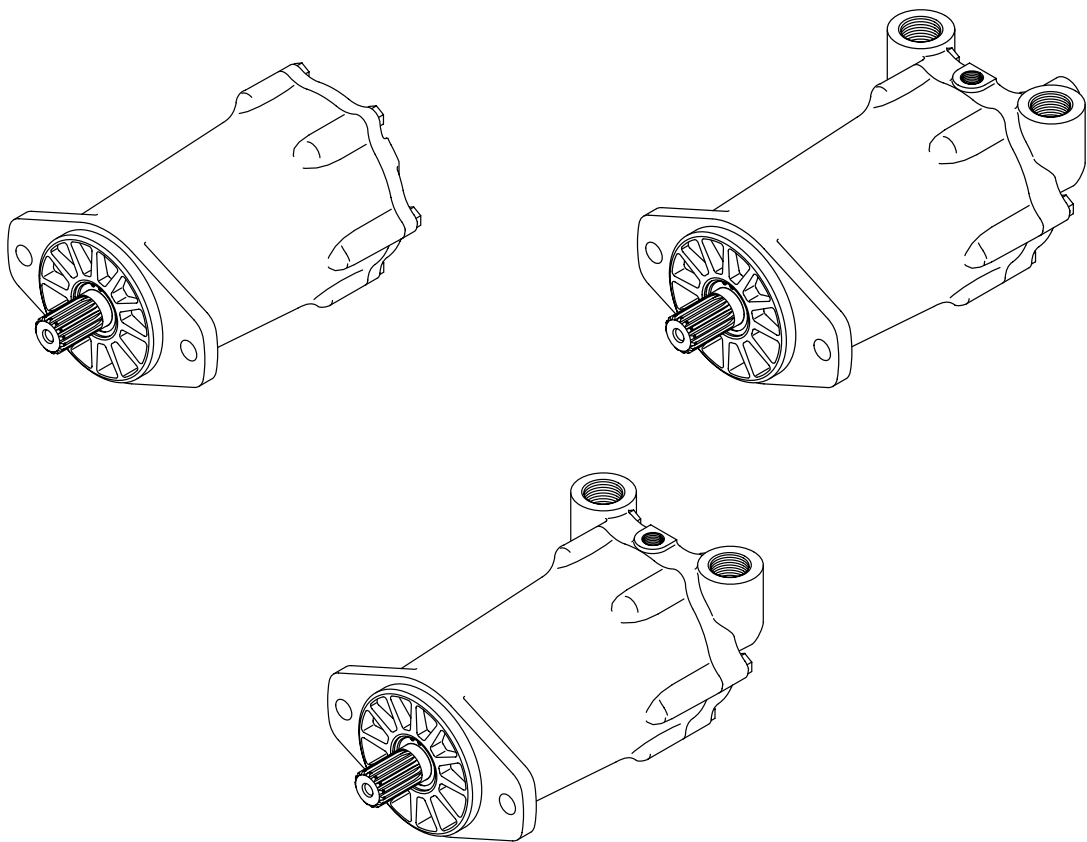


Eaton®  
Medium Duty Piston Pump

No. 07-134  
May 1999



Repair Information



Model 74624 and 74644,  
82,6 cm<sup>3</sup>/r [5.04 in<sup>3</sup>/r] Displacement

design code **B**

# Introduction

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## Introduction

This manual provides service information for the Eaton Models 74624 and 74644 fixed displacement motor. Step by step instructions for the complete disassembly, inspection, and reassembly of the motor are given. The following recommendations should be followed to insure successful repairs.

- Remove the motor from the application.
- Cleanliness is extremely important.
- Clean the port areas thoroughly before disconnecting the hydraulic lines.
- Plug the motor ports and cover the open hydraulic lines immediately after they're disconnected.
- Drain the oil and clean the exterior of the motor 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 motor.
- For replacement parts and ordering information refer to parts list 06-161.
- 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 motor repairs on an authorized test stand is essential.

# Identification and Tools Required

## Identification Numbers

Stamped on each unit.

