Oilgear

PVWW

OPEN LOOP PUMPS

FOR FLUIDS CONTAINING WATER

Bulletin 47013
PERFORMANCE
ASSURANCE IS
STANDARD WITH EVERY
OILGEAR COMPONENT

Every Oilgear pump manufactured is shipped with a corporate commitment to stay with the installation until it performs as specified.

This total dedication to performance is based upon experience gained since 1921 in matching fluid power system to a tremendous range of machines and applications.

Oilgear’s Performance Assurance is made possible because of the many hydraulic techniques learned over the years in supplying machinery builders and users with unique solutions to hundreds of unusual fluid power problems.

Historically, Oilgear has concentrated its energies on hydraulic equipment and systems. Every Oilgear facility is staffed with factory trained and field experienced application engineers. These men are backed by a headquarters engineering staff who has access to the records and knowledge generated from these historically successful solutions.

Performance Assurance doesn’t stop with the design of the system or the sale of the component. It guarantees that Oilgear engineers will be there—when they are needed—supplying the education, field service, parts and repairs, to make sure each runs smoothly—and keeps on running.

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PVWW
OPEN LOOP PUMP

Large control selection
• 12 different types
• Field interchangeability without disconnecting from drive or system piping

Cylinder mounted polymerous journal bearings
• Allows operation with water base, low viscosity or other special fluids
• Provides infinite bearing life
• Provides compact design

Hardened cylinder surface running on hardened valve plate ("hard-on-hard")
• Provides greater resistance to contamination
• Provides longer life
• Allows operation with water base, low viscosity or other special fluids

SAE keyed or SAE splined shaft
• Heavy duty belt drive shafts available

Sealed front shaft bearings
• Allows operation with water base, low viscosity or other special fluids
• Allows side loading

Swashblock and saddle with special polymerous bearings
• Allows running on water base, low viscosity or other special fluids
• Permits consistent control reaction
• Eliminates troublesome yoke bearings
• Provides long life

Steel shoes with specially treated faces for increased fluid retention, running on hardened swashblock surface.
• Allows a higher degree of contaminate resistance
• Allows higher pressure operation with long life
• Allows operation with water base, viscosity or other special fluids
• Provides longer life

88050R

Thru-shaft availability
• Allows for multiple pump installation from a single drive shaft
• Allows pumps to drive auxiliary devices

Three frame sizes with seven capacity ranges allowing greater flexibility to selectively match pressure and capacity.
• Low flow/high pressure to low pressure/high flow from the same frame sizes

Valve plate selections
• Rear or side port connections available

1
2
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4
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9
10

8000
OPEN LOOP PUMP
## SPECIFICATIONS

### 27—30 SSU VISCOSITY FLUID

<table>
<thead>
<tr>
<th>FRAME SIZE</th>
<th>UNIT SIZE</th>
<th>MAXIMUM DISPLACEMENT</th>
<th>RATED CONTINUOUS PRESSURE</th>
<th>MAXIMUM PRESSURE</th>
<th>FLOW RATE</th>
<th>MAXIMUM SPEED</th>
<th>POWER INPUT</th>
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<tr>
<td></td>
<td></td>
<td>in³/rev</td>
<td>ml/rev</td>
<td>psi</td>
<td>bar</td>
<td>psi</td>
<td>bar</td>
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<tr>
<td>A</td>
<td>06</td>
<td>0.86</td>
<td>14.1</td>
<td>3000</td>
<td>206.9</td>
<td>3500</td>
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<td></td>
<td>10</td>
<td>1.35</td>
<td>22.1</td>
<td>2000</td>
<td>137.9</td>
<td>2500</td>
<td>172.5</td>
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<tr>
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<td>15</td>
<td>2.06</td>
<td>33.8</td>
<td>3000</td>
<td>206.9</td>
<td>3500</td>
<td>241.4</td>
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<tr>
<td></td>
<td>20</td>
<td>2.83</td>
<td>46.4</td>
<td>2000</td>
<td>137.9</td>
<td>2500</td>
<td>172.5</td>
</tr>
<tr>
<td>C</td>
<td>34</td>
<td>4.67</td>
<td>76.5</td>
<td>3000</td>
<td>206.9</td>
<td>3500</td>
<td>241.4</td>
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<td>45</td>
<td>6.00</td>
<td>98.3</td>
<td>2000</td>
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<td>2500</td>
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<td></td>
<td>60</td>
<td>7.94</td>
<td>130.2</td>
<td>1200</td>
<td>82.8</td>
<td>1500</td>
<td>103.4</td>
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</tbody>
</table>

*Higher pressure available—consult factory. Note: Minimum speed 600 rpm.

