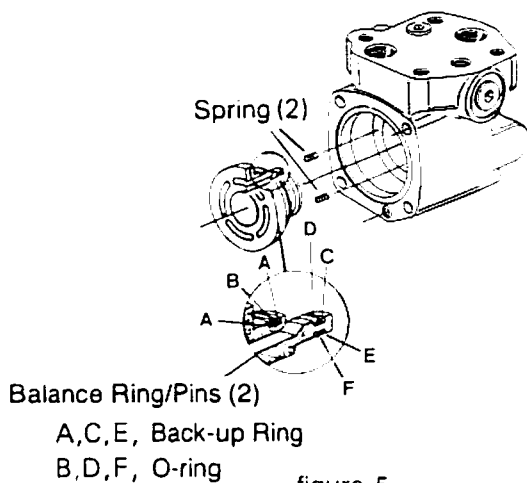


figure 5

5 Remove the balance ring and the 2 balance ring springs. The balance ring fits into the valve housing tightly; a sliding hammer bearing puller may be needed to loosen it.

6 Remove the o-rings and the back-up rings from the balance ring.

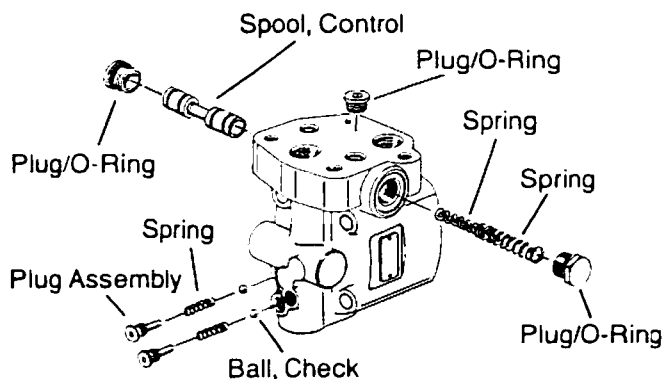


figure 6

7 Remove the 2 control spool plugs and o-rings. Use caution, the control spool springs are compressed under the plugs.

8 Remove the control spool and springs.

9 Remove the 2 check ball plugs and o-rings. Remove the 2 check balls and springs.

10 Remove the case drain plug and o-ring from the port face, see figure 6.

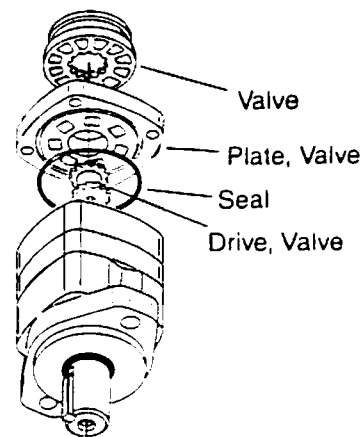


figure 7

11 Remove the valve.

12 Remove the valve plate.

13 Remove the 3 in. [76mm] seal from the valve plate.

14 Remove the valve drive, see figure 7.

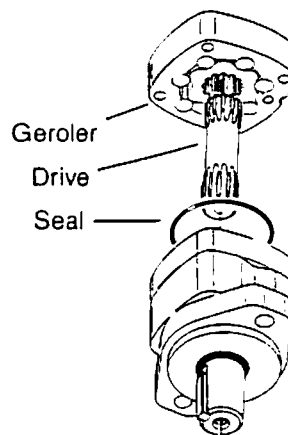


figure 8

15 Remove the Geroler assembly. Be sure to keep the Geroler star and rollers within the outer ring if they are loose.

16 Remove the drive.

17 Remove the 3 in. [76mm] seal from the wear plate, see figure 8.

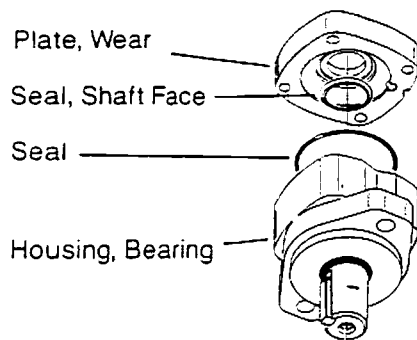


figure 9

18 Remove the wear plate.

19 Remove the shaft face seal from the wear plate.

20 Remove the 3 in. [76mm] seal from the bearing housing, see figure 9.

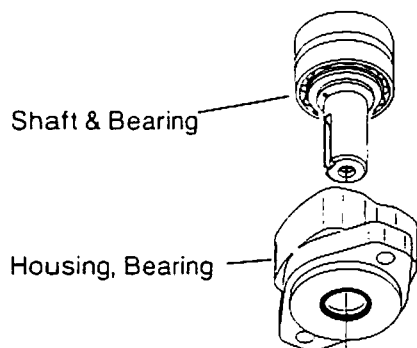


figure 10

21 Press the shaft and bearing assembly from the bearing housing.

Note: Individual parts of the shaft and bearing assembly are not sold. If the shaft or bearings are damaged replace the complete assembly.

