Piston Pumps
Technical Focus

M-Series Industrial
Variable Displacement
M Series pumps are open circuit, axial piston designs. A variety of controls provides the ability to match the pumps to each application.

A strong, proven rotating group allows the pumps to handle pressures to 280 bar (4000 psi) continuous and 320 bar (4600 psi) intermittent – with less maintenance cost. Each frame can also contain a 230 bar (3300 psi) higher flow rotating group that provides additional application flexibility. High-load bearings and a stiff drive shaft help provide a pump life of 30,000 hours (@ 65% rated pressure), reducing operating costs and extending machine life.

M Series pumps feature a saddle-type yoke with steel-backed polymer bearings. The stiff yoke reduces deflection and allows even loading of bearings, improving life. A single control piston reduces loading on the yoke, resulting in reduced pump size that allows installation in tighter locations.

M Series pumps operate at a level of quietness that exceeds the requirements of today’s demanding industrial conditions. The pumps feature a unique three-piece envelope (flange, housing and valve block) specifically created for low fluid-borne and structure-borne noise levels. Another pump feature – a bimetal timing plate – improves pump filling characteristics that, in turn, reduces fluid-borne noise and extends pump life.

An adjustable maximum stop provides a means of tuning flow to your system, while gauge ports allow monitoring of inlet and outlet conditions. These standard features reduce system complexity and cost.

Mounting flanges are offered in SAE and ISO configurations, and ports are offered in SAE, ISO, and BSPP in both tube and flange versions. This provides a wide variety of installation opportunities for global machine design.

Side- or end-ported models are available to facilitate plumbing and help fit the pump to your machine space needs. Multiple drain ports allow many mounting orientations, reducing installed costs.

M Series pumps are capable of operating with many types of hydraulic fluids used in industrial and mobile systems. High-water-content and phosphate ester fluids can be accommodated, in addition to the typical petroleum based and synthetic fluids.

With an M Series pump you can have smaller and quieter power units at higher pressures, using higher speed (1500 and 1800 r/min) electric motors. Your systems will have lower vibration levels on the system piping, helping to ensure a leak-free system.

**Typical Applications**
- Metal shears
- Stamping presses
- Material conveyors
- Automotive transfer lines
- Process industry machines
- Clamping fixtures
- Load/unload heavy robots
- Flight simulators
- Entertainment rides
- Tube forming and bending
- Plastic injection molding
- Blow molding machines
- Metal die casters

**Features and Benefits**
- Long pump life
- Quiet pump operation
- Inlet and outlet gauge ports and adjustable maximum displacement stops – standard
- Astonishingly low 4% pressure ripple
- Low installed and operating costs
- Reduced maintenance
- Flexibility in machine design
- Compact size saves space
- Design promotes leak-free system
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## Model Code Selection

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1,2,3 | Product Series  
PVM – M Series Variable Piston Pump |
| 4,5,6 | Displacement  
Fourteen displacements available  
230 bar and 280 bar continuous ratings |
| 7 | Valve Plate  
E – Electric Motor Speeds |
| 8 | Input Rotation  
R – Clockwise (Righthand)  
L – Counter-clockwise (Lefthand) |
| 9,10 | Input Shaft  
Standard SAE and ISO splined versions  
(Other configurations optional) |
| 11 | Mounting Flange  
Thirteen options in SAE and ISO mounts |
| 12 | Main Port Location  
E – End Ported  
S – Side Ported |
| 13,14 | Main Port Type  
SAE & ISO tube ports and 4-bolt flange  
(Other configurations optional) |
| 15,16 | Pump Special Features  
00 – None  
AA – Adjustable Maximum Displacement Stop and Single Shaft Seal (standard)  
AB – Double Shaft Seal, Two Way |
| 17 | Control  
0 – None  
A – Pressure Compensator  
B – Pressure and Flow Compensator with Bleed Orifice  
C – Pressure and Flow Compensator with Plugged Orifice  
E – Industrial Control (57cc through 141 cc only) |
| 18,19 | Pressure Compensator Setting  
00 – None  
07 – 70 bar (Adjustable between 40 bar and 130 bar)  
23 – 230 bar (Adjustable between 130 bar and 320 bar)  
28 – 280 bar (Adjustable between 130 bar and 320 bar) |
| 20,21 | Flow Compensator Setting  
00 – None  
11 – 11 bar setting  
20 – 20-20 bar setting  
24 – 24-24 bar setting |
| 22,23 | Torque Limiter Setting  
00 – None (Not available on M Series) |
| 24 | Compensator Special Features  
0 – None |
| 25 | Auxiliary Mounting Pad  
0 – None  
(Auxiliary mounting available on all frame sizes) |
| 26 | Paint  
0 – No Paint  
A – Standard Blue Paint |
| 27 | Customer Identification  
0 – None (Contact Eaton for Options) |
| 28 | Design Code  
A – A (Initial Release) |
### 4.5.6 Maximum Geometric Displacement

<table>
<thead>
<tr>
<th>Displacement Code</th>
<th>016</th>
<th>020</th>
<th>045</th>
<th>050</th>
<th>057</th>
<th>063</th>
<th>074</th>
<th>081</th>
<th>098</th>
<th>106</th>
<th>131</th>
<th>141</th>
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</thead>
<tbody>
<tr>
<td>cm³/hr</td>
<td>18.0</td>
<td>21.1</td>
<td>45.1</td>
<td>50.0</td>
<td>57.4</td>
<td>63.1</td>
<td>73.7</td>
<td>81.0</td>
<td>98.3</td>
<td>106.5</td>
<td>131.1</td>
<td>141.0</td>
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<tr>
<td>in³/hr</td>
<td>1.1</td>
<td>1.29</td>
<td>2.75</td>
<td>3.05</td>
<td>3.50</td>
<td>3.85</td>
<td>4.50</td>
<td>4.94</td>
<td>6.00</td>
<td>6.50</td>
<td>8.00</td>
<td>8.60</td>
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### 9.10 Shaft End Type at Electric Motor End

