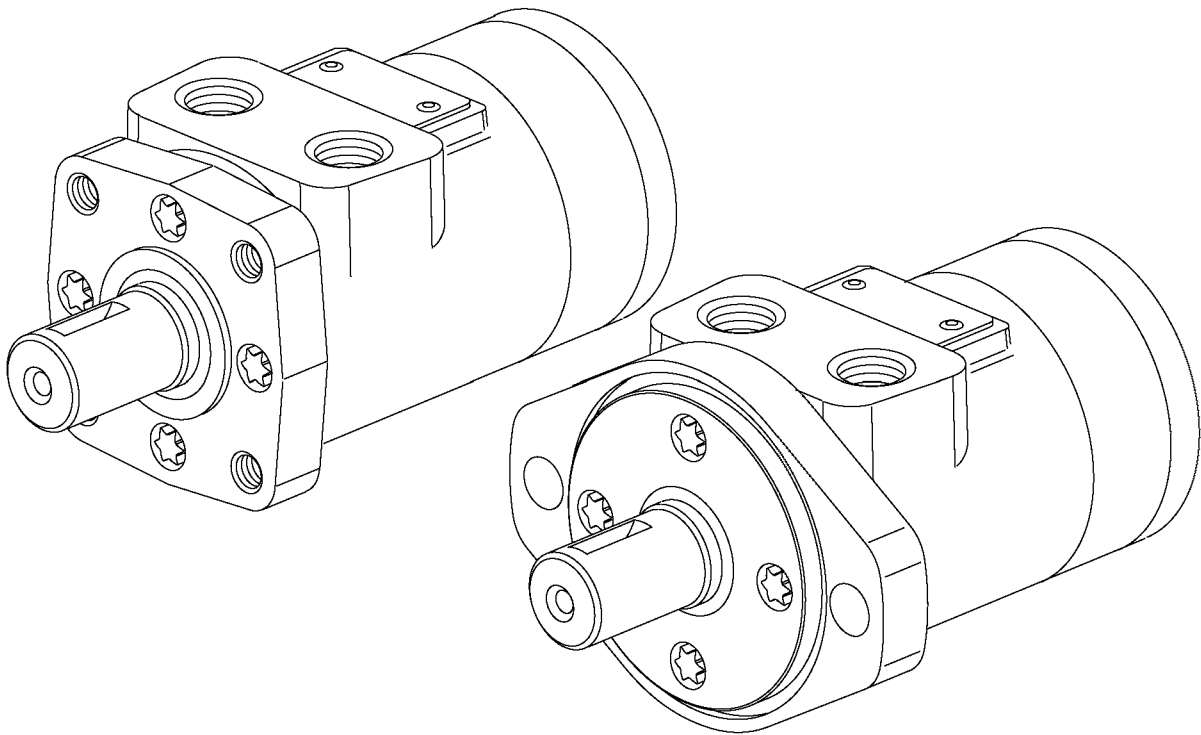


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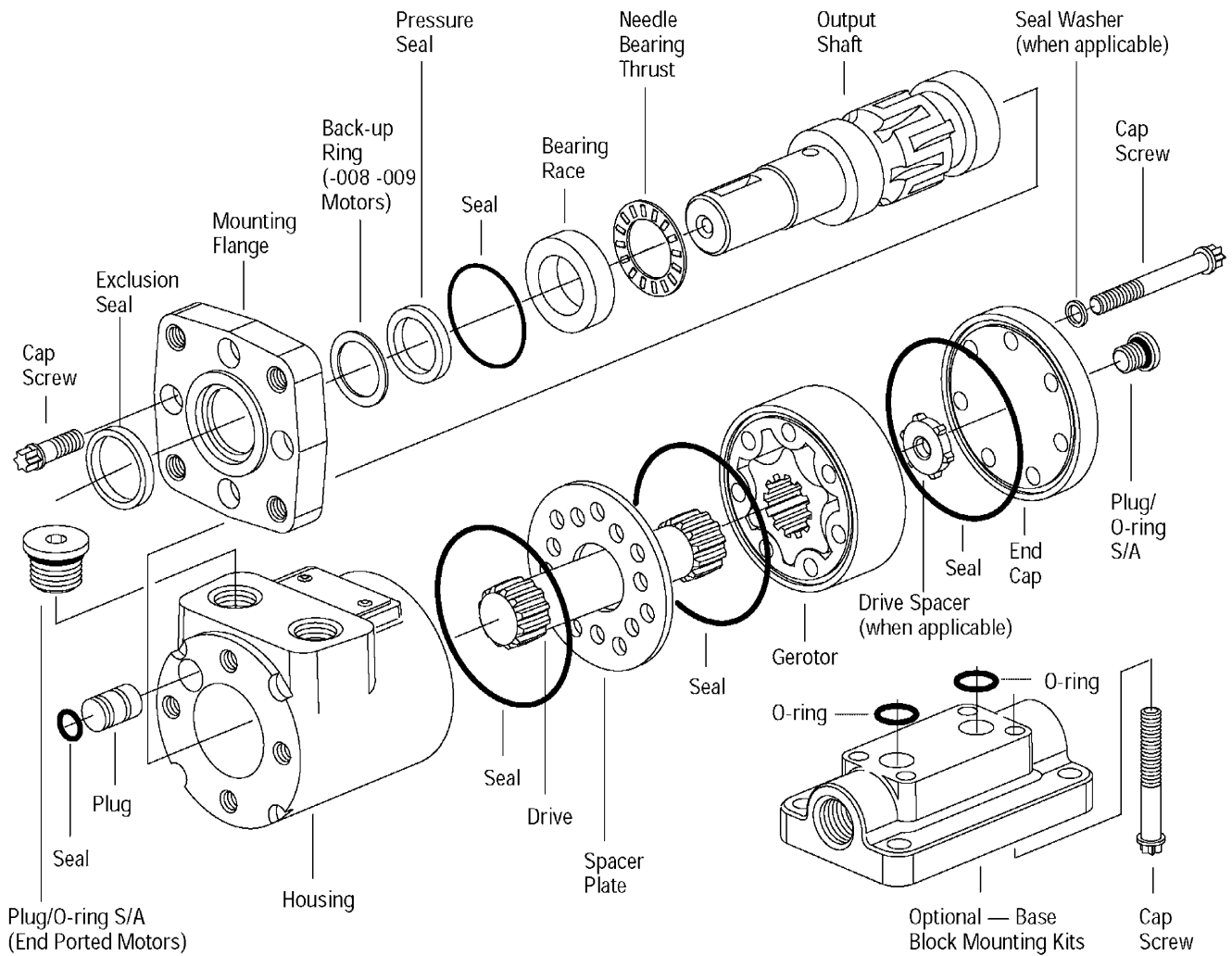
Char-Lynn®

