SERVICE INSTRUCTIONS
“PVWJ” C-FRAME PUMPS -064/-076/-098/-130
FOR TYPE “P-1NN/F/J/K” AND “P-LNN/F/J/K” LOAD SENSING CONTROLS

Figure 1. Typical Oilgear Type “P-1NN/F/J/K” and “P-LNN/F/J/K” Load Sensor Controls for “PVWJ” C-Frame Pump (shown with and without optional adapter and maximum volume stop)

PURPOSE OF INSTRUCTIONS
These instructions will simplify the installation, operation, troubleshooting and maintenance of Oilgear type “P-1NN/F/J/K” and “P-LNN/F/J/K” controlled units.

This material will inform you about the basic construction, principle of operation and service parts listings. Some controls may be modified for specific applications from those described in this bulletin and other changes may be made without notice.

REFERENCE MATERIAL
Fluid Recommendations....................................................................................................... Bulletin 90000
Contamination Evaluation Guide........................................................................................ Bulletin 90004
Filtration Recommendations............................................................................................ Bulletin 90007
Piping Information ......................................................................................................... Bulletin 90011
Proper Installation of Vertical Pumps ............................................................................... Bulletin 90014
Alternate Remote Compensating of Single/Multiple Load Sense Pumps ....................... DS-47974-A
PVWJ Open Loop Pumps, Application Guidelines.......................................................... Bulletin 847085
PVWJ Open Loop Pumps (All Frame Sizes) Service Instructions .................................. Bulletin 947085
PVWJ Open Loop Pumps, Sales .................................................................................. Bulletin 47085

PVWJ PUMP INSTALLATIONS
PVWJ C Frame (PVWJ-064) w/ Rear Ports ...................................................................... DS-47486
PVWJ C Frame (PVWJ-064) w/ Side Ports & w/ or w/o Thru Shaft ................................ DS-47487
PVWJ C Frame (PVWJ-076/-098/-130) w/ Rear Ports .................................................... DS-47488
PVWJ C Frame (PVWJ-076/-098/-130) w/ Side Ports & w/ or w/o Thru Shaft ............... DS-47489

PVWJ PUMP CONTROL INSTALLATIONS
“P-1NN/F/J/K” and “P-LNN/F/J/K” Pressure Compensator w/ Load Sense for
PVWJ-064/-076/-098/-130.................................................................................................. DS-47989

THE OILGEAR COMPANY
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Milwaukee, Wisconsin 53219
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Read and understand this entire instruction sheet before repairing, or adjusting your Oilgear product.

Those who use and maintain this equipment must be thoroughly trained and familiar with the product. If incorrectly used or maintained, this product and its equipment can cause severe injury.

SAFETY SYMBOLS

The following signal words are used in this instruction sheet to identify areas of concern where your safety may be involved. Carefully read the text and observe any instructions provided to ensure your safety.

**DANGER**

This signal word indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING**

This signal word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**

This signal word indicates that a potentially hazardous situation exists which, if not avoided, may result in damage to equipment or minor personal injury.

While not directly relevant to the topic being discussed, the **NOTE** is used to emphasize information provided, or provide additional information which may be of benefit.

**WARNING**

Some service operations may require special tools or equipment. If you require information on these items, please contact Oilgear before attempting these repairs and service operations.

**WARNING**

Read, understand and follow the safety guidelines, dangers and warnings contained in this instruction sheet to promote reliable operation and prevent serious personal injury.

**WARNING**

DO NOT attempt to service this machinery in an environment where safety regulations are not established and in place.

**WARNING**

DO NOT operate the hydraulic system if a leak is present. Serious injury may result.

**WARNING**

Hydraulic systems operate under very high pressure. Hydraulic fluid escaping from a pressurized system can penetrate unprotected body tissue. DO NOT inspect for hydraulic leaks with bare hands or other exposed body parts. As a minimum, wear leather gloves prior to inspecting for leaks and use cardboard or wood. If leaks are present, relieve pressure and allow system to cool prior to servicing. If injured by escaping hydraulic oil, contact a physician immediately. Serious complications may arise if not treated immediately. If you have questions regarding inspecting for hydraulic leaks, please contact Oilgear prior to servicing.