<table>
<thead>
<tr>
<th>Description</th>
<th>Shaft Code</th>
</tr>
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<tbody>
<tr>
<td>SAE J744-16-1, SAE A, Straight Keyed</td>
<td>01</td>
</tr>
<tr>
<td>SAE J744-19-1, SAE 19-1, Straight Keyed</td>
<td>02</td>
</tr>
<tr>
<td>SAE J744-16-4, SAE A, 9T Spline</td>
<td>03</td>
</tr>
<tr>
<td>SAE J744-16-4, SAE A, 11T Spline</td>
<td>04</td>
</tr>
<tr>
<td>SAE J744-22-1, SAE B, Straight Keyed</td>
<td>05</td>
</tr>
<tr>
<td>SAE J744-25-1, SAE B-B, Straight Keyed</td>
<td>06</td>
</tr>
<tr>
<td>SAE J744-22-4, SAE B, 13T Spline</td>
<td>07</td>
</tr>
<tr>
<td>SAE J744-25-4, SAE B-B, 15T Spline</td>
<td>08</td>
</tr>
<tr>
<td>SAE J744-32-1, SAE C, Straight Keyed</td>
<td>10</td>
</tr>
<tr>
<td>SAE J744-38-1, SAE C-C, Straight Keyed</td>
<td>11</td>
</tr>
<tr>
<td>SAE J744-32-4, SAE C, 14T Spline</td>
<td>12</td>
</tr>
<tr>
<td>SAE J744-38-4, SAE C-C, 17T Spline</td>
<td>13</td>
</tr>
<tr>
<td>SAE J744-44-1, SAE D, Straight Keyed</td>
<td>14</td>
</tr>
<tr>
<td>SAE J744-44-4, SAE D, 13T Spline</td>
<td>15</td>
</tr>
<tr>
<td>ISO 3019/2 E20N, Straight Keyed</td>
<td>16</td>
</tr>
<tr>
<td>ISO 3019/2 E25N, Straight Keyed, Short Spigot</td>
<td>17</td>
</tr>
<tr>
<td>ISO 3019/2 E25N, Straight Keyed</td>
<td>18</td>
</tr>
<tr>
<td>ISO 3019/2 E32N, Straight Keyed, Short Spigot</td>
<td>19</td>
</tr>
<tr>
<td>ISO 3019/2 E40N, Straight Keyed, Short Spigot</td>
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</table>

### 11 Mounting Flange Specifications

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>PVM018/020</th>
<th>PVM045/050</th>
<th>PVM057/063</th>
<th>PVM074/081</th>
<th>PVM098/106</th>
<th>PVM131/141</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SAE J744-82-2 (A, 2-bolt)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>B</td>
<td>ISO 3019/2-80A2HW</td>
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<td>●</td>
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<td>●</td>
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<td>C</td>
<td>SAE J744-101-2 (B, 2-bolt)</td>
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<td>●</td>
<td>●</td>
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<td>●</td>
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</tr>
<tr>
<td>D</td>
<td>ISO 3019/2-100A2HW</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>E</td>
<td>SAE J744-127-2 (C, 2-bolt)</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>F</td>
<td>ISO 3019/2-125-A2HW</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>G</td>
<td>SAE J744-127-4 (C, 4-bolt)</td>
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<td>●</td>
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<td>●</td>
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<tr>
<td>J</td>
<td>SAE J744-152-4 (D, 4-bolt)</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>K</td>
<td>ISO 3019/2-160B4HW</td>
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<td>●</td>
<td>●</td>
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● = Available  
○ = Not Available
# Model Code Options

## 12.14 MAIN PORT OPTIONS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Inlet</th>
<th>Outlet</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Inlet</td>
<td>Outlet</td>
</tr>
<tr>
<td>01</td>
<td>SAE J1926 Tube Ports</td>
<td>Inlet</td>
<td>Outlet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-20</td>
<td>-24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-24 (End ports only)</td>
<td>-24</td>
</tr>
<tr>
<td>02</td>
<td>SAE J518 Flange Ports</td>
<td>Inlet</td>
<td>Outlet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.25&quot;</td>
<td>2.0&quot;</td>
</tr>
<tr>
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<td>2.0&quot;</td>
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<td>2.0&quot;</td>
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<td>2.5&quot;</td>
<td>2.5&quot;</td>
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<tr>
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<td></td>
<td>2.5&quot;</td>
<td>2.5&quot;</td>
</tr>
<tr>
<td>03</td>
<td>ISO 6149-1 Tube Ports</td>
<td>Inlet</td>
<td>Outlet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M42</td>
<td>M48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M48 (End ports only)</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>ISO 6162 Flange Ports</td>
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<td>Outlet</td>
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<tr>
<td></td>
<td></td>
<td>32mm</td>
<td>51mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>51mm</td>
<td>51mm</td>
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<tr>
<td></td>
<td></td>
<td>64mm</td>
<td>64mm</td>
</tr>
<tr>
<td>05</td>
<td>British Standard Parallel Pipe - Tube Ports</td>
<td>Inlet</td>
<td>Outlet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G 1-1/4</td>
<td>G 3/4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G 1-1/2</td>
<td>G 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
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</tr>
</tbody>
</table>

*SAE Code 62, high pressure series, or ISO 400 bar. Other flange ports are SAE Code 61, standard pressure series, or ISO 25-350 bar.

## 25 THRU-DRIVE OPTIONS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>PVM018/020</th>
<th>PVM045/050</th>
<th>PVM057/063</th>
<th>PVM074/081</th>
<th>PVM098/106</th>
<th>PVM131/141</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>Single pump, non-thru-drive</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>A</td>
<td>SAE A, 2-bolt, 9T spline</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>B</td>
<td>SAE A, 2-bolt, 11T spline</td>
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<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>C</td>
<td>SAE B, 2-/4-bolt, 13T spline</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>D</td>
<td>SAE B-B, 2-/4-bolt, 15T spline</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>E</td>
<td>SAE C, 2-/4-bolt, 14T spline</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>F</td>
<td>SAE C-C, 2-/4-bolt, 17T spline</td>
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<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>ISO 80-A2HW, 9T SAE spline</td>
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<td>ISO 80-A2HW, 11T SAE spline</td>
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<td>○</td>
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<tr>
<td>K</td>
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<td>○</td>
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<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>L</td>
<td>ISO 125-A2/B4HW, 14T SAE spline</td>
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<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>M</td>
<td>ISO 125-A2/B4HW, 17T SAE spline</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

● = Available
○ = Not Available
## Displacement, Pressure and Flow Ratings

At 50°C (120°F), SAE 10W oil, 1 bar absolute (0 psig) inlet.