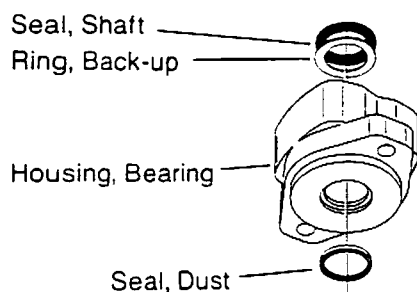


figure 11

22 Use a small blade screwdriver to pry the shaft seal, back-up washer, and dust seal from the bearing housing. Be careful, do not to damage the seal seats.

Reassembly

Check all mating surfaces. Replace any parts with scratches or burrs that could cause leakage. Wash all the metal parts in clean solvent. Blow them dry with pressurize air. Do not wipe the parts dry with paper towels or cloth. Lint in a hydraulic system will cause damage. Check the key way and chamfered area of the output shaft; remove any nicks, burrs, or sharp edges that could damage the shaft seals during reassembly.

Note: Always use new seals when reassembling hydraulic motors. Refer to parts list 6-129 for seal kit part numbers, replacement parts, and ordering information.

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

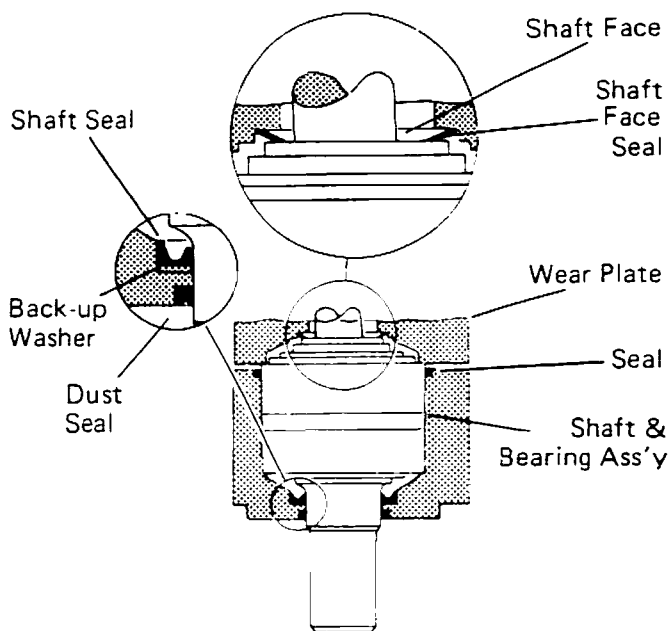


figure 12

5

23 Press the dust seal into the outer bore of the bearing housing. The lip of this seal must face outward, see figure 12. Be sure the dust seal is inserted straight and is undamaged.

24 Place the back-up washer into the inner bore of the bearing housing. Press the shaft seal into the inner bore over the back-up washer. Use the shaft seal installation tool, P/N 600496.

25 Before pressing the shaft and bearing assembly into the bearing housing lubricate the inner edge of the dust and shaft seals with petroleum jelly. Be careful not to damage the seals when installing the shaft. A protective bullet, P/N 600465, will help accomplish this step.