H Series
General Purpose Gerotor Motor

007 008 009



Disassembly



Tools required for disassembly and reassembly.

- Torque wrench (34Nm [300 lb-in] capacity)
- 300-400mm [12-16 in.] breaker bar
- 5/16 in.-12 point socket no. 5422 (Heavy Duty 56Nm [500 lb-in] Capacity)
- Small screwdriver (150-200 x 6mm [6-8 x 1/4 in.] flat blade), see page 4 for tooling information.
- 5mm [3/16 in.] hex key
- Shaft pressure seal installation tool for 007 motor P/N 600470, for 008 and 009 motors P/N 600523
- Seal sleeve or bullet P/N 600304 (1 in. dia. shaft), P/N 600466 (7/8 in. dia. shaft)
- Tools available—by special order—through our service department.

Reassembly

Instructions in this manual are for H Series motors (101-XXXX-007, 008 and 009).

Cleanliness is extremely important when repairing these motors. Work in a clean area. Before disconnecting lines, clean port area of motor. Remove key when used. Check shaft and key slot. Remove burrs, nicks and sharp edges. Before disassembly, drain oil from motor. Then plug ports and thoroughly clean exterior of motor.

Although not all drawings show the motor in a vise, we recommend that you keep the motor in a vise during disassembly. Follow the clamping procedures explained throughout the manual.

Gerotor End

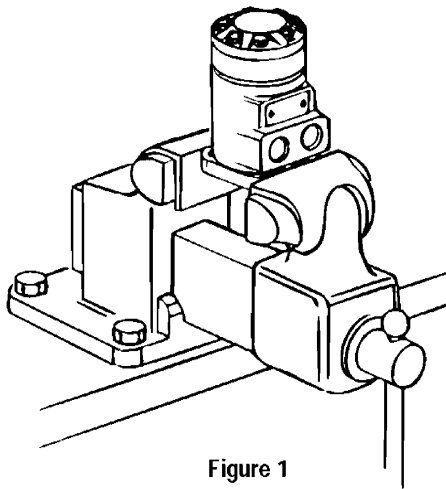


Figure 1

1 Place motor in vise and clamp across edge of flange with output shaft down. When clamping, use protective device on vise such as special soft jaws, pieces of hard rubber or board (see Figure 1).

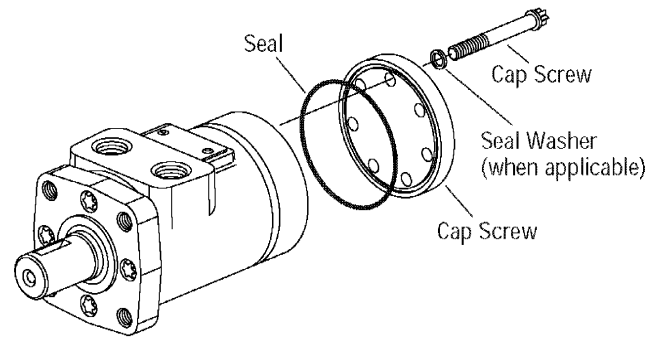


Figure 2

2 Remove cap screws and seal washers (when applicable – see Figure 2).

3 Remove end cap.

4 Remove seal from end cap.

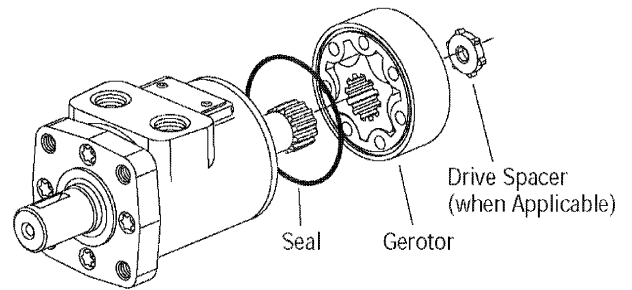


Figure 3

5 Remove gerotor.

6 Remove seal from gerotor (see Figure 3).

7 Remove drive spacer if applicable.

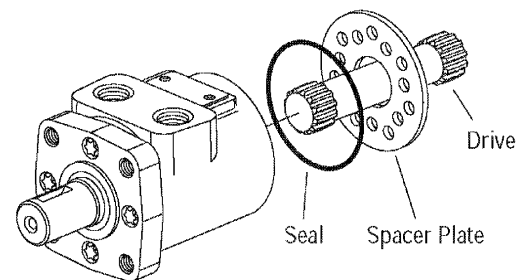


Figure 4

8 Remove drive (see Figure 4).

9 Remove spacer plate.

10 Remove seal from housing.

Disassembly

- 11 Remove output shaft from housing.
- 12 Remove needle thrust bearing from shaft or housing.