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Maximum Geometric Displacement cm³/r (in³/r)</th>
<th>Maximum Pressure bar (psi)</th>
<th>Maximum Flow at 210 bar (3000 psi) l/min (USgpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM018</td>
<td>18 (1.1)</td>
<td>Continuous</td>
<td>@1000 r/min @1500 r/min @1200 r/min @1000 r/min</td>
</tr>
<tr>
<td>PVM020</td>
<td>21.1 (1.29)</td>
<td>280 (4000)</td>
<td>31 (8.2) 26 (7) 21 (5.5) 17 (4.5)</td>
</tr>
<tr>
<td>PVM045</td>
<td>45.1 (2.75)</td>
<td>280 (4000)</td>
<td>76 (20) 65 (17) 49 (13) 42 (11)</td>
</tr>
<tr>
<td>PVM050</td>
<td>50.0 (3.05)</td>
<td>280 (4000)</td>
<td>87 (23) 75 (20) 62 (16) 49 (13)</td>
</tr>
<tr>
<td>PVM057</td>
<td>57.4 (3.50)</td>
<td>280 (4000)</td>
<td>102 (27) 85 (22.4) 66 (17.4) 54 (14.3)</td>
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<tr>
<td>PVM083</td>
<td>63.1 (3.85)</td>
<td>280 (4000)</td>
<td>111 (28) 93 (24) 74 (19) 60 (16)</td>
</tr>
<tr>
<td>PVM074</td>
<td>73.7 (4.50)</td>
<td>280 (4000)</td>
<td>127 (33.5) 106 (28) 86 (22.7) 70 (18.5)</td>
</tr>
<tr>
<td>PVM081</td>
<td>81.0 (4.94)</td>
<td>280 (4000)</td>
<td>139 (37) 116 (31) 93 (25) 76 (20)</td>
</tr>
<tr>
<td>PVM098</td>
<td>98.3 (6.00)</td>
<td>280 (4000)</td>
<td>170 (45) 141 (37) 112 (29.6) 92 (24.3)</td>
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<tr>
<td>PVM106</td>
<td>106.5 (6.50)</td>
<td>280 (4000)</td>
<td>187 (49) 155 (41) 123 (32) 102 (27)</td>
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<tr>
<td>PVM131</td>
<td>131.1 (8.00)</td>
<td>280 (4000)</td>
<td>215 (57) 178 (47) 141 (37) 118 (31)</td>
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<tr>
<td>PVM141</td>
<td>141.0 (8.60)</td>
<td>280 (4000)</td>
<td>238 (63) 199 (53) 158 (42) 131 (35)</td>
</tr>
</tbody>
</table>

*Less than 10% of duty cycle.
**Momentary system pressure spikes only.

## Speed, Input Power and Torque Ratings

At 50°C (120°F), SAE 10W oil, 1 bar absolute (0 psig) inlet.

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Maximum Operating Speed r/min</th>
<th>Maximum Input Power at 210 bar (3000 psi) kw (hp)</th>
<th>Maximum Torque at 210 bar (3000 psi) Nm (lb-ft)</th>
<th>Approximate Weight kg (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM018</td>
<td>1800</td>
<td>@1000 r/min @1500 r/min @1200 r/min @1000 r/min</td>
<td>84 (62)</td>
<td>19 (33)</td>
</tr>
<tr>
<td>PVM020</td>
<td>1800</td>
<td>16 (22)</td>
<td>13 (18)</td>
<td>9 (12)</td>
</tr>
<tr>
<td>PVM045</td>
<td>1800</td>
<td>14 (18)</td>
<td>11 (15)</td>
<td>9 (12)</td>
</tr>
<tr>
<td>PVM050</td>
<td>1800</td>
<td>41 (55)</td>
<td>34 (46)</td>
<td>27 (37)</td>
</tr>
<tr>
<td>PVM057</td>
<td>1800</td>
<td>35 (47)</td>
<td>30 (40)</td>
<td>28 (38)</td>
</tr>
<tr>
<td>PVM083</td>
<td>1800</td>
<td>52 (70)</td>
<td>44 (59)</td>
<td>36 (49)</td>
</tr>
<tr>
<td>PVM074</td>
<td>1800</td>
<td>42 (57)</td>
<td>36 (48)</td>
<td>29 (39)</td>
</tr>
<tr>
<td>PVM081</td>
<td>1800</td>
<td>63 (84)</td>
<td>52 (70)</td>
<td>42 (56)</td>
</tr>
<tr>
<td>PVM098</td>
<td>1800</td>
<td>56 (75)</td>
<td>46 (62)</td>
<td>35 (47)</td>
</tr>
<tr>
<td>PVM106</td>
<td>1800</td>
<td>88 (118)</td>
<td>72 (97)</td>
<td>58 (78)</td>
</tr>
<tr>
<td>PVM131</td>
<td>1800</td>
<td>72 (97)</td>
<td>60 (80)</td>
<td>48 (64)</td>
</tr>
<tr>
<td>PVM141</td>
<td>1800</td>
<td>94 (126)</td>
<td>79 (106)</td>
<td>63 (85)</td>
</tr>
</tbody>
</table>

## Standard Response Times

<table>
<thead>
<tr>
<th>Model Series</th>
<th>On Stroke (msec)</th>
<th>Off Stroke (msec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM018</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>PVM020</td>
<td>39</td>
<td>26</td>
</tr>
<tr>
<td>PVM045</td>
<td>140</td>
<td>40</td>
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<tr>
<td>PVM050</td>
<td>140</td>
<td>40</td>
</tr>
<tr>
<td>PVM057</td>
<td>65</td>
<td>20</td>
</tr>
<tr>
<td>PVM063</td>
<td>85</td>
<td>20</td>
</tr>
</tbody>
</table>

*Values with pressure compensator control.
Control Options

Pressure Compensator Control – Code A

The pump will provide a continuously modulated flow to meet changing load demands at a pre-adjusted compensator pressure. At pressures below the compensator setting, the pump will operate at maximum displacement. See model code on page 4 for compensator pressure ranges.

Warning: The pressure compensator may be adjusted beyond the rated pressure of the pump. When adjusting the pressure limiter, install a 0-350 bar (0-5000 psi) gage in the outlet gage port and limit the pressure setting to the continuous rated pressure for the pump displacement shown on page 7.

