Char-Lynn® T-Series General Purpose Geroler® Motor
Parts and repair manual

-001

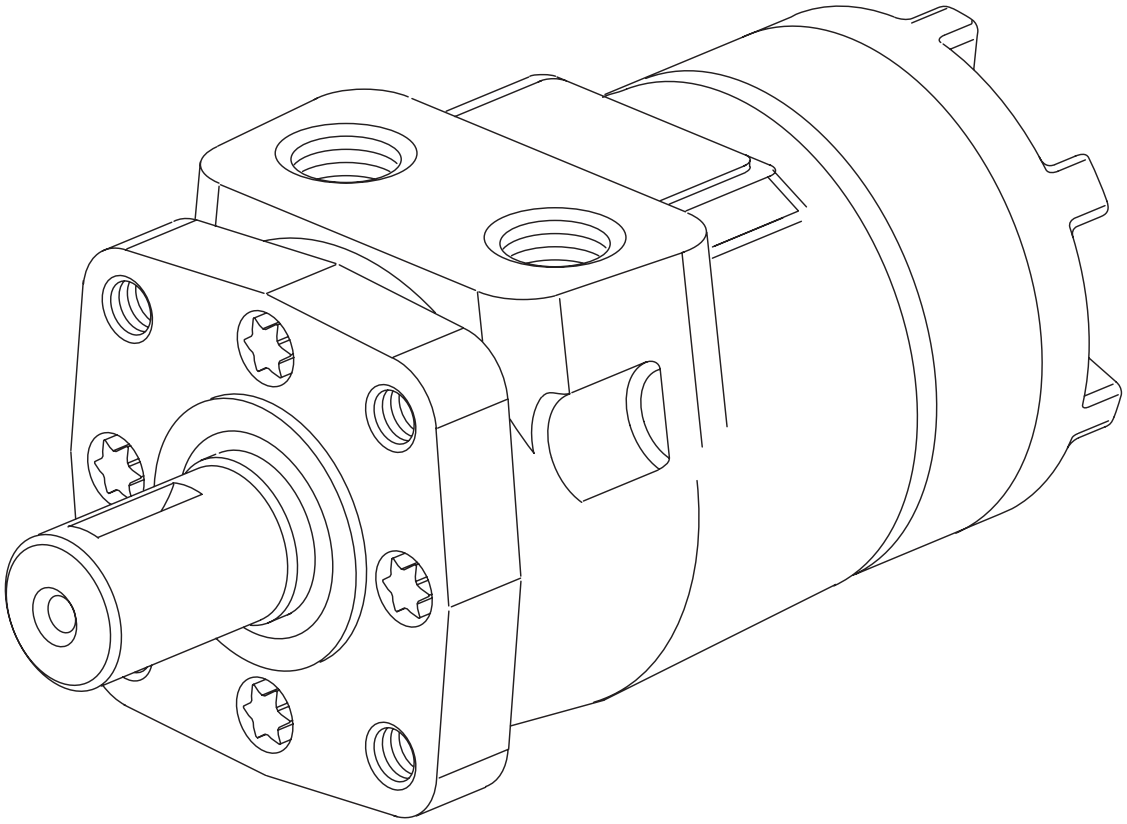

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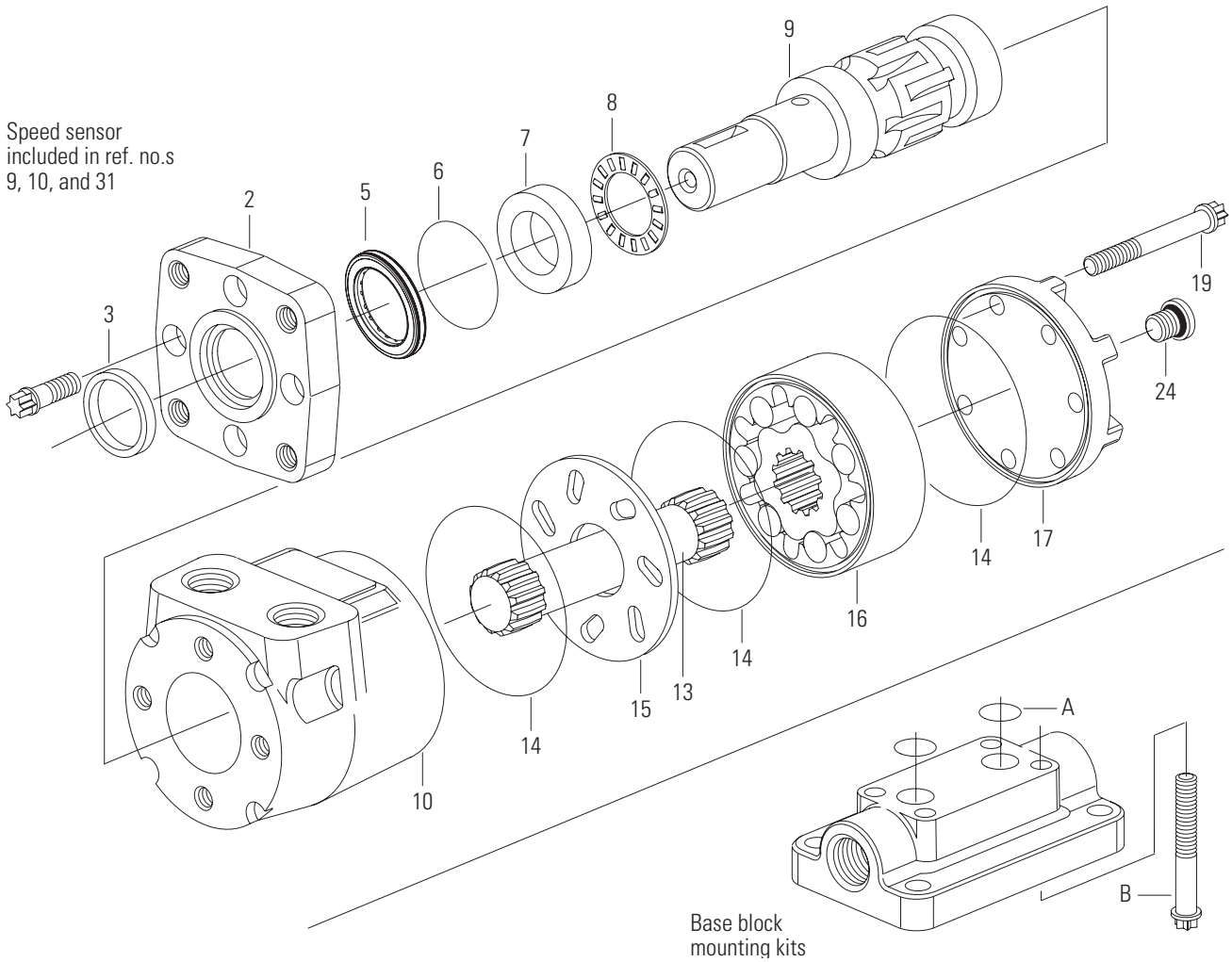
Table of contents

