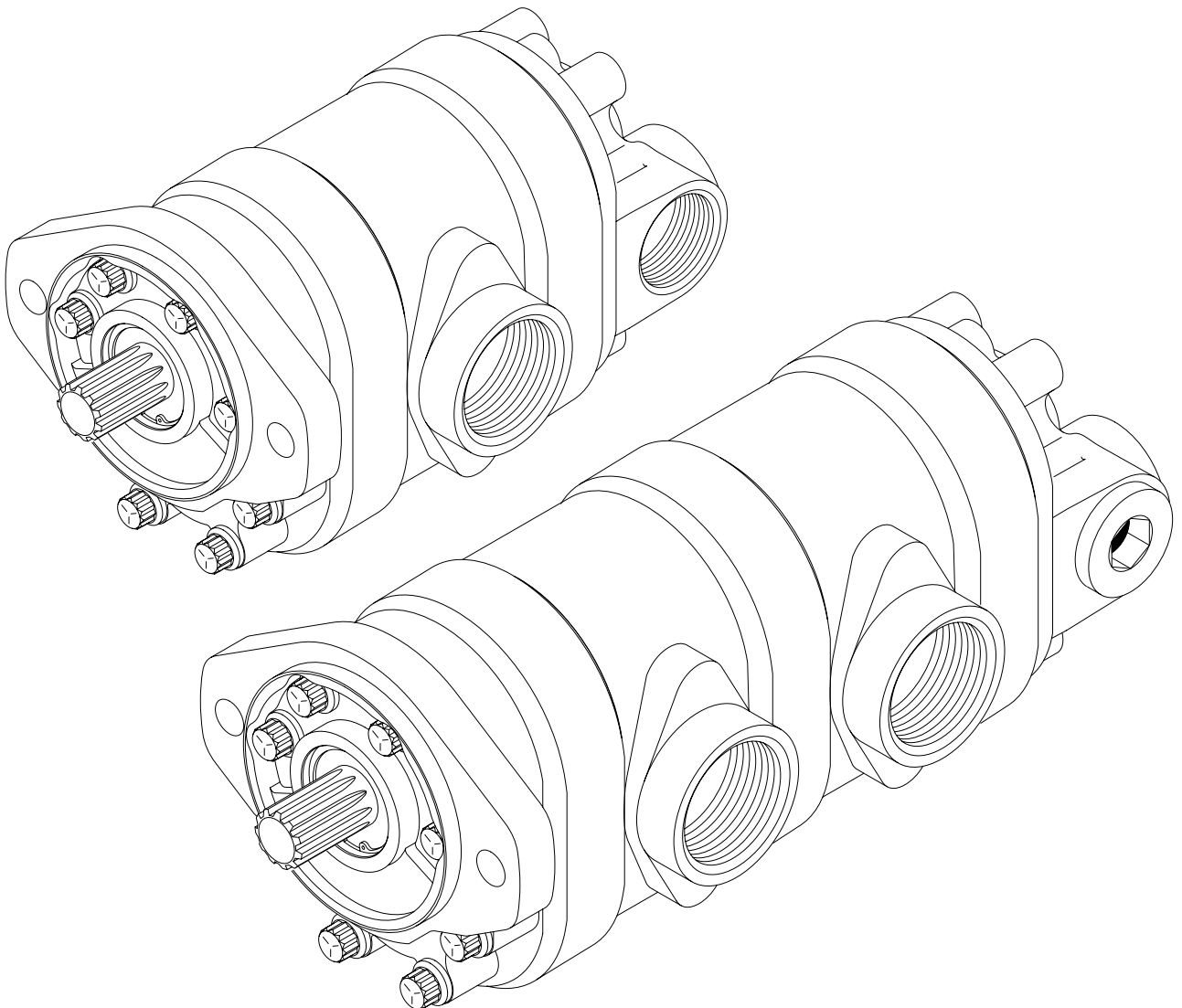




Repair Information



Series 26
Model 26000 Multiple Gear Pumps

Introduction

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Introduction

This manual provides service information for the Eaton model 26000 multiple gear pumps. Step by step instructions for the complete disassembly, inspection, and reassembly of the pumps are included.

The following recommendations should be followed to insure successful repairs.

- Remove the pump from the application.
- Cleanliness is extremely important.
- Clean the port areas thoroughly before disconnecting the hydraulic lines.
- Plug the pump ports and cover the open hydraulic lines immediately after they're disconnected.
- Drain the oil and clean the exterior of the pump before making repairs.
- Wash all metal parts in clean solvent.
- Use compressed air to dry the parts. Do not wipe them dry with paper towels or cloth.
- The compressed air should be filtered and moisture free.
- Always use new seals when reassembling hydraulic pumps.
- For replacement parts and ordering information refer to parts list 6-635.
- Lubricate the new rubber seals with a petroleum jelly (vaseline) before installation.
- Torque all bolts over gasket joints, then repeat the torquing sequence to makeup for gasket compression.
- Verifying the accuracy of pump repairs on an authorized test stand is essential.

