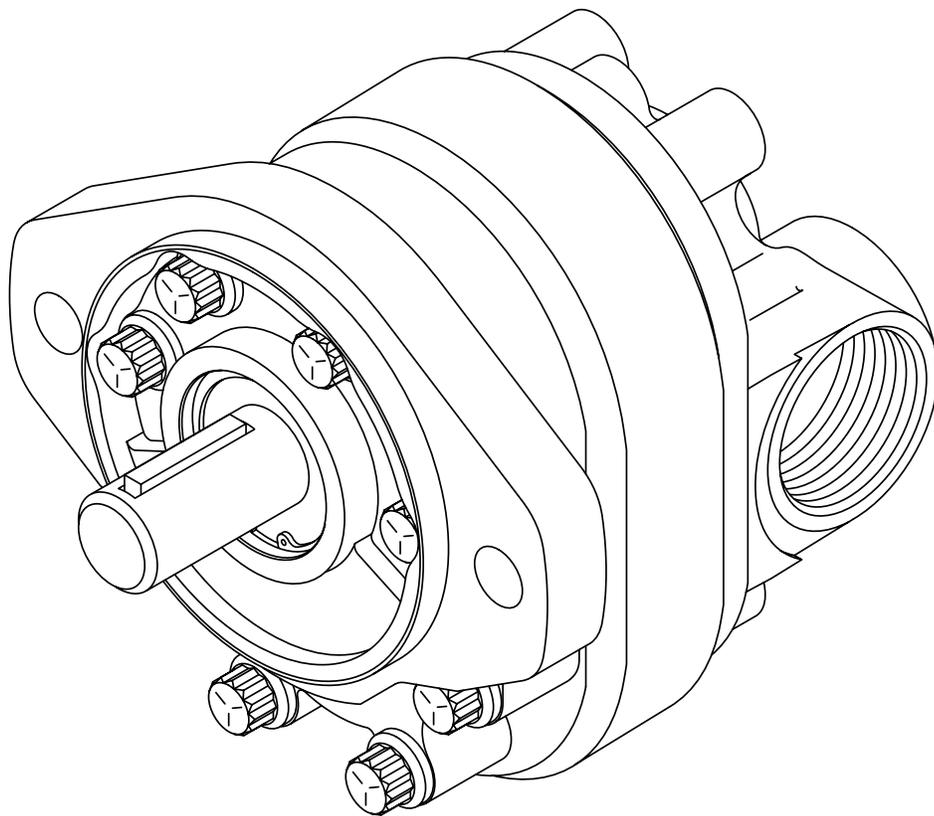




## Repair Information



**Series 26**  
**Model 26000 Single Gear Pumps**

# Introduction

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## Introduction

This manual provides service information for the Eaton model 26000 single 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 6-634.
- 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 0 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 cm<sup>3</sup>/r [ in<sup>3</sup> /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** \_\_\_\_\_