Parts



Displacement	Reference number 13		Reference number 16		Reference number 19	
cm^3/r [in^3/r]	Drive	Length mm [in]	Geroler	Width mm [in]	Cap screw	Length mm [in]
29 [1.8]	602-000	76,2 [3.00]	22801-015	6,6 [.26]	16294-150	38,1 [1.50]
36 [2.2]	602-000	76,2 [3.00]	22801-001	6,6 [.26]	16294-150	38,1 [1.50]
49 [3.0]	201111-001	78.7 [3.10]	22801-002	8,9 [.36]	16294-162	41,1 [1.62]
59 [3.6]	203378-001	80,7 [3.18]	22801-013	10,8 [0.43]	16294-162	41,1 [1.62]
66 [4.0]	616-000	81,8 [3.22]	22801-003	11,9 [.47]	16294-175	44,5 [1.75]
80 [4.9]	201111-002	84.6 [3.33]	22801-004	14,7 [.58]	16294-188	47,8 [1.88]
102 [6.2]	201111-003	88,6 [3.49]	22801-005	18,5 [.73]	16294-200	50,8 [2.00]
131 [8.0]	201111-004	94,0 [3.70]	22801-006	23,9 [.94]	16294-225	57,2 [2.25]
157 [9.6]	201111-005	90,8 [3.90]	22801-007	29,0 [1.14]	16294-238	60,5 [2.38]
195 [11.9]	201111-006	105,7 [4.16]	22801-008	35,6 [1.40]	16294-262	66,5 [2.62]
244 [14.9]	201111-007	114,8 [4.52]	22801-009	44,5 [1.76]	16294-300	76,2 [3.00]
306 [18.7]	201111-008	126,2 [4.97]	22801-010	56,1 [2.21]	16294-350	88,9 [3.50]
370 [22.6]	201111-009	137,9 [5.43]	22801-012	67,8 [2.66]	16294-400	101,6 [4.00]
488 [29.8]	201111-010	160,2 [6.31]	22801-016	89.4 [3.52]	16294-480	121.9 [4.80]

Parts list

	Ref. no.	Part no.	Description	Qty. per unit
	1	16292-088	Screw, cap (6 point (E10) drive 5/16-24 x 7/8)	4
	2	22000-001	Flange mounting (2 Bolt)	1
		22000-002	Flange mounting (4 Bolt) 3/8-16 UNC	1
		22000-004	Flange mounting (2 Bolt SAE B)	1
		22000-005	Flange mounting (4 Bolt Magneto)	1
		22000-006	Flange mounting (4 Bolt) M10 x 1,5	1
X	3	9121-002	Seal, exclusion	1
	5	6029894-002	Seal, pressure (medium pressure)	1
		5995483-001	Seal, pressure (HP)	1
X	6	9091-001	Seal, section (Flange)	1
	7	7462-000	Race, thrust bearing	1
	8	7537-000	Bearing, thrust needle	1
	9	7360-001	Shaft, output (1 in. dia. straight with woodruff key slot)	1
		7360-002	Shaft, output (SAE 6B splined)	1
		7360-007	Shaft, output (1 in. dia. straight with .316 dia. crosshole)	1
		7360-008	Shaft, output (1 in. dia. Straight with .406 dia. crosshole)	1
		7360-016	Shaft, output (7/8 in. dia. SAE B 13 T splined)	1
		7360-018	Shaft, output (1 in. dia. tapered)	1
		7360-024	Shaft, output (25 mm dia. straight)	1
		220879-001	Shaft, output (1 in. dia. straight with woodruff key slot) with Speed Sensor	1
		220879-002	Shaft, output (SAE 6B splined) with Speed Sensor	1
		220879-007	Shaft, output (1 in. dia. straight with .316 dia. crosshole) with Speed Sensor	1
		220879-008	Shaft, output (1 in. dia. Straight with .406 dia. crosshole) with Speed Sensor	1
		220879-018	Shaft, output (1 in. dia. tapered) with Speed Sensor	1
		220879-024	Shaft, output (25 mm dia. straight) with Speed Sensor	1
		14193-000	Key, woodruff (1 in. dia. straight shaft)	1
		14193-000	Key, woodruff (for tapered shaft)	1
		14462-006	Key, straight (for 25 mm dia. shaft)	1
		14381-000	Nut (for tapered shaft)	1
	10	201285-001	Housing, 7/8-14 O-ring ports	1
		201285-002	Housing, 1/2 NPTF ports	1
		201285-003	Housing, manifold ports (5/16-18 UNC)	1
		201285-006	Housing, manifold ports (M8 X 1.25)	1
		201285-010	Housing, (G 1/2 (BSP))	1
		201285-011	Housing, M22 X 1.5 O-ring ports	1
		201138-001	Housing, 7/8-14 O-ring ports with Speed Sensor	1
		201138-002	Housing, 1/2 NPTF ports with Speed Sensor	1
		201138-003	Housing, manifold ports (5/16-18 UNC) with Speed Sensor	1
		201138-006	Housing, (G 1/2 (BSP)) with Speed Sensor	1