Identification and Tools Required

Product Number: **26 5 01 - R Z A**

Series _____
26 = Gear Pump
 (SAE "A" Mount)

Features _____
0 = Standard Single Pump
1 = Standard Single W/ Relief
2 = Flow Divider Backplate
3 = Flow Divider W/ Load Sense
4 = Tandem Backplate
5 = Multiple Pumps

Displacement cm³/r [in³ /r] _____
01 = 6.6 [.40] **08** = 22.5 [1.37]
02 = 8.2 [.50] **09** = 24.3 [1.48]
03 = 9.5 [.58] **10** = 25.2 [1.54]
04 = 10.8 [.66] **11** = 27.7 [1.69]
05 = 13.8 [.84] **12** = 29.0 [1.77]
06 = 16.7 [1.02] **13** = 30.6 [1.87]
07 = 19.7 [1.20]

Input Rotation _____
R = Right-hand (clockwise)
L = Left-hand (Counterclockwise)

Catalog / Non-Catalog _____
Z = Cataloged Pump
A-Y = Non-Cataloged Pump

Shafts , Porting Size and Location _____

Side Ports

A = 3/4 in. 11 Tooth, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
C = 3/4 in. Str. Keyed, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
E = 3/4 in. 9 Tooth, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
G = 5/8 in. Str. Keyed, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
J = 5/8 in. 9 Tooth, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
L = 5/8 in. Str. Keyed, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
N = 3/4 in. 11 Tooth, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
R = 3/4 in. Str. Keyed, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure

Rear Ports

B = 3/4 in. 11 Tooth, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
D = 3/4 in. Str. Keyed, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
F = 3/4 in. 9 Tooth, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
H = 5/8 in. Str. Keyed, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
K = 5/8 in. 9 Tooth, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
M = 5/8 in. Str. Keyed, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
P = 3/4 in. 11 Tooth, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
S = 3/4 in. Str. Keyed, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure

B 95 01 31 JB **Serial Number Code:**

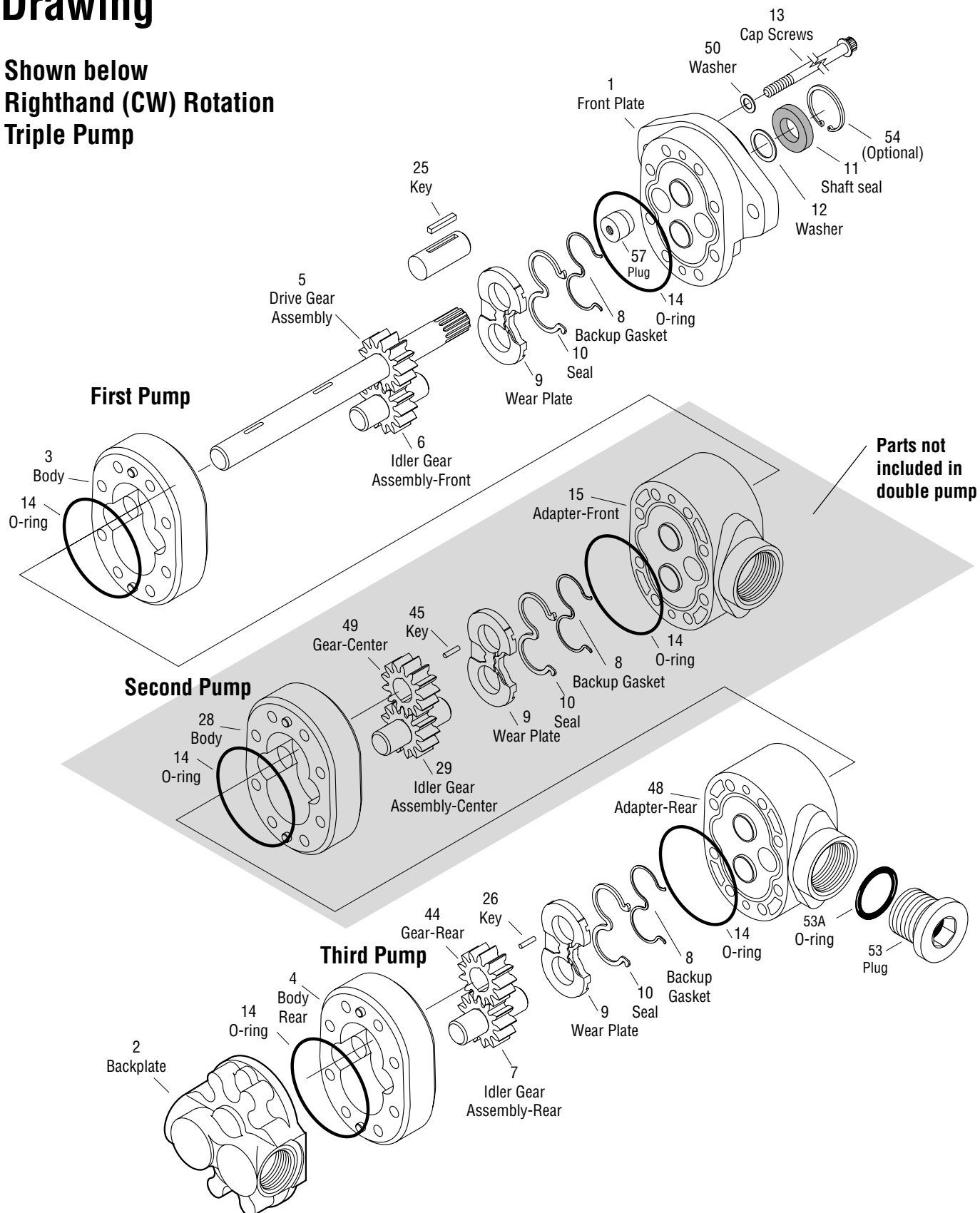
_____ **Testers Initials**
 _____ **Day of Month (two digits)**
 _____ **Month (two digits)**
 _____ **Last two digits of year built.**
 (95 for 1995 etc.)
 _____ **Revision level of parts list.**