For units to be run with conventional (oil) hydraulic fluids, please see Oligear Bulletin 47014 (PVW Pumps) or Bulletin 47015 (PVWH Pumps).
PUMP CONTROLS
PRESSURE*

Pressure Compensator

"CN"

Ensures maximum pump flow until unit reaches preset control pressure setting then regulates output flow to match the requirements of the system while maintaining preset output pressure.

Can be adjusted from 750 psi working pressure up to the maximum pressure rating of applicable pump.

A remote control module "VSR" can be used to adjust the "CN" Control.

Low Pressure Compensator

"CL"

Works the same as the "CN" control except it provides a lower minimum pressure. Can be adjusted from 250 psi working pressure up to a maximum of 1500 psi.

A remote control module "VSR" can be used to adjust the "CL" Control.

Dual Pressure Compensator

"C2"

Provides two independently adjustable pressure compensated deliveries as selected by an integral solenoid.

Triple Pressure Compensator

"C3"

Provides three independently adjustable pressure compensated deliveries as selected by integral solenoids.

*Be sure system and pumps are protected against overloads with a high pressure relief valve.
PUMP CONTROLS

PRESSURE * (Cont’d)

Soft Start Pressure Compensator

Pump starts "softly" by going quickly at low pressure to a reduced flow setting, thereby reducing start up torque requirements.

While a standard compensator adjustor is supplied, a remote control module "VSR" can also be used to adjust the "CU" control.

High-Low Pressure Compensator

Ensures maximum pump flow until unit reaches preset control pressure setting, then partially de-strokes the pump to provide a minimum variable adjustment preset flow rate regardless of system pressure.

Remote control module "VSR" can also be used to adjust the pressure compensator action of "CH" controlled pumps.

Remote Operator

Remote control module to adjust "CF", "CH", "CL", "CN", and "CU" controlled pumps. When system pressure reaches the setting of the remote control module, the control then regulates output to match the requirements of the system while maintaining preset output pressure.

VOLUME/PRESSURE SENSING*

Load Sensing

A constant flow output is maintained for a given flow control valve setting regardless of changes in drive speed and/or working pressure.

Remote control module "VSR" can also be used to adjust the pressure compensator action of "CF" controlled pumps.

*Be sure system and pumps are protected against overloads with a high pressure relief valve.
VOLUME*

Handwheel

"HN"
Provided simple manual handwheel adjustment of delivery.

Lever Operated

"MN"
Varies displacement proportional to the rotation of a pintle.

Fixed Displacement

"NN"

*Be sure system and pumps are protected against overloads with a high pressure relief valve.
The following single pump curves are based on a fluid temperature of 95°F (27 SSU) and flooded inlet.
SOUND CURVES

All of the following sound curves are based on pump delivering full volume from port “A”. Single microphone noise taken in semi-reverberant room at three feet from pump surface. Tolerance on curves is +3 dBa.
MULTIPLE PUMPS
PUMP COMBINATIONS

Two or more Oilgear axial piston variable delivery pumps can be integrally coupled together and driven from a single shaft.

Pump deliveries can be combined for large volume circuits or deliveries can be used individually. See page 4 for individual pump ratings.

The front pump can be used at full rated output while the rear pumps are governed by the thru shaft torque listed in the table, on page 11.
### Thru Shaft Sizing/Compatibility

<table>
<thead>
<tr>
<th>PISTON PUMP FRAME SIZE</th>
<th>INPUT TORQUE</th>
<th>ALLOWABLE THRU SHAFT TORQUE</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>PUMP SIZE</td>
<td>RATED PRESSURE (T&lt;sub&gt;R&lt;/sub&gt;)@ RATED PRESSURE</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>3000</td>
<td>206,9 452 50,9 3500 241,4 527 59,3</td>
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<tr>
<td>10</td>
<td>2000</td>
<td>137,9 466 52,5 2500 172,5 588 66,2</td>
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<tr>
<td>15</td>
<td>3000</td>
<td>206,9 1063 119,7 3500 241,4 1244 140,0</td>
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<tr>
<td>20</td>
<td>2000</td>
<td>137,9 973 109,5 2500 172,5 1215 136,8</td>
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<tr>
<td>34</td>
<td>3000</td>
<td>206,9 2395 269,6 3500 241,4 2795 314,7</td>
</tr>
<tr>
<td>45</td>
<td>2000</td>
<td>137,9 2100 236,4 2500 172,5 2600 292,7</td>
</tr>
<tr>
<td>60</td>
<td>1200</td>
<td>82,8 1722 193,9 1500 103,4 2125 239,2</td>
</tr>
</tbody>
</table>

