



Bulletin PM 1638-10-M1/USA

Parker Pumps Parts & Service

Effective: November 1999



PHP Series Variable Volume Piston Pump Service Bulletin

Model PHP40 ** 10**



WARNING

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Introduction:

The PHP40 **** 10 series piston pumps are designed to provide long life while operating with Hydraulic Oil. Refer to Bulletin 2600-112-B1/USA for limits. However, should maintenance be required, the following instructions should be used for disassembly, replacement of parts, cleaning and assembly.

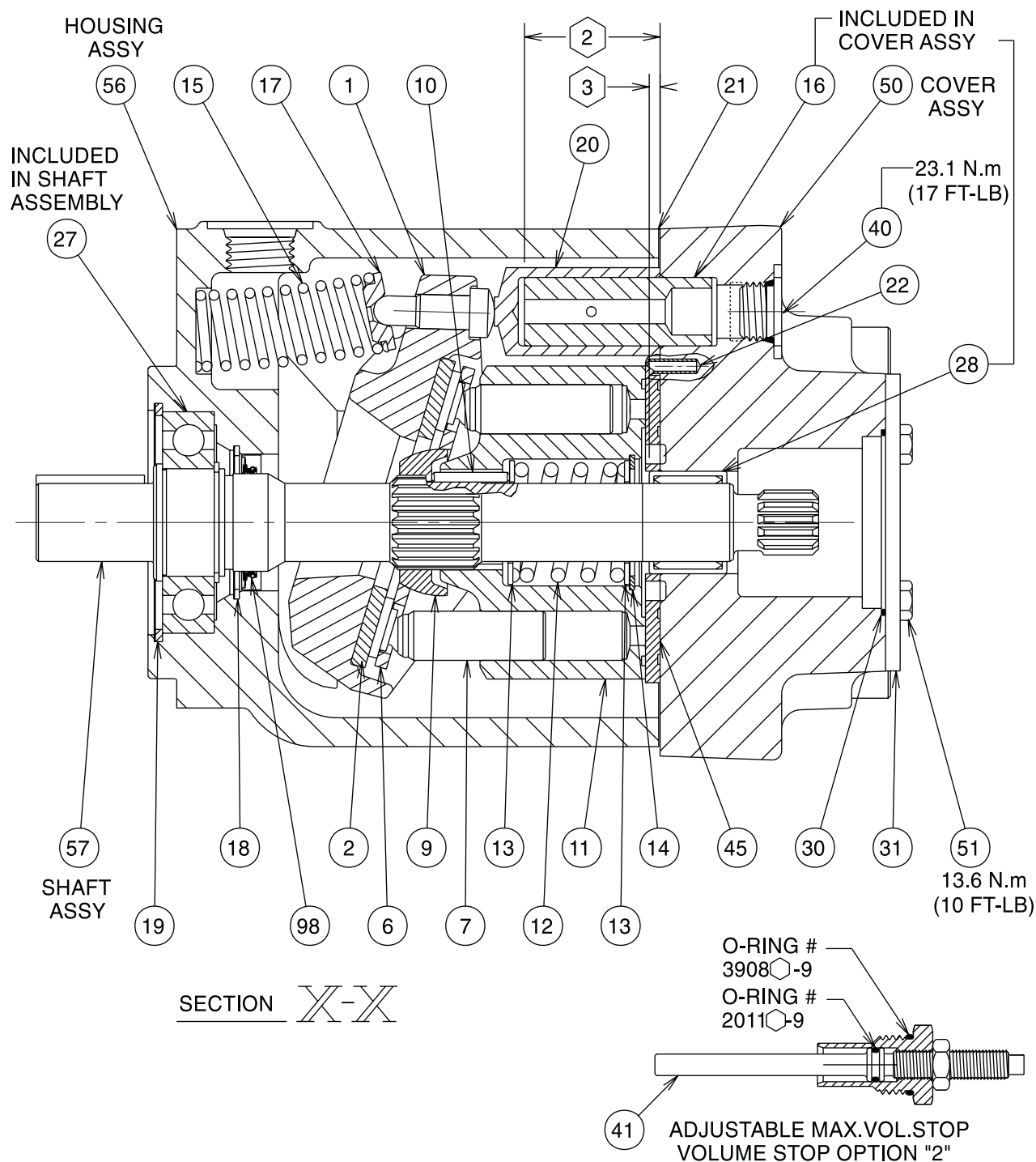
Note:

Prior to any pump disassembly, plug the open ports and clean all dirt from the outside of the pump.

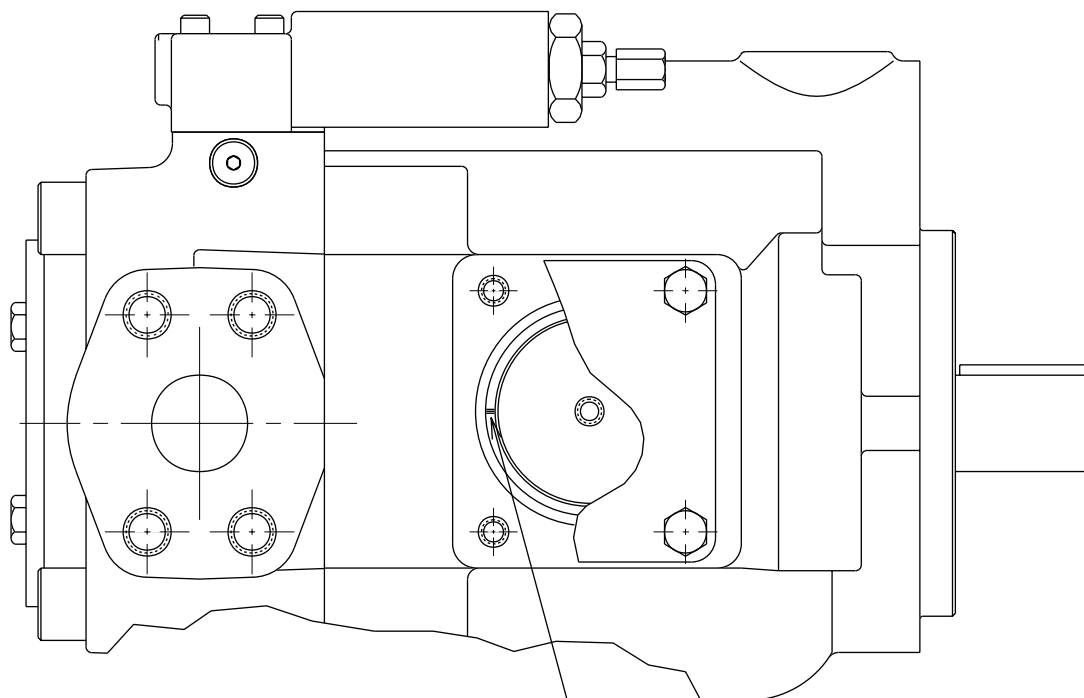
Prior to assembly all parts should be cleaned and then lightly coated with oil.