Pressure Cut-off Characteristics of Code A Pressure Compensator Control at 50°C (120°F), static conditions.

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Max. Speed r/min</th>
<th>&quot;Q&quot; Outlet Flow l/min (USgpm)</th>
<th>&quot;P&quot; Outlet Pressure bar (psi)</th>
<th>A bar (psi)</th>
<th>B L/min (USgpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM018</td>
<td>1800</td>
<td>32 (8.5)</td>
<td>280 (4000)</td>
<td>2.8 (40)</td>
<td>4.5 (1.2)</td>
</tr>
<tr>
<td>PVM020</td>
<td>1800</td>
<td>35 (9.25)</td>
<td>230 (3300)</td>
<td>2.8 (40)</td>
<td>4.5 (1.2)</td>
</tr>
<tr>
<td>PVM045</td>
<td>1800</td>
<td>76 (20)</td>
<td>280 (4000)</td>
<td>10 (150)</td>
<td>4.5 (1.2)</td>
</tr>
<tr>
<td>PVM050</td>
<td>1800</td>
<td>87 (23)</td>
<td>230 (3300)</td>
<td>10 (150)</td>
<td>4.5 (1.2)</td>
</tr>
<tr>
<td>PVM057</td>
<td>1800</td>
<td>102 (27)</td>
<td>280 (4000)</td>
<td>3.5 (51)</td>
<td>14 (3.7)</td>
</tr>
<tr>
<td>PVM083</td>
<td>1800</td>
<td>113 (29)</td>
<td>230 (3300)</td>
<td>7.4 (107)</td>
<td>7.6 (2.00)</td>
</tr>
<tr>
<td>PVM074</td>
<td>1800</td>
<td>127 (33.5)</td>
<td>280 (4000)</td>
<td>1.5 (22)</td>
<td>37 (9.8)</td>
</tr>
<tr>
<td>PVM081</td>
<td>1800</td>
<td>141 (37)</td>
<td>230 (3300)</td>
<td>1.5 (22)</td>
<td>37 (9.8)</td>
</tr>
<tr>
<td>PVM098</td>
<td>1800</td>
<td>179 (47)</td>
<td>280 (4000)</td>
<td>1.5 (22)</td>
<td>25 (6.6)</td>
</tr>
<tr>
<td>PVM106</td>
<td>1800</td>
<td>195 (51.5)</td>
<td>230 (3300)</td>
<td>1.5 (22)</td>
<td>20 (5.3)</td>
</tr>
<tr>
<td>PVM131</td>
<td>1800</td>
<td>229 (60.5)</td>
<td>280 (4000)</td>
<td>3.5 (51)</td>
<td>19 (5.0)</td>
</tr>
<tr>
<td>PVM141</td>
<td>1800</td>
<td>238 (63)</td>
<td>230 (3300)</td>
<td>3.5 (51)</td>
<td>14 (3.70)</td>
</tr>
</tbody>
</table>
Load Sensing and Pressure Compensator Control – Code B or C

The pump will provide power matching of pump output to system load demand, maximizing efficiency and improving load metering characteristics of any directional control valve installed between the pump and the load.

Load sensing ensures that the pump always provides only the amount of flow needed by the load. At the same time, the pump operating pressure adjusts to the actual load pressure plus a pressure differential required for the control action. When the system is not demanding power, the load sense control will operate in an energy-saving stand-by mode.

Typically, the differential pressure is that between the pressure inlet and service port of a proportionally controlled directional valve, or a load sensing directional control valve. See the model code on page 4 for differential pressure settings for load sensing.

If the load pressure exceeds the system pressure setting, the pressure compensator de-strokes the pump. The load sensing line must be as short as possible and can also be used for remote control or unloading of the pump pressure. For remote control purposes, it is recommended that you contact your Eaton representative for the correct configuration of the control.

Warning: The pressure compensator may be adjusted beyond the rated pressure of the pump. When adjusting the pressure limiter, install a 0-350 bar (0-5000 psi) gage in the outlet gage port and limit the pressure setting to the continuous rated pressure for the pump displacement shown on page 7.
Performance

**Typical Noise Levels at 1800 and 1200 r/min with**
Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- 1800 r/min max. flow
- 1200 r/min max. flow
- 1800 r/min min. flow
- 1200 r/min min. flow

Sound pressure data equivalent to NFPA. Outlet Pressure – bar (psi)

**Delivery and Efficiency at 1800 r/min**

- 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
- Volumetric Efficiency
- Overall Efficiency
- Delivery (effective flow)

**Typical Noise Levels at 1500 and 1000 r/min with**
Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- 1500 r/min max. flow
- 1000 r/min max. flow
- 1500 r/min min. flow
- 1000 r/min min. flow

Outlet Pressure – bar (psi)

**Input Torque and Power at 1800 r/min**

- 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
- Input Torque, Full Stroke
- Input Torque, Cut-off
- Input Power, Full Stroke
- Input Power, Cut-off
Performance

Delivery and Efficiency at 1500 r/min

Volumetric Efficiency

Overall Efficiency

Delivery (effective flow)

Outlet Pressure – bar (psi)

Efficiency – %

(700) 50

(1500) 90

(2200) 80

(2900) 70

(3600) 60

(4400) 50

(5000) 40

Delivery – l/min (USgpm)

30 (8)

20 (5)

10 (3)

0

Volumetric Efficiency

Overall Efficiency

Delivery (effective flow)

Outlet Pressure – bar (psi)

Efficiency – %

(700) 50

(1500) 90

(2200) 80

(2900) 70

(3600) 60

(4400) 50

(5000) 40

Delivery – l/min (USgpm)

30 (8)

20 (5)

10 (3)

0

Input Torque and Power at 1500 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque, Full Stroke

Input Power, Full Stroke

Input Torque – Nm (in.lb.)

Input Power – kW (hp)

Outlet Pressure – bar (psi)

Input Torque and Power at 1200 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque, Full Stroke

Input Power, Full Stroke

Input Torque – Nm (in.lb.)