**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.

**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**

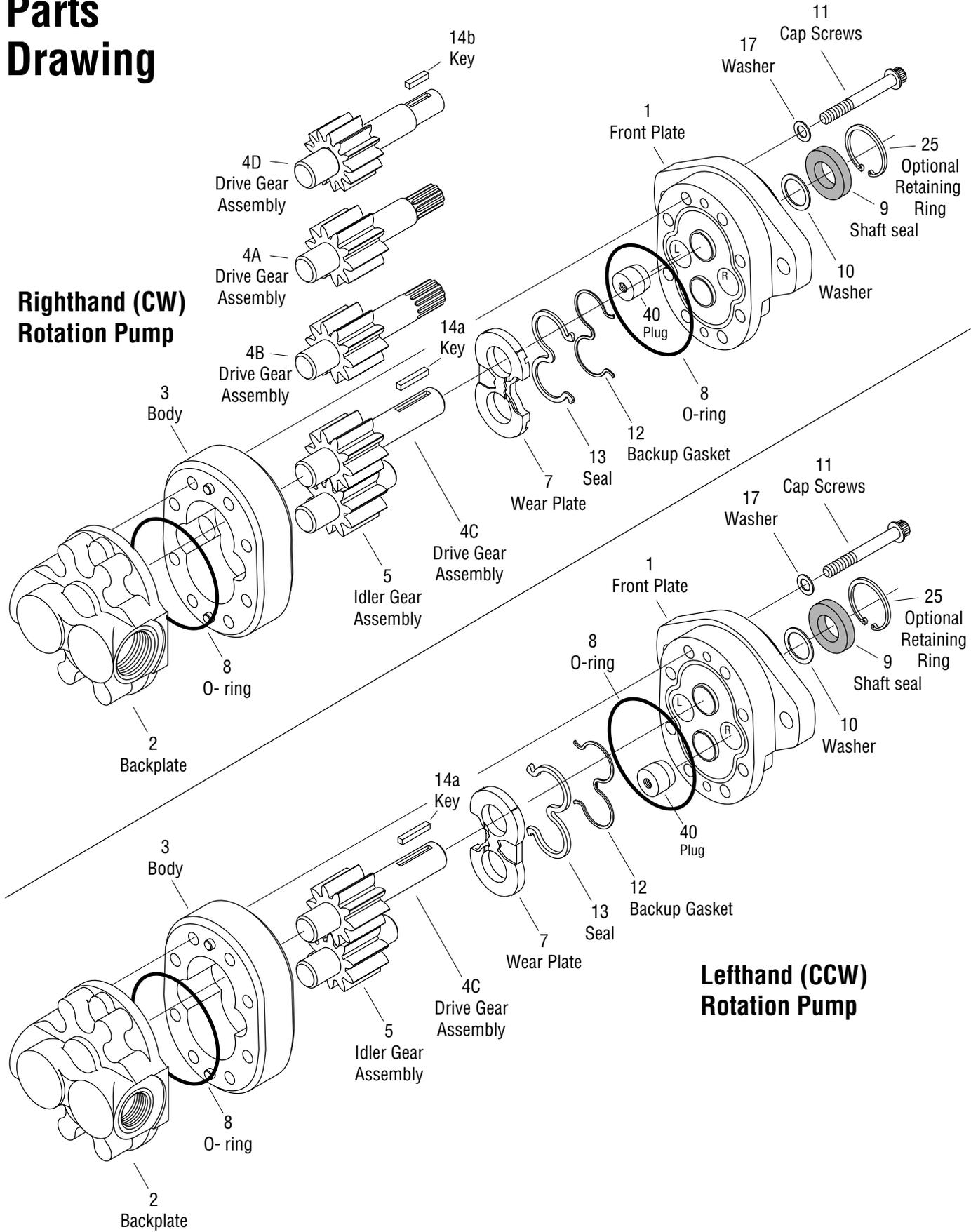
- B = 3/4 in. 11 Tooth, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
- D = 3/4 in. Str. Keyed, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
- F = 3/4 in. 9 Tooth, 1 5/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
- H = 5/8 in. Str. Keyed, 1 1/16-12 UN-2B Suction, 7/8-14 UNF-2B Pressure
- K = 5/8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

## 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

## Righthand (CW) Rotation Pump



## Lefthand (CCW) Rotation 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 area of pump. Disconnect hydraulic lines, removing pump assembly from vehicle and plugging ports. Thoroughly clean the outside of pump. After cleaning, remove port plugs and drain oil.

### Disassembly

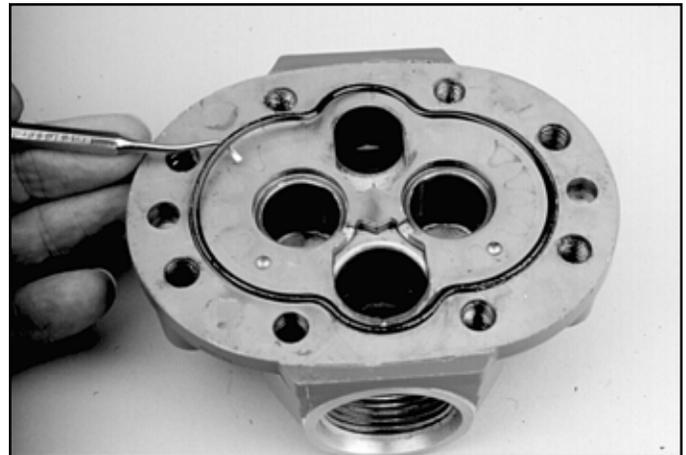
- 1 Remove *key* from drive shaft if keyed drive gear assembly is used.
- 2 Put a *location mark* across front plate, body and backplate to assure proper reassembly.
- 3 Clamp pump in vise, shaft end up.
- 4 Remove *cap screws* (eight each) and washer (four each).
- 5 Remove pump from vise, hold pump in hands and tap shaft with plastic hammer or rawhide mallet to separate front plate from backplate. Body will remain with either front plate or backplate.