Parts list

	Ref. no.	Part no.	Description	Qty. per unit
X	11	N/A	O-ring	1
X	12	N/A	Plug	1
	13	*	Drive	1
X	14	5996785-001	Seal	3
	15	22808-000	Plate, spacer	1
	16	*	Geroler	1
	17	23986-001	Cap, end (no port)	1
		23986-002	Cap, end (with drain port 7/16-20 O-ring)	1
		23986-003	Cap, end (with drain port G 1/4 (BSP))	1
	19	*	Screw, cap (6 point (E10) drive 5/16-24)	7
	24	9072-003	Plug/ O-ring (7/16-20 drain port)	1
X		250003-904	O-ring for 7/16-20 drain port plug	1
		9170-002	Plug/O-ring (G 1/4 (BSP) drain port)	1
		—	O-ring for G 1/4 (BSP) drain port plug	1
	31	6026077-001	Sensor, speed — 127mm [5.0 in.] Lead wire	1
	49	6038979-001	Seal, guard	1
	Motor seal kit	60564-000	Seal kit (Buna N) — contains parts indicated by X	
		60565-000	Seal kit (same as above with one exception - shaft seal is Viton)	
		60566-000	Seal kit (Viton) — contains parts indicated by X (part no.s differ from those shown)	
		123-1007	Base block mounting kit (1/2 NPTF ports (manifold mount motors only))	
	Mounting kit	123-1007	Base block mounting kit (1/2 NPTF ports (manifold mount motors only))	
		123-1008	Base block mounting kit (7/8-14 O-ring ports (manifold mount motors only))	
X	A	15058-000	Seal, O-ring (2)	
	B	267512-019	Screw, cap (5/16-18 thread (4))	
		14474-003	Screw, cap (M8 x 1.5) thread (4))	

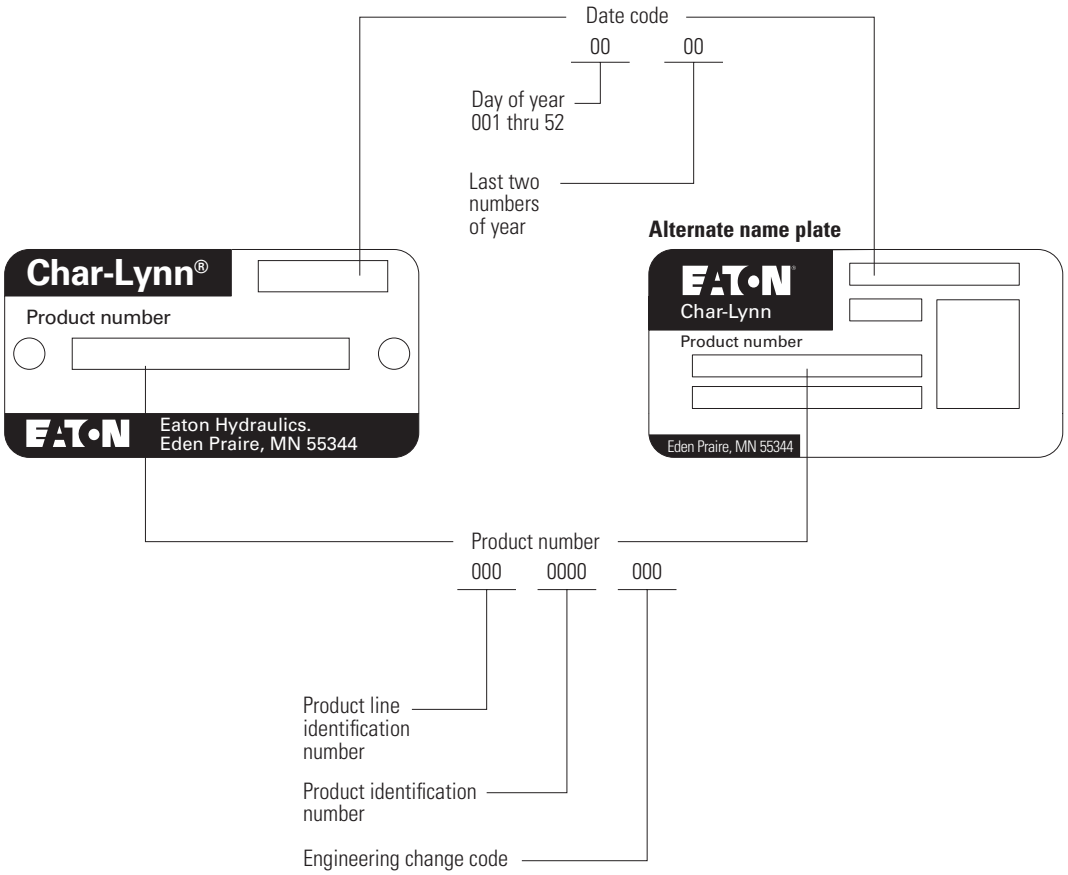
Viton is a registered trade name of Dupont Corporation.
*See chart above part dwg. page 3. N/A — Not applicable

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

How to order replacement parts



Product numbers—T series -001

Add three digit prefix —158-to four digit number from chart for complete product number—Example 158-1068.