The cleanliness of working on this pump or the hydraulic system is extremely important to the safety and reliability of the pump and the system. Always make sure the fittings are clean on the outside before removing them from their connections, are capped and plugged when removed and placed in a clean rag or container until they are reinstalled.
Hydraulic hoses and tubing must be inspected on a daily basis for leaks, cuts, abrasions, damage and improper clearance along any mounting frame for hidden damage before the unit is put into service. Replace damaged hoses or hoses you suspect are damaged before the system is returned to service! Hoses must be replaced every two years. Failure to properly inspect and maintain the system may result in serious injury.

Hydraulic systems are hot. DO NOT TOUCH! Serious personal injury may result from hot oil. When you have completed working on the hydraulic system, thoroughly clean any spilled oil from the equipment. Do not spill any hydraulic fluids on the ground. Clean any hydraulic fluids from your skin as soon as you have completed maintenance and repairs. Dispose of used oil and system filters as required by law.

Use correct hoses, fittings, and adapters with the correct SAE rating when replacing hoses to prevent possible serious injury. Always replace hoses, fittings, and adapters with replacements that have a proper, suitable, working pressure rating. Replacement hoses must be of the correct length and must comply with the hose manufacturer’s and Oilgear’s installation guidelines and recommendations.

Hydraulic hoses have the SAE ratings marked on the hose to assist you in selecting the correct hose. The same manufacturer must supply any replacement hydraulic hoses and fitting assemblies. As an example: Brand “X” hose and brand “Y” fitting will not normally be compatible. No “Twist” is allowed in the hydraulic hoses. “Twist” may result in premature hose failure. This can cause serious injury. Please contact Oilgear for assistance when required.

Hydraulic cylinders can be holding a function in a certain position when the pump is OFF. An example of this is a function being held in the lift or partial lift position by the cylinders. If a hydraulic line is removed or the hydraulic circuits or controls are being worked on, gravity may allow the function being held in position to drop. All workers and personnel must remain clear of these areas when working on or operating the hydraulic system. Block and secure all devices and functions which apply before beginning work or operation. Failure to comply with this can result in serious injury or death.

Any hydraulic pipe which is replaced must conform to SAE J1065 specifications. If incorrect hydraulic pipe is installed, the hydraulic system may fail, causing serious injury. Damaged or leaking fittings, pipes or hoses must be replaced before the system is returned to service.

DO NOT heat hydraulic pipe. The carbon content of this steel tube is such that if heated for bending, and either water or air quenched, the pipe may lose its ductility and thereby be subject to failure under high pressure conditions. Serious injury can result. Damaged or leaking pipes must be replaced before the system is returned to service. Please contact Oilgear if you require assistance or have questions.

All hydraulic pressure must be relieved from the hydraulic system prior to removing any components from the system. To relieve the hydraulic pressure from the hydraulic system, turn off the motor and operate the control panel with the key in the ON position. Failure to comply can result in serious injury. If you have any questions concerning relieving the hydraulic pressure from the system, please contact Oilgear.
Hydraulic components can be heavy. Use caution while lifting these components. Serious personal injury can be avoided with proper handling of the components.

Please contact Oilgear if you require assistance. When performing hydraulic test procedures, use the proper hydraulic gauges. Installing an incorrect test gauge could result in serious injury if the gauge fails. Use properly rated hydraulic hoses to allow the test gauge to be read away from moving parts and functions.

Increasing hydraulic pressure beyond the recommendations may result in serious damage to the pump and system or serious personal injury and may void the Oilgear Warranty. If you have questions concerning hydraulic pressures or testing procedures, please contact Oilgear before attempting the test procedures or making adjustments.

An Oilgear pump or pump control must not be modified in any way without authorization from Oilgear. Modifications may not comply with safety standards, including ANSI safety standards, and may result in serious personal injury. Please contact Oilgear if you require assistance.

DO NOT enter under hydraulic supported equipment unless they are fully supported or blocked. Failure to follow this procedure can result in serious injury or death.

Any Oilgear pump safety decals must be replaced anytime they are damaged, missing, or cannot be read clearly. Failure to have proper decals in place can result in serious injury or death. (If you require safety decals, please contact Oilgear for replacement safety decals, at no charge.)

Be sure everyone is clear of the area around the hydraulic system before operating after servicing. Remain attentive at all times when operating to check your work until you are completely sure it is safe to return to service. Failure to heed this warning may result in serious personal injury or death.