### Parts List

Item No.	Description	Qty.
1	Front plate Assembly	1
2	Backplate	1
3	Body Assembly	1
4	Drive Gear Assembly	1
5	Idler Gear Assembly	1
~ 7	Wear Plate	1
~ 8	O-ring	2
~ 9	Shaft Seal	1
~ 10	Washer	1
11	Cap Screw	8
~ 12	Backup Gasket	1
~ 13	Seal	1
14	Key for Straight Shaft	1
~ 17	Washer	4
25	Retaining Ring (optional)	1
40	Plug	1
~ Seal Kit	26000-901 for Single Pumps	

- 6 Remove *o-ring* seal from backplate.

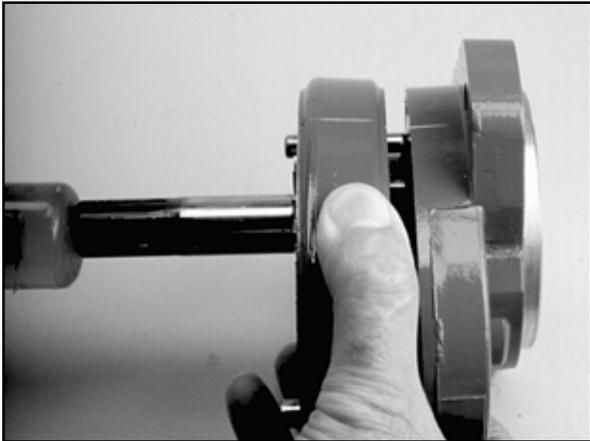


- 7 To disassemble the *relief valve backplate, flow divider backplate, and tandem flow divider backplate* see page 11 & 12.

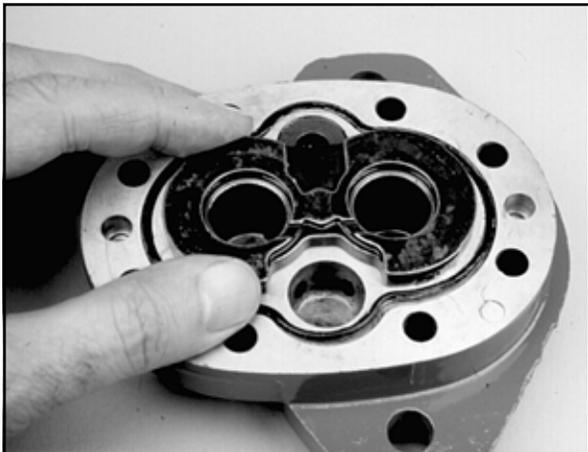
# Disassembly

8 Remove *idler gear assembly* from body.

9 To separate *body* from the plate it remained with, place *drive gear assembly* in gear pocket and tap protruding end with plastic hammer or rawhide mallet. Remove drive gear assembly.



10 Remove wear plate and o-ring seal, noting position of open side of wear plate.



11 Remove *back-up gasket and seal* from wear plate by extracting with a o-ring tool.



12 Remove snap ring (if applicable) from the front of the front plate shaft seal area.

13 Remove *shaft seal* and *washer* from front plate with a blunt punch from the back side.



14 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** Place pump in a protected jaw vise with shaft end up. Remove the eight cap screws.

**2** Remove front plate, noting orientation of drive shaft through bearing in reference to the backplate.

**3** Notice the location of the open side of wear plate and remove wear plate.

**4** Switch *drive gear and idler gear* within gear pockets. Do not flip idler gear end for end.

Note: Gear housing body and backplate do not need altering.