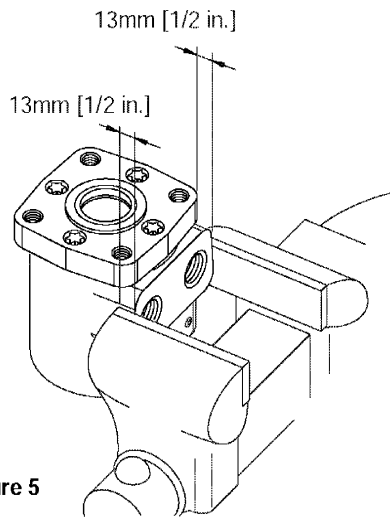


Figure 5

13 Reposition motor in vise. Clamp across ports as shown in Figure 5. Do not clamp on side of housing. Excessive clamping pressure on side of housing causes distortion.

14 Remove cap screws from mounting flange. These screws are assembled with Loctite to hold them in place.

The screws will require 35-45 Nm [300-400 lb-in] of torque to break loose and 11 Nm [100 lb-in] torque to remove. Do not use impact wrench on screws that have been secured with Loctite. This could result in rounded heads or broken sockets.

Note: If torque higher than given above is required to break screws loose, apply heat according to following instructions:

When heated, Loctite partially melts. This reduces torque required to remove screw. Use small flame propane torch to heat small area of housing where screw enters (see Figure 6). Be careful not to overheat housing and damage motor. Gradually apply torque to screw with socket wrench as heat is applied for 8 to 10 seconds. As soon as screw breaks loose, remove heat from housing. Continue turning screw until it is completely removed.

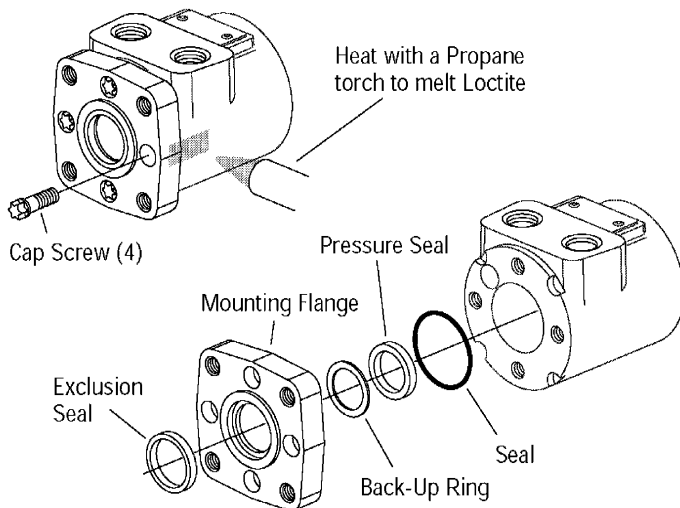


Figure 6

15 Carefully remove flange from housing.

Important: Some motors may have a quad seal and back-up ring in place of the pressure seal. The quad seal and back-up ring are no longer available and are replaced by the pressure seal. They are interchangeable, but some precautions must be taken to insure proper installation. Follow the reassembly instructions.

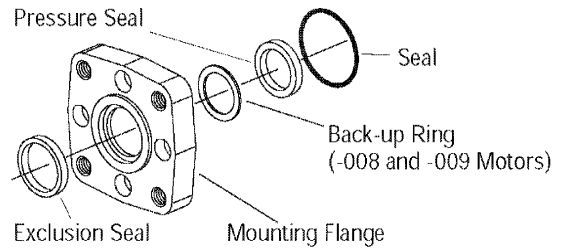


Figure 7

16 Exclusion seal, back-up ring, pressure seal and seal will come off with flange (see Figure 7). Use seal removal tool (shown in Figures 8 and 9) to remove exclusion and pressure seals.

Important: Be careful not to scratch seal cavity O.D. This could create a leak path.

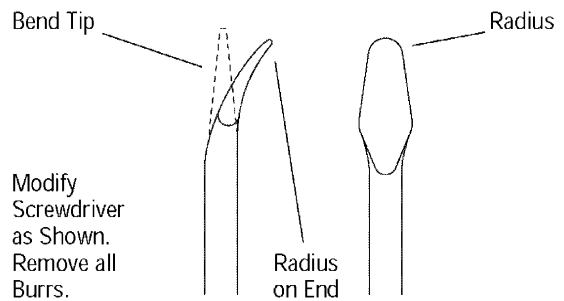


Figure 8

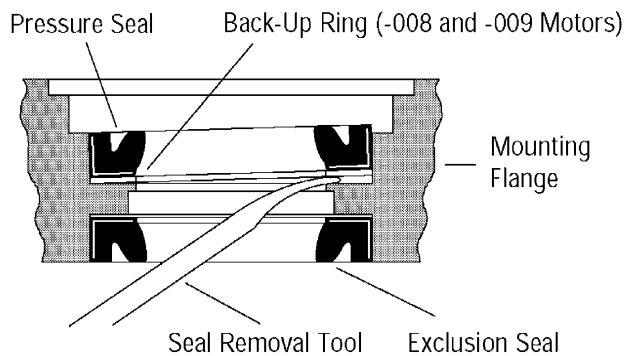


Figure 9

Reassembly

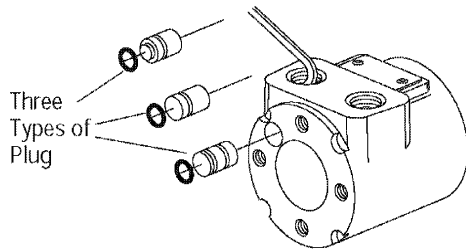


Figure 10

17 A metal plug, with seal, plugs a machining hole in the housing. It is not necessary to remove plug and replace seal unless leakage occurs around plug. To remove plug, insert 5 mm [.187 in.] hex key through port opening and push it out (see Figure 10). The 009 plug is not interchangeable with 007 and 008 plugs.