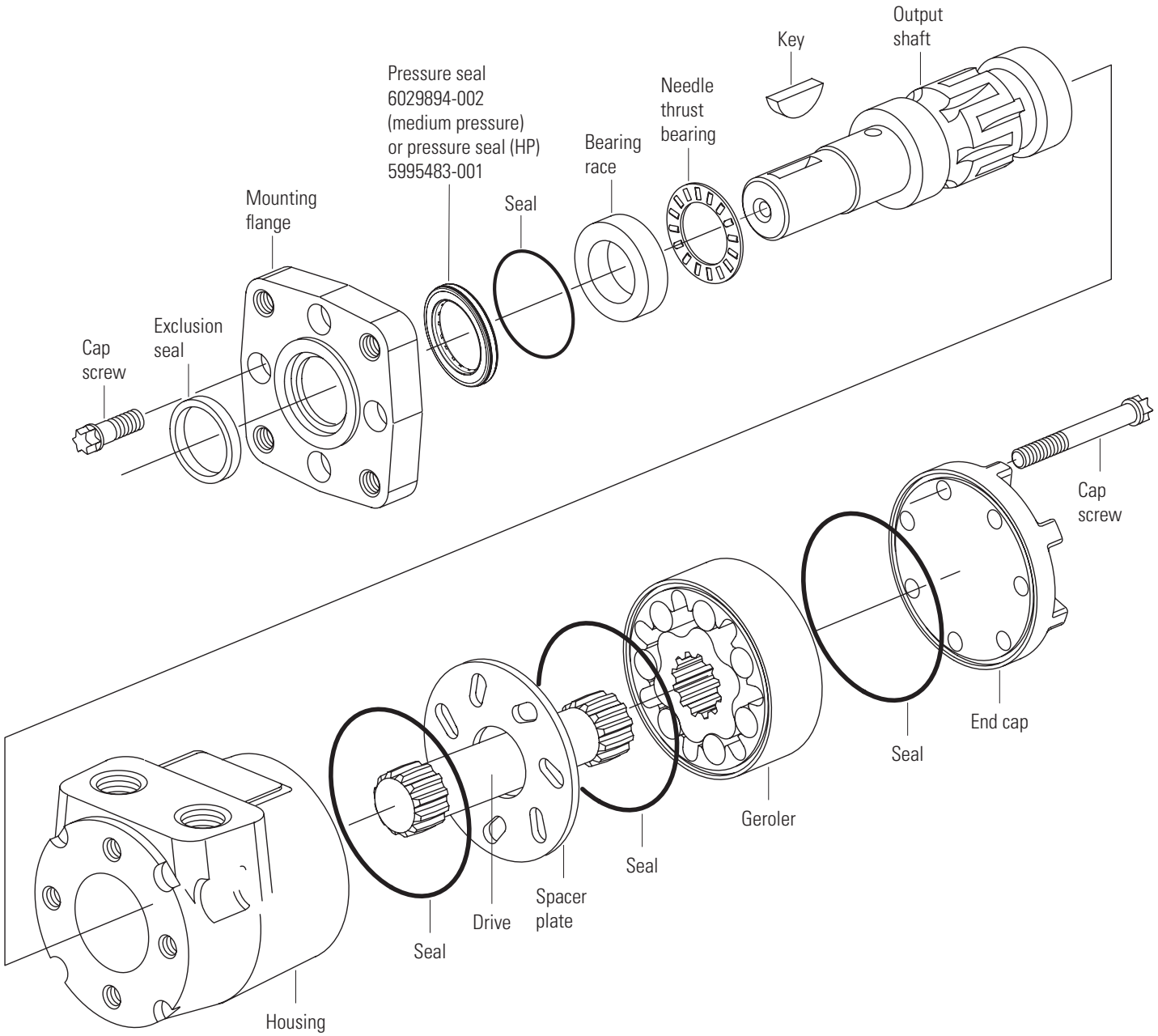
Mounting	Shaft	Ports	Part# prefix	Displ. cm³/r [in³/r] Product Number 158-xxxx										
				36 [2.2]	49 [3.0]	66 [4.0]	80 [4.9]	102 [6.2]	131 [8.0]	157 [9.6]	195 [11.9]	224 [14.9]	306 [18.7]	370 [22.6]
2 Bolt flange	1 in. Straight w/woodruff key	7/8-14 O-ring	158-	—	—	-1537	-1034	-1035	-1538	-1036	-1037	-1038	-1039	-1040
		1/2 NPTF	158-	—	—	-1540	-1026	-1027	-1541	-1028	-1029	-1030	-1031	-1032
		Manifold	158-	—	—	-1543	-1042	-1043	-1544	-1044	-1045	-1046	-1047	-1048
	1 in. SAE 6B splined	7/8-14 O-ring	158-	—	—	-1552	-1082	-1083	-1553	-1084	-1085	-1086	-1087	-1088
		1/2 NPTF	158-	—	—	-1555	-1074	-1075	-1556	-1076	-1077	-1078	-1079	-1080
		Manifold	158-	—	—	-1558	-1090	-1091	-1559	-1092	-1093	-1094	-1095	-1096
4 Bolt flange	1 in. Straight w/woodruff key	7/8-14 O-ring	158-	—	—	-1570	-1010	-1011	-1571	-1012	-1013	-1014	-1015	-1016
		1/2 NPTF	158-	—	—	-1573	-1002	-1003	-1574	-1004	-1005	-1006	-1007	-1008
		Manifold	158-	—	—	-1576	-1018	-1019	-1577	-1020	-1021	-1022	-1023	-1024
	1 in. SAE 6B splined	7/8-14 O-ring	158-	—	—	-1579	-1058	-1059	-1580	-1060	-1061	-1062	-1063	-1064
		1/2 NPTF	158-	—	—	-1582	-1050	-1051	-1583	-1052	-1053	-1054	-1055	-1056
		Manifold	158-	—	—	-1585	-1066	-1067	-1586	-1068	-1069	-1070	-1071	-1072

158-1068

Tools required

Tools required for disassembly and reassembly

- Torque wrench (34 Nm [300 lb-in] capacity)
- 300-400 mm [12-16 in.] breaker bar
- 5/16 in. – 6 point (E10 Drive) socket no. 64489-000* (heavy duty 56 Nm [500 lb-in] capacity)
- E10 Torx socket
- Small blade screwdriver
- 3/16 in. hex key
- Shaft seal installation tool
- Shaft sleeve or bullet
  - For 1 inch dia. shaft
  - For 7/8 inch dia. shaft



Disassembly

Cleanliness is extremely important when repairing hydraulic motors. Work in a clean area. Before disconnecting the hydraulic lines, clean the port area of the motor. Before disassembly, drain the oil from the motor. Then plug the ports and thoroughly clean the exterior of the motor. Check the output shaft, remove any burrs, nicks, or sharp edges.