Wear the proper protective clothing when operating, servicing or maintaining the hydraulic system or the Oilgear pump. Wear the correct protective gear, safety glasses, gloves and safety shoes. Serious injury can result without proper protective gear.

Make sure to keep hands, feet and other parts of your body clear of revolving or moving parts. Failure to comply can cause serious injury.

DO NOT wear watches, rings or jewelry while working with electrical and mechanical equipment. These items can be hazardous and can cause serious and painful injuries if they come into contact with electrical wires, moving parts or hydraulic equipment.
Figure 2. ASA Diagram for “P-1NN/F/J/K” or “P-LNN/F/J/K” Controls Shown with Typical Pump

Figure 3. Curve Indicating Flow Versus Pressure for “P-1NN/F/J/K” or “P-LNN/F/J/K” Type Control
<table>
<thead>
<tr>
<th>TROUBLESHOOTING</th>
<th>PROBLEM</th>
<th>CAUSES</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unresponsive or Unstable Control</td>
<td>Swashblock bearing surface and/or saddle bearings worn or damaged.</td>
<td>See appropriate pump service bulletin.</td>
<td></td>
</tr>
<tr>
<td>Control pin and/or hole in swashblock worn significantly.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Saddle bearing locating pins broken.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fluid is contaminated.</td>
<td>Inspect and clean if necessary. See bulletin 90007.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control piston orifice (732) plugged.</td>
<td>Inspect and clean if necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contamination trapped between control piston (702) and piston bore is not allowing piston to move smoothly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contamination trapped between control spool (708) and spool bore is not allowing spool to move smoothly.</td>
<td>Inspect and clean if necessary. Replace scored or damaged parts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contamination trapped between control spool (725) and spool bore is not allowing spool to move smoothly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulty remote pressure compensator circuit components.</td>
<td>Inspect and replace if necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic line between remote pressure compensator components and RP port of control is too long.</td>
<td>Shorten line length.</td>
<td></td>
<td></td>
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<tr>
<td>Insufficient control flow.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient Outlet Volume</td>
<td>Swashblock not stroking to desired displacement.</td>
<td>See appropriate pump service bulletin.</td>
<td></td>
</tr>
<tr>
<td>Low input drive speed.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Worn or grooved cylinder barrel and/or valve plate mating surfaces.</td>
<td></td>
<td></td>
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<tr>
<td>Failed driveshaft.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worn or damaged piston shoes or swashblock.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worn pistons and/or piston bores.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control piston stuck off stroke.</td>
<td>Inspect and replace if necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential pressure setting is too low.</td>
<td>Adjust load sense setting CW or add shim to increase differential pressure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum volume stop adjusted incorrectly.</td>
<td>Adjust maximum volume stop CCW to increase outlet flow.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure compensator is set too close to operating pressure.</td>
<td>Adjust pressure compensator setting CW to increase setting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Destrokes at low pressure</td>
<td>Pressure compensator adjustment not set correctly.</td>
<td>Adjust pressure compensator setting CW to increase setting and retorque jam nut (715).</td>
<td></td>
</tr>
<tr>
<td>Load sense line is vented.</td>
<td>Check pressure in load sense line (at load sense port) to assure it is same as system pressure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow control valve is closed or blocked.</td>
<td>Inspect and service if necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control piston orifice (732) plugged.</td>
<td>Inspect and clean if necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severely worn load sense control spool (725) and/or spool bore.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damaged or fractured control spring (items 708, 709 and/or 726).</td>
<td>Inspect and replace if necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severely worn pressure compensator control spool (706) and/or spool bore.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damaged or fractured control piston spring (item 703).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulty remote pressure compensator circuit components.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excessive peak pressure</td>
<td>Pressure compensator is set too high.</td>
<td>Adjust pressure compensator setting CCW to decrease setting.</td>
<td></td>
</tr>
<tr>
<td>Minimum volume stop is set too high.</td>
<td>Adjust minimum volume stop CCW to decrease outlet flow.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid is contaminated.</td>
<td>Inspect and clean if necessary. See bulletin 90007.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swashblock bearing surface and/or saddle bearings worn or damaged.</td>
<td>See appropriate pump service bulletin.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contamination trapped between control piston (702) and piston bore is not allowing piston to move smoothly.</td>
<td>Inspect and clean if necessary. Replace scored or damaged parts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contamination trapped between control spool (706) and spool bore is not allowing spool to move smoothly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulty remote pressure compensator circuit components.</td>
<td>Inspect and replace if necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restriction in drilled passages between pump outlet port and control spool.</td>
<td>Inspect and clean if necessary.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PRINCIPLE OF OPERATION