Warning:

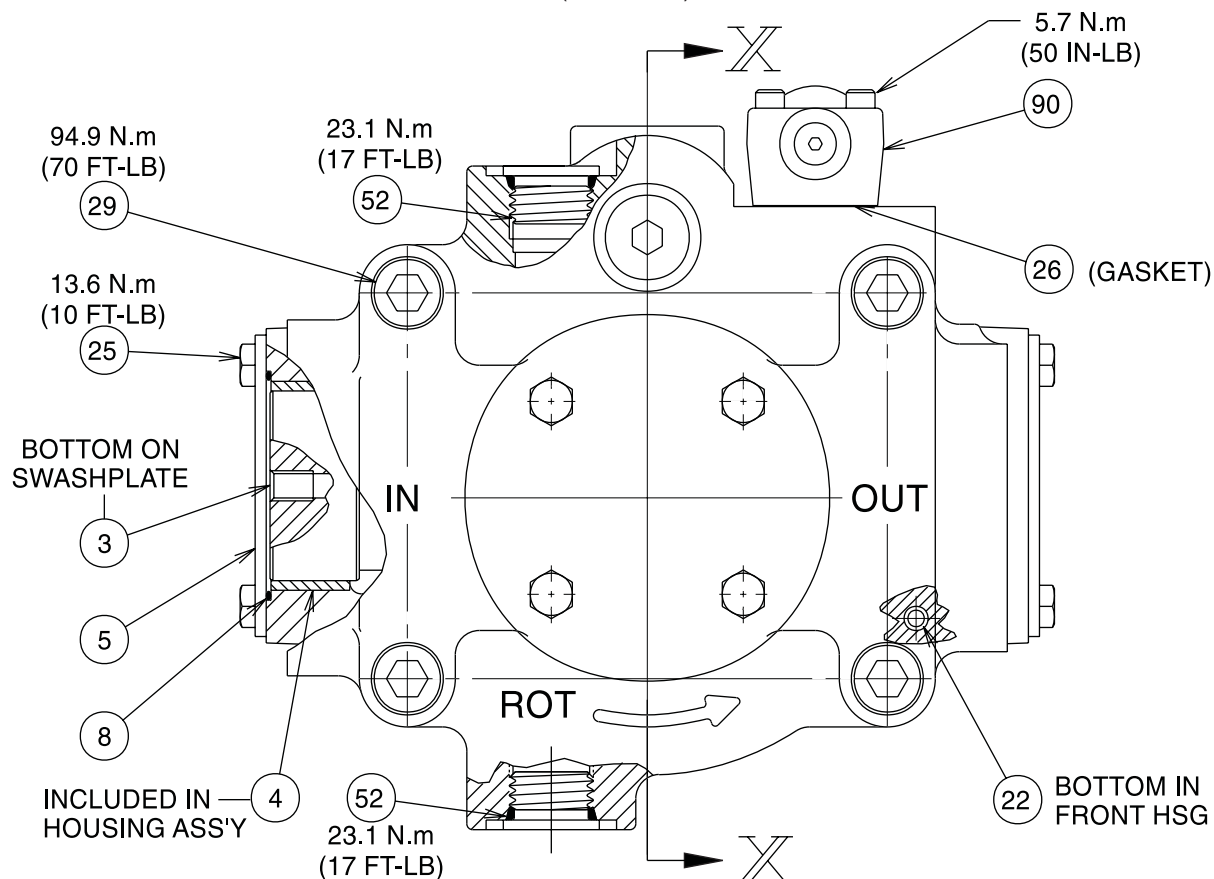
Protective eye wear should be worn during all maintenance procedures.

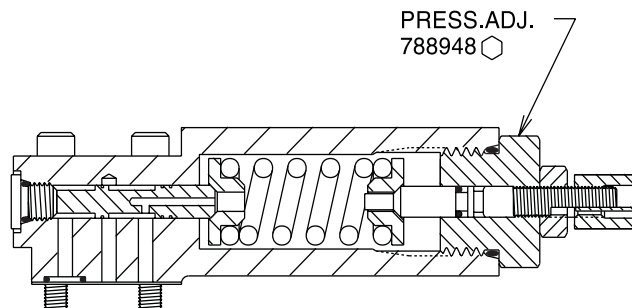
**NOTE:**

1. PUMP SHOWN IS A RIGHTHAND (CW) ROTATION PUMP. FOR A LEFTHAND (CCW) ROTATION PUMP THE INLET AND OUTLET PORTS WILL BE REVERSED.
- ② INSTALLED HEIGHT OF ITEM 16 (SERVO POST) ABOVE ITEM 50 (REAR COVER) TO BE 44.27 / 44.37 (1.743 / 1.747).
- ③ INSTALLED HEIGHT OF ITEM 28 (NEEDLE BEARING) ABOVE ITEM 50 (REAR COVER) TO BE 3.30 / 3.81 (.130 / .150).