1. Clamp the motor in a vise so the shaft is vertical and the end cap is on top. Clamp on the mounting flange using just enough clamping force to hold the motor securely. Protect the mounting flange with soft vise jaws
2. Remove the seven cap screws from the end cap and disassemble the motor as shown in Figure 1. Do not disassemble the Geroler
3. Un-clamp the motor and remove the output shaft, thrust needle bearing, and thrust bearing race (see Figure 2)
4. Clamp the motor in a vise so the mounting flange is on top. Clamp across the port area. Do not clamp on the motor housing. Use just enough clamping force to hold the motor securely

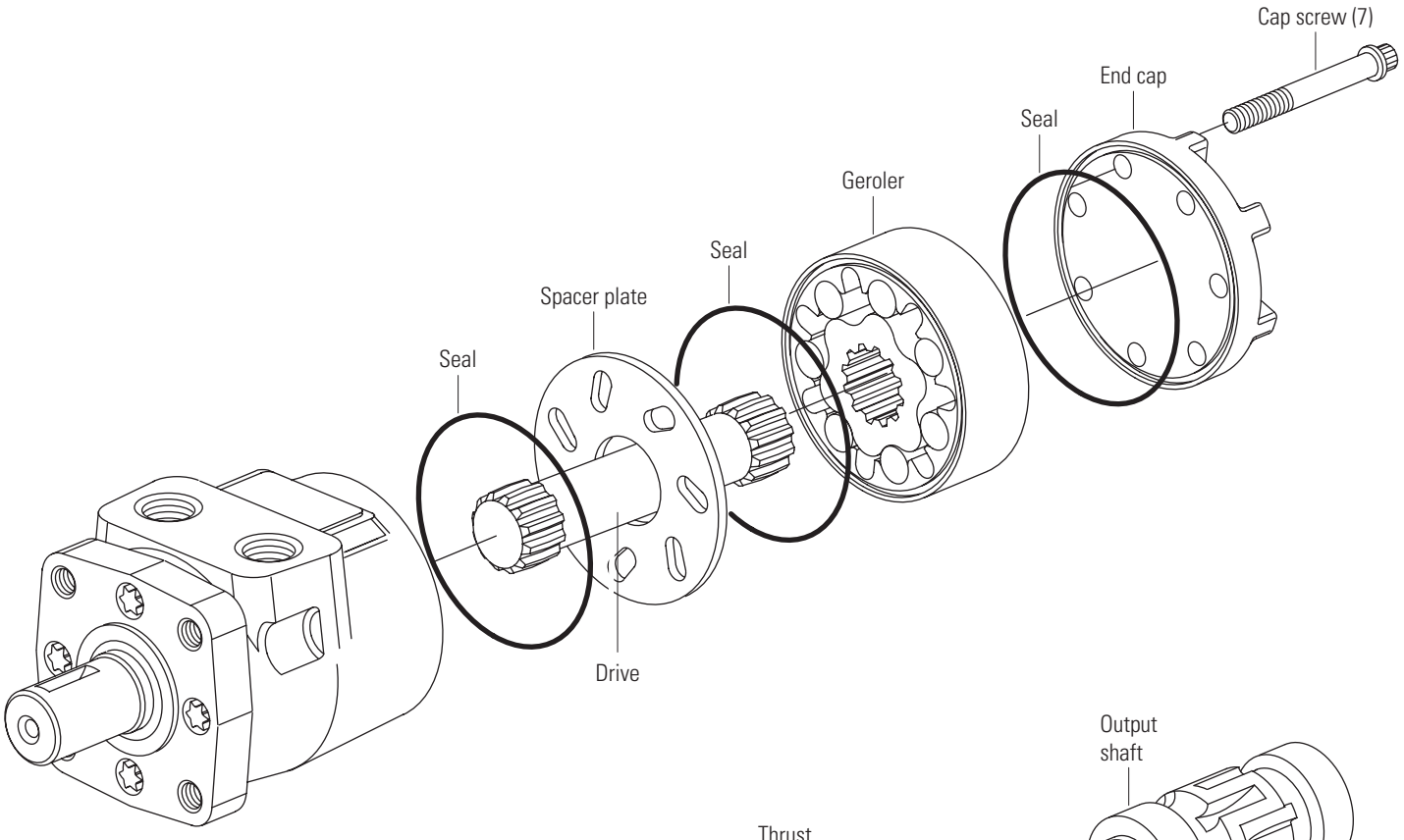


Figure 1

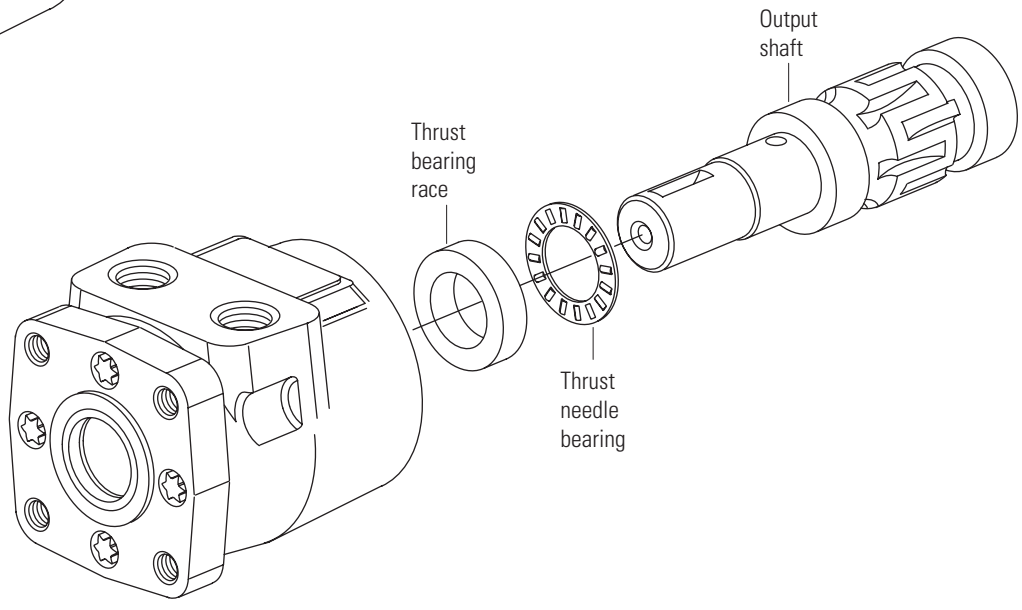


Figure 2

Caution

These screws were Loctited during assembly. Do Not exceed 56 Nm [500 lb-in] of removal torque.