**Actual Input Torque Calculation**

\[ T_A = T_R \times \frac{\text{Actual Operating Pressure}}{\text{Rated Pressure}} \times \% \text{Full Delivery} \]

**Note:** When applying a thru shaft driven Oilgear pump or a thru shaft driven pump from other manufacturers, it must be determined that its actual input torque does not exceed the allowable thru shaft torque given in the table above. Use the formula given to determine actual input torque if the pump is applied at other than rated values.

**Note:** If more than one pump is to be thru shaft driven, their combined actual input torques must not exceed the above values if their highest loads are experienced simultaneously.
MOUNTING BRACKETS FOR PVWW PUMPS

Piston Pump Frame Size

A

06, 10

B

15, 20

C

34, 45, 60

Contact your Oilgear Representative for detailed dimensions.
SAE ADAPTERS FOR PVWW PUMPS
Installation adapters for single pumps with thru shaft and side ports. (E60240)

<table>
<thead>
<tr>
<th>Piston Pump Frame Size</th>
<th>For Mounting The Following</th>
<th>To Piston Pump Size</th>
<th>Order Code No.</th>
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<tbody>
<tr>
<td><strong>A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>06, 10 Piston Pump</td>
<td>06, 10</td>
<td>AA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>06, 10 Piston Pump</td>
<td>15, 20</td>
<td>AA</td>
</tr>
<tr>
<td></td>
<td>15, 20 Piston Pump</td>
<td>15, 20</td>
<td>AB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>06, 10 Piston Pump</td>
<td>34, 45, 60</td>
<td>AA</td>
</tr>
<tr>
<td></td>
<td>15, 20 Piston Pump</td>
<td>34, 45, 60</td>
<td>AB</td>
</tr>
<tr>
<td></td>
<td>34, 45, 60 Piston Pump</td>
<td>34, 45, 60</td>
<td>AC</td>
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</table>

Contact your Oilgear Representative for detailed dimensions.
### SIZE AND WEIGHTS
#### SINGLE PUMPS

#### Dimensions and Weights

<table>
<thead>
<tr>
<th>FRAME SIZE</th>
<th>PVWW PUMP SIZE</th>
<th>HEIGHT (H)</th>
<th>WIDTH (W)</th>
<th>L_R</th>
<th>L_S</th>
<th>L_A</th>
<th>WEIGHT</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>inch</td>
<td>mm</td>
<td>inch</td>
<td>mm</td>
<td>inch</td>
<td>mm</td>
<td>lb</td>
</tr>
<tr>
<td>A</td>
<td>06 &amp; 10</td>
<td>4.50</td>
<td>114.3</td>
<td>4.32</td>
<td>109.7</td>
<td>7.20</td>
<td>8.07</td>
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<tr>
<td>B</td>
<td>15 &amp; 20</td>
<td>6.11</td>
<td>155.2</td>
<td>5.80</td>
<td>147.3</td>
<td>8.50</td>
<td>9.63</td>
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<tr>
<td>C</td>
<td>34, 45 &amp; 60</td>
<td>7.18</td>
<td>182.4</td>
<td>6.76</td>
<td>171.7</td>
<td>10.44</td>
<td>11.50</td>
</tr>
</tbody>
</table>

All dimensions are approximate, for detailed dimensions contact your Oilgear Representative.