Tools Required

- 3/8 in. socket and ratchet wrench
- Internal Retaining Ring Pliers (straight .090 tip)
- O-ring Pick
- Thread 3/8 dia. UNC bolt/screw
- Torque Wrench (135.6 N·m [100 lbf·ft] capacity)
- Hammer (soft face)
- Light Petroleum Jelly
- Seal Driver
- Arbor Press

Parts Drawing

Shown below
Righthand (CW) Rotation
Triple Pump



Disassembly

Repair Information - Model 26000

Work in a clean area; cleanliness is extremely important when repairing hydraulic pumps. Before disconnecting the lines, clean port areas of pump. Disconnect hydraulic lines, removing pump assembly from vehicle and plugging ports. Thoroughly clean the outside of the pump. After cleaning, remove port plugs and drain oil.

Disassembly of a Triple Pump

During disassembly keep all mating part in order and together.

1 Remove *key* from drive shaft if keyed drive gear assembly is used.

2 Put a *location mark* across front plate, bodies, adapters and backplate to assure proper reassembly.



3 Clamp pump in vise, shaft end up. Caution must be used as excessive clamping pressure on pump housing may distort the housing.

4 Remove *cap screws* (eight each) and washer (four each).



5 Remove pump from vise and position pump so that the shaft end is down. Now disassembly will continue from the rear of the pump.

Parts List

Item No.	Description	Qty.
1	Frontplate Assembly	1
2	Backplate	1
3	Body Assembly – Front	1
4	Body Assembly – Rear	1
5	Drive Gear Assembly	1
6	Idler Gear Assembly – Front	1
7	Idler Gear Assembly – Rear	1
~ 8	Backup Gasket	A/R
~ 9	Wear Plate	A/R
~ 10	Seal	A/R
~ 11	Shaft Seal	1
~ 12	Washer	1
13	Cap Screw	8
~ 14	O-ring	A/R
15	Adaptor Plate– Front	1
25	Key for Straight Shaft	1
26	Key – Rear Gear	1
28	Body Assembly – Center	A/R
29	Idler Gear Assembly – Center	A/R
44	Gear – Rear	1
45	Key – Center Gear	A/R
48	Adaptor Plate – Rear	1
49	Gear – Center	A/R
50	Washer	4
53	Plug Assembly	1
~ 53A	O-ring	1
~ 57	Plug	1
~	26000-902	Seal Kit for Double Pump
~	26000-903	Seal Kit for Triple Pump
A/R	– As Required	
~	– Parts contained in seal kits	

6 Start by tapping the backplate with a soft faced hammer to remove from the third pump body. Remove *o-ring* seal from backplate.

7 To disassemble the *relief valve backplate and flow divider backplate* see page 15.

Disassembly

8 To separate the *third pump body* from adapter plate use a soft faced hammer and tap to loosen and then lift straight up.



9 Remove *idler gear assembly* from wear plate and adaptor plate.



10 Remove *drive gear* from input shaft.



11 Remove *wear plate and o-ring seal*, noting position of open or closed side of wear plate.



12 Using a pencil magnet remove the *drive gear key* from the drive shaft.



13 Using a o-ring pick or similar tool and remove the *o-ring seal* from the rear adapter plate.

14 Tap rear *adapter plate* with a soft faced hammer to loosen and remove adapter plate. After removing adapter, turn it over and remove the *second o-ring seal*.