Reassembly

Shaft End

Check all mating surfaces. Replace any parts with scratches or burrs that could cause leakage or damage. Clean all metal parts in clean solvent. Blow dry with air. Do not wipe parts with cloth or paper towel because lint or other matter could get into the hydraulic system and cause damage.

Check around key slot and chamfered area of shaft for burrs, nicks or sharp edges that could damage seals during reassembly. Remove nicks or burrs with a hard smooth stone (such as an Arkansas stone). Do not file or grind motor parts.

Note: Lubricate all seals with petroleum jelly. Use new seals when reassembling motor. Refer to parts list 6-121 for proper seal kit numbers.

Important: Do not stretch seals before installing them.

Cleanliness is extremely important in the successful application of Loctite. Before Loctite can be applied, the parts should be cleaned as follows:

Note: Fully cured Loctite resists most solvents, oils, gasoline and kerosene and is not affected by cleaning operations. It is not necessary to remove cured Loctite that is securely bonded in tapped holes; however, any loose particles of cured Loctite should be removed.

- a. Wash the housing with solvent to remove oil, grease and debris. Pay particular attention to four tapped holes on flange end.
- b. Blow dry with compressed air. Clean and dry tapped holes.

c. Wire brush screw threads to remove cured Loctite and other debris. Discard any screws that have damaged threads or rounded heads.

d. Wash screws with non-petroleum base solvent. Blow dry with compressed air.

18 If you remove plug and seal, lubricate new seal and install on plug. Some plugs have two o-ring grooves but require only one o-ring. Install o-ring in groove closest to end of plug. Push plug into housing so plug and housing are flush. Be careful not to damage seal.

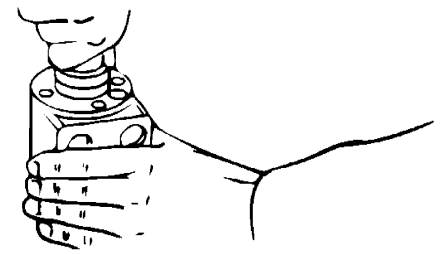
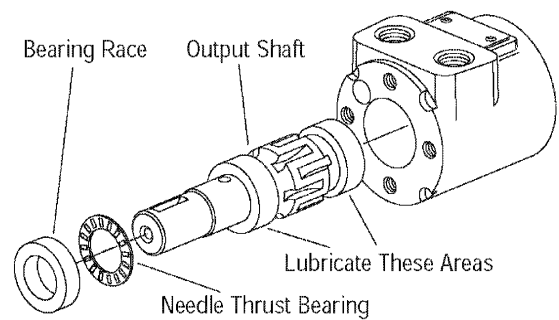


Figure 11

19 Lubricate output shaft with hydraulic oil, then install shaft in housing (see Figure 11).

Important: Do not permit oil to get into the four tapped holes.

20 Install needle thrust bearing, then bearing race on shaft. Pull shaft partially out of housing. Push all three parts in housing together (see Figure 11). The bearing race must rotate freely when in position.

Reassembly

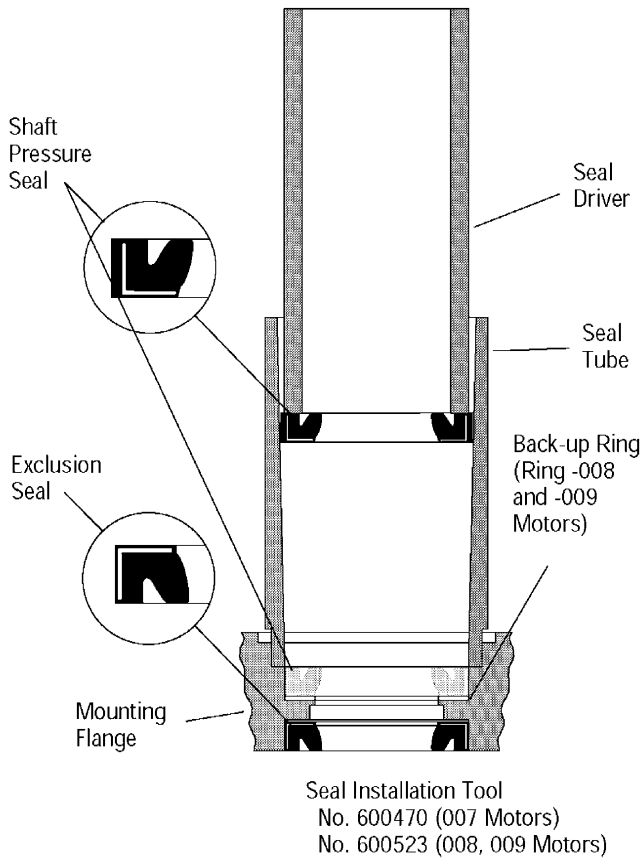


Figure 12

- 21** Install exclusion seal in flange (see Figure 12). Carefully press exclusion seal into place.
- 22** Visually check seal seat in mounting flange for scratches or other marks that might damage the pressure seal. Check for cracks in flange that could cause leakage.
- 23** Lubricate I.D. of seal tube and O.D. of shaft pressure seal with light film of clean petroleum jelly. Align small I.D. end of seal tube with seal seat in mounting flange. Install back-up ring and pressure seal in tube with lips of seal face up (see Figure 12). Insert seal driver in tube and firmly push seal seat with a rotating action.