A - Product Number Description

74624 = Fixed Motor 82,6 cm<sup>3</sup>/r [5.04 in<sup>3</sup>/r]

74644 = Fixed Motor thru Shaft for Brake Mount 82,6 cm<sup>3</sup>/r [5.04 in<sup>3</sup>/r]

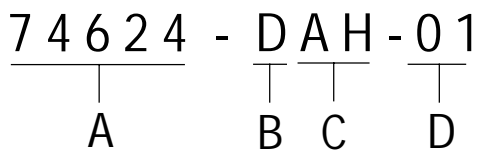
B - Rotation,

D = Dual

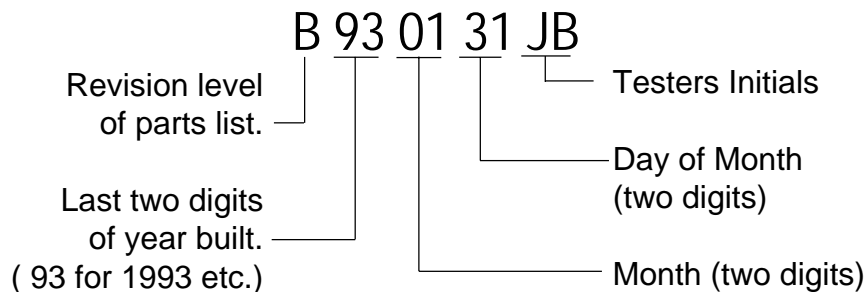
C - Sequential Letters

D - Design Code Number

## Single Motor - Product Number



## Serial Number Code:



## Required Tools

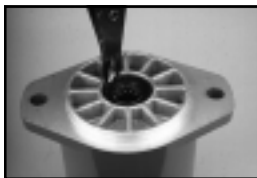
- 1/2 in. Socket, w/ Ratchet Wrench
- External Retaining Ring Pliers (straight .090 tip)
- Internal Retaining Ring Pliers (straight .090 tip)
- O-ring Pick
- Torque Wrench (54 N·m [40 lbf·ft] capacity)
- Hammer (soft face)
- Light Petroleum Jelly
- Seal Driver

# Disassembly

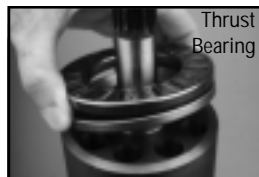
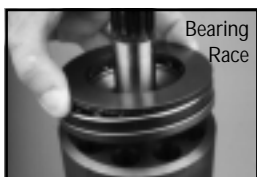
## Disassembly

The following repair procedures are used to disassemble the Eaton model 74624 high torque axial piston motors.

- 1 Position the motor with the output shaft down. Remove the six cap screws retaining the backplate.
- 2 With the cap screws removed, retain the motor assembly together by hand and carefully turn the motor over so that the output shaft is in the up position. Next, carefully remove the housing assembly.
- 3 After removing the housing, use the retaining ring pliers to remove the output shaft seal retaining ring.



- 4 Use a screwdriver or similar tool to pry the shaft seal from its bore.
  - 5 Returning to the main assembly, remove the bearing race from the thrust bearing.
- Note: This bearing race may have remained stuck inside the motor housing assembly. If so, remove at this time.
- 6 Remove the thrust bearing, piston race assembly, pivot and spacer from the output shaft.

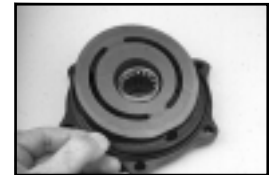


- 7 Retaining the piston block and backplate, carefully turn the assemblies over so that the backplate is in the up position.

Note: When rotating the piston block, make sure to retain the 9 loose pistons in the block assembly.



- 8 Turn the backplate assembly over and remove the drive shaft thrust race.



- 9 Remove the sealing o-ring from the backplate.
- 10 Remove the thrust bearing and race from the drive shaft.



Note: The thrust bearing and race may have remained in the backplate assembly.

- 11 Remove the connector plate from the piston assemblies.



- 12 Remove the piston assemblies and spider from the drive shaft assembly.