If the Loctite is holding the screws too tightly, heat the motor housing, with a propane torch, while turning the screw. Apply heat to where the screw threads into the motor housing, see Figure 3. Apply just enough heat to remove the screw, do not overheat the motor housing or mounting flange.

5. Remove the four cap screws that hold the mounting flange to the motor housing
6. Remove the mounting flange from the motor housing. The exclusion seal, pressure seal, and back-up ring will come off with the mounting flange
7. Carefully remove the exclusion seal, pressure seal, and backup ring from the mounting flange. A seal removal tool may be fabricated by bending and rounding the end of a small blade screwdriver, see Figure 4

Important

Do not damage the mounting flange where the shaft passes through it.

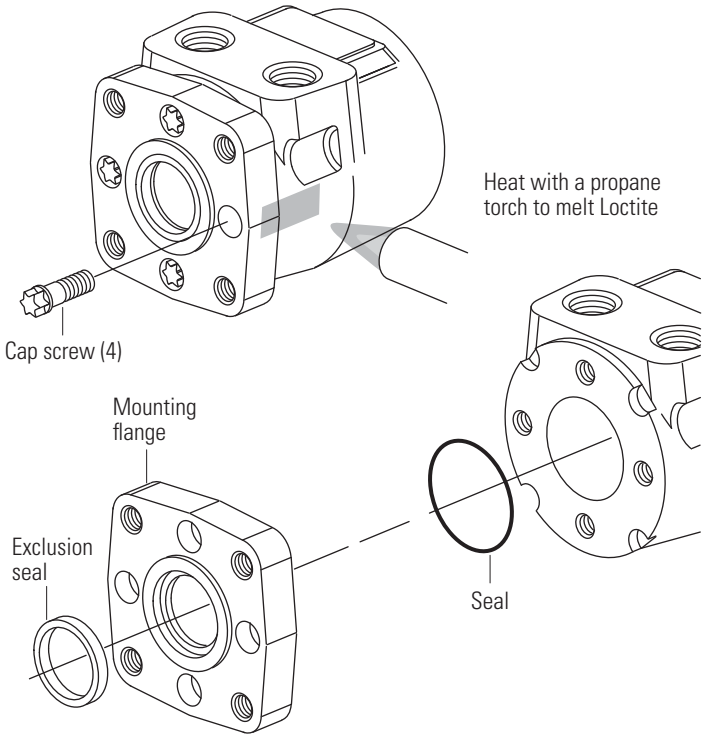


Figure 3

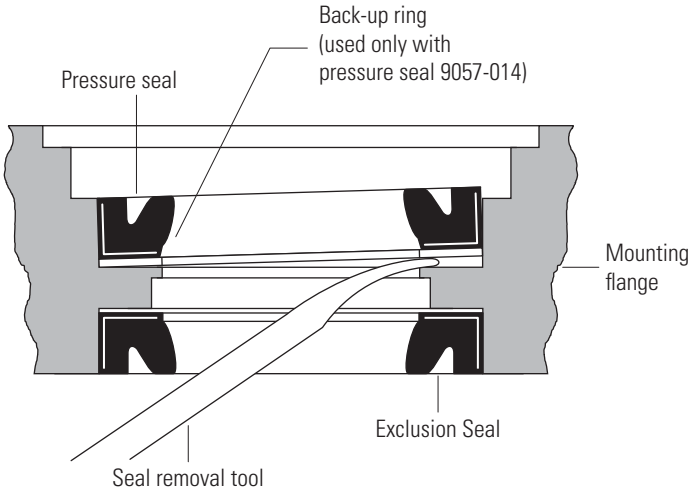


Figure 4

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 willcause 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 6-146 for seal kit part numbers, replacement parts, and ordering information.