Input Power – kW (hp)

Outlet Pressure – bar (psi)
Performance

**Delivery and Efficiency at 1000 r/min**

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

**Input Torque and Power at 1000 r/min**

- **Input Torque** (Nm in. lbf)
- **Input Power** (kW hp)

**Case Flow Versus Outlet Pressure at 1800 r/min, Full Flow**

- **Case Flow** (l/min USgpm)

**Case Flow Versus Outlet Pressure at Cutoff, 1800 r/min**

- **Case Flow** (l/min USgpm)
Performance

Typical Noise Levels at 1800 and 1200 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

Noise Level – dBA

Outlet Pressure – bar (psi)

1800 r/min
Max. Flow

1200 r/min
Max. Flow

1800 r/min
Min. Flow

1200 r/min
Min. Flow

Typical Noise Levels at 1500 and 1000 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

Noise Level – dBA

Outlet Pressure – bar (psi)

1500 r/min
Max. Flow

1000 r/min
Max. Flow

1500 r/min
Min. Flow

1000 r/min
Min. Flow
### Performance

#### PVM020

**Delivery and Efficiency at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Volumetric Efficiency**
- **Overall Efficiency**

**Outlet Pressure – bar (psi)**

**Efficiency – %**

- 0 (10)
- 10 (13)
- 20 (15)
- 30 (17)
- 40 (19)
- 50 (21)
- 60 (23)
- 70 (25)
- 80 (27)
- 90 (29)
- 100 (31)

**Delivery (effective flow)**

- 0 (10)
- 10 (13)
- 20 (15)
- 30 (17)
- 40 (19)
- 50 (21)
- 60 (23)
- 70 (25)
- 80 (27)
- 90 (29)
- 100 (31)

**Input Torque and Power at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Input Torque – Nm (in.lb.)**
- **Input Power – kW (hp)**

**Outlet Pressure – bar (psi)**

**Input Torque, Full Stroke**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)

**Input Power, Full Stroke**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)

**Input Torque, Cut off**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)

**Input Power, Cut off**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)

---

**Delivery and Efficiency at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Volumetric Efficiency**
- **Overall Efficiency**

**Outlet Pressure – bar (psi)**

**Efficiency – %**

- 0 (10)
- 10 (13)
- 20 (15)
- 30 (17)
- 40 (19)
- 50 (21)
- 60 (23)
- 70 (25)
- 80 (27)
- 90 (29)
- 100 (31)

**Delivery (effective flow)**

- 0 (10)
- 10 (13)
- 20 (15)
- 30 (17)
- 40 (19)
- 50 (21)
- 60 (23)
- 70 (25)
- 80 (27)
- 90 (29)
- 100 (31)

**Input Torque and Power at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Input Torque – Nm (in.lb.)**
- **Input Power – kW (hp)**

**Outlet Pressure – bar (psi)**

**Input Torque, Full Stroke**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)

**Input Power, Full Stroke**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)

**Input Torque, Cut off**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)

**Input Power, Cut off**

- 25 (34)
- 20 (27)
- 15 (20)
- 10 (13)
- 5 (7)
Performance

PVM020

Delivery and Efficiency at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Volumetric Efficiency

Overall Efficiency

Delivery (effective flow)

Delivery – l/min (USgpm)

Efficiency – %

0 10 20 30 40 50 (700) (1500) (2200) (2900) (3600)

0 10 (3) 20 (5) 30 (8) 40 (11) 50 (13)

Input Torque and Power at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Input Torque, Full Stroke

Input Power, Full Stroke

Input Torque – Nm (in.lbf.)

Input Power – kW (hp)

0 50 100 150 200 250 (700) (1500) (2200) (2900) (3600)

0 5 (7) 10 (13) 15 (20) 20 (27) 25 (34)

0 10 (88) 20 (177) 30 (265) 40 (354) 50 (442)

0 10 (88) 20 (177) 30 (265) 40 (354) 50 (442)

Input Torque and Power at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Input Torque, Full Stroke

Input Power, Full Stroke

Input Torque – Nm (in.lbf.)

Input Power – kW (hp)

0 50 100 150 200 250 (700) (1500) (2200) (2900) (3600)

0 5 (7) 10 (13) 15 (20) 20 (27) 25 (34)

0 10 (88) 20 (177) 30 (265) 40 (354) 50 (442)
Performance

Case Flow versus Outlet Pressure at 1800 r/min, Full Flow, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow versus Outlet Pressure at Cutoff, 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Performance

**Typical Noise Levels at 1800 and 1200 r/min**

with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

**Typical Noise Levels at 1500 and 1000 r/min**

with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet
Performance

PVM045

Delivery and Efficiency at 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Volumetric Efficiency
Overall Efficiency
Delivery (effective flow)

Outlet Pressure – bar (psi)

Efficiency – %

50 (27)
76 (20)
49 (13)
27 (7)

Volumetric Efficiency
Overall Efficiency
Delivery (effective flow)

Outlet Pressure – bar (psi)

Efficiency – %

50 (27)
76 (20)
49 (13)
27 (7)

Delivery – l/min (USgpm)

Input Torque and Power at 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque – Nm (in.lb.)

Input Torque, Full Stroke

Input Power, Full Stroke

Input Torque, Cut-off

Input Power – kW (hp)

Outlet Pressure – bar (psi)
Performance

PVM045

Delivery and Efficiency at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Volumetric Efficiency
Overall Efficiency
Delivery (effective flow)

Input Torque and Power at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
Performance

PVM045

Delivery and Efficiency at 1200 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Volumetric Efficiency
Overall Efficiency
Delivery (effective flow)

Efficiency – %

0 100
0 50 100 150 200 250 300 350 400 450 500

0 200 400 600 800 1000

0 100 200 300

Delivery – l/min (USgpm)

Input Torque and Power at 1200 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Input Torque, Full Stroke
Input Power, Full Stroke

Input Torque – Nm (in.lbf.)