15 Remove *second or middle pump body* from second set of gears.



16 Remove *idler gear assembly* from wear plate and *drive gear* from input shaft.



17 Remove the next (second) *wear plate assembly* from the adapter.

18 Next, use a pencil magnet to remove the *second drive key* from the pump shaft.



19 Remove the *o-ring seal* from the front adapter plate.

20 Tap *front adapter plate* with a soft faced hammer to loosen and remove adapter plate. After removing adapter, turn it over and remove the *second o-ring seal*.



21 Remove *first pump body* from front plate.



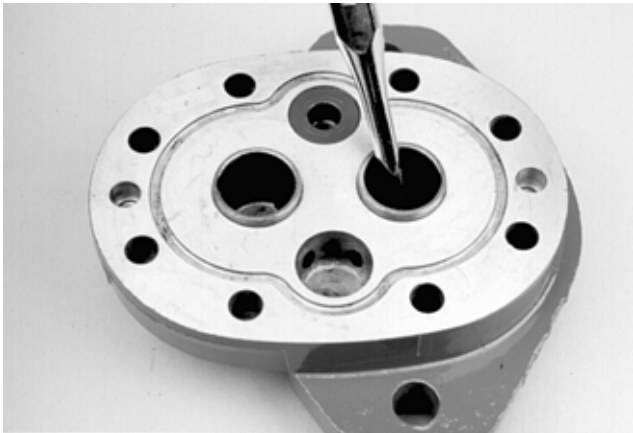
22 Remove *first pump idler gear and input drive gear assembly* along with *wear plate and o-ring seal* from front plate.



23 Remove *back-up gasket and seal* from all wear plates.



24 Using a drift punch or similar tool, remove the *shaft seal* from the front plate. Caution is needed not to damage counter bore of shaft seal area when removing seal.



25 Removing the *plug* in front plate is not necessary, unless you intend to change rotation. See Reversibility - Changing Input Rotation of Pump.

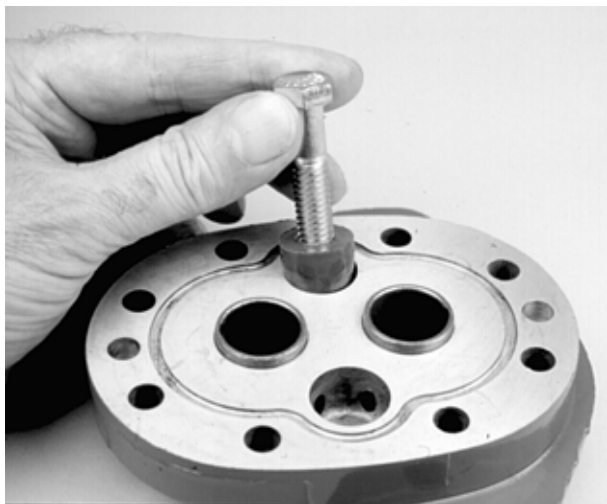
Reversibility

Changing Input Rotation of Pump

1 To change input rotation of a double or triple pump a complete disassembly is required.

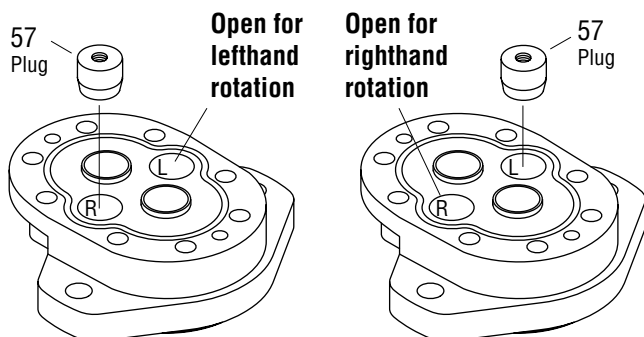
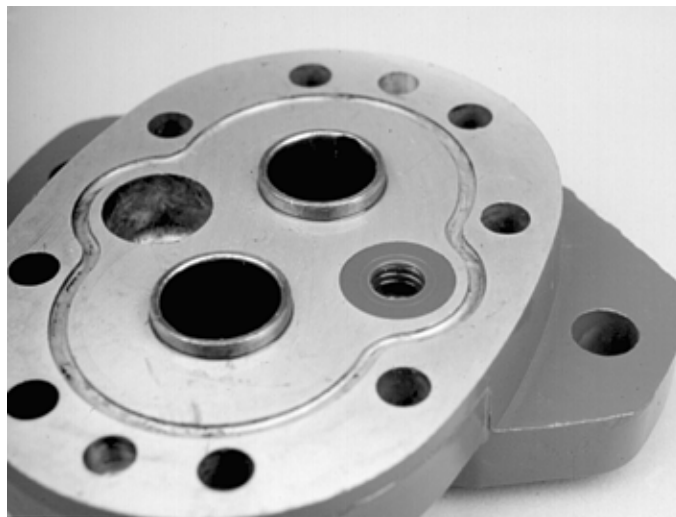
2 Follow the steps below to alter the front plate assembly to the desired rotation required.