**5** Re-install wear plate into gear pockets over the gears with seal and backup gasket up. (Same orientation as removed)

**6** Front plate disassembly and assembly:

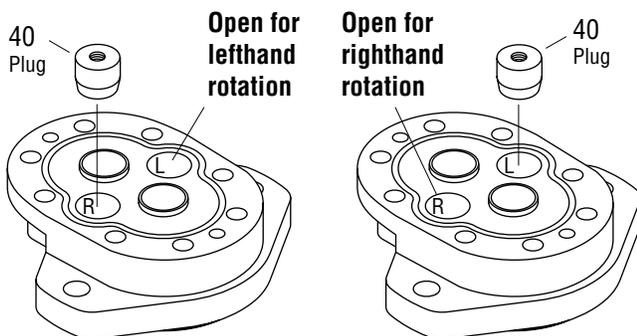
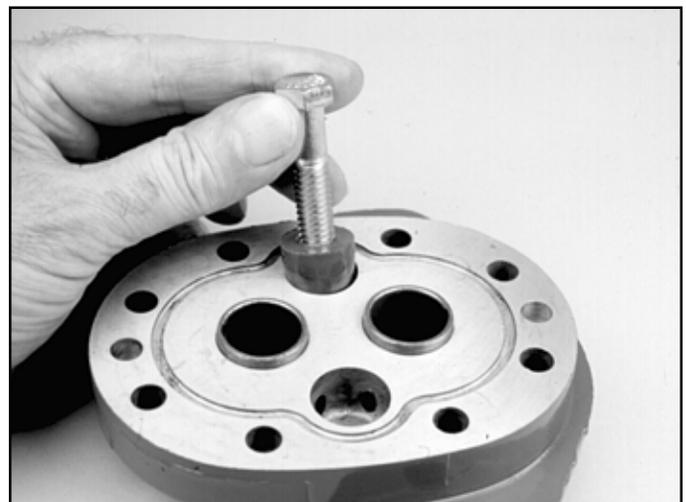
- Thread 3/8 UNC threaded bolt into *plug cavity*. Start with fingers, then place bolt head in vise and turn front plate to engage threads 2-3 turns.
- Holding bolt in vise, tap front plate with rubber hammer to disengage *plug*.
- Remove *plug* from bolt.
- Install plug in the other casting cavity and tap flush with rubber hammer. Note L or R at bottom of cavity.

**7** Hold o-ring in groove of front plate with petroleum jelly. Reassemble front plate over drive shaft end, being careful not to damage shaft seal.

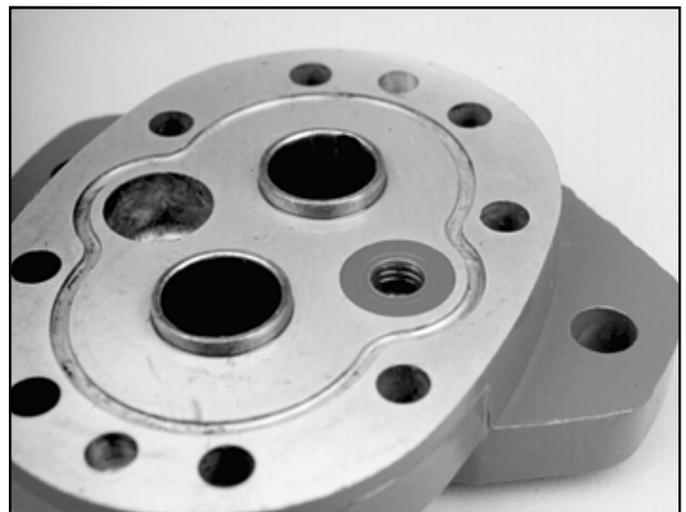
**8** Torque 8 cap screws 34 to 38 N•m [25 to 28 lbf•ft].

**9** Lubricate gears and mating surfaces with hydraulic oil through ports.

**10** Rotate shaft (manually) to ensure proper assembly of components.



- Ensure that bearing drain holes are free of debris.
- Note proper placement of o-ring in groove of front plate.



# 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.

## 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 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 Check for scoring on face of backplate. 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].

Model Number	26001	26002	26003	26004	26005	26006	26007	26008	26009	26010	26011	26012	26013
Pump Disp. cm <sup>3</sup> /r [in <sup>3</sup> /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, body, wear plate and front plate is correct. You will note two half moon cavities in the body. Note: 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 is always side with larger port boss.

## Reassembly

- 1 During the reassembly replace the *wear plate, seal, back-up gasket, shaft seal and o-rings* as new parts.
- 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.