26 Re-clamp the bearing housing in a vise as shown in figure 1.

27 Pour a small amount of clean hydraulic fluid into the bearing housing and output shaft.

28 Apply petroleum jelly to the 3 in. [76mm] seal and install it in the groove in the bearing housing.

29 Install the shaft face seal in the wear plate as shown in figure 12.

30 Install the wear plate, see figure 12. Be sure to align the notch in the wear plate with the scribe mark on the bearing housing.

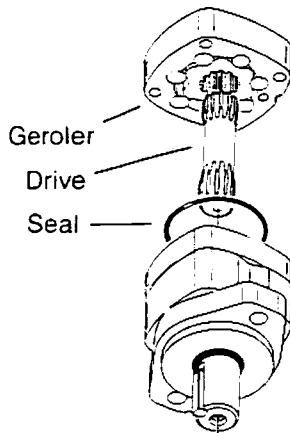


figure 13

31 Apply petroleum jelly to the 3 in. [76mm] seal and install it in the groove in the wear plate.

32 Insert the drive into the bearing housing.

Note: On smaller displacement motors the splined ends of the drive will be different lengths. If this is the case the longer splines go into the bearing housing.

- ⑥ 33 Install the Geroler assembly on the wear plate. Be sure the notches are aligned and the star and rollers are in place, see figure 13.

Motor Timing Timing the hydraulic motor involves 3 steps. The direction the output shaft rotates is determined by timing.

Any one of
6 Ports open
to Outside
of Valve

Rotate Valve
Clockwise
1/2 tooth to
Engage Spline

Alignment
Reference
Only

Largest
Open
Pocket

Plate, Valve

Seal

Drive, Valve

Geroler

figure 14

Timing Step # 1 Locate the largest open pocket in the Geroler and mark its position.

34 Install the valve drive.

35 Apply petroleum jelly to the 3 in. [76mm] seal and install it in the groove in the valve plate.

36 Install the valve plate on the Geroler. Be sure the notches are aligned.

Timing Step # 2 Locate the open slot in the valve plate that is in line with the largest open pocket in the Geroler.

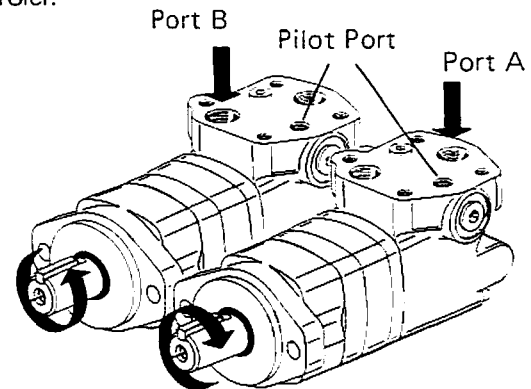


figure 15

Timing Step # 3 Align any one of the side openings in the valve with the open slot in the valve plate that is over the largest open pocket in the Geroler. Engage the valve with the valve drive by rotating it clockwise until the spline teeth mesh (1/2 spline tooth). This will provide the standard rotation when pressurized, see figure 15.

To reverse rotation engage the valve with the valve drive by rotating it counter clockwise until the spline teeth mesh (1/2 spline tooth).

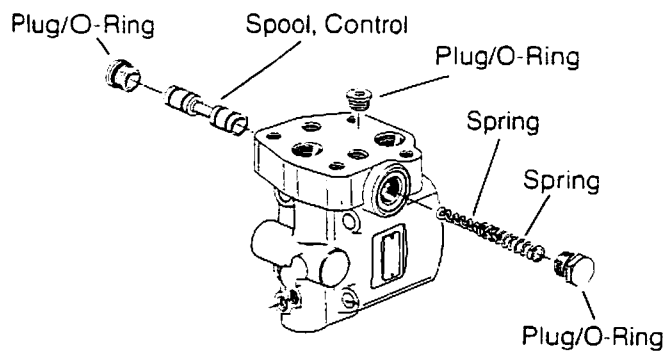


figure 16

37 Install the case drain plug in the port face. Use a new o-ring and tighten the plug to 40 to 60 lb-in [4,5 to 6,8 Nm].