- 13 Remove the spider pilot from the pivot.



- 14 Remove the pivot from the spring.

- 15 Remove the spring from the drive shaft.



- 16 Remove the drive shaft from the piston block.

- 17 Remove the nine pistons from the block.



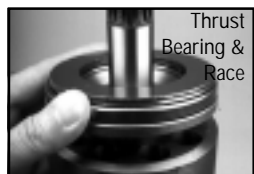
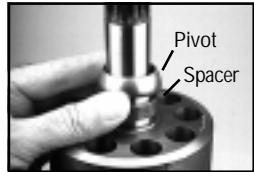
# Reassembly

## Reassembly

Before reassembly the Eaton Model 74624 high torque axial piston motor inspect all parts and replace if needed. New seals should be lubricated with petroleum jelly to assure proper installation.

Lubricate all finished part surfaces freely with clean hydraulic fluid to provide start-up lubrication between the rotating parts.

- 1 Looking at the piston block one end has a beveled edge around the shaft bore as shown.
- 2 Install the drive shaft into the piston block at the beveled edge end. Note that the retaining ring on the drive shaft must be on the beveled side of the piston block.
- 3 Using the backplate as a means of support, place the drive shaft and piston block on the backplate with the spline end of the drive shaft in the up position.
- 4 Install the spacer and pivot on the drive shaft.
- 5 Place the piston race assembly over the drive shaft and onto pivot.
- 6 Place thrust bearing and race onto piston race assembly.

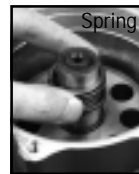


- 7 Install the motor housing assembly over the drive shaft.

- 8 Carefully retaining the assemblies together, turn the motor housing over and support it in the drive shaft down position. Remove the backplate assembly. Install the nine pistons into the piston block. Insert the beveled end of the pistons into block and against the piston race assembly. Caution: Do not install more than one piston in the same bore.



- 9 Place the spring over the drive shaft and pivot onto the spring.
- 10 Lubricate and place spider pilot onto pivot.



- 11 Lubricate and install the spider and the piston assemblies into piston block and onto pivot.



- 12 The connector plate is flat on one side. The flat side is shown.



- 13 Lubricate and place the connector plate onto the piston assemblies. The flat side is positioned against piston assemblies.



- 14 Install bearing race, thrust bearing and second bearing race onto shaft.



- 15 Lubricate and place thrust race and/or races in backplate assembly.



- 16 Position new o-ring onto backplate.



- 17 Align the holes of the backplate to the housing. Install cap screws and torque 20,3-24,4 N·m [15 to 18 lbf·ft].

- 18 Protecting the new shaft seal, install the seal over the output shaft and into the motor housing slightly below the counterbore face. Position the retaining ring on top of the seal.



- 19 Using a seal driver or similar tool, press the retaining ring and shaft seal into motor housing.



- 20 The unit is ready to test and reinstall.

## Main Parts Description

Item	Qty.	Description
1	1	Drive Shaft (See descriptions page 7)
2	1	Backplate Assembly (See descriptions page 7)
3	1	Housing Assembly (See descriptions page 7)
4	1	Rotating Kit Assembly - Refer to specific parts list
+~ 5	1	Retaining Ring
+~ 6	1	O-ring, 2,37 mm Dia. x 114,3 mm ID. [.0937 in. Dia. x 4.5 in. ID.]
7	1	Thrust Bearing
8	2	Pivot
9	1	Spider
10	1	Key
11	9	Piston
12	9	Piston Assembly
13	1	Connector Plate
14	1	Spacer
+~ 15	1	Shaft Seal
16	1	Bearing Race
17	1	Piston Race S/A
18	1	Spring - Refer to specific parts list
18a	1	Spring - Refer to specific parts list
18b	1	Spring - Refer to specific parts list
19	1	Pilot - Refer to specific parts list
19a	1	Pilot - Refer to specific parts list
20	1	Thrust Bearing
21	1	Bearing Race
22	6	Cap Screws, 5/16-18, 25,4 mm [1 in.] Long - Refer to specific parts list
22a	4	Cap Screws, 5/16-18, 38,1 mm [1.5 in.] Long - Refer to specific parts list
+~ 23	1	Retaining Ring
24	A/R	Trust Race
25	1	Key - 74624-204, 74644-210 & 74644-215
~ 26	2	Retaining Ring
27	1	Thrust Bearing
28	2	Bearing Race
~ 29	1	Shaft Seal
~ 30	1	Washer
~ 31	1	Retaining Ring
32	2	Cap Screws, 5/16-18, 50,8 mm [2 in.] Long
+~ 33	1	Retaining Ring
34	1	Key - Used with Shaft 74644-214 - Refer to specific parts list
34a	1	Key - Used with Shaft 74644-209 & 74644-210 - Refer to specific parts list
35	1	Plug S/A
35-1	1	O-ring, 1,98 mm Dia. x 11,89 mm ID. [.078 in. Dia. x .468 in. ID.]
36	A/R	Washer
37	A/R	Washer
38	1	Spring Collar