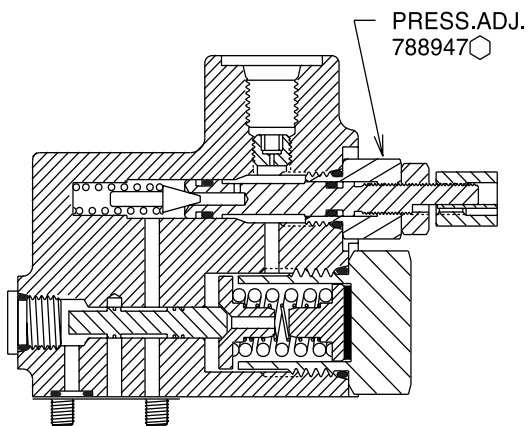


SEAM OF ITEM #4 (TRUNNION BEARING) —
 MUST BE ORIENTED TO THIS LOCATION $\pm 30^\circ$
 DURING ASSEMBLY INTO ITEM #56 (HOUSING)

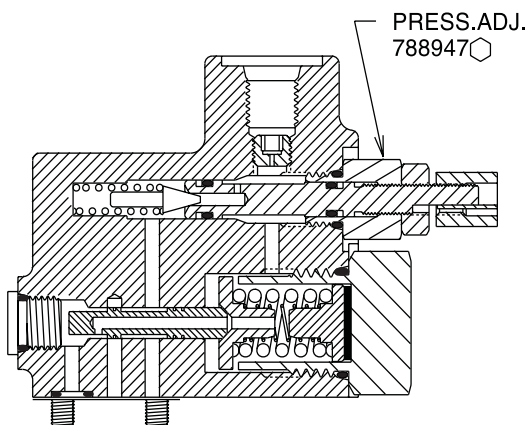




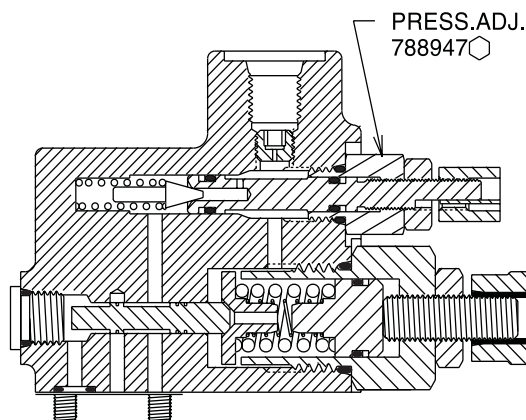
"OMIT" COMPENSATOR (STANDARD)
 ITEM 90



"ME" COMPENSATOR
 (REMOTE W/EXTERNAL SENSE)
 ITEM 92