- Thread 3/8 UNC threaded bolt into *plug* cavity. Start with fingers, then place bolt head in vise and turn front plate to engage threads 2-3 turns.
- Holding bolt in vise, tap front plate with rubber hammer to disengage *plug*.
- Remove *plug* from bolt.



- Install plug in the other casting cavity and tap flush with rubber hammer. Note L or R at bottom of cavity.

3 After changing plug into proper cavity start the reassembly portion of this booklet.



- Ensure that bearing drain holes are free of debris.

Inspection

Inspect Parts for Wear

General

- 1 Clean and dry all parts.
- 2 Remove all nicks and burrs from all parts with emery cloth.

Gear Assembly Inspection

- 1 Check spline drive shaft for twisted or broken teeth or check keyed drive shaft for broken or chipped keyway.
- 2 Inspect both the drive gear and idler gear shafts at bushing points and seal area for rough surfaces and excessive wear.
- 3 Replace gear assembly if shaft measures less than 19 mm [.748 in] in bushing area. (One gear assembly may be replaced separately; shafts and gears are available as assemblies only.)
- 4 Inspect gear for scoring and excessive wear.
- 5 Replace gear assembly if gear width is below the following dimensions. Refer to chart on this page.
- 6 Assure that snap rings are in grooves on either side of drive and idler gears.
- 7 If edge of gear teeth are sharp, break edge with emery cloth or stone.

Front plate and Backplate Inspection

- 1 Oil groove in bushings in front plate should be in line with dowel pin holes and 180° apart. The oil grooves in the backplate bushings should be at approximately 37° to the pressure side.
- 2 Replace the backplate, adapter plate or front plate if I.D. of bushings exceed 19,2 mm [.755 in] (Bushings are not available as separate items).
- 3 Bushings in front plate should be at 3,20 mm [.126 in] above surface of front plate.
- 4 Bushings in adapter plate on the wear plate side should be at 3,20 mm [.126 in] above surface of adapter.
- 5 Check for scoring on face of backplate or backplate side of adapter plate. Replace if wear exceeds ,038 mm [.0015 in].

Body Inspection

- 1 Check body inside gear pockets for excessive scoring or wear.
- 2 Replace body if I.D. of gear pockets exceeds 43,7 mm [1.719 in].

Minimum Gear Width per Displacement

Model Number	26001	26002	26003	26004	26005	26006	26007	26008	26009	26010	26011	26012	26013
Pump Disp. cm ³ /r [in ³ /r]	6,6 [.40]	8,2 [.50]	9,5 [.58]	10,8 [.66]	13,8 [.84]	16,7 [1.02]	19,7 [1.20]	22,5 [1.37]	24,3 [1.48]	25,2 [1.54]	27,7 [1.69]	29,0 [1.77]	30,6 [1.87]
Gear Width mm [in]	7,85 [.309]	9,75 [.384]	11,20 [.441]	12,95 [.510]	16,15 [.636]	19,35 [.762]	22,56 [.888]	25,76 [1.014]	28,12 [1.107]	28,96 [1.140]	32,16 [1.266]	33,78 [1.330]	35,36 [1.392]

Reassembly

General Information

It is important that the relationship of the backplate, bodies, adapters, wear plates, and front plate is correct. You will note two half moon cavities in the body. The smaller half moon port cavity must be on the pressure side of the pump. The side of wear plate with midsection cut out must be on suction side of pump. Suction side of backplate or adapter is always side with larger port boss.

Reassembly

1 During the reassembly, replace and lubricate all of the *wear plates, seals, back-up gaskets, shaft seal and o-rings* as new parts. Lubricate all finished parts and/or assembly surfaces freely with clean hydraulic fluid during assembly.

2 Install *o-ring* in groove of front plate.



3 Apply a thin coat of petroleum jelly or hydraulic oil to both milled gear pockets of body. Slip body onto front plate with half moon port cavities in body facing away from front plate. Check and align the previously scribed line on the exterior of pump unless input rotation was changed.

Note: If rotation was changed, make sure the small half moon port cavity is on the pressure side (the plugged side of the front plate) of the pump.



4 Install new *seal* and new *backup gasket* into all wear plates. Note in the middle of the backup gasket a flat section or support. This area must face away from the wear plate inside the seal.



5 Place the first new *wear plate, seal, and backup gasket* into gear pocket with seal and backup gasket next to front plate. The side of the wear plate with the mid section cut-away must be on the suction side of pump.