“P-1NN/F/J/K” and “P-LNN/F/J/K” load sensing controlled pumps match flow and pressure to load demand. As the load on the system increases, pump pressure will also increase, but flow (volume) will remain constant. The control senses and maintains a constant pressure differential across an orifice (flow control valve) in the delivery line and pump flow becomes a function of valve position. For a given flow control valve setting, the pump will maintain a constant flow regardless of changes in the pump input speed and/or working pressure. The flow compensator has no tank port therefore, the pressure compensator valve takes priority and short strokes the pump when the compensator setting is reached. As load pressure falls below the compensator setting, the load sensing function automatically resumes.

“P-1NN/F/J/K” controls can be adjusted from 750 psi (51,7 bar) working pressure up to a maximum pressure rating of the applicable pump.

“P-LNN/F/J/K” controls can be adjusted from 250 psi (17,2 bar) up to a maximum of 1500 psi (103,4 bar).

Figure 4. Swashblock at Full Delivery and “P-1NN/F/J/K” or “P-LNN/F/J/K” Controls at Maximum Volume Stop
LINE MOUNTED REMOTE PRESSURE CONTROL FOR TYPE "P-1NN/F/J/K" AND "P-LNN/F/J/K" PUMP CONTROLS

Remote operation of “P-1NN/F/J/K” and “P-LNN/F/J/K” controls can be accomplished by installing a remote compensator valve at the location shown in the control circuit.

The compensator setting on the pump control must be set at least 200 psi (13.8 bar) higher than the required pressure setting of the remote compensator module to prevent the pump compensator control from interacting with the remote compensator module.

Figure 5. “P-1NN/F/J/K” and “P-LNN/F/J/K” Control Circuit with Remote Pressure Control
ALTERNATE

REMOTE COMPENSATING SINGLE/MULTIPLE PVWJ PUMPS REMOTE ADJUSTMENT

Minimum system pressure will be determined by the control piston spring in the load sense control. Pump outlets must be isolated with check valves.

Procedure for setting up the remote compensator on multiple PVWJ pumps with adjustable load sense controls. A pressure gauge should be installed at the outlet of each pump.

1. Remove the load sense line from each pump and plug the load sense line.
2. Start pumps and set each standby setting at 300 psi (20,7 bar), then turn off the pumps.
3. Reinstall load sense lines.
4. Set the remote compensator relief valve at its maximum pressure setting.
5. Start the pump and set the compensator adjustment at 200 psi (13,8 bar) above what the maximum (system) remote setting would be, i.e. if the remote psi was to be 3000 (206,8 bar) set the pump at 3200 psi (220,6 bar).
6. Repeat step 5 for each pump.
7. Start all pumps and observe the pressures at each unit as the pressure is varied at the remote compensator valve.

Supply orifice size may vary based on application.

NOTE

If possible, start each pump individually for the remainder of the set-up procedure.
### SCREW AND PLUG TORQUES
FOR CONTROLS