REMOTE CONTROL OPTION "M"
 REQUIRED W/POWER OPTION "HLM"
 ITEM 91

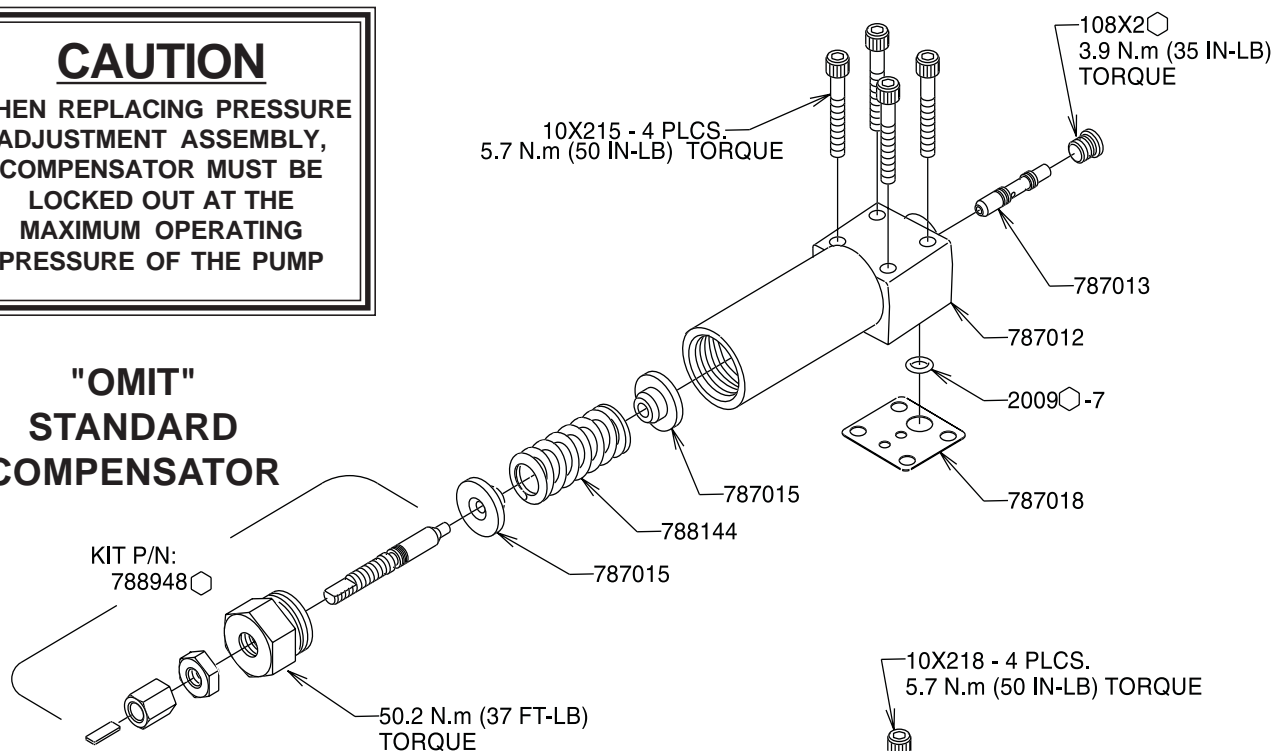


LOAD SENSE OPTION "A"
 REQUIRED W/POWER OPTION "HLA"
 ITEM 93

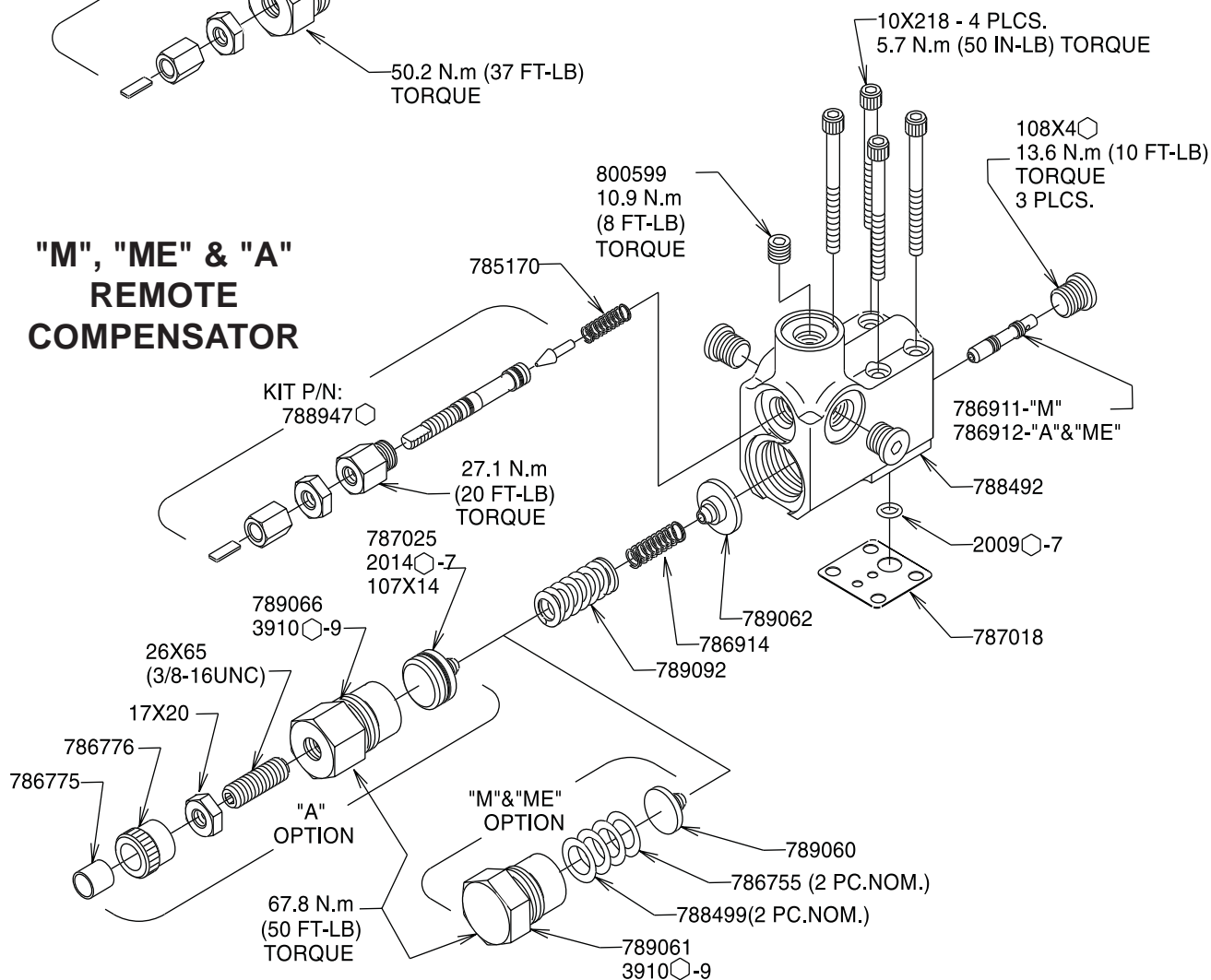
CAUTION

WHEN REPLACING PRESSURE
 ADJUSTMENT ASSEMBLY,
 COMPENSATOR MUST BE
 LOCKED OUT AT THE
 MAXIMUM OPERATING
 PRESSURE OF THE PUMP