### Seal Repair Kit

+ 74640-904	Seal Repair Kit for 74624 rear or same side ported motor.
~ 74640-910	Seal Repair Kit for 74644 Through shaft motor.

### Drive Shaft S/A - Item #1

Item #	Description	
1a	15 Tooth 16/32 Spline with Snap Ring Groove with Snap Ring, .375-16 UNC-2B Thread, 18.3 [.72] Min Full Thread, Shaft Ext 39.6 [1.56]	1l [10.69] (Short Key Included) <b>Front</b> - Taper .125:1 Dia 22.22 [.875], Woodruff Keyway Dia 15.75 [.620] X 3.96 [.156], .500-20 UNF-2A Thread, Shaft Ext 57.9 [2.28]
1b	15 Tooth 16/32 Spline with Snap Ring Groove, Shaft Ext 46 [1.81]	<b>Rear</b> - Straight Shaft Dia 25.4 [1.00], Keyway 6.35 X 38.4 [.250 X 1.51], Shaft Length from Mounting Flange 292.1 [11.50]
1c	Taper 1:8, Dia 25.4 [1.00], Woodruff Keyway Dia 25.4 [1.00] X 6.35 [.250], .625-18 UNC-2A Thread, Shaft Ext 69 [2.72]	
1d	13 Tooth 16/32 Spline, Shaft Ext 41.1[1.62]	1m <b>Front</b> - Taper .125:1 Dia 22.22 [.875], Woodruff Keyway Dia 15.75 [.620] X 3.96 [.156], .500-20 UNF-2A Thread, Shaft Ext 57.9 [2.28]
1e	Straight Shaft , Dia. 25.4 [1.00], Keyway 6,35 x 38,1 [.250 x 1.50], Shaft Ext. 63,5 [2.50]	<b>Rear</b> - Straight Shaft Dia 25.4 [1.00], Shaft Length from Mounting Flange 254 [10.00], Shaft End Hole Internal 6.40 [.252] X 14 [.55] Deep
1f	15 Tooth 16/32 Spline Tapered 1:8 with .375-16 UNC-2B Thread, 18.3 [.72] Min Full Thread, Shaft Ext 46 [1.81]	