Length Example:
- SINGLE PUMP:
  - PVWW-15-RSAY-CNN
  - Size 15 (L_R) length = 8.50 inches (215.9 mm)

- SINGLE PUMP W/REAR PORTS:
  - PVWW-15-RDFY-CNNNTK
  - Size 15 (L_R) length = 9.63 inches (244.6 mm)

- SINGLE PUMP W/THRU SHAFT & W/ADAPTER:
  - PVWW-15-RDFY-CNNNTK-AG
  - Size 15 (L_A) length = 12.36 inches (313.9 mm)
MULITIPLE PUMPS

DIMENSIONS AND WEIGHTS

<table>
<thead>
<tr>
<th>FRAME SIZE</th>
<th>PVWW DUAL PUMP SIZES</th>
<th>W WIDTH</th>
<th>L LENGTH</th>
<th>H HEIGHT</th>
<th>WEIGHT</th>
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<tbody>
<tr>
<td>A/A</td>
<td>06 or 10 &amp; 06 or 10</td>
<td>4-1/4</td>
<td>16 - 5/8</td>
<td>4-1/4</td>
<td>72</td>
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<tr>
<td>B/A</td>
<td>15 or 20 &amp; 06 or 10</td>
<td>5-3/4</td>
<td>19 -1/2</td>
<td>6</td>
<td>108</td>
</tr>
<tr>
<td>B/B</td>
<td>15 or 20 &amp; 15 or 20</td>
<td>5-3/4</td>
<td>21</td>
<td>6</td>
<td>144</td>
</tr>
<tr>
<td>B/C</td>
<td>34, 45 or 60 &amp; 06 or 10</td>
<td>7-1/8</td>
<td>21-1/4</td>
<td>7-1/4</td>
<td>143</td>
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<tr>
<td>C/C</td>
<td>34, 45 or 60 &amp; 15 or 20</td>
<td>7-1/8</td>
<td>22 -1/2</td>
<td>7-1/4</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>34, 45 or 60 &amp; 34, 45 or 60</td>
<td>7-1/8</td>
<td>24 -1/2</td>
<td>7-1/4</td>
<td>214</td>
</tr>
</tbody>
</table>

All dimensions are approximate, for detailed dimensions of these or other multiple combinations including other types of auxiliary pumps, contact your Oilgear Representative.

Length Example:

DUAL PUMP
Two variable delivery pumps
PVWW-45-LDFS-CHSNTK-/PVWW-20-LSAY-CNSNN
Size 45 pump (L_A) length = 14 inches (355.6 mm) plus
Size 20 pump (L_B) length = 8.50 inches (215.9 mm) =
22.50 inches (571.5 mm)

Three variable delivery pumps
PVWW-45-LDFS-CNSNTK-/PVWW-20-LDFY-CF
SNTK-/PVWW-10-LDAY-MNSNNN-CP
Size 45 pump (L_A) length = 14.00 inches (355.6 mm) plus
Size 20 pump (L_B) length = 12.36 inches (315.9 mm) plus
Size 10 pump (L_C) length = 7.20 inches (182.9 mm) =
33.56 inches (857.4 mm)
### HOW TO ORDER

<table>
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<th>BLOCK NUMBER EXPLANATION</th>
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<th>10</th>
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<tbody>
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<td>TRIPLE PUMP EXAMPLE</td>
<td>P</td>
<td>V</td>
<td>WW —</td>
<td>45 —</td>
<td>L</td>
<td>DF</td>
<td>S —</td>
<td>CN</td>
<td>SN</td>
<td>TK —</td>
<td>/</td>
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<tr>
<td>DUAL PUMP EXAMPLE</td>
<td>P</td>
<td>V</td>
<td>WW —</td>
<td>45 —</td>
<td>L</td>
<td>DF</td>
<td>S —</td>
<td>CN</td>
<td>SN</td>
<td>TK —</td>
<td>/</td>
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<tr>
<td>SINGLE PUMP WITH THRU-SHAFT</td>
<td>P</td>
<td>V</td>
<td>WW —</td>
<td>34 —</td>
<td>R</td>
<td>DF</td>
<td>S —</td>
<td>CN</td>
<td>NN</td>
<td>TK —</td>
<td>AT</td>
</tr>
<tr>
<td>EXAMPLE</td>
<td>P</td>
<td>V</td>
<td>WW —</td>
<td>10 —</td>
<td>L</td>
<td>DA</td>
<td>Y —</td>
<td>CN</td>
<td>SN</td>
<td>TK —</td>
<td>CP</td>
</tr>
<tr>
<td>SINGLE PUMP WITH REAR PORTS</td>
<td>P</td>
<td>V</td>
<td>WW —</td>
<td>06 —</td>
<td>L</td>
<td>SA</td>
<td>Y —</td>
<td>CN</td>
<td>SN</td>
<td>NN —</td>
<td></td>
</tr>
<tr>
<td>EXAMPLE</td>
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<td></td>
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</tbody>
</table>