"OMIT" STANDARD COMPENSATOR



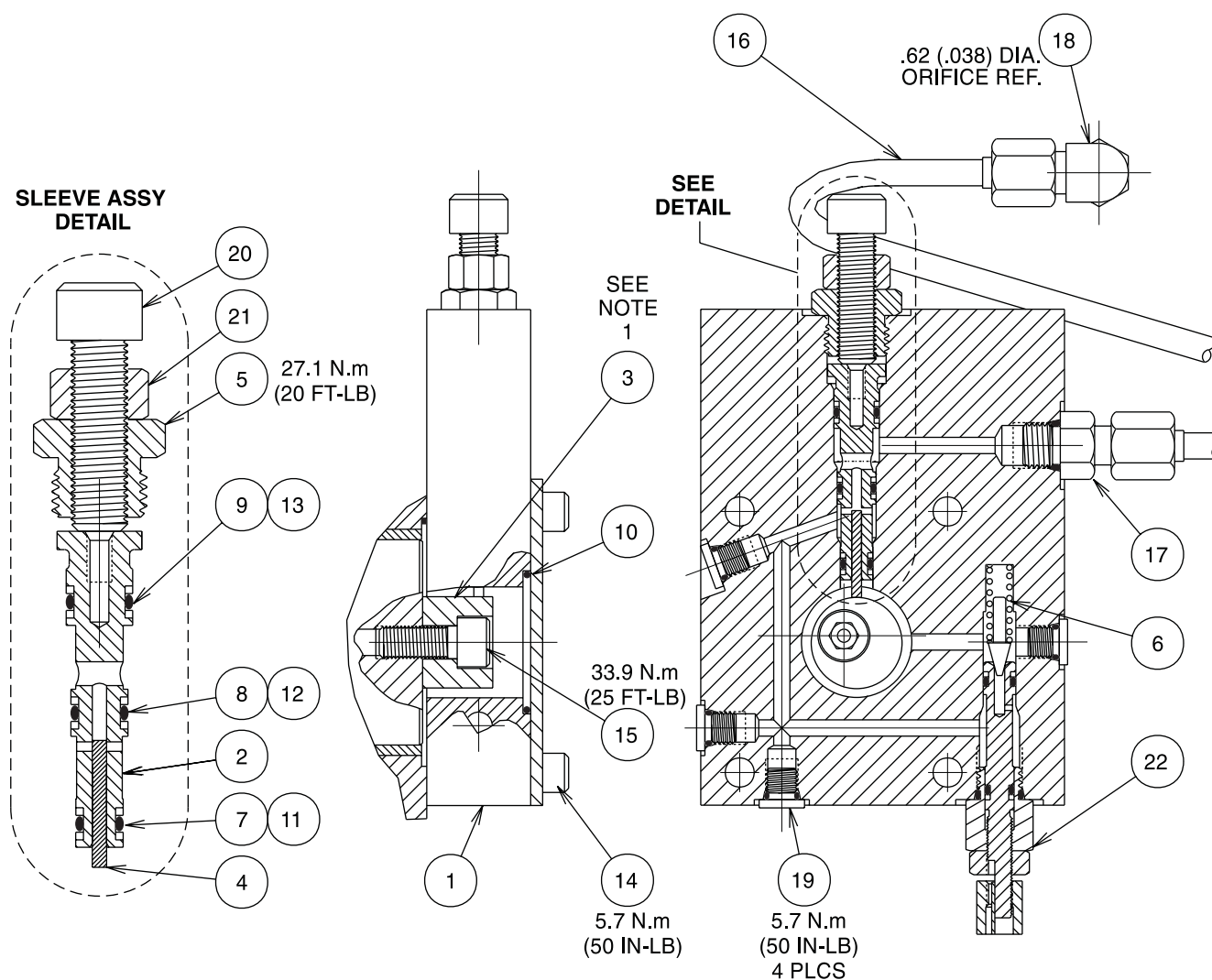
"M", "ME" & "A" REMOTE COMPENSATOR



P/N: 788017- COMPLETE HI-LO ASSEMBLY

| ITEM | PART NUMBER | QTY | DESCRIPTION |
|------|-------------|-----|--------------------|
| 1 | 787976 | 1 | HI-LO BODY |
| 2 | 788713 | 1 | HI-LO SLEEVE |
| 3 | 787822 | 1 | HP CONTROL CAM |
| 4 | 787975 | 1 | HI-LO SPOOL |
| 5 | 787977 | 1 | HI-LOW SLEEVE RET. |
| 6 | 785170 | 1 | SPRING |
| 7 | 2008-7 | 1 | O-RING |
| 8 | 2010-7 | 1 | O-RING |
| 9 | 2011-7 | 1 | O-RING |
| 10 | 2123-7 | 1 | O-RING |
| 11 | 107X8 | 2 | BACK-UP RING |



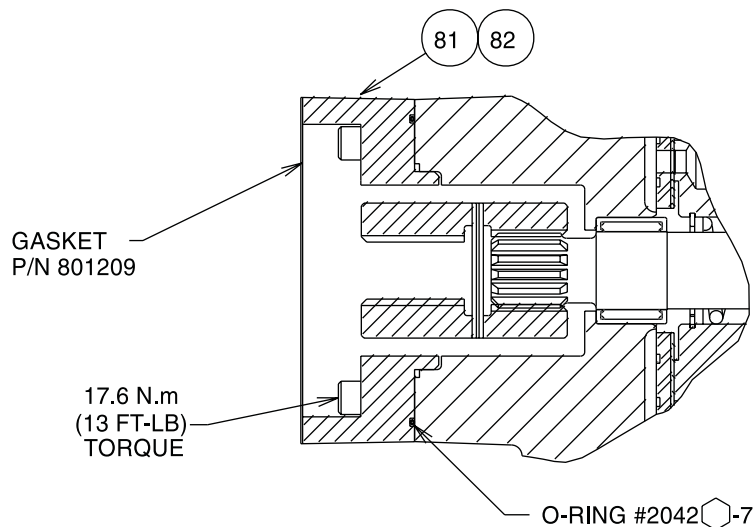

| ITEM | PART NUMBER | QTY | DESCRIPTION |
|------|-------------|-----|-----------------------|
| 12 | 107X10 | 2 | BACK-UP RING |
| 13 | 107X11 | 2 | BACK-UP RING |
| 14 | 10X227 | 4 | 1/4-20X1.5 CAP SCREW |
| 15 | 787836 | 1 | BOLT - SPECIAL |
| 16 | 788490 | 1 | TUBING ASSEMBLY |
| 17 | 4F50X-S | 1 | 90-ELBOW FITTING |
| 18 | 787523 | 1 | ORIFICE FITTING |
| 19 | 108X2 | 4 | -2 PLUG W/3902-9 |
| 20 | 10X89 | 1 | 3/8-24X1.25 CAP SCREW |
| 21 | 16X42 | 1 | JAM NUT |
| 22 | 788947 | 1 | PRESS.ADJUST.KIT |

**NOTE:**



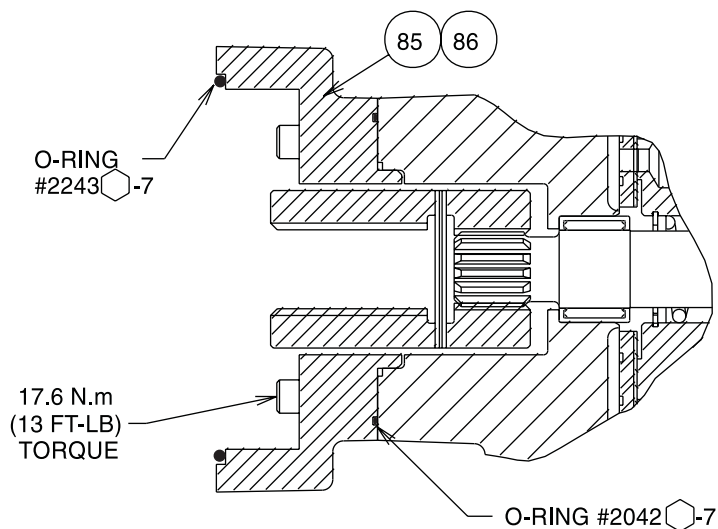

1. WITH THE PUMP AT FULL STROKE, INSTALL THE CAM (ITEM 3) CONCENTRIC WITH THE HOLE IN THE HI-LO BODY.
2. MUST BE USED WITH PROPER COMPENSATOR ASSEMBLY. HI-LOW (POWER) CONTROL ASSEMBLY DOES NOT INCLUDE PRESSURE COMPENSATOR ASSEMBLY. FOR "HLM" OPTION USE "M" COMPENSATOR, FOR "HLA" OPTION USE "A" COMPENSATOR.