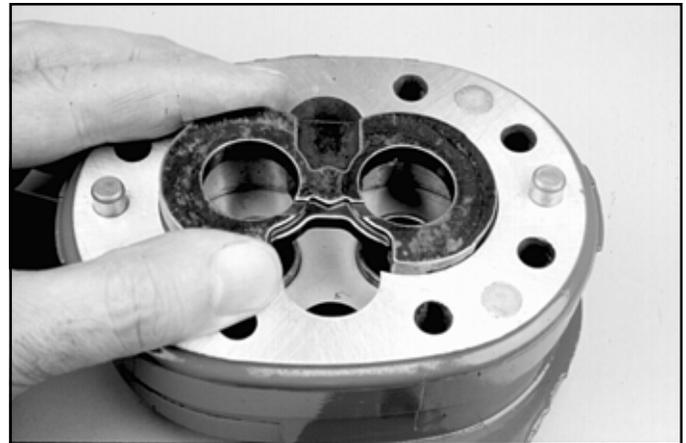
Note: The small half moon port cavity must be on the pressure side (the plugged side of the front plate) of pump.



- 4 Install new *seal* and new *backup gasket* into wear plate. 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 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.

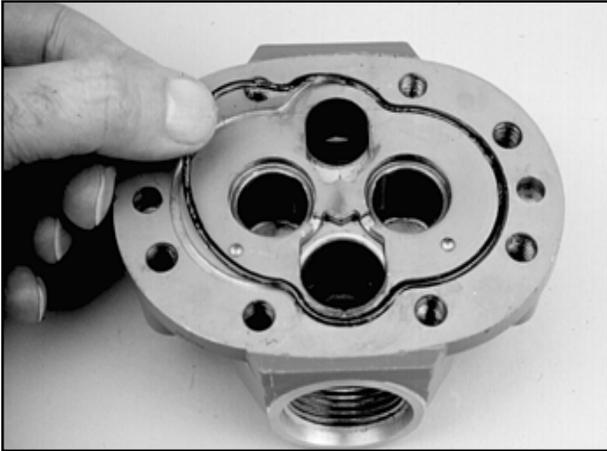


- 6 Dip *gear assemblies* into oil and slip into front plate bushings and gears into pockets of body.



# Reassembly

7 Install new *o-ring* in groove of backplate.



8 Make sure port orientation is correct and then slide *backplate* over gear shafts until dowel pins are engaged.

9 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.

10 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.



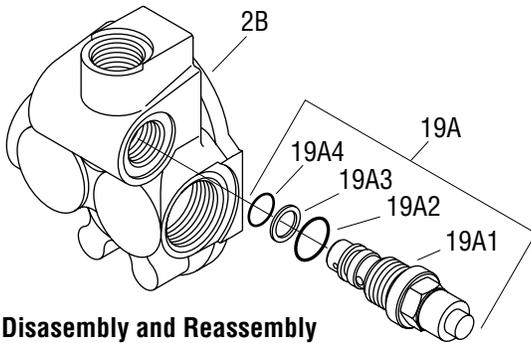
11 Place 1-5/16 in. O.D. sleeve over shaft and press in shaft seal until flush with front surface of front plate.