6 Dip *gear assemblies* into oil and slip first shaft assemblies into front plate bushings and gears into body pockets.



Reassembly

7 Install new *o-ring* in groove of adapter plate (side with bushings below surface).



8 Align the scribed lines of the first body and front adapter, install adapter plate onto the drive shaft and body.



9 Lubricate and install second o-ring onto adapter.

10 Install the drive key into the key slot using some petroleum jelly to help hold it in place.



11 Aligning the previously scribed line of body and adapter, install the second pump body onto the adapter plate.



12 Lubricate and install the second wear plate assembly into the pump body. Caution is required to not dislodge the seals during installation. Remember sealing side of the wear plate is toward the adapter plate with the cut side of the wear plate facing the suction side or large cavity location of pump body.



13 Lubricate and install the second drive gear onto the shaft and into the pump body aligning key with slot in gear.

14 Lubricate and install the second idler gear assembly into body and adapter.



- 15** Lubricate and install the *new o-ring seal* onto the rear adapter plate.



- 16** Aligning the two previously scribed lines on the body and rear adapter, install *rear adapter* onto pump body. Lubricate and install the *new o-ring seal* onto the other side of rear adapter plate.

- 17** Install the *third drive key* into the key slot using petroleum jelly to help hold it in place.



- 18** Aligning the previously scribed line of body and adapter, install the *third pump body* onto the rear adapter plate.

- 19** Lubricate and install the third wear plate assembly into the pump body. Caution is required to not dislodge the seals during installation. Remember sealing side of the wear plate is toward the adapter plate with the cut side of the wear plate facing the suction side or large cavity location of pump body.



- 20** Lubricate and install the *third drive gear* onto the shaft and into the pump body aligning key with slot in gear.

- 21** Lubricate and install the *third idler gear assembly* into body and adapter.



- 22** Install the *new o-ring seal* in groove of backplate.

- 23** Check scribe line, make sure port orientation is correct and then slide *backplate* over gear shafts until dowel pins are engaged.



- 24** Secure with *cap screws* and new *washers*. Tighten cap screws evenly in a crisscross pattern 34 to 38 N•m [25 to 28 lbf•ft] torque.



25 Place washer over drive shaft into housing. Liberally oil shaft seal and install over drive shaft, carefully so that rubber sealing lips are not cut.



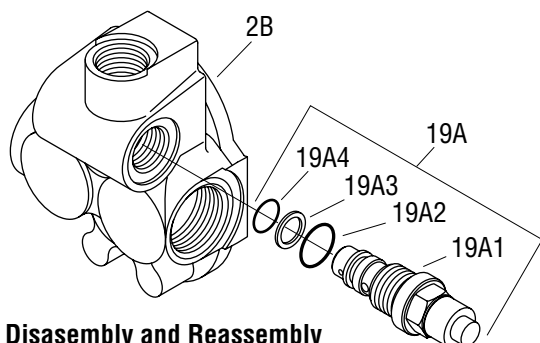
26 Place 1-5/16 in. O.D. sleeve over shaft and press in shaft seal until its below the surface of the front plate 6.1mm [.24 in]. Install retaining ring if required optional feature is used.

27 Install key on keyed shaft.

Note: Refer to Start-up Procedure and Trouble Shooting Procedure.

Specific Backplate Parts List

Relief Valve Backplate

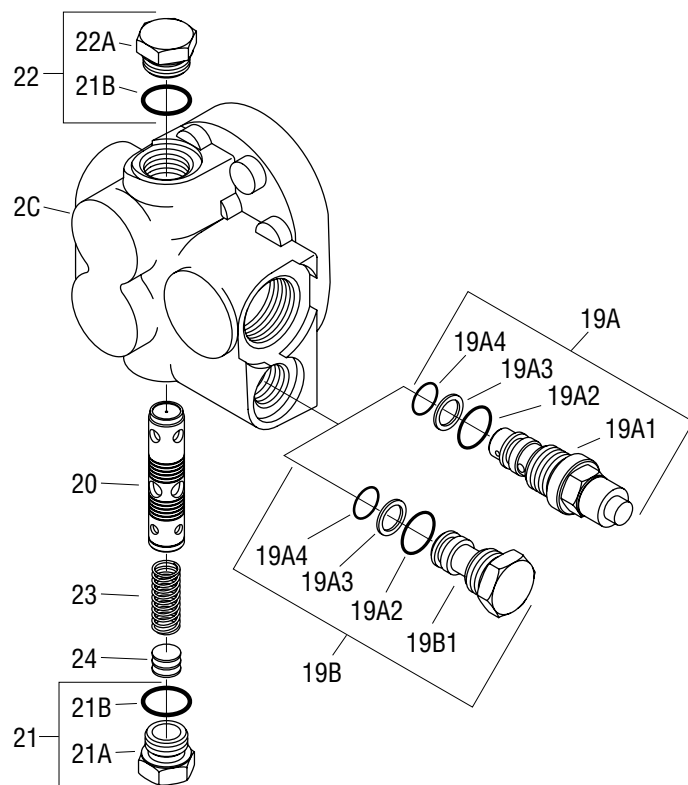


Disassembly and Reassembly

- 1 After removing *relief valve*, remove and replace o-rings and backup ring with new parts.
- 2 Install *relief valve* and torque 41 to 46 N•m [30 to 34 lbf•ft]