Input Power – kW (hp)

0 30 (40)
0 20 (27)
0 10 (13)

0 30 (265)
0 60 (530)
0 90 (795)
0 120 (1060)
0 150 (1325)
0 180 (1595)
0 210 (1860)
0 240 (2125)
Performance

### Delivery and Efficiency at 1000 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Overall Efficiency**
- **Volumetric Efficiency**

#### Delivery (effective flow)
- 76 (20)
- 57 (15)
- 38 (10)
- 19 (5)

#### Delivery – l/min (USgpm)
- 0

#### Outlet Pressure – bar (psi)

#### Efficiency – %
- 0

### Input Torque and Power at 1000 r/min
50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

- **Input Torque, Full Stroke**
- **Input Power, Full Stroke**

#### Input Torque – Nm (in.lb.)
- 240 (2125)
- 210 (1860)
- 180 (1595)
- 150 (1325)
- 120 (1060)
- 90 (795)
- 60 (530)
- 30 (265)
- 0

#### Input Power – kW (hp)
- 30 (40)
- 20 (27)
- 10 (13)
- 0

#### Outlet Pressure – bar (psi)

- 0
- 50 (700)
- 100 (1500)
- 150 (2200)
- 200 (2900)
- 250 (3600)
- 300 (4400)
- 350 (5000)
Performance

Case Flow Versus Outlet Pressure at 1800 r/min, Full Flow
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow Versus Outlet Pressure at Cutoff, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
Performance

PVM050

Typical Noise Levels at 1800 and 1200 r/min with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Noise Level – dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>48</td>
<td>48</td>
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<tr>
<td>52</td>
<td>52</td>
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<td>56</td>
<td>56</td>
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<tr>
<td>60</td>
<td>60</td>
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<td>64</td>
<td>64</td>
</tr>
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<td>68</td>
<td>68</td>
</tr>
<tr>
<td>72</td>
<td>72</td>
</tr>
</tbody>
</table>

Typical Noise Levels at 1500 and 1000 r/min with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Noise Level – dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>52</td>
<td>52</td>
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<td>56</td>
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</tr>
<tr>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>72</td>
<td>72</td>
</tr>
</tbody>
</table>

Sound pressure data equivalent to NFPA.
Performance

PVM050

Delivery and Efficiency at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Delivery and Efficiency at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Performance

PVM050

Delivery and Efficiency at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Volumetric Efficiency

Overall Efficiency

Outlet Pressure – bar (psi)

Delivery (effective flow)

Efficiency – %

100 (33)

75 (20)

50 (13)

25 (7)

0

Delivery – l/min (USgpm)

0

25 (7)

50 (13)

75 (20)

100 (26)

125 (33)

0

10 (13)

20 (27)

30 (40)

40 (54)

50 (67)

0

20 (177)

40 (354)

60 (531)

80 (708)

100 (885)

120 (1062)

140 (1239)

160 (1416)

180 (1593)

200 (1770)

220 (1947)

240 (2124)

Outlet Pressure – bar (psi)

0

10 (13)

20 (27)

30 (40)

40 (54)

50 (67)

Input Torque, Full Stroke

Input Power, Full Stroke

Input Torque – Nm (in.lbf.)

Input Power – kW (hp)

0

20 (177)

40 (354)

60 (531)

80 (708)

100 (885)

120 (1062)

140 (1239)

160 (1416)

180 (1593)

200 (1770)

220 (1947)

240 (2124)

Outlet Pressure – bar (psi)

0

25 (7)

50 (13)

75 (20)

100 (26)

125 (33)

0

10 (13)

20 (27)

30 (40)

40 (54)

50 (67)

Input Torque, Full Stroke

Input Power, Full Stroke

Input Torque – Nm (in.lbf.)

Input Power – kW (hp)

0

10 (13)

20 (27)

30 (40)

40 (54)

50 (67)

200 (2900)

250 (3600)

150 (2200)

100 (1500)

50 (700)

0
### Performance

**Case Flow versus Outlet Pressure at 1800 r/min, Full Flow, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Case Flow (l/min)**
  - 0.1 (0.03)
  - 0.2 (0.05)
  - 0.3 (0.08)
  - 0.4 (0.11)
  - 0.5 (0.13)
  - 0.6 (0.16)
  - 0.7 (0.18)
  - 0.8 (0.21)
  - 0.9 (0.24)
  - 1.0 (0.26)

- **Outlet Pressure (bar (psi))**
  - 0
  - 0.1 (0.26)
  - 0.2 (0.26)
  - 0.3 (0.26)
  - 0.4 (0.26)
  - 0.5 (0.26)
  - 0.6 (0.26)
  - 0.7 (0.26)
  - 0.8 (0.26)
  - 0.9 (0.26)
  - 1.0 (0.26)

**Case Flow versus Outlet Pressure at Cutoff, 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Case Flow (l/min)**
  - 0
  - 1 (0.26)
  - 2 (0.53)
  - 3 (0.79)
  - 4 (1.06)
  - 5 (1.32)
  - 6 (1.59)
  - 7 (1.85)
  - 8 (2.11)
  - 9 (2.38)
  - 10 (2.64)

- **Outlet Pressure (bar (psi))**
  - 0
  - 50 (700)
  - 100 (1500)
  - 150 (2200)
  - 200 (2900)
  - 250 (3600)
Performance

Typical Noise Levels at 1800 and 1200 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

Typical Noise Levels at 1500 and 1000 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet
Performance

Delivery and Efficiency at 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi) vs. Efficiency – %

Overall Efficiency
Volumetric Efficiency
Delivery (effective flow)

Input Torque and Power at 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi) vs. Delivery – l/min (US gpm)

Input Torque – Nm (in.lbf.) vs. Input Power – kW (hp)

Input Torque, Full Stroke
Input Power, Full Stroke
Input Torque, Cut-off
Performance

PVM057

Delivery and Efficiency at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
**Performance**

**Delivery and Efficiency at 1200 r/min**

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

**Input Torque and Power at 1200 r/min**

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Input Torque, Full Stroke**
- **Input Power, Full Stroke**
Performance

### Delivery and Efficiency at 1000 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Delivery – l/min (USgpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
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<tr>
<td>20</td>
<td>0</td>
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<tr>
<td>30</td>
<td>5</td>
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<tr>
<td>40</td>
<td>11</td>
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<tr>
<td>50</td>
<td>16</td>
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<td>60</td>
<td>21</td>
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<td>70</td>
<td>25</td>
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<tr>
<td>80</td>
<td>30</td>
</tr>
<tr>
<td>90</td>
<td>35</td>
</tr>
<tr>
<td>100</td>
<td>40</td>
</tr>
</tbody>
</table>