13 Install key on keyed shaft.

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

# Specific Backplate Parts List

## Relief Valve Backplate

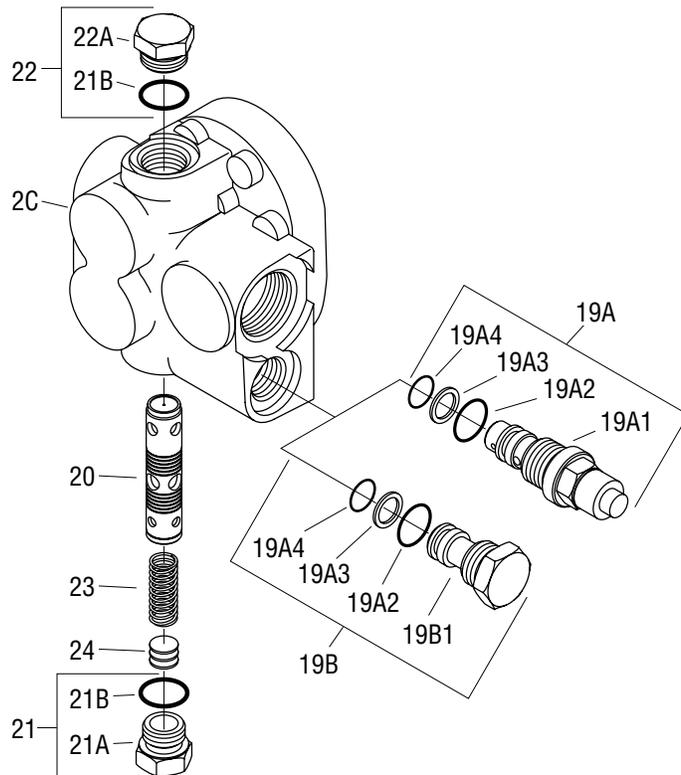


### Disassembly and Reassembly

- 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

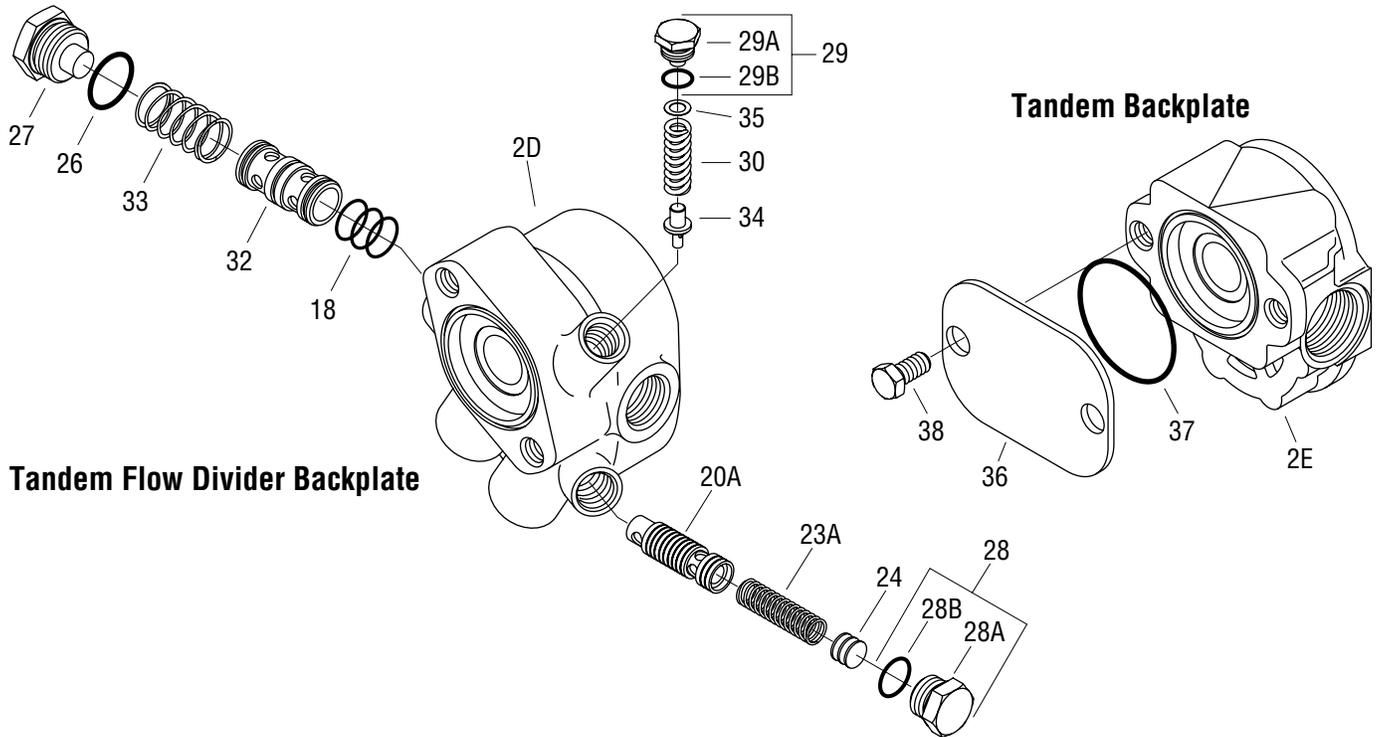


### Disassembly and Reassembly

- 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]
- 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]