Important: After installing seal in flange, examine seal condition. If damaged or improperly installed, you must replace it before continuing with reassembly.

- 24** Install 49 mm [1.937 in.] I.D. seal in flange.
 - 25** It is recommended to apply a light coat of Loctite Primer NF in tapped holes of housing. Allow primer to air dry for at least 1 minute. Do not force dry with air jet; the primer will blow away.
- Use of primer is optional. With primer, Loctite curing time is approximately 15 minutes. Without primer curing time is approximately 6 hours.

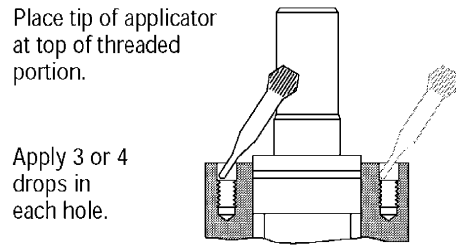


Figure 13

26 Apply 3 or 4 drops of Loctite sealant at top of thread for each of four holes in housing (see Figure 13). Do not allow parts with Loctite applied to come in contact with any metal parts other than those for assembly. Wipe off excess Loctite from housing face, using a non-petroleum base solvent.

Do not apply Loctite to threads more than 15 minutes before installing screws. If housing stands for more than 15 minutes, repeat application. No additional cleaning or removal of previously applied Loctite is

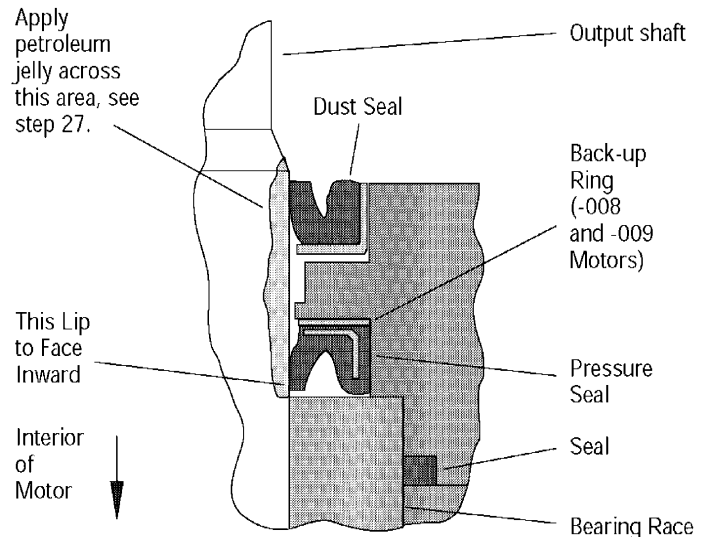


Figure 14

necessary.

27 Before installing flange and seal assembly over shaft, place protective sleeve or bullet over shaft. Then lubricate space between exclusion seal and pressure seal, as well as lips of both seals (see Figure 14).

Install flange. Rotate flange slowly while pushing down over shaft. Be careful not to invert or damage seals.

Reassembly

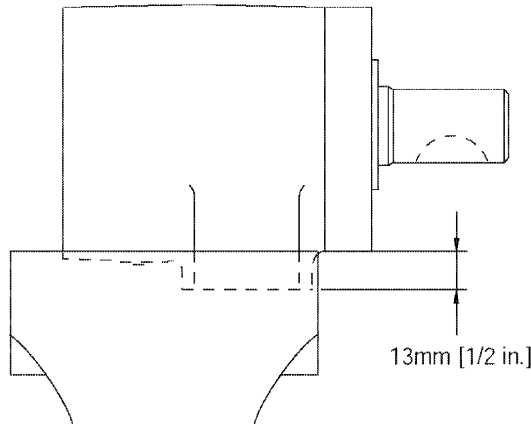


Figure 15

28 After removing bullet, clamp motor in vise as shown in Figure 15. Make sure shaft cannot fall out. Install dry screws and alternately torque them immediately to 250 lb-in [28 Nm]. If you use primer, allow to cure for 10 to 15 minutes. Without primer, allow 6 hours curing time before subjecting motor to high torque reversals. On all other applications, you can run motor immediately.

If you use new screws, make sure they are the correct length: 22 mm [.875 in.] under head length. See parts list for correct part number.

Gerotor End

29 Reposition motor with gerotor end up, then clamp across ports. Do not clamp on side of housing.

Important: To aid installation of seals, apply light coat of clean petroleum jelly to seals. Do not stretch seals before installing them in groove.

30 Pour approximately 35 cc of clean hydraulic oil in output shaft cavity.

31 Install 73 mm [2.875 in.] I.D. seal in housing seal groove. Avoid twisting seal.

Timing Procedure

a. Install drive. Use felt tip marker to mark one drive tooth. Align this tooth with timing dot on shaft.

Note: If drive is not symmetrical, install larger splined end into shaft.

b. Install spacer plate.

c. Install 73 mm [2.875 in.] I.D. seal in gerotor seal groove. Carefully place gerotor on spacer plate, seal side toward spacer plate.

Standard Rotation Align any star point with tooth marked on drive (see Figure 16).

