Parker Pumps
Parts & Service

Effective: August 1998

PVP Series
Variable Volume
Piston Pump
Service Bulletin

Model PVP23 **** 20
Model PVP33 **** 20
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Introduction:
The PVP23 or 33 **** 20 series piston pumps are designed to provide long life while operating with Hydraulic Oil. Refer to catalog 1550/USA for limits. However, should maintenance be required, the following instructions should be used for disassembly, replacement of parts, cleaning and assembly.

Note:
Prior to any pump disassembly, plug the open ports and clean all dirt from the outside of the pump. Prior to assembly all parts should be cleaned and then lightly coated with oil.

Warning:
Protective eye wear should be worn during all maintenance procedures.
Notes:

1. Installed height of item 25 (needle bearing) into item 58 (rear cover) to be .125/.150.
2. Installed height of item 26 (servo post) into item 58 (rear cover) to be 1.465/1.470.
3. Item 3 (trunnion pin) to be pressed in until shoulder bottoms on swashplate.
4. Illustration shows righthand (CW) rotation pump. Lefthand (CCW) pumps will have the inlet, outlet ports and the rotation arrow reversed.
ADJUSTABLE MAX. VOLUME STOP
VOLUME STOP OPTION "2"
O-RING 2011-9
ITEM #48
Control Options

Notes:

1. Must be used with proper compensator assembly. Horsepower (torque) control assembly does not include pressure compensator assembly. For "H" option use "M" compensator. For "C" option use "A" compensator.
THRU SHAFT VARIATIONS  "6A1" & "6A3"

REAR PUMP CONFIGURATION:
- SAE AA 2 BOLT
- 2,000 PILOT DIAMETER
- SHAFT SIZES:
  6A1 - .500 X.125 KEY - KIT# 787233
  6A3 - 9 TOOTH 20/40
  PITCH SPLINE - KIT# 787235

THRU SHAFT VARIATIONS  "6A2", "6A4", "6A5"  "9A4", "9A5"

REAR PUMP CONFIGURATION:
- SAE A 2 BOLT
- 3,250 PILOT DIAMETER
- SHAFT SIZES:
  6A2 - .750 X.188 KEY - KIT# 787234
  6A4 - 9 TOOTH 16/32
  PITCH SPLINE - KIT# 787236
  6A5 - 11 TOOTH 16/32
  PITCH SPLINE - KIT# 787392
  9A4 - 9 TOOTH 16/32
  PITCH SPLINE - KIT# 788208
  9A5 - 11 TOOTH 16/32
  PITCH SPLINE - KIT# 788209

THRU SHAFT VARIATIONS  "6B1", "6B2", "6B3", "6B4"  "9B3", "9B4"

REAR PUMP CONFIGURATION:
- SAE B 2 BOLT
- 4,000 PILOT DIAMETER
- SHAFT SIZES:
  6B1 - .875 X.250 KEY - KIT# 787237
  6B2 - 1.00 X.250 KEY - KIT# 787238
  6B3 - 13 TOOTH 16/32
  PITCH SPLINE - KIT# 787239
  6B4 - 15 TOOTH 16/32
  PITCH SPLINE - KIT# 787240
  9B3 - 13 TOOTH 16/32
  PITCH SPLINE - KIT# 788210
  9B4 - 15 TOOTH 16/32
  PITCH SPLINE - KIT# 788211
Notes:

1. Illustration shows righthand (CW) rotation pump. Lefthand (CCW) pumps will have the compensator on opposite side, and port plate kidneys reversed.
2. Seal kit (SKPVP23/33©20) consists of all O-rings, gaskets and shaft seal.
Bulletin PM 1622-20-M1/USA
Parker Pumps Parts & Service
Model PVP23 / 33 **** 20

Pump Exploded View

50 IN LB TORQUE
STANDARD COMPENSATOR ASSEMBLY

VOLUME STOP OPTION 2 (INSTALLED FROM REAR OF PUMP)

REF.O-RING 20110-7

REF.O-RING 2009-7
REF.GASKET 787018

INCLUDED IN COVER ASS'Y (ITEM 58)

PARTS INCLUDED IN ROTATING GROUP REPAIR KIT:
RRKVPVP23/33R20
-OR-
RRKVPVP23/33L20

INSTALL PINS INTO BARREL WITH GEAR LUBE OR PETROLEUM JELLY

70 FT-LBS

Parker Hannifin Corporation
Hydraulic Pump/Motor Division
Greeneville, TN 37745 USA
CAUTION

These service parts are intended for use in hydraulic pumps. Incorrect installation or assembly of these parts could cause the pump or pumps being repaired to fail in subsequent use or to operate incorrectly.