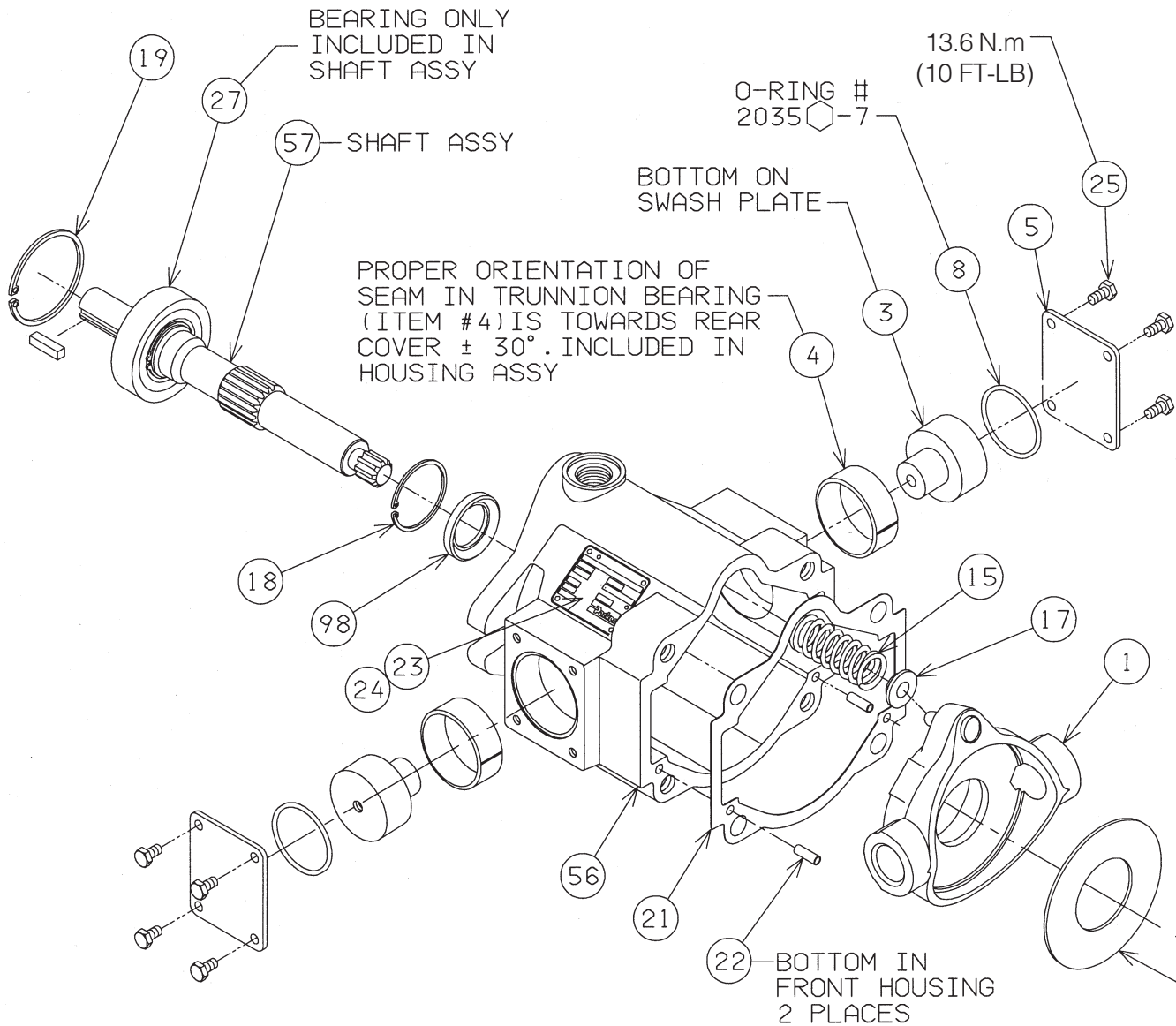
THRU SHAFT VARIATIONS**"6A4", "6A5", "9A4", "9A5"****REAR PUMP CONFIGURATION:**

- SAE A 2 BOLT
- 82.55 (3.250) PILOT DIAMETER
- SHAFT SIZES:

6A4 - 9 TOOTH 16/32 PITCH SPLINE - KIT P/N 787236 6A5 - 11 TOOTH 16/32 PITCH SPLINE - KIT P/N 787392 9A4 - 9 TOOTH 16/32 PITCH SPLINE - KIT P/N 788208 9A5 - 11 TOOTH 16/32 PITCH SPLINE - KIT P/N 788209 **THRU SHAFT VARIATIONS****"6B3", "6B4", "9B3", "9B4"****REAR PUMP CONFIGURATION:**