38 Install the control spool and springs.

39 Install the control spool plugs with new o-rings. The springs will need to be compressed to install the second plug, see figure 16.

40 Tighten the control spool plugs to 450 to 550 lb-in [51 to 62 Nm].

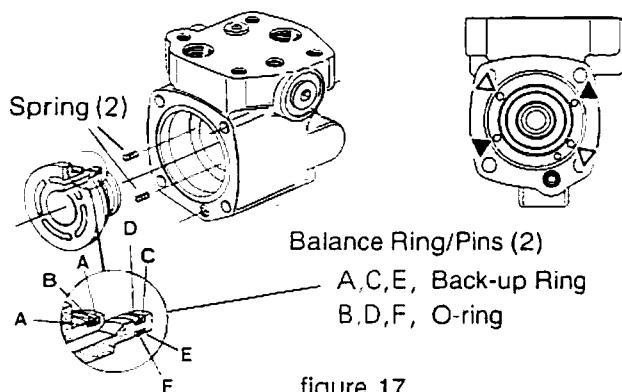


figure 17

41 Install the o-rings and back-up rings on the balance ring. Install the o-rings first then the back-up rings.

42 The larger o-ring has 2 back-up rings; 1 on each side. The 2 smaller o-rings each have 1 back-up ring. The 2 smaller back-up rings are installed closest to the small end of the balance ring.

43 Insert the 2 balance ring springs into the holes in the valve housing. These springs may be installed in any 2 holes that are directly across from each other, see figure 17.

44 To aid the installation of the balance ring lubricate its o-rings and back-up rings with petroleum jelly. Install the balance ring by aligning the 2 index pins with the 2 remaining holes in the valve housing. Push the balance ring into the valve housing until it just touches the springs.

Important: Do not push the balance ring all the way down into the valve housing.

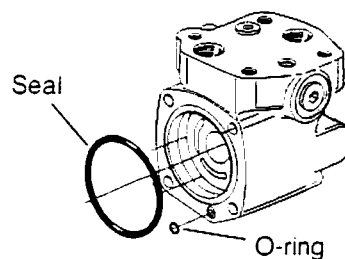


figure 18

45 Apply petroleum jelly to the 2 3/4 in. [70mm] seal and 3/8 in. [9,5mm] o-ring and install them in their valve housing grooves.

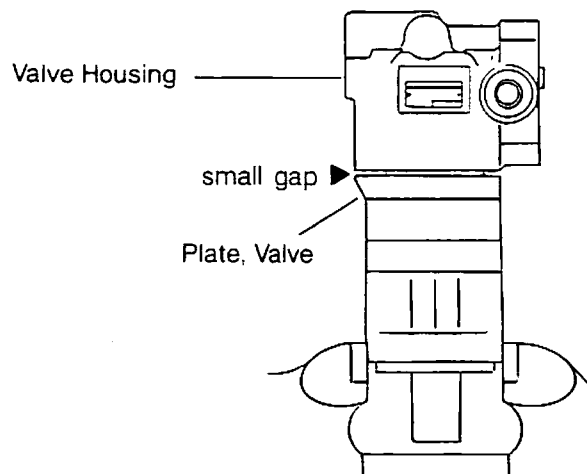


figure 19

46 Carefully install the valve housing on the valve plate. There should be a small gap between the valve housing and the valve plate. This gap will be closed when the hex head bolts are tightened.