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	

# Specific Backplate Parts List



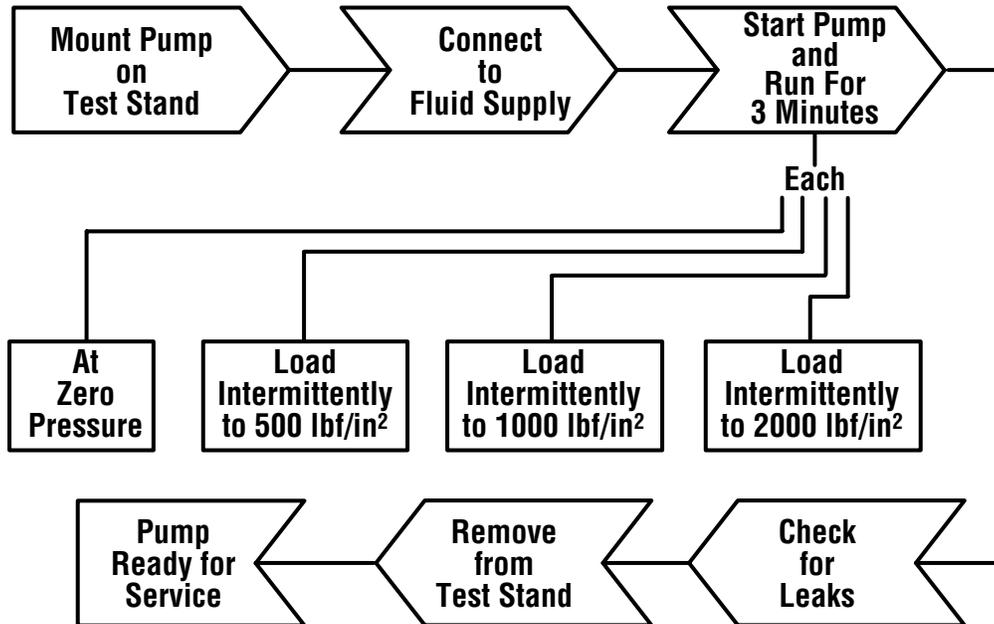
## Disassembly and Reassembly

- 1** Remove *relief valve plug, shim, spring, and poppet* from backplate. Do not remove internal relief valve seat. Seat is loctited to a predetermined depth. Remove o-ring from plug and replace with new o-ring.
- 2** Install *poppet, spring, shim, and relief valve plug* and torque 14 to 16 N•m [10 to 12 lbf•ft]
- 3** Remove flow divider *plugs, shims, springs, spool, and sleeve* from backplate. (Notice orientation of spool with cavity in backplate) Remove *o-rings* from sleeve and replace with new *o-rings*.
- 4** Install *sleeve, spool, springs, shims, and plug assemblies* into backplate. Torque plug #27 48 to 54 N•m [35 to 40 lbf•ft] and plug #28 29 to 33 N•m [21 to 24 lbf•ft]

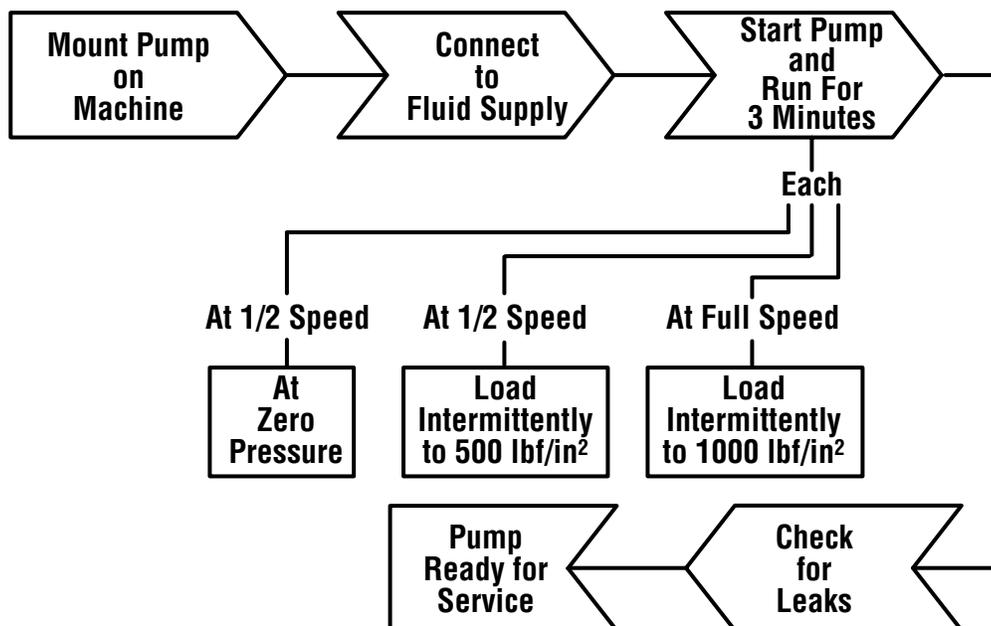
Item No.	Description	Qty.
2D	Tandem Flow Divider Backplate	1
2E	Tandem Backplate	1
18	O-ring	3
20A	Spool for Tandem Flow Divider Backplate	
23A	Spring for Tandem Flow Divider Backplate	1
24	Shim (.0239 inch thick)	A/R
~ 26	O-ring	1
27	Plug	1
28	Plug/O-ring Assembly	1
28A	Plug	1
~ 28B	O-ring	2
29	Plug/O-ring Assembly	1
29A	Plug	1
~ 29B	O-ring	1
30	Relief Valve Spring	1
32	Sleeve	1
33	Spring	1
34	Poppet	1
35	Shim Washer (.010 inch thick)	A/R
36	Tandem Cover Plate	1
37	O-ring	1
38	Cap Screw	2
A/R	- As Required	