### Through Shaft (74644)

Item #	Description
1g	<b>Front</b> - 15 Tooth 16/32 Spline with Snap Ring Groove with Snap Ring, .375-16 UNC-2B Thread, 18.3 [.72] Min Full Thread, Shaft Ext 39.6 [1.56] <b>Rear</b> - 15 Tooth 16/32 Spline, Shaft Length from Mounting Flange 258.6 [10.18]
1h	<b>Front</b> - 15 Tooth 16/32 Spline Tapered 1:8 with .375-16 UNC-2B Thread, 18.3 [.72] Min Full Thread, Shaft Ext 46 [1.81] <b>Rear</b> - Straight Shaft Dia 25.4 [1.00], Keyway 6.3 X 25.4 [.250 X 1.00], Shaft Length from Mounting Flange 274.3 [10.80]
1i	<b>Front</b> - Straight Shaft , Dia. 25.4 [1.00], Keyway 6,35 x 38,1 [.250 x 1.50], Shaft Ext. 63,5 [2.50] (Key Included) <b>Rear</b> - Straight Shaft Dia 25.4 [1.00], Keyway 6.3 X 25.4 [.250 X 1.00], Shaft Length From Mounting Flange 274.3 [10.80]
1j	<b>Front</b> - 15 Tooth 16/32 Spline Tapered 1:8 with .375-16 UNC-2B Thread, 18.3 [.72] Min Full Thread, Shaft Ext 46 [1.81] <b>Rear</b> - 15 Tooth 16/32 Spline, with .375-16 UNC-2B Thread, 18.3 [.72] Min Full Thread, Shaft Length from Mounting Flange 274.3 [10.80]
1k	<b>Front</b> - 15 Tooth 16/32 Spline, Shaft Ext 46 [1.81] <b>Rear</b> - Straight Shaft Dia 22.22 [.875], Keyway 6.35 X 26.9 [.250 X 1.06], Shaft Length From Mounting Flange 271.5

### Backplate S/A - Item #2

Item #	Description
2a	Rear porting, through drain into mounting flange.
2b	Rear porting, drain port horizontal top rear of unit.
2c	Same side porting, drain port vertical top rear of unit, two mounting holes bottom rear.
2d	Same side porting, drain port vertical top rear of unit.

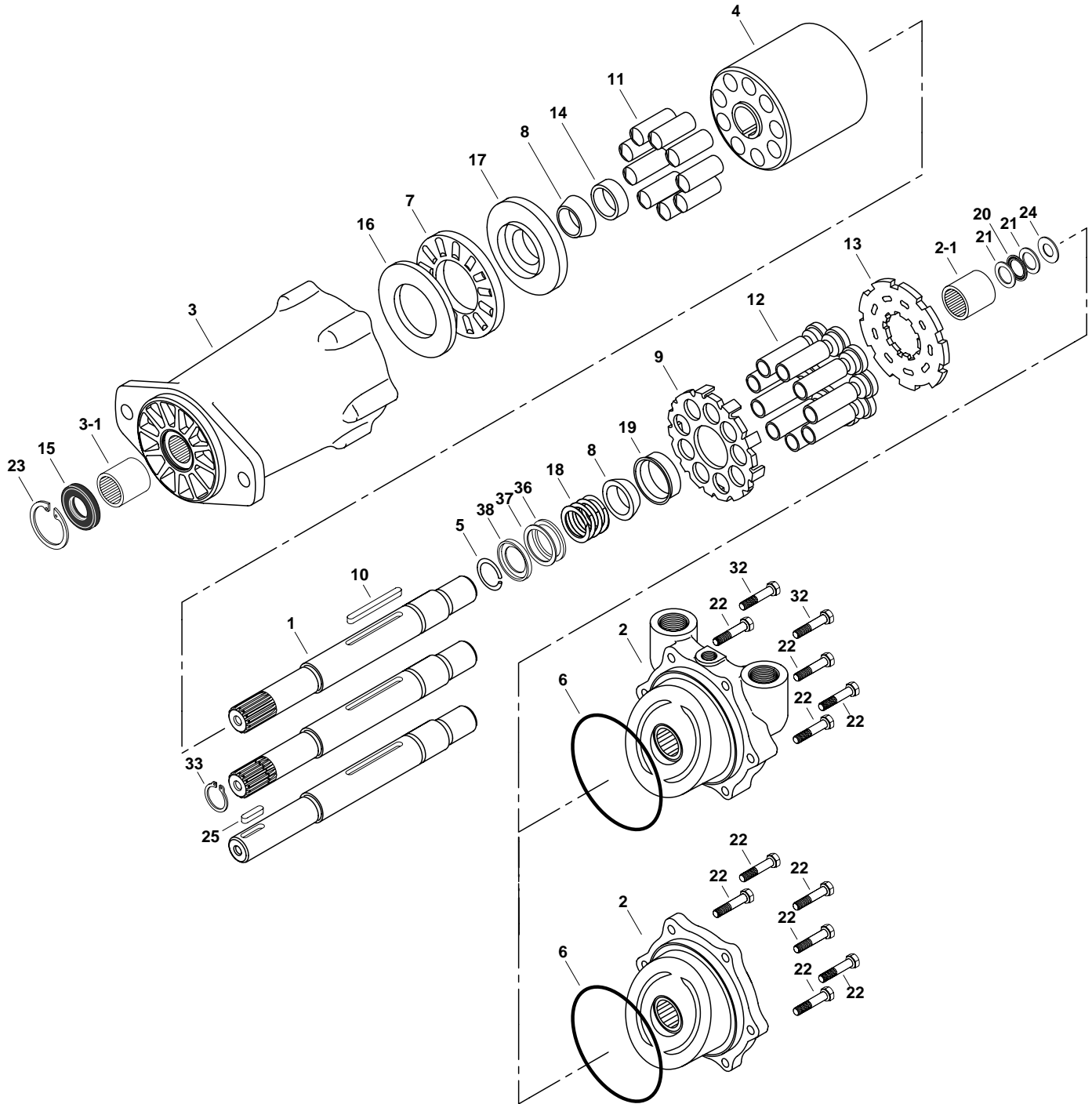
### Housing for Through Shaft (74644)