Important

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

8. Remove all of the old Loctite® from the mounting flange cap screws and their threaded holes. The threads must be clean and dry for the new Loctite to hold properly
9. Lubricate and install the output shaft, needle thrust bearing, and bearing race into the housing

   Important

   Do not permit oil to get into the four threaded holes.
10. Lubricate the exclusion seal and press it into its seat in the mounting flange. Figure 5 shows the correct seal orientation.
11. Lubricate and install the back-up ring and pressure seal. Use seal installation tool to press the pressure seal into place (see Figure 5)

    Note: With use of pressure seal 6029894-002 (medium pressure) or pressure seal (HP) 5995483-001, back-up ring does not need to be installed, see Figure 5A

    Important

    Be sure the exclusion seal and pressure seal are undamaged and properly seated.
12. Apply three or four drops of Loctite 277 to the threads of the four holes in the motor housing where the mounting flange will be attached. Apply the Loctite so that it coats the threads. Remove all excess Loctite
13. Install a protective sleeve or bullet over the output shaft. Lubricate the inner edges of the exclusion and pressure seals. Lubricate and install the 44.1 mm [1.74 in.] diameter o-ring seal on the mounting flange. Then slide the mounting flange down over the shaft
14. Remove the protective sleeve and install the four cap screws. Tighten the cap screws, in a criss-cross pattern, to 28 Nm [250 lb-in]. Be sure the output shaft does not fall out of the housing

    Important

    The Loctite must cure completely before the motor is put into service. Loctite curing time is six hours. Use of Loctite Primer reduces curing time to 15 minutes. Follow the instructions on the Loctite package.
15. Clamp the motor in the vise so the output shaft is vertical and down. Clamp on the mounting flange
16. Pour clean hydraulic fluid into the motor to provide start-up lubrication
17. Lubricate and install one of the three largest diameter seals in the groove in the motor housing
18. Install the drive

    Note: If the splined ends of the drive are different lengths, install the longer end into the shaft.

Seal installation tool

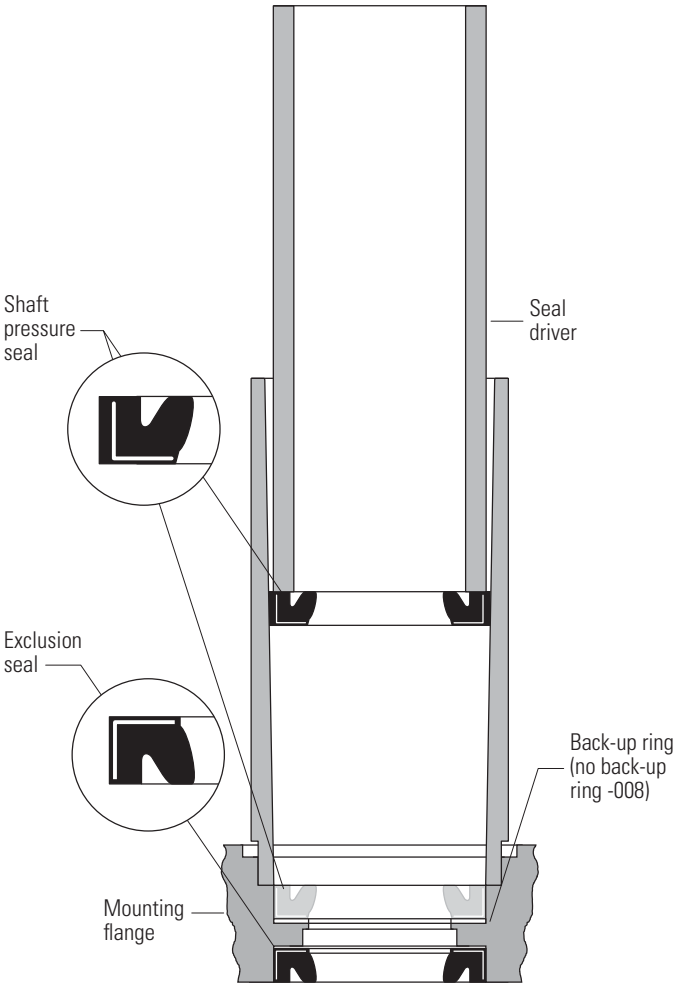


Figure 5

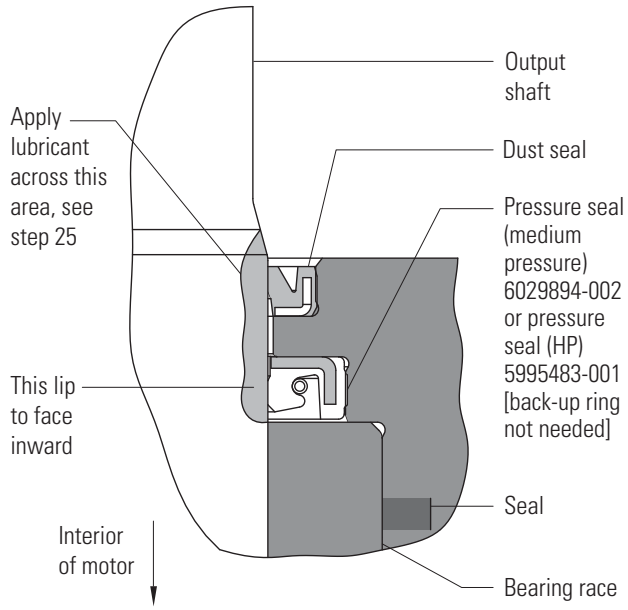
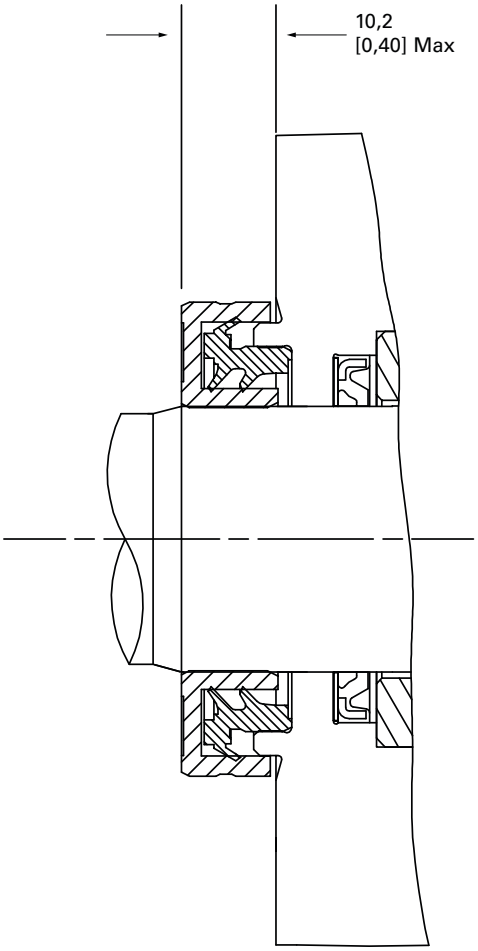
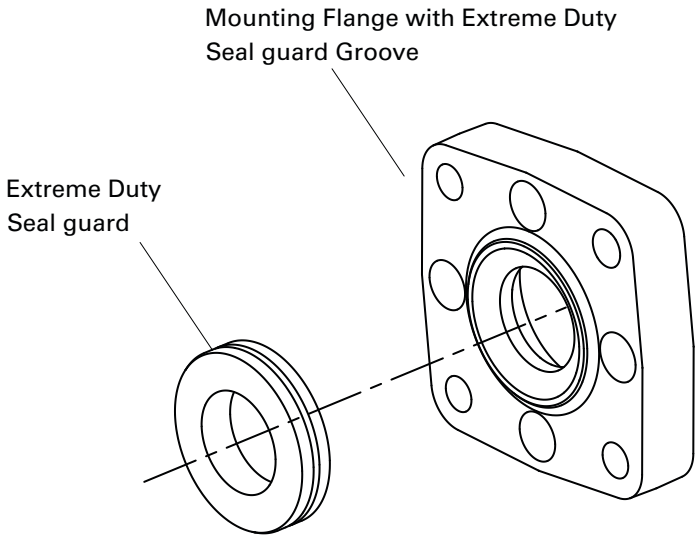