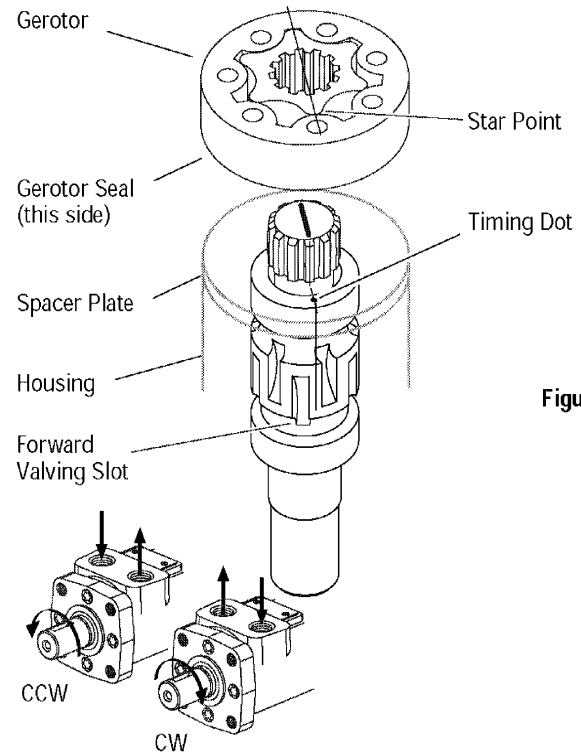


Figure 16

Reverse Rotation Align any star valley with marked tooth (see Figure 17).

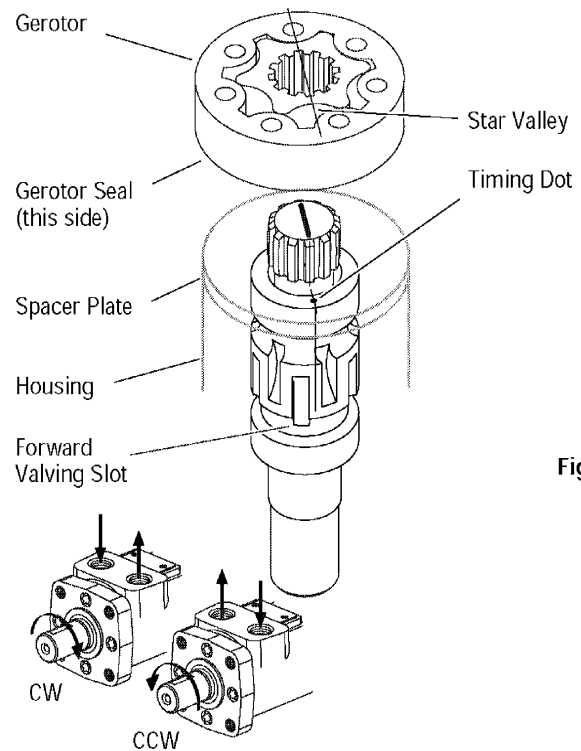
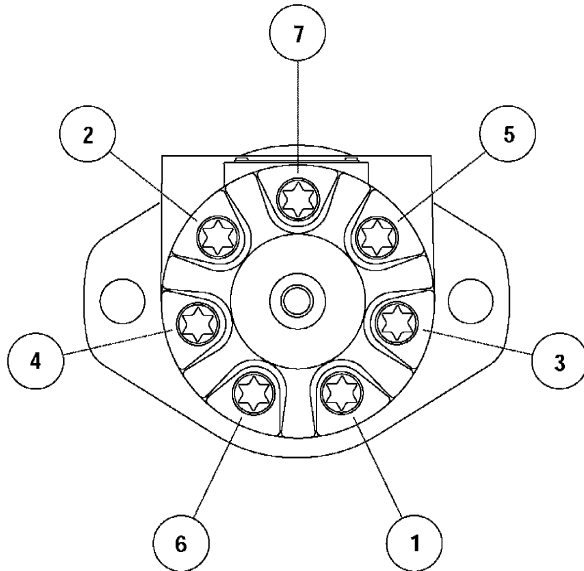


Figure 17

Reassembly

- 32 Rotate gerotor to line up with bolt holes. Be careful not to disengage star from drive or disturb gerotor seal.
- 33 Install drive spacer if applicable.
- 34 Install 73 mm [2.875 in.] seal in end cap. Carefully place end cap on gerotor.



Bolt Torquing Sequence

Figure 18

- 35 Install cap screws and seal washers (if applicable) in end cap. Pretighten screws to 7,4 Nm [40 lb-in]. Make sure seal washers are properly seated. Then torque screws 27-28 Nm [235-250 lb-in] in sequence, as shown in figure 18.

Reassembly — Speed Sensor

1 Rotate the motor shaft until a (gear/target) tooth is centered in the speed sensor port. If this is not done, the sensor may be damaged during the operation of the motor.

2 Make sure the lock nut and its threads are clean and dry for the proper torque. Position the lock nut against the alignment nut as shown in Figure 19.