Item #	Description
2e	Same side porting, drain port vertical top rear of unit.

### Housing S/A - Item #3

Item #	Description
3a	Through drain into mounting flange
3b	No drain in housing
3c	Special housing used with item 18 #17141-10 and item 19 #74600-620. Also has slotted 2 bolt B flange.

# Parts Drawing

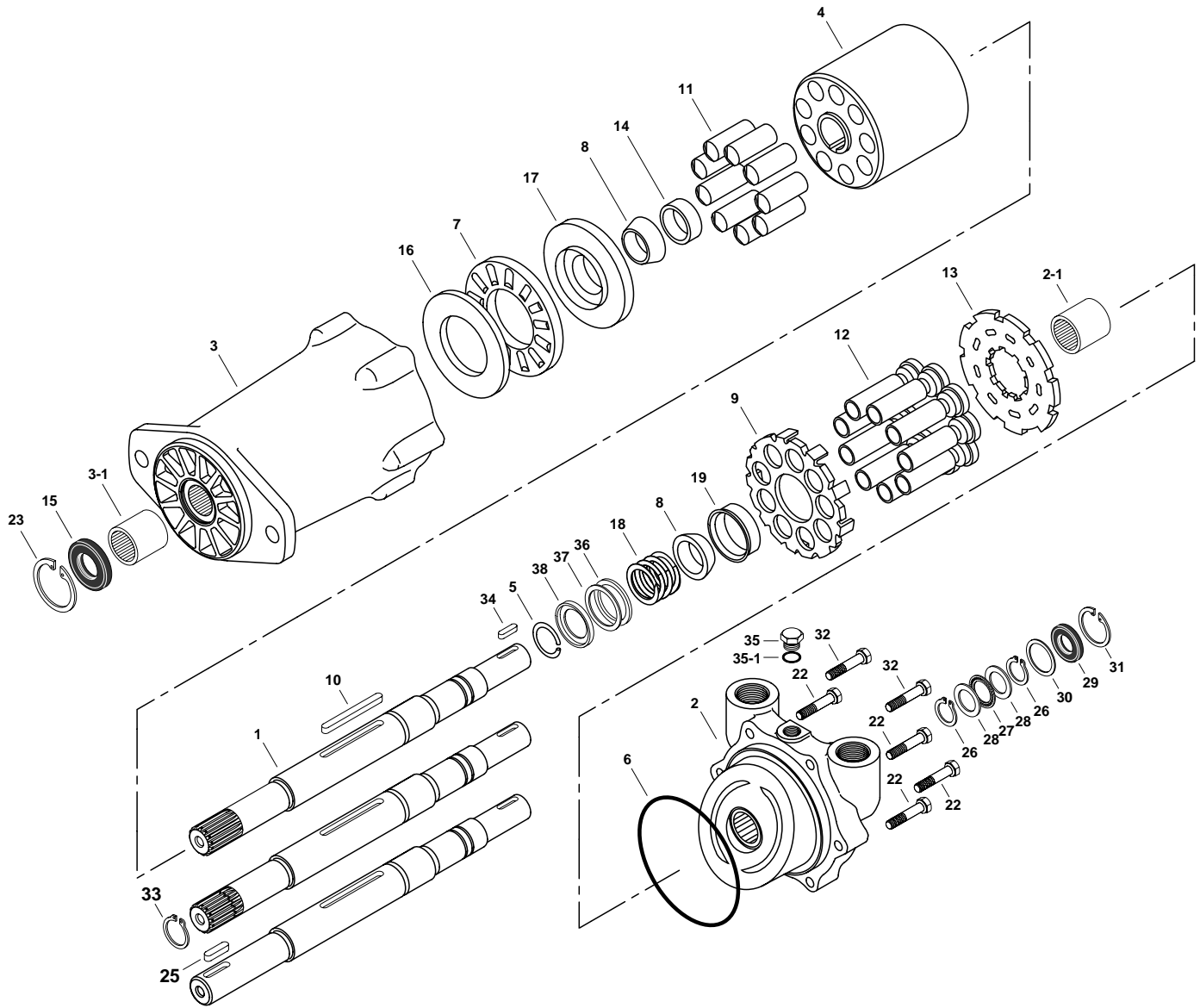




# Specific Parts List

		Product Numbers 74624												
		- DAA	- DAB	- DAD	- DAE	- DAG	- DAH	- DAJ	- DAL	- DAM	- DAN	- DAP	- DAR	- DAS
Item #s	1	1a	1b	1c	1d	1d	1e	1a	1e	1f	1f	1b	1b	1f
	2	2a	2b	2b	2b	2b	2b	2b	2c	2c	2d	2b	2b	2d
	3	3a	3b	3b	3c	3b	3b	3b	3b	3b	3b	3b	3b	3b
	4	4	4	4	4	4	4	4	4	4	4	4	4a	4
	5	X	X	X	X	X	X	X	X	X	X	X	X	X
	6	X	X	X	X	X	X	X	X	X	X	X	X	X
	7	X	X	X	X	X	X	X	X	X	X	X	X	X
	8	X	X	X	X	X	X	X	X	X	X	X	X	X