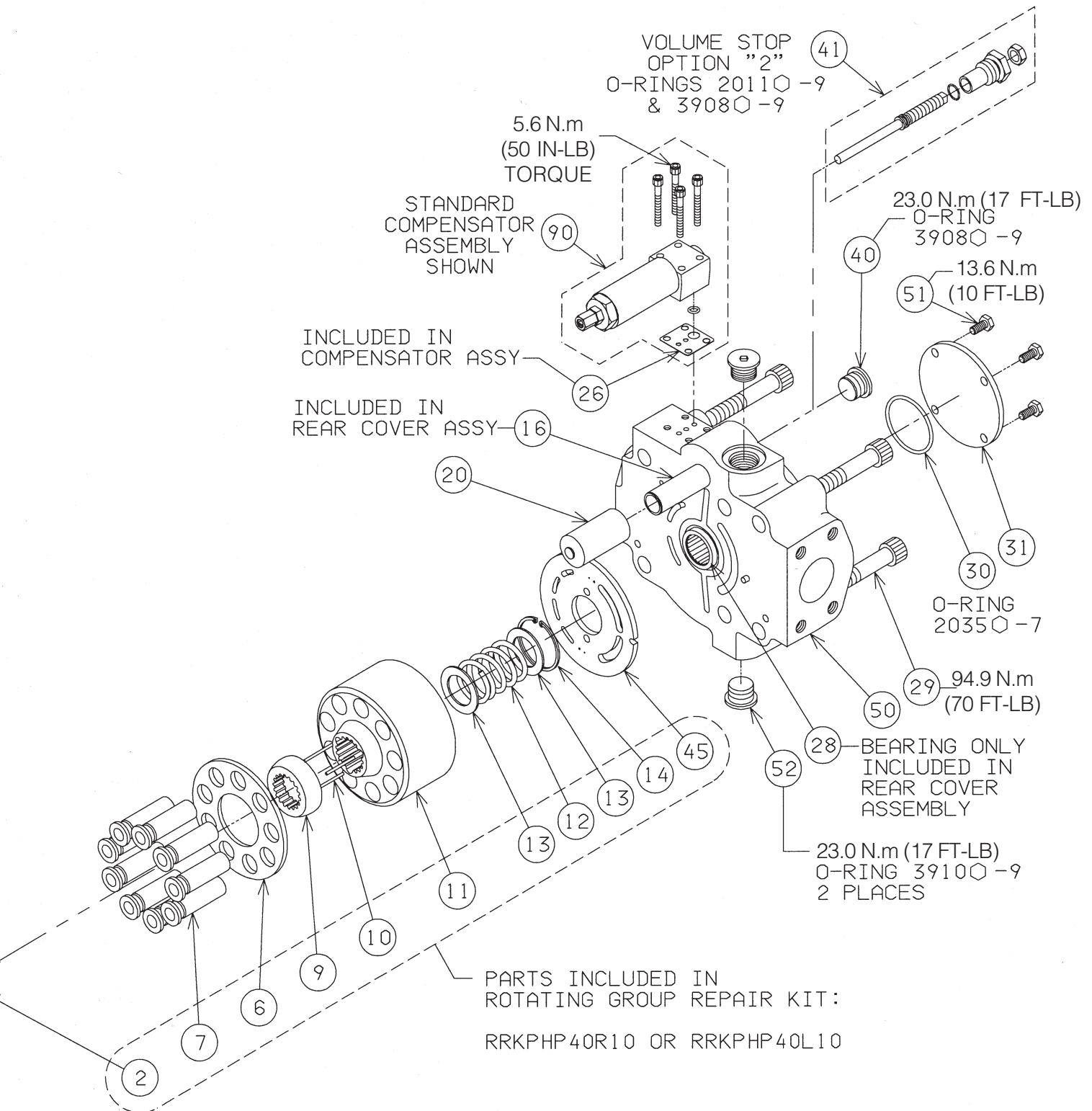
- SAE B 2 BOLT
- 101.6 (4.000) PILOT DIAMETER
- SHAFT SIZES:

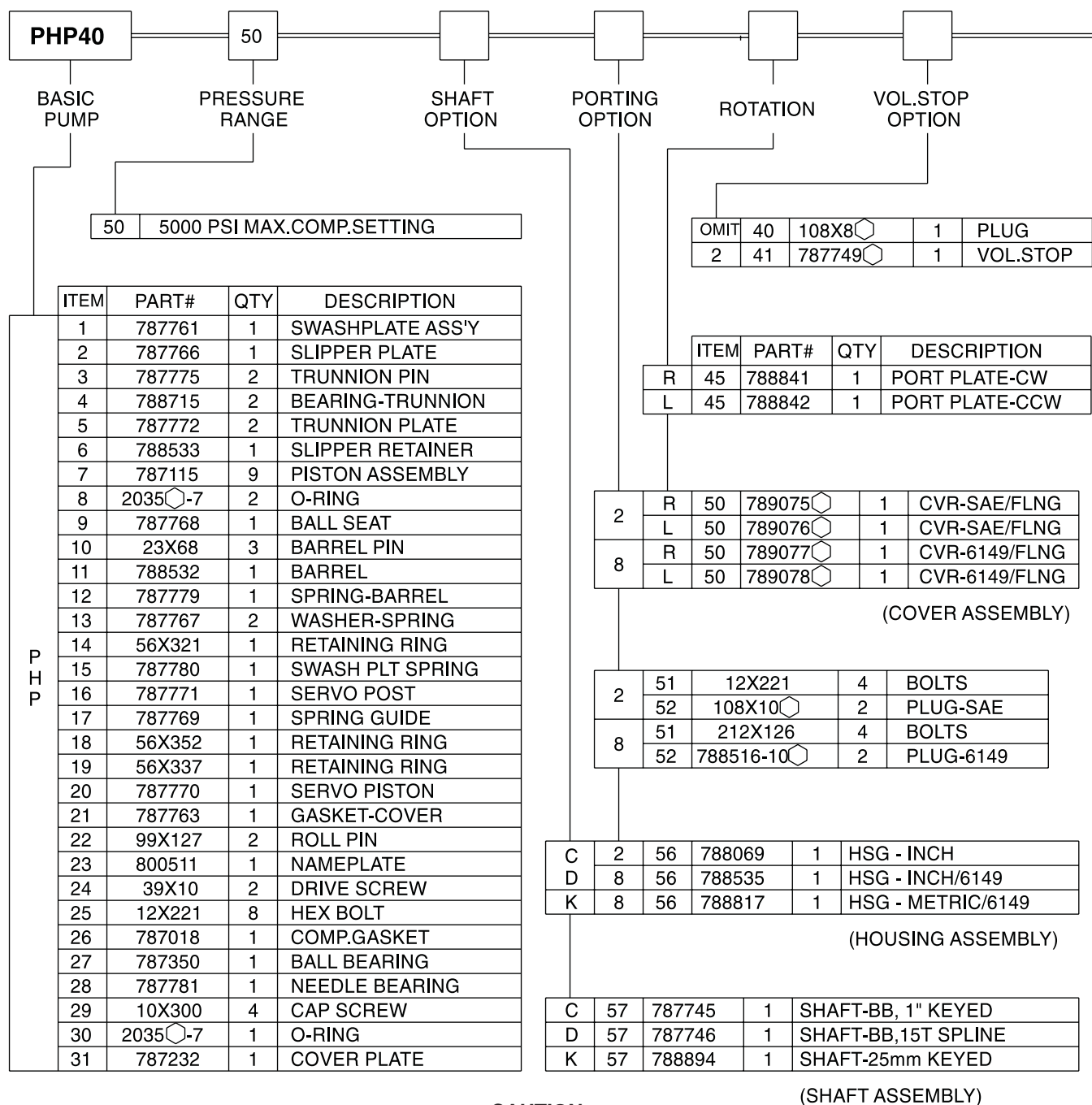
6B3 - 13 TOOTH 16/32 PITCH SPLINE - KIT P/N 787239 6B4 - 15 TOOTH 16/32 PITCH SPLINE - KIT P/N 787240 9B3 - 13 TOOTH 16/32 PITCH SPLINE - KIT P/N 788210 9B4 - 15 TOOTH 16/32 PITCH SPLINE - KIT P/N 788211 