Item No.	Description	Qty.
2	Relief Valve Backplate	1
18	O-ring	3
19A	Relief Valve Assembly	1
19A1	Relief Valve	1
~ 19A2	O-ring	1
~ 19A3	Backup Ring	1
~ 19A4	O-ring	1
19B	Plug Assembly	1
19B1	Plug	1

Flow Divider Backplate



Disassembly and Reassembly

- 1 After removing *relief valve or plug*, remove and replace o-ring and backup ring with new parts.
- 2 Install *relief valve or plug* and torque 41 to 46 N•m [30 to 34 lbf•ft]

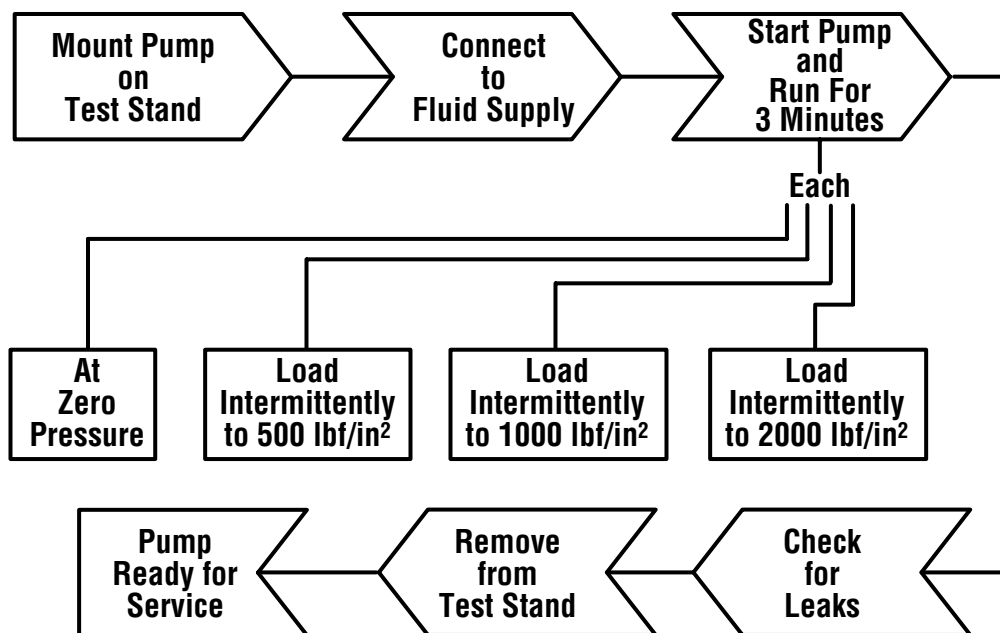
Item No.	Description	Qty.
2C	Flow Divider Backplate	1
19A	Relief Valve Assembly	1
19A1	Relief Valve	1
~ 19A2	O-ring	1
~ 19A3	Backup Ring	1
~ 19A4	O-ring	1
19B	Plug Assembly	1
19B1	Plug	1
20	Flow Divider Spool	1
21	Plug/O-ring Assembly	1
21A	Plug	1
~ 21B	O-ring	2
22	Plug/O-ring Assembly	1
22A	Plug	1
23	Spring	1
24	Shim (.0239 inch thick)	A/R
A/R	— As Required	

- 3 Remove flow divider *plugs, shims, spring, and spool* from backplate. (Notice orientation of spool with cavity in backplate)