	9	X	X	X	X	X	X	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X	X	X	X	X	X	X
	11	X	X	X	X	X	X	X	X	X	X	X	X	X
	12	X	X	X	X	X	X	X	X	X	X	X	X	X
	13	X	X	X	X	X	X	X	X	X	X	X	X	X
	14	X	X	X	X	X	X	X	X	X	X	X	X	X
	15		X	X	X	X	X	X	X	X	X	X	X	X
	16	X	X	X	X	X	X	X	X	X	X	X	X	X
	17	X	X	X	X	X	X	X	X	X	X	X	X	X
	18	18	18b	18b	18a	18b	18b	18b	18b	18	18	18b	18b	
	19	19	19	19	19a	19	19	19	19	19a	19a	19	19	
	20	X	X	X	X	X	X	X	X	X	X	X	X	X
	21	X	X	X	X	X	X	X	X	X	X	X	X	X
	22	22	22	22	22	22	22	22	22a	22a	22a	22	22	22a
	23		X	X	X	X	X	X	X	X	X	X	X	X
	24	X	X	X		X	X	X	X	X	X	X	X	X
	25						X		X					
	32								X	X	X			X
	33	X						X						
	36									X	X			
	37									X	X			
	38				X					X	X			
	Seal Repair Kit 72640	-904	-904	-904	-904	-904	-904	-904	-904	-904	-904	-904	-904	-904