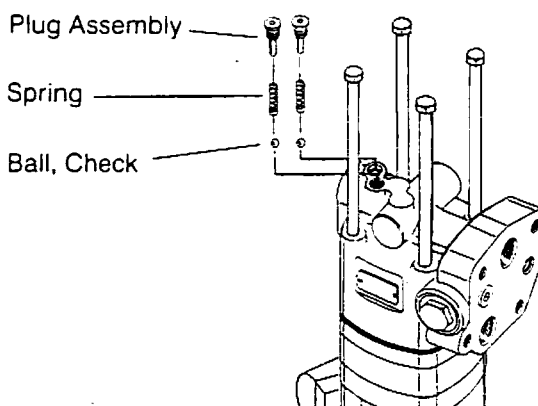


figure 20

47 Install the 4 hex head bolts and tighten them in a criss-cross pattern to 450 to 550 lb-in [51 to 62 Nm].

48 Install the 2 check balls and springs.

49 Install the 2 check ball plugs with new o-rings and tighten them to 40 to 60 lb-in [4,5 to 6,8 Nm].

CHAR-LYNN®
HYDRAULIC MOTOR
2000 SERIES – TWO SPEED
REPAIR INFORMATION
NO. 7-131

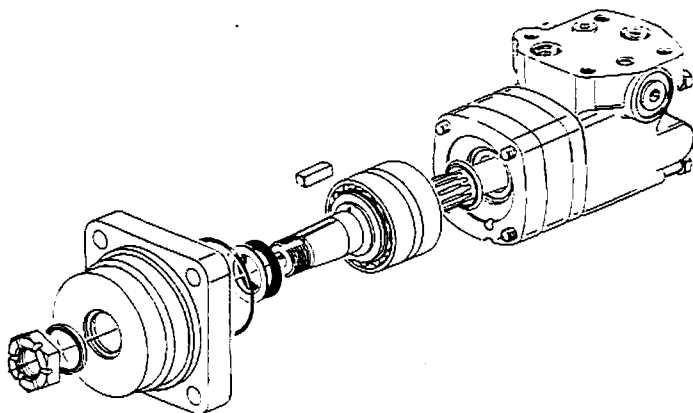


figure 21

Wheel Motor

On wheel motors a different bearing housing is used, see fig. 21. Other than this the parts are the same and the same disassembly and reassembly procedures apply.

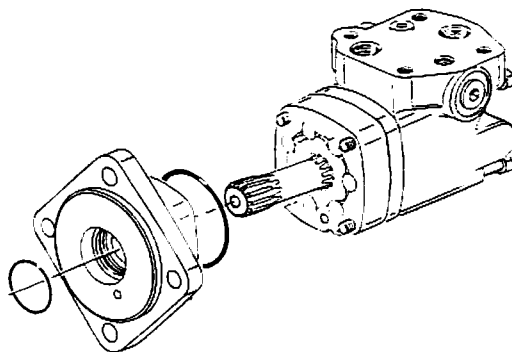


figure 22

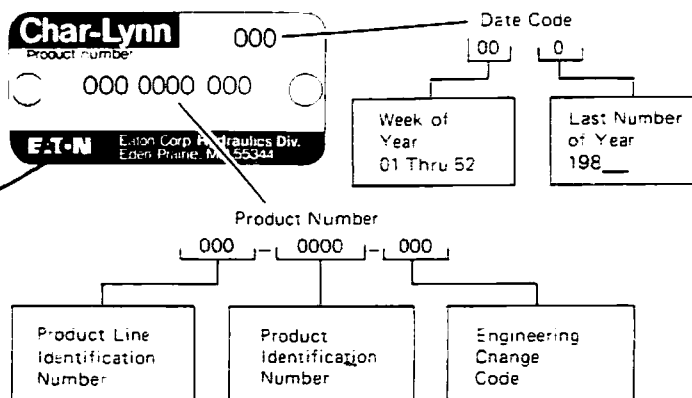
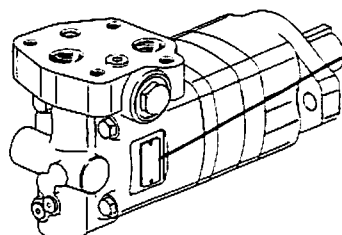
Bearingless Motor

Bearingless motors are the same as standard motors without the shaft and bearing assembly. The mounting flange replaces the bearing housing and wear plate, see fig. 22. Follow the disassembly and reassembly procedure for the rear section of the standard motor.

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



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