# Placing Series 26 Gear Pump Back into Operation

When test stand is *available*.



When test stand is *not available*.



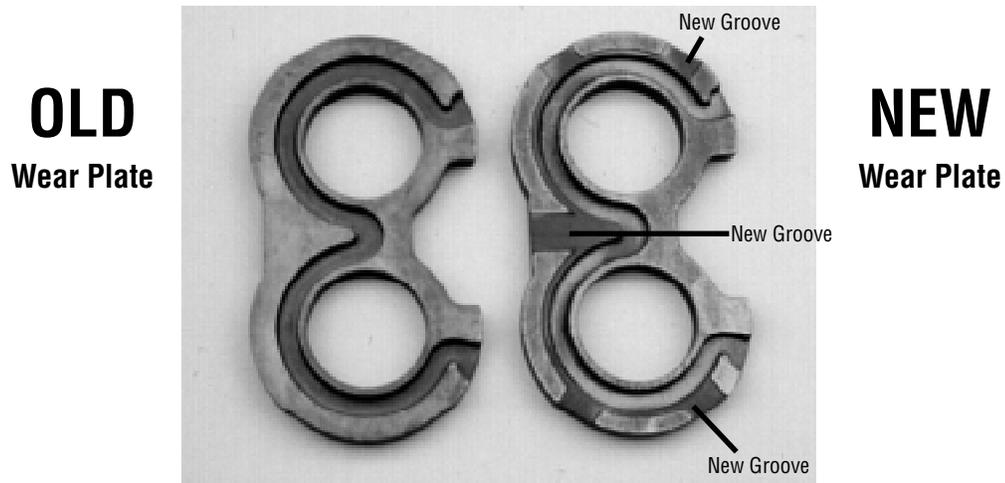
# Trouble Shooting

<b>Problem</b>	<b>Possible Cause</b>	<b>Correction</b>
Cavitation	<ul style="list-style-type: none"> <li>a. Oil too heavy.</li> <li>b. Oil filter plugged.</li> <li>c. Suction line plugged or too small.</li> </ul>	<ul style="list-style-type: none"> <li>a. Change to proper viscosity</li> <li>b. Clean filter.</li> <li>c. Clean line and check size of line.</li> </ul>
Oil heating	<ul style="list-style-type: none"> <li>a. Oil supply low.</li> <li>b. Contaminated oil.</li> <li>c. Setting of relief valve too high or too low.</li> <li>d. Oil in system too light.</li> </ul>	<ul style="list-style-type: none"> <li>a. Fill reservoir.</li> <li>b. Drain reservoir and refill with clean oil.</li> <li>c. Set to correct pressure.</li> <li>d. Drain reservoir and refill with proper viscosity oil.</li> </ul>
Shaft seal leakage	<ul style="list-style-type: none"> <li>a. Worn shaft seal.</li> <li>b. Worn shaft in seal area.</li> <li>c. Debris in shaft seal suction side drain holes.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace shaft seal.</li> <li>b. Replace drive assembly.</li> <li>c. Disassemble pump and inspect.</li> </ul>
Foaming oil	<ul style="list-style-type: none"> <li>a. Low oil level</li> <li>b. Air leaking into suction line</li> <li>c. Wrong kind of oil.</li> </ul>	<ul style="list-style-type: none"> <li>a. Fill reservoir.</li> <li>b. Tighten fittings.</li> <li>c. Drain and fill reservoir with non-foaming oil.</li> </ul>

# 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.



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.

**Order parts from 6-634 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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