# Parts Drawing - Through Shaft



# Specific Parts List

		Product Numbers 74644									
		- DAE	- DAG	- DAJ	- DAK	- DAM	- DAN	- DAP	- DAR	- DAS	
Item #'s	1	1g	1h	1i	1j	1k	1l	1m	1j	1j	
	2	2e	2e	2e	2e	2e	2e	2e	2e	2e	
	3	3b	3a	3b	3a	3b	3b	3b	3a	3b	
	4	4	4	4	4	4	4	4	4	4	
	5	X	X	X	X	X	X	X	X	X	
	6	X	X	X	X	X	X	X	X	X	
	7	X	X	X	X	X	X	X	X	X	
	8	X	X	X	X	X	X	X	X	X	
	9	X	X	X	X	X	X	X	X	X	
	10	X	X	X	X	X	X	X	X	X	
	11	X	X	X	X	X	X	X	X	X	
	12	X	X	X	X	X	X	X	X	X	
	13	X	X	X	X	X	X	X	X	X	
	14	X	X	X	X	X	X	X	X	X	
	15	X		X		X	X	X		X	
	16	X	X	X	X	X	X	X	X	X	
	17	X	X	X	X	X	X	X	X	X	
	18	18	18	18	18	18	18	18	18	18	
	19	19	19a	19	19a	19a	19	19	19a	19a	
	22	22a	22a	22a	22a	22a	22a	22a	22a	22a	
	23	X		X			X	X		X	
	25			X							
	26	X	X	X	X	X	X	X	X	X	
	27	X	X	X	X	X	X	X	X	X	
	28	X	X	X	X	X	X	X	X	X	
	29	X	X	X	X	X	X	X	X	X	
	30	X	X	X	X	X	X	X	X	X	
	31	X	X	X	X	X	X	X	X	X	
	32	X	X	X	X	X	X	X	X	X	
	33	X									
	34		34	34		34a					
	35		X		X				X		
	36		X		X	X			X		
	37		X		X	X			X		
	38	X	X	X	X	X	X	X	X	X	
	Seal Repair Kit 74640		-910	-910	-910	-910	-910	-910	-910	-910	-910

# Trouble Shooting

In trouble shooting a pump and motor system it is necessary to isolate the pump from the motor to determine which unit is actually malfunctioning. A worn pump or worn motor will give the same system indication. Therefore, it is advisable to first run a pressure and flow check on the pump to make sure it is performing within its operating specifications. The following trouble shooting suggestions are based on the assumption that the pump's flow and pressure settings meet operating specifications.

Possible Trouble	Causes	Remedies
1. Motor turns while unloaded but slows down or stops when load is applied.	A. Scored back plate. B. Scored connector plate. C. Scored or worn piston shoes. D. Low relief valve pressure.	A. Remove backplate and examine surface condition of flat area, if scored, replace back plate. Do not lap. B. Disassemble motor, check finish on connector plate and back plate, replace of necessary. C. Disassemble motor, examine condition of shoes on pistons, replace pistons as a complete set. D. Check relief valve for proper pressure setting, adjust or replace relief valve.
2. Motor will not turn.	A. Severely scored back plate and connector plate. B. Contaminate particle holding connector off back plate.	A. Disassemble motor completely. Inspect all parts, clean all parts, replace all worn parts and flush hydraulic system. B. Disassembly motor, inspect and clean parts, replace necessary parts.
3. Motor free wheels.	A. Oil flow and pressure shut off going to motor.	A. When the hydraulic system is shut off, either by shutting off the engine on a closed loop system or returning the control valve spool to neutral on an open center system, the motor will free wheel after it has leaked off and allows the free floating pistons to collapse. This is inherent in the design. On a closed loop or propulsion system, the motor will not free wheel as long as charge pressure is maintained to and from the motor.
4. Rapid tapping noise in motor.	A. Free floating pistons seating on bearing race.	A. When oil flow to the motor is shut off and the motor allowed to free wheel, the free floating pistons will collapse into the piston block. When oil flow is reapplied to the motor the pistons will re-seat themselves against the bearing race and will cause a rapid tapping sound. This is not harmful to the motor as long as the oil flow into the motor does not exceed 10 GPM for the first revolution of the motor.
5. Excessive case drain flow.	A. Excessive internal wear in.	A. Disassemble motor, inspect parts and replace as necessary. Case drain flow should not exceed 1.5 GPM at full pressure.

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