1 = UNIT  
P = Pump  

2 = TYPE  
F = Fixed  
V = Variable  

3 = DESIGN SERIES  
WW = Water Base Series  

4 = SIZE (1800 rpm)  
06 = 6 gpm  
10 = 10 gpm  
15 = 15 gpm  
20 = 20 gpm  
34 = 34 gpm  
45 = 45 gpm  
60 = 60 gpm  

5 = ROTATION (from shaft end)  
L = Left Hand (CCW)  
R = Right Hand (CW)  

6 = PORT TYPE & LOCATIONS  
DA = Side Location w/SAE St. Thread Ports (for sizes 06, 10)  
DF = Side Location w/SAE Flanged Ports (for sizes 15, 20, 34, 45, 60)  
SA = Rear Location w/SAE St. Thread for sizes 06, 10, 15, 20, w/SAE St. Thread (Pressure Port) & w/SAE Flanged (Suction Port) for sizes 34, 45 & 60. Rear Ports can not be used with thru-shaft (multiple) units.  
DR = Flanged/Top & bottom with relief valve (for sizes 15, 20, 34 & 45). See Bulletin RV-I for dimensions.  
GA = Side Location w/SAE St. Thread Ports (for non-thru shafted size 06 & 10)  
TA = Side Location w/SAE St. Thread Ports (for thru shafted size 06 & 10).  

7 = INPUT SHAFT END  
Y = Keyed (SAE)  
S = Splined (SAE), Mobile  
D = Splined (SAE), Industrial  
B = Keyed (belt driven, size 06 thru 20)  
C = Splined (belt driven, size 06 thru 20)  

8 = CONTROL TYPES  
Pressure  
*CN = Pressure Compensator  
*CL = Low Pressure Compensator  
C2 = Dual Pressure Compensator  
C3 = Triple Pressure Compensator  
*CU = Soft Start Pressure Compensator  
*CH = High-Low Pressure Compensator  
Volume/Pressure Sensing  
*CF = Load Sensing  
2F = Dual Pressure Compensator with Load Sensing  
Volume  
HN = Handwheel  
MN = Lever Operator  
NN = Fixed Displacement  

9 = VOLUME STOPS  
SA = Minimum Volume Stop (not available with CU, CF, 2F or HN controls)  
SB = Minimum & Maximum Volume Stop (not available with CU, HP, CF or 2F controls)  
SN = Maximum Volume Stop (Not available with CU, CH, CF, 2F or HF controls)  
NN = No stops
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<thead>
<tr>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>10</th>
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</thead>
<tbody>
<tr>
<td>P</td>
<td>V</td>
<td>WW —</td>
<td>20 —</td>
<td>L</td>
<td>DF</td>
<td>Y —</td>
<td>C2</td>
<td>SN</td>
<td>TK —</td>
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<td>L</td>
<td>DA</td>
<td>Y —</td>
<td>C2</td>
<td>SN</td>
<td>TK —</td>
<td>CP</td>
</tr>
</tbody>
</table>

10 = THRU SHAFT TYPE

NN = None (Single units w/rear ports only)

TK = Mounting for Key or Tang Driven Auxiliary Devices
    (not available for 06/10 sizes)

TH = Mounting for Spline Driven Auxiliary w/high strength shaft
    Note: when using high strength shaft "TH", splined input shaft must be ordered.

11 = COUPLING and ADAPTERS
(Optional when not ordering multiple pump)

AA = For mounting PVWW-06, 10
    (SAE A 2-bolt)

AB = For mounting PVWW-15, 20
    (SAE B 2-bolt)

AC = For mounting PVWW-34, 45, 60
    (SAE C 2-bolt)

CP = Cover plate

VA = For mounting PVWW-06 or 10
    (SAE A 2-bolt) to "TH" shaft

VB = For mounting PVWW-15, or 20
    (SAE B 2-bolt) to "TH" shaft

VC = For mounting PVWW-34, 45 or 60
    (SAE C 2-bolt) to "TH" shaft

* FOR REMOTE CONTROL ADJUSTMENT (optional)

Order line mounted sequence valve as a separate item.

For additional information on this module, see DS-82318.