NOTES:

1. ILLUSTRATION SHOWS Righthand (CW) ROTATION PUMP. LEFTHAND (CCW) PUMPS WILL HAVE THE INLET AND OUTLET PORTS ON OPPOSITE SIDE AND PORT PLATE KIDNEYS REVERSED.
2. SEAL KIT (SKPHP40-10) CONSIST OF:
 ALL O-RINGS, GASKETS AND SHAFT SEAL.

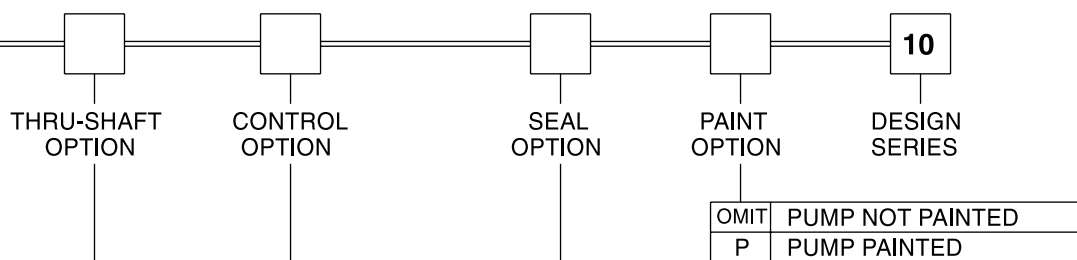


Parts List**Model PHP40 **** 10****CAUTION**

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.



| | ITEM | PART# | QTY | DESCRIPTION |
|------|------|--------|-----|--------------------|
| OMIT | 98 | 787751 | 1 | SHAFT SEAL - BUNA |
| V | 98 | 787791 | 1 | SHAFT SEAL - VITON |









| | | | | | |
|-----|------|----|-----------------|---|------------------------|
| 2 | OMIT | 90 | 788240-5 | 1 | STANDARD COMP ASSY |
| | M | 91 | 788751-5 | 1 | REMOTE COMP ASSY (INT) |
| 3 | ME | 92 | 788752-5 | 1 | REMOTE COMP ASSY (EXT) |
| | A | 93 | 788753-5 | 1 | LOAD SENSE COMP ASSY |
| HLM | | 95 | 788017 | 1 | HI-LO ASSEMBLY |
| | | 91 | 788751-5 | 1 | REMOTE COMP ASSY |
| HLA | | 95 | 788017 | 1 | HI-LO ASSEMBLY |
| | | 93 | 788752-5 | 1 | LOAD SENSE ASSY |
| | VO | 90 | USE"OMIT"OPTION | 1 | STANDARD COMP ASSY |
| | VM | 91 | USE"M"OPTION | 1 | REMOTE COMP ASSY |
| | VA | 93 | USE"A"OPTION | 1 | LOAD SENSE ASSY |

NOTE:
 WHEN ORDERING CONTROLS FOR METRIC
 VERSION PUMPS(OPTION 8)
 ADDITIONAL METRIC SCREWS ARE REQUIRED.

| CONTROL | PART NUMBER | QTY | DESCRIPTION |
|-----------|-------------|-----|------------------|
| OMIT | 210X105 | 4 | CAPSCREW-M5X35MM |
| ALL OTHER | 210X108 | 4 | CAPSCREW-M5X50MM |

NOTE:
 WHEN ORDERING CONTROLS M,ME,A,HLM,HLA
 FOR METRIC VERSION PUMPS(OPTION 8)
 ADDITIONAL ADAPTOR FITTING IS REQUIRED.

| PORTING | PART NUMBER | QTY | DESCRIPTION |
|---------|-------------|-----|------------------|
| 8 | 788517 | 1 | FITTING(ISO6149) |

| | | | | | |
|---|------|----|--|---|----------------------|
| | OMIT | 31 | 787232 | 1 | COVER PLATE |
| 6 | A4 | 81 | 787236  | 1 | "A" PILOT,9T SPLINE |
| | A5 | 82 | 787392  | 1 | "A" PILOT,11T SPLINE |
| | B3 | 85 | 787239  | 1 | "B" PILOT,13T SPLINE |
| | B4 | 86 | 787240  | 1 | "B PILOT,15T SPLINE |
| 9 | A4 | 81 | 788208  | 1 | "A" PILOT,9T SPLINE |
| | A5 | 82 | 788209  | 1 | "A" PILOT,11T SPLINE |
| | B3 | 85 | 788210  | 1 | "B" PILOT,13T SPLINE |
| | B4 | 86 | 788211  | 1 | "B PILOT,15T SPLINE |

Notes:

1. O-Ring compound designation - =Nitrile, = Viton.
2. For proper operation of "HLM" control, it must be used with a "M" option compensator.
3. For proper operation of "HLA" control, it must be used with an "A" option compensator.
4. Seal Kit P/N SKPHP 40 10
 Rotating Group Kit P/N: RRKPHP40 10

R - CW
 L - CCW

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 reinstalling 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 its 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**

- △ Pump should prime within 30 seconds. If it does not, **STOP**.
- △ 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 flange not tight, pinched O-Ring at flange or pump housing.

Cannot Build Any Pressure

- △ Make sure pump is primed.
- △ Check alignment.
- △ 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.
- △ Pressure control dart is lodged open.

Pump Will Not Compensate

- △ Differential spring over-compressed (i.e. spring guide dislocated).
- △ Pressure control stem vent hole is plugged.
- △ Control spool travel is hindered.
- △ Saturation orifice is missing in load sense circuit.

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3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

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