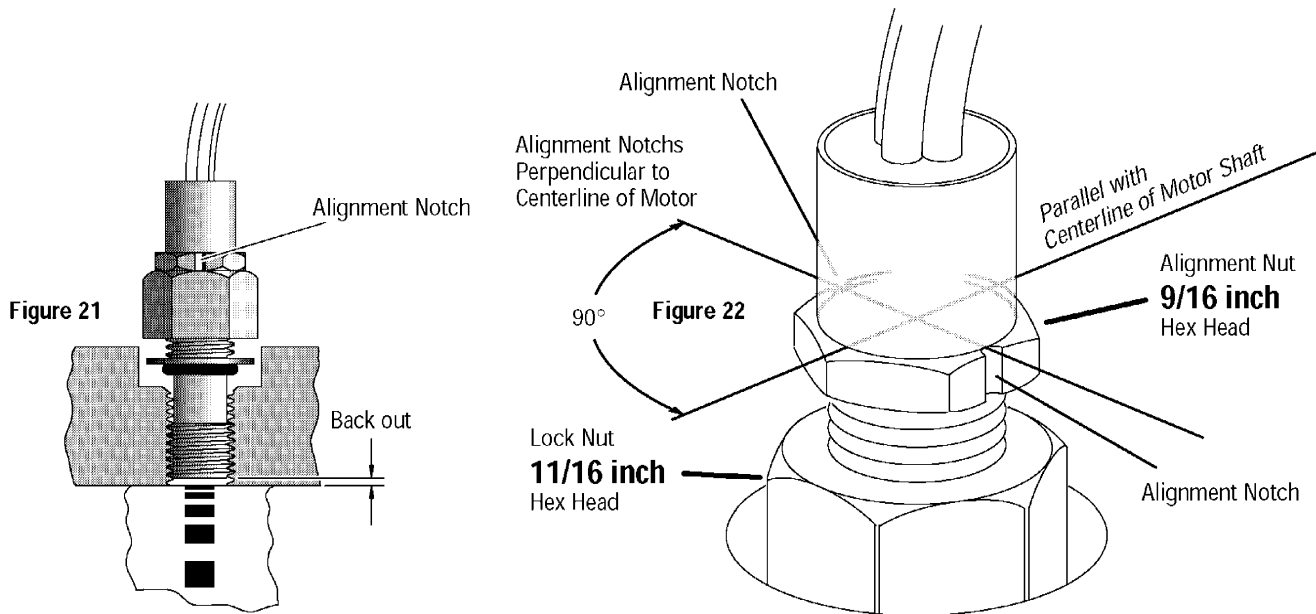
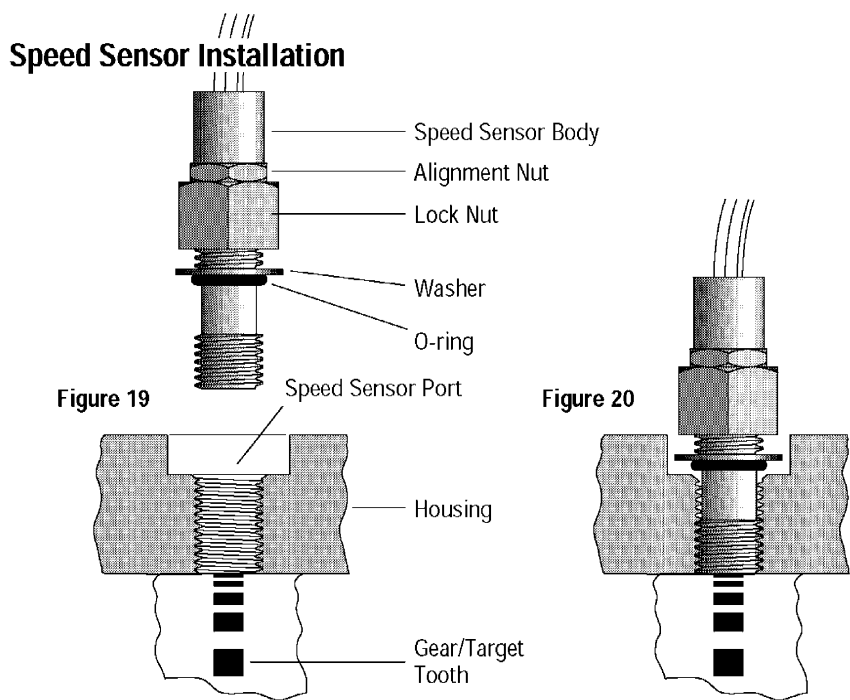
3 Move the washer and the o-ring up against the speed sensor body threads as shown in Figure 19.

4 By hand, lightly thread the speed sensor body into the housing until the sensor touches against the motor (gear/target) tooth. **Do not force the sensor against the (gear/target) tooth, damage may occur.** Make sure the o-ring or the washer do not touch the housing — see Figure 20.

5 Turn the speed sensor body out one quarter turn (CCW) plus the additional amount (CCW) needed to make the alignment notches perpendicular to the motor shaft centerline ($90^\circ \pm 5$ degrees from the motor shaft centerline — Figure 21 and 22).

6 Maintain the speed sensor body alignment (Figure 22), and tighten the lock nut to 8,5-14 Nm [75-125 lb-in.] (torque values are for clean dry threads).

7 Check the speed sensor body for correct alignment (Figure 22), reinstall the sensor if it is not correct.



Common Product Numbers

Product Numbers—H Series

Add three digit prefix —**101**—to four digit number from chart for complete product number—Example 101-1868.
Orders will not be accepted without three digit prefix.