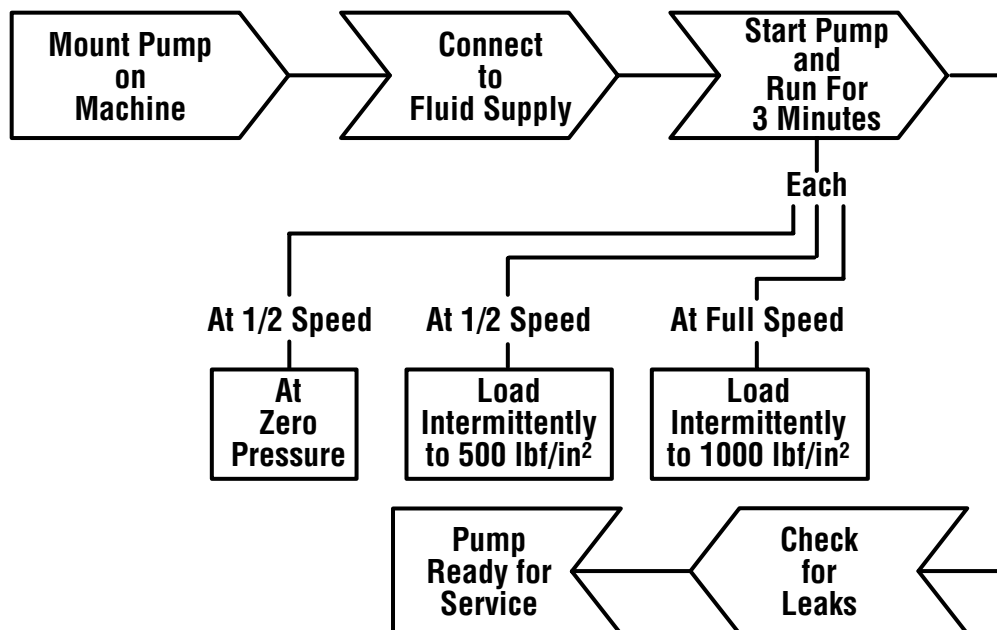
- 4 Install new plug *seals* on plugs. Install *spool, spring, shims, and plug assemblies* into backplate. Torque plugs 29 to 33 N•m [21 to 24 lbf•ft]

Placing Series 26 Gear Pump Back into Operation

When test stand is *available*.



When test stand is *not available*.



Trouble Shooting

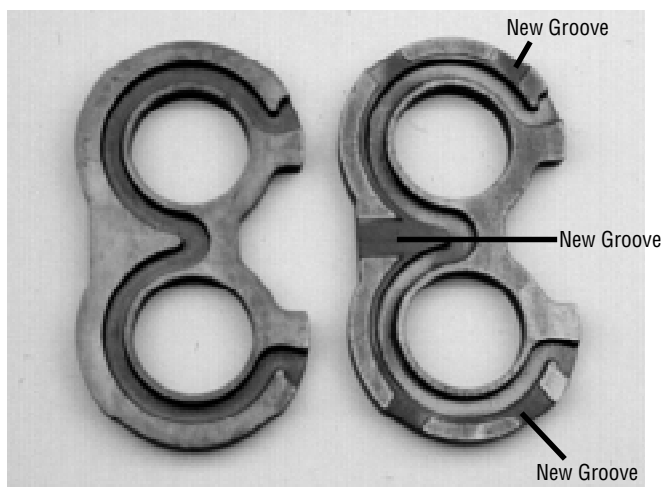
Problem	Possible Cause	Correction
Cavitation	a. Oil too heavy. b. Oil filter plugged. c. Suction line plugged or too small.	a. Change to proper viscosity b. Clean filter. c. Clean line and check size of line.
Oil heating	a. Oil supply low. b. Contaminated oil. c. Setting of relief valve too high or too low. d. Oil in system too light.	a. Fill reservoir. b. Drain reservoir and refill with clean oil. c. Set to correct pressure. d. Drain reservoir and refill with proper viscosity oil.
Shaft seal leakage	a. Worn shaft seal. b. Worn shaft in seal area. c. Debris in shaft seal suction side drain holes.	a. Replace shaft seal. b. Replace drive assembly. c. Disassemble pump and inspect.
Foaming oil	a. Low oil level b. Air leaking into suction line c. Wrong kind of oil.	a. Fill reservoir. b. Tighten fittings. c. Drain and fill reservoir with non-foaming oil.

Note

Wear Plate Identification

A product improvement has been made to the Model 26000 gear pump with a new designed wear plate. To identify the new wear plate, look for grooves placed in the seal side of the wear plate as shown below.

OLD
Wear Plate



NEW
Wear Plate

This new wear plate enables better pressure clamping with aerated oil in pumps 1.37 cubic inch or smaller. Aerated oil may occur during a cold start-up in applications with long suction lines or when the mouth of the inlet line is temporarily exposed to air.

Note

**Order parts from 6-635 Parts Information booklet.
Each order must include the following information.**

1. Product and/or Part Number
2. Serial Number Code
3. Part Name
4. Quantity

Eaton Corporation
Hydraulics Division
15151 Hwy. 5
Eden Prairie, MN 55344
Telephone 612/937-9800
Fax 612/937-7130

Eaton Ltd.
Hydraulics Division
Glenrothes, Fife
Scotland, KY7 4NW
Telephone 01-592-771-771
Fax 01-592-773-184

Eaton GmbH
Hydraulics Products
Am Schimmersfeld 7
40880 Ratingen, Germany
Telephone 02102-406-830
Fax 02102-406-800



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Products in this catalog are manufactured
in an ISO-9001-certified site.