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Head Type &amp; Size</th>
<th>Tightening Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>603</td>
<td>SAE #4 Plug</td>
<td>3/16&quot; Internal Hex</td>
<td>120 in.-lbs (14 N·m)</td>
</tr>
<tr>
<td>605</td>
<td>SAE #6 Plug</td>
<td>1/4&quot; Internal Hex</td>
<td>200 in.-lbs (23 N·m)</td>
</tr>
<tr>
<td>606</td>
<td>SAE #8 Plug</td>
<td>5/16&quot; Internal Hex</td>
<td>45 ft-lbs (61 N·m)</td>
</tr>
<tr>
<td>711</td>
<td>PC Adjuster Screw LHCS</td>
<td>3/32&quot; Internal Hex</td>
<td>57 in.-lbs (6 N·m)</td>
</tr>
<tr>
<td>714</td>
<td>Adjuster Plate Screw</td>
<td>5/32&quot; Internal Hex</td>
<td>80 in.-lbs (9 N·m)</td>
</tr>
<tr>
<td>720</td>
<td>Max. or Min. Volume Stop Housing</td>
<td>7/8&quot; External Hex</td>
<td>50 ft-lbs (68 N·m)</td>
</tr>
<tr>
<td>722</td>
<td>End Cap Screws</td>
<td>3/16&quot; Internal Hex</td>
<td>120 in.-lbs (14 N·m)</td>
</tr>
<tr>
<td>723</td>
<td>Control Body Screws</td>
<td>1/4&quot; Internal Hex</td>
<td>30 ft-lbs (41 N·m)</td>
</tr>
<tr>
<td>730</td>
<td>Load Sense Module Screws</td>
<td>5/32&quot; Internal Hex</td>
<td>80 in.-lbs (9 N·m)</td>
</tr>
<tr>
<td>732</td>
<td>Control Piston Orifice</td>
<td>3/32&quot; Internal Hex</td>
<td>20 in.-lbs (2.3 N·m)</td>
</tr>
<tr>
<td>733</td>
<td>Load Sense Module Adapter Screws</td>
<td>5/32&quot; Internal Hex</td>
<td>80 in.-lbs (9 N·m)</td>
</tr>
<tr>
<td>738</td>
<td>Load Sense Adjustment Housing</td>
<td>7/8&quot; External Hex</td>
<td>50 ft-lbs (68 N·m)</td>
</tr>
</tbody>
</table>

### CONTROL O-RING SEALS

<table>
<thead>
<tr>
<th>Item Number</th>
<th>ARP 568 Uniform Size Number</th>
<th>Shore A Durometer</th>
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<tbody>
<tr>
<td>1009</td>
<td>009</td>
<td>90</td>
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<td>1010</td>
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<td>90</td>
</tr>
<tr>
<td>1908</td>
<td>908</td>
<td>90</td>
</tr>
</tbody>
</table>
### PARTS LIST

Parts used in these assemblies are per Oilgear specifications. Use only Oilgear parts to ensure compatibility with assembly requirements. When ordering replacement parts, be sure to include pump type and serial number, bulletin number and item number. Specify type of hydraulic fluid to ensure seal and packing compatibility.

**NOTE**  
Parts drawings may not be identical to Oilgear drawings referenced.

#### PVWJ CONTROL PART LIST  
**C-FRAME FOR 064, 076, 098 & 130**  
LOAD SENSE WITH PRESSURE COMPENSATOR CONTROL

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td>SAE#2 Plug</td>
</tr>
<tr>
<td>603</td>
<td>SAE#4 Plug</td>
</tr>
<tr>
<td>605</td>
<td>SAE#6 Plug</td>
</tr>
<tr>
<td>606</td>
<td>SAE#8 Plug</td>
</tr>
<tr>
<td>640</td>
<td>Plug</td>
</tr>
<tr>
<td>701</td>
<td>Control Block</td>
</tr>
<tr>
<td>702</td>
<td>Control Piston</td>
</tr>
<tr>
<td>703</td>
<td>Control Piston Spring</td>
</tr>
<tr>
<td>704</td>
<td>Piston Stop</td>
</tr>
<tr>
<td>705</td>
<td>End Cap</td>
</tr>
<tr>
<td>706</td>
<td>Pressure Compensator Control Spool</td>
</tr>
<tr>
<td>707</td>
<td>Spring Seat</td>
</tr>
<tr>
<td>708</td>
<td>Pressure Compensator Spring (Outer)</td>
</tr>
<tr>
<td>709*</td>
<td>Pressure Compensator Spring (Inner)</td>
</tr>
<tr>
<td>710</td>
<td>Control Plug</td>
</tr>
<tr>
<td>711</td>
<td>Screw</td>
</tr>
<tr>
<td>712</td>
<td>Shims</td>
</tr>
<tr>
<td>713</td>
<td>Adjuster Plate</td>
</tr>
<tr>
<td>714</td>
<td>Screw</td>
</tr>
<tr>
<td>715</td>
<td>Jam Nut</td>
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<tr>
<td>716</td>
<td>Pressure Compensator Adjustment Screw</td>
</tr>
<tr>
<td>717</td>
<td>Min. Volume Stop Stem</td>
</tr>
<tr>
<td>718</td>
<td>Max. Volume Stop Stem</td>
</tr>
<tr>
<td>719</td>
<td>Jam Nut</td>
</tr>
<tr>
<td>720</td>
<td>Volume Stop Housing</td>
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<tr>
<td>721</td>
<td>Control Pin</td>
</tr>
<tr>
<td>722</td>
<td>Screw, End Cap</td>
</tr>
<tr>
<td>723</td>
<td>Screw, Control Body</td>
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<tr>
<td>724</td>
<td>Load Sense Control Module</td>
</tr>
<tr>
<td>725</td>
<td>Load Sense Control Spool</td>
</tr>
<tr>
<td>726</td>
<td>Load Sense Spring</td>
</tr>
<tr>
<td>727</td>
<td>Shims</td>
</tr>
<tr>
<td>728</td>
<td>Solid Shim</td>
</tr>
<tr>
<td>729</td>
<td>Locating Pin</td>
</tr>
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<td>O-Ring</td>
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<td>1908</td>
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*Only used in P-1 Control.*
## Service Kits