### Input Torque and Power at 1000 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Input Torque, Full Stroke**
- **Input Power, Full Stroke**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Torque – Nm (in.lb.)</th>
<th>Input Power – kW (hp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>13</td>
<td>13 (19)</td>
</tr>
<tr>
<td>20</td>
<td>27</td>
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<td>40</td>
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<td>54</td>
<td>54 (82)</td>
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<tr>
<td>50</td>
<td>60</td>
<td>60 (90)</td>
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<tr>
<td>60</td>
<td>79</td>
<td>79 (118)</td>
</tr>
<tr>
<td>70</td>
<td>97</td>
<td>97 (146)</td>
</tr>
<tr>
<td>80</td>
<td>106</td>
<td>106 (175)</td>
</tr>
<tr>
<td>90</td>
<td>120</td>
<td>120 (194)</td>
</tr>
<tr>
<td>100</td>
<td>132</td>
<td>132 (213)</td>
</tr>
<tr>
<td>150</td>
<td>239</td>
<td>239 (360)</td>
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<tr>
<td>200</td>
<td>328</td>
<td>328 (507)</td>
</tr>
<tr>
<td>250</td>
<td>417</td>
<td>417 (654)</td>
</tr>
<tr>
<td>300</td>
<td>506</td>
<td>506 (701)</td>
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<tr>
<td>350</td>
<td>595</td>
<td>595 (748)</td>
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<tr>
<td>400</td>
<td>684</td>
<td>684 (795)</td>
</tr>
<tr>
<td>450</td>
<td>773</td>
<td>773 (843)</td>
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<tr>
<td>500</td>
<td>862</td>
<td>862 (891)</td>
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<tr>
<td>550</td>
<td>951</td>
<td>951 (939)</td>
</tr>
<tr>
<td>600</td>
<td>1041</td>
<td>1041 (987)</td>
</tr>
</tbody>
</table>

---

PVM057
Performance

Case Flow Versus Outlet Pressure at Full Flow, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow Versus Outlet Pressure at Cutoff, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
Performance

Typical Noise Levels at 1800 and 1200 r/min. with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Typical Noise Levels at 1500 and 1000 r/min. with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
Performance

**PVM063**

**Delivery and Efficiency at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

**Outlet Pressure** – bar (psi)

**Efficiency – %**

- 100 (32)
- 100 (26)
- 80 (21)
- 60 (16)
- 40 (11)
- 20 (5)

**Delivery – l/min (USgpm)**

- 0
- 20 (5)
- 40 (11)
- 60 (16)
- 80 (21)
- 100 (26)

**Input Torque and Power at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

- **Input Torque**, Full Stroke
- **Input Power**, Full Stroke
- **Input Torque**, Cut-off
- **Input Power**, Cut-off

**Outlet Pressure** – bar (psi)

**Input Torque**, Full Stroke
- 270 (2390)
- 240 (2124)
- 210 (1859)
- 180 (1593)
- 150 (1328)
- 120 (1062)
- 90 (1327)
- 60 (531)
- 30 (226)

**Input Power**, Full Stroke
- 50 (67)
- 40 (54)
- 30 (40)
- 20 (27)
- 10 (13)

**Input Torque**, Cut-off
- 50 (67)
- 40 (54)
- 30 (40)
- 20 (27)
- 10 (13)

**Input Power**, Cut-off
- 50 (67)
- 40 (54)
- 30 (40)
- 20 (27)
- 10 (13)
Performance

PVM063

Delivery and Efficiency at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Delivery and Efficiency at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Performance

PVM063

Case Flow versus Outlet Pressure at 1800 r/min, Full Flow, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow versus Outlet Pressure at Cutoff, 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Performance

Typical Noise Levels at 1800 and 1200 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

Typical Noise Levels at 1500 and 1000 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet
Performance

**PVM074**

### Delivery and Efficiency at 1800 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

#### Outlet Pressure – bar (psi)

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Delivery (effective flow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>25 (7)</td>
</tr>
<tr>
<td>50</td>
<td>50 (13)</td>
</tr>
<tr>
<td>75</td>
<td>75 (20)</td>
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<tr>
<td>100</td>
<td>100 (26)</td>
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<td>125</td>
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<td>150</td>
<td>150 (40)</td>
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<tr>
<td>175</td>
<td>175 (47)</td>
</tr>
<tr>
<td>200</td>
<td>200 (54)</td>
</tr>
<tr>
<td>225</td>
<td>225 (61)</td>
</tr>
<tr>
<td>250</td>
<td>250 (68)</td>
</tr>
<tr>
<td>275</td>
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<tr>
<td>300</td>
<td>300 (82)</td>
</tr>
<tr>
<td>325</td>
<td>325 (89)</td>
</tr>
<tr>
<td>350</td>
<td>350 (96)</td>
</tr>
<tr>
<td>375</td>
<td>375 (103)</td>
</tr>
<tr>
<td>400</td>
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<td>450</td>
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<tr>
<td>475</td>
<td>475 (131)</td>
</tr>
<tr>
<td>500</td>
<td>500 (138)</td>
</tr>
<tr>
<td>525</td>
<td>525 (145)</td>
</tr>
<tr>
<td>550</td>
<td>550 (152)</td>
</tr>
<tr>
<td>575</td>
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<tr>
<td>600</td>
<td>600 (166)</td>
</tr>
<tr>
<td>625</td>
<td>625 (173)</td>
</tr>
<tr>
<td>650</td>
<td>650 (180)</td>
</tr>
<tr>
<td>675</td>
<td>675 (187)</td>
</tr>
<tr>
<td>700</td>
<td>700 (194)</td>
</tr>
</tbody>
</table>

#### Efficiency – %

- Delivery (effective flow)
- Overall Efficiency

### Input Torque and Power at 1800 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Input Torque, Full Stroke**
- **Input Power, Full Stroke**
- **Input Torque, Cut-off**
- **Input Power, Cut-off**