The following precautions should be followed:

1. All parts should be cleaned and then lightly coated with mineral oil, or another lubricating fluid compatible with the system fluid being used, prior to assembly.
2. The pump should be disassembled, repaired and reassembled in a clean environment.
3. Use proper tools to disassemble and reassemble the pump.
4. If you are uncertain at how to install these parts, you should obtain assistance either from a Parker Hannifin distributor, or from the Hydraulic Pump/Motor Division.
### Parts List

#### Model PVP23 / 33 **** 20

**Notes:**

1. O-Ring compound designation
   - □ = Nitrile, ○ = Viton.
2. For proper operation of "H" control, it must be used with a remote compensator assembly.
3. For proper operation of "C" control, it must be used with a load sense compensator assembly.
4. Seal Kit P/N SKPVP 23/33 □ 20
   - Rotation Group Kit P/N: RRKPV23/33 □ 20

#### Specifications:

- **Rotation Group Kit: RRKPV23/33 □ 20**
  - R - CW
  - L - CCW

#### O-Ring Designation:

<table>
<thead>
<tr>
<th>Compound Designation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrile</td>
<td>○</td>
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<tr>
<td>Viton</td>
<td>○</td>
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#### Parts List:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>QTY</th>
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<tbody>
<tr>
<td>108X8</td>
<td>Plug</td>
<td>2</td>
</tr>
<tr>
<td>2030N-7</td>
<td>O-Ring</td>
<td>2</td>
</tr>
<tr>
<td>108X8V</td>
<td>Plug</td>
<td>2</td>
</tr>
<tr>
<td>2030V-7</td>
<td>O-Ring</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Control Options:

- **Remote Comp Assy (INT)**
  - Part Number: 787028

- **Remote Comp Assy (EXT)**
  - Part Number: 787029

- **Load Sense Comp Assy**
  - Part Number: 787027

- **Horsepower Assembly**
  - Part Number: 788055

- **Use Std. Omit Control**
  - Part Number: 788157

- **Use 'M' Control**
  - Part Number: 788157

- **Use 'A' Control**
  - Part Number: 788157

- **Use 'C' Control**
  - Part Number: 788157

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**Bulletin PM 1622-20-M1/USA**
Parker Pumps Parts & Service
Greeneville, TN 37745 USA

**Parker Hydraulics**
Hydraulic Pump/Motor Division
Greeneville, TN 37745 USA

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Service Notes:

- Use a clean lubricant (compatible with the working fluid) on all pump components during assembly.
- Most premature pump failures occur when contaminants from a previous failure have not been removed from the system, or cause for previous failure is still present (i.e. water in oil, filter bypassing, etc.)
- Thoroughly clean the reservoir, suction lines, suction strainer, drain lines, etc. before re-installing the pump.
- Always fill the pump case with clean fluid before starting a new or serviced pump for flooded suction, purge air from suction lines by cracking the inlet fitting or vent plug on pump. This should prevent an airlock condition and allow for faster priming.
- Starting the pump slowly by jogging (or turning over engine without allowing it to start) will help the pump prime and make it easier to determine when priming has occurred.
- Start pump with an open circuit whenever possible. Reduce the compensator to it's minimum setting during start-up. Cycle the pump on and off stroke while increasing the compensator to its required setting.

This will assist in break-in of new components and help purge air from the case.

Basic Troubleshooting:

Pump Will Not Prime
- Check for proper drive rotation.
- Make sure pump shaft is turning (i.e. key at coupling hubs is engaged).
- Make sure reservoir is full.
- Check for major sources of a suction leak (vent plug open, shaft seal missing (PAVC), flange not tight, pinched O-Ring at flange or pump housing.

Cannot Build Any Pressure
- Make sure pump is primed.
- Check alignment, especially on PAVC pumps without "9" option.
- Make sure systems is not an open circuit.

A pump produces flow, not pressure. It can only limit pressure when the system requirement is higher than the pump compensator setting.

Can Only Build A Few Hundred PSI
- Compensator is backed all the way out.
- The remote or load sense line is vented.
- Control orifice or spool is plugged.
- Incorrect compensator spool (PVP).
- Pressure control dart is lodged open.
- Torque control plug is missing (PAVC).

Pump Will Not Compensate
- Differential spring over-compressed (i.e. spring guide dislocated).
- Control drain line blocked (PAVC).
- Pressure control stem vent hole is plugged.
- Control spool travel is hindered.
- Control orifice is missing (PAVC).
- Saturation orifice is missing in load sense circuit.
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