### PVWJ Control Service Kits

Reference 519975-302 and 519975-303

SERVICE KIT, Figures 7 through 10

<table>
<thead>
<tr>
<th>Description</th>
<th>Kit No.</th>
<th>Design</th>
<th>Items Included (quantity is 1 unless noted)</th>
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<td><strong>Main Control Body Kits</strong></td>
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<tr>
<td>PVWJ-064</td>
<td>K50434-101</td>
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<td>PVWJ-076/-098/-130</td>
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<td><strong>Control Piston Kit</strong></td>
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<td><strong>Control Spring Kits</strong></td>
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<td>P-LNN/F, P-LNN/J, &amp; P-LNN/K (All Models)</td>
<td>K50036-105</td>
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<td>PVWJ-064 P-1NN/F, P-1NN/J, &amp; P-1NN/K</td>
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<td>Load Sense Differential = 100-220 psid (All Models)</td>
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<td>Fixed Load Sense Module Assembly, 170 psid</td>
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<td>Adjustable Load Sense Module Assembly, 225-350 psid</td>
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Figure 7. Parts Drawing of Standard Configuration for “P-1NN/FNN” and “P-LNN/FNN” Control
(519975-302 sheet 1)
Figure 8. Exploded Parts Drawing for “P-1NN/FNN” and “P-LNN/FNN” Control (519975-302 sheet 2)
MAXIMUM AND MINIMUM VOLUME STOP

The maximum volume stop can be adjusted to attain a maximum volume from full to 25% of full flow. The pump can be de-stroked from full to 25% flow with 13 1/2 turns of the volume stop. One turn clockwise will decrease maximum pump outlet flow 4%.

The minimum volume stop can be adjusted to attain a minimum volume from zero to 70% of full flow. The adjustment requires 12 1/2 turns to go from zero to 70% of full flow. One turn clockwise will increase minimum pump outlet flow 4%.

Figure 9. Parts Drawing of Standard Configuration for “P-1NN/FSN” and “P-LNN/FSN” Control (519975-303 sheet 1)
Figure 9. Exploded Parts Drawing for “P-1NN/FSN” and “P-LNN/FSN” Control (519975-303 sheet 2) Optional Adapter and Maximum Volume Stop Shown
AFTER SALES SERVICES

At Oilgear we build products to last. It is the nature of this type of machinery to require proper maintenance regardless of the care we put into manufacturing. Oilgear has several service programs in place to help you.

STAY-ON-STREAM SERVICE

By signing up for Oilgear's Stay-On-Stream program, you can prepare for problems before they happen. Certain field tests such as fluid testing, slip testing and electronic profile recording comparisons can be performed by our field service people or your own factory trained personnel. These tests can indicate problems before they become “down-time” difficulties.

SERVICE SCHOOLS

Oilgear conducts training to train your maintenance personnel. “General” hydraulic or electronic training is conducted at our Milwaukee, Wisconsin plant on a regular basis. “Custom” training, specifically addressing your particular hydraulic and electro-hydraulic equipment, can be conducted at your facilities.

SPARE PARTS AVAILABILITY

Prepare for your future needs by stocking Oilgear original factory parts. Having the correct parts and necessary skills “in-plant” enables you to minimize “down-time.” Oilgear has developed parts kits to cover likely future needs. Oilgear Field Service Technicians are also ready to assist you and your maintenance people in troubleshooting and repairing equipment.