Mounting	Shaft	Ports	Displ. cm ³ /r [in ³ /r] Product Number 101-xxxx												
			36 [2.2]	46 [2.8]	59 [3.6]	74 [4.5]	97 [5.9]	120 [7.3]	146 [8.9]	159 [9.7]	185 [11.3]	231 [14.1]	293 [17.9]	370 [22.6]	740 [45.0]
2 Bolt Flange	1 in. Straight w/Woodruff Key	7/8-14 O-ring	101-1700	-1033	-1701	-1034	-1035	-1702	-1703	-1036	-1037	-1038	-1039	-1040	—
		1/2 NPTF	101-1704	-1025	-1705	-1026	-1027	-1706	-1707	-1028	-1029	-1030	-1031	-1032	—
		Manifold*	101-1708	-1041	-1709	-1042	-1043	-1710	-1711	-1044	-1045	-1046	-1047	-1048	—
	1 in. SAE 6B Splined	7/8-14 O-ring	101-1721	-1081	-1722	-1082	-1083	-1723	-1724	-1084	-1085	-1086	-1087	-1088	—
		1/2 NPTF	101-1725	-1073	-1726	-1074	-1075	-1727	-1728	-1076	-1077	-1078	-1079	-1080	—
		Manifold*	101-1729	-1089	-1730	-1090	-1091	-1731	-1732	-1092	-1093	-1094	-1095	-1096	—
	1 in. Straight w/.31 Dia. Crosshole	7/8-14 O-ring	101-1796	-1797	-1798	-1799	-1800	-1801	-1802	-1803	—	—	—	—	—
		1/2 NPTF	101-1804	-1805	-1806	-1807	-1808	-1809	-1810	—	—	—	—	—	—
		Manifold*	101-1811	-1812	-1813	-1814	-1815	-1816	-1817	-1818	—	—	—	—	—
	1 in. Straight w/.40 Dia. Crosshole	7/8-14 O-ring	101-1819	-1323	-1820	-1324	-1325	-1821	-1822	-1326	—	—	—	—	—
		1/2 NPTF	101-1823	-1319	-1824	-1320	-1825	-1826	-1827	-1828	—	—	—	—	—
		Manifold*	101-1829	-1463	-1830	-1831	-1832	-1833	-1834	-1871	—	—	—	—	—
4 Bolt Flange	1 in. Straight w/Woodruff Key	7/8-14 O-ring	101-1749	-1009	-1750	-1010	-1011	-1751	-1752	-1012	-1013	-1014	-1015	-1016	—
		1/2 NPTF	101-1753	-1001	-1754	-1002	-1003	-1755	-1756	-1004	-1005	-1006	-1007	-1008	—
		Manifold*	101-1757	-1017	-1758	-1018	-1019	-1759	-1760	-1020	-1021	-1022	-1023	-1024	—
	1 in. SAE 6B Splined	7/8-14 O-ring	101-1761	-1057	-1762	-1058	-1059	-1763	-1764	-1060	-1061	-1062	-1063	-1064	—
		1/2 NPTF	101-1764	-1049	-1765	-1050	-1051	-1766	-1767	-1052	-1053	-1054	-1055	-1056	—
		Manifold*	101-1768	-1065	-1769	-1066	-1067	-1770	-1771	-1068	-1069	-1070	-1071	-1072	—
	1 in. Straight w/.31 Dia. Crosshole	7/8-14 O-ring	101-1835	-1836	-1837	-1838	-1839	-1840	-1841	-1842	—	—	—	—	—
		1/2 NPTF	101-1843	-1497	-1844	-1449	-1352	-1845	-1846	-1847	—	—	—	—	—
		Manifold*	101-1848	-1466	-1849	-1459	-1850	-1851	-1852	-1853	—	—	—	—	—
	1 in. Straight w/.40 Dia. Crosshole	7/8-14 O-ring	101-1854	-1311	-1855	-1856	-1857	-1858	-1859	-1860	—	—	—	—	—
		1/2 NPTF	101-1861	-1313	-1862	-1312	-1314	-1863	-1864	-1315	—	—	—	—	—
		Manifold*	101-1865	-1305	-1866	-1306	-1307	-1867	-1868	-1869	—	—	—	—	—

101-1868

Product Numbers—H Series Motors with Corrosion Protection

Mounting	Shaft	Ports	Displ. cm ³ /r [in ³ /r] Product Number 101-xxxx												
			36 [2.2]	46 [2.8]	59 [3.6]	74 [4.5]	97 [5.9]	120 [7.3]	146 [8.9]	159 [9.7]	185 [11.3]	231 [14.1]	293 [17.9]	370 [22.6]	740 [45.0]
4 Bolt Flange	1 in. Straight w/Woodruff Key	1/2 NPTF	101-2032	-2014	-2093	-2027	-2013	-2094	-2095	-2015	-2028	-2029	-2030	-2031	—
		Manifold*		-2067							-2068	-2069			

*Manifold product numbers shown are for motors with four 5/16-18 port face mounting threads. Manifold, manifold mounting o-rings and bolts are NOT included (for M8 x 1.5 port face mounting threads see note below).

H Series Spool Valve Motors

For Additional Literature Contact Eaton Corp. Hydraulics Division 15151 Highway 5 Eden Prairie, MN 55344.

- Specifications and performance data, Catalog No. 11-885
- Replacement part numbers and kit information — Parts Information No. 6-121

How to Order Replacement Parts

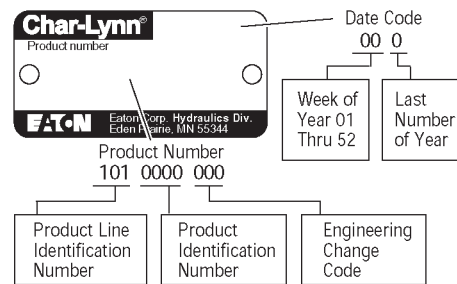
Each Order Must Include the Following:

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

How to Order Replacement Parts

Each Order Must Include the Following:

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



Eaton
Fluid Power Group
Hydraulics Business USA
14615 Lone Oak Road
Eden Prairie, MN 55344
USA
Tel: 952-937-9800
Fax: 952-294-7722
www.eaton.com/hydraulics

Eaton
Fluid Power Group
Hydraulics Business Europe
Route de la Longeraie 7
1110 Morges
Switzerland
Tel: +41 (0) 21 811 4600
Fax: +41 (0) 21 811 4601

Eaton
Fluid Power Group
Hydraulics Business Asia Pacific
11th Floor Hong Kong New World Tower
300 Huaihai Zhong Road
Shanghai 200021
China
Tel: 86-21-6387-9988
Fax: 86-21-6335-3912