Figure 5A

Installation of extreme duty seal guard:

After completing assembly of the shaft into the mounting flange, press the Extreme Duty Seal Guard onto the shaft with a tool that will provide an even push over the seal. This tool must bottom out against the mounting flange and provide a 10,2 mm [.40 inch] stop for the seal guard.





Reassembly (continued)

Motor timing

19. Align shaft timing dot with any bolt hole. Bolt hole will be used for timing reference
20. Install spacer plate, and note the position of the threaded hole in housing aligned with the timing dot on shaft

    Important

    Be sure the slots in the spacer plate provide passage for hydraulic fluid as well as the cap screws. If the spacer plate is flipped the motor will not operate.
21. Lightly stretch, lubricate and install the second of three large diameter seals in the groove in the Geroler
22. Install the Geroler

    Standard Timing Align any star point with the threaded hole noted for the location of the timing dot (see Figure 6).

    Reverse Timing Align any star valley with the threaded hole noted for the location of the timing dot (see Figure 6).
23. Rotate the geroler to align the screw holes and install drive spacer if applicable
24. Lubricate and install the last one of the three large diameter seals in the groove in the end cap
25. Install the end cap and seven cap screws
26. Tighten the cap screws in a criss-cross pattern, to 27-28 Nm [235-250 lb-in]

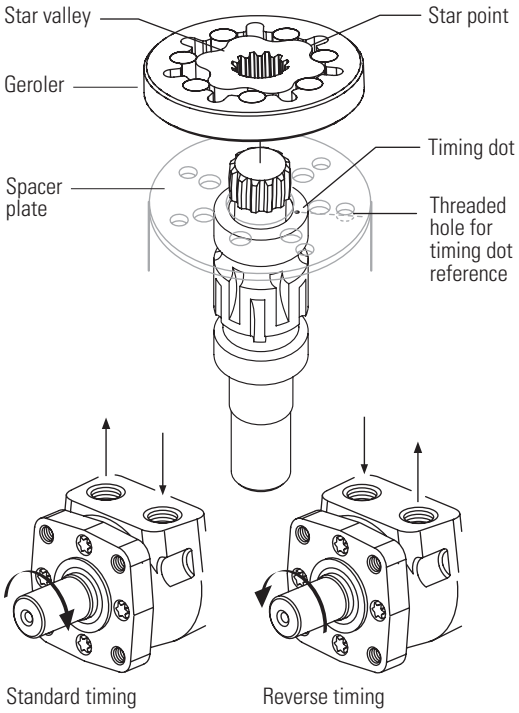
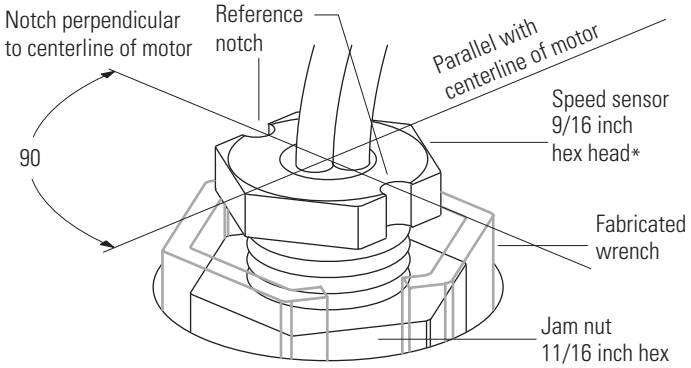


Figure 6

Speed sensor installation



*Turn speed sensor in to bottom (making sure jam nut is backed off sufficiently), back off 1/4 turn (CCW) and if reference notch(s) is not positioned as shown above continue turning (CCW) to align reference notch 90 off of centerline of motor or perpendicular to motor shaft. Hold speed sensor in this position and tighten jam nut to 8,5 — 14 Nm [75 — 125 lb-in].

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

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

Eaton
Hydraulics Group Asia Pacific
Eaton Building
No.7 Lane 280 Linhong Road
Changning District,
Shanghai 200335
China
Tel: (+86 21) 5200 0099
Fax: (+86 21) 2230 7240

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