#### Outlet Pressure – bar (psi)

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>Input Torque (Nm)</th>
<th>Input Power (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>25</td>
<td>25 (27)</td>
<td>25 (354)</td>
</tr>
<tr>
<td>50</td>
<td>50 (54)</td>
<td>50 (708)</td>
</tr>
<tr>
<td>75</td>
<td>75 (80)</td>
<td>75 (940)</td>
</tr>
<tr>
<td>100</td>
<td>100 (107)</td>
<td>100 (1194)</td>
</tr>
<tr>
<td>125</td>
<td>125 (131)</td>
<td>125 (1337)</td>
</tr>
<tr>
<td>150</td>
<td>150 (155)</td>
<td>150 (1480)</td>
</tr>
<tr>
<td>175</td>
<td>175 (179)</td>
<td>175 (1622)</td>
</tr>
<tr>
<td>200</td>
<td>200 (205)</td>
<td>200 (1764)</td>
</tr>
<tr>
<td>225</td>
<td>225 (230)</td>
<td>225 (1906)</td>
</tr>
<tr>
<td>250</td>
<td>250 (255)</td>
<td>250 (2048)</td>
</tr>
<tr>
<td>275</td>
<td>275 (280)</td>
<td>275 (2190)</td>
</tr>
<tr>
<td>300</td>
<td>300 (305)</td>
<td>300 (2332)</td>
</tr>
<tr>
<td>325</td>
<td>325 (330)</td>
<td>325 (2474)</td>
</tr>
<tr>
<td>350</td>
<td>350 (355)</td>
<td>350 (2616)</td>
</tr>
<tr>
<td>375</td>
<td>375 (380)</td>
<td>375 (2758)</td>
</tr>
<tr>
<td>400</td>
<td>400 (405)</td>
<td>400 (2900)</td>
</tr>
<tr>
<td>425</td>
<td>425 (430)</td>
<td>425 (3042)</td>
</tr>
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<td>450</td>
<td>450 (455)</td>
<td>450 (3184)</td>
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<tr>
<td>475</td>
<td>475 (480)</td>
<td>475 (3326)</td>
</tr>
<tr>
<td>500</td>
<td>500 (505)</td>
<td>500 (3468)</td>
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<tr>
<td>525</td>
<td>525 (530)</td>
<td>525 (3610)</td>
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<td>550</td>
<td>550 (555)</td>
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<tr>
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<td>575 (580)</td>
<td>575 (3894)</td>
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<td>600 (605)</td>
<td>600 (4036)</td>
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<td>625 (4178)</td>
</tr>
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<td>650 (655)</td>
<td>650 (4320)</td>
</tr>
<tr>
<td>675</td>
<td>675 (680)</td>
<td>675 (4462)</td>
</tr>
<tr>
<td>700</td>
<td>700 (705)</td>
<td>700 (4604)</td>
</tr>
</tbody>
</table>
Delivery and Efficiency at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Volumetric Efficiency</th>
<th>Overall Efficiency</th>
<th>Delivery (effective flow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>100</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>50</td>
<td>75</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>75</td>
<td>50</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>100</td>
<td>25</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>125</td>
<td>10</td>
<td>5</td>
<td>3</td>
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</table>

Input Torque and Power at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Torque, Full Stroke</th>
<th>Input Power, Full Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>200 (1770)</td>
<td>20 (27)</td>
</tr>
<tr>
<td>240</td>
<td>240 (2124)</td>
<td>40 (54)</td>
</tr>
<tr>
<td>280</td>
<td>280 (2478)</td>
<td>80 (708)</td>
</tr>
<tr>
<td>320</td>
<td>320 (2832)</td>
<td>120 (1062)</td>
</tr>
<tr>
<td>360</td>
<td>360 (3186)</td>
<td>160 (1416)</td>
</tr>
<tr>
<td>400</td>
<td>400 (3540)</td>
<td>200 (3540)</td>
</tr>
</tbody>
</table>
Performance

Delivery and Efficiency at 1200 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Volumetric Efficiency

Overall Efficiency

Outlet Pressure – bar (psi)

Efficiency – %

Delivery (effective flow)

0 100
50 (700) 100 (1500) 150 (2200) 200 (2900) 250 (3600) 300 (4400) 350 (5000)

0 125 (33) 100 (26) 75 (20) 50 (13) 25 (7)

Input Torque and Power at 1200 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque – Nm (in.lbf.)

Input Power, Full Stroke

0 50 (700) 100 (1500) 150 (2200) 200 (2900) 250 (3600) 300 (4400) 350 (5000)

0 20 (27) 40 (54) 60 (80) 80 (100)

400 (3540) 360 (3186) 320 (2832) 280 (2478) 240 (2124) 200 (1770) 160 (1416) 120 (1062) 80 (708) 40 (354)
Performance

---

**PVM074**

### Delivery and Efficiency at 1000 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Efficiency (%)**
- **Volumetric Efficiency**
- **Overall Efficiency**

### Delivery (effective flow)

- **Outlet Pressure – bar (psi)**
  - 0 (0)
  - 20 (27)
  - 40 (54)
  - 60 (80)
  - 80 (107)
  - 100 (26)
  - 120 (1062)
  - 140 (1416)
  - 160 (1770)
  - 180 (2124)
  - 200 (2478)
  - 220 (2832)
  - 240 (3186)
  - 260 (3540)

---

### Input Torque and Power at 1000 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Input Torque – Nm (in.lbf.)**
  - 0 (0)
  - 40 (354)
  - 80 (708)
  - 120 (1062)
  - 160 (1416)
  - 200 (1770)
  - 240 (2124)
  - 280 (2478)
  - 320 (2832)
  - 360 (3186)
  - 400 (3540)

- **Input Power – kW (hp)**
  - 0 (0)
  - 20 (27)
  - 40 (54)
  - 60 (80)
  - 80 (107)

---

---
Performance

Case Flow Versus Outlet Pressure at Full Flow, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow - l/min (USgpm)

Outlet Pressure - bar (psi)

Case Flow Versus Outlet Pressure at Cutoff, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow - l/min (USgpm)

Outlet Pressure - bar (psi)
Performance

Typical Noise Levels at 1800 and 1200 r/min. with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>0</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800 r/min max. flow</td>
<td>74</td>
<td>72</td>
<td>70</td>
<td>68</td>
<td>66</td>
<td>64</td>
</tr>
<tr>
<td>1800 r/min min. flow</td>
<td>72</td>
<td>70</td>
<td>68</td>
<td>66</td>
<td>64</td>
<td>62</td>
</tr>
<tr>
<td>1200 r/min max. flow</td>
<td>68</td>
<td>66</td>
<td>64</td>
<td>62</td>
<td>60</td>
<td>58</td>
</tr>
<tr>
<td>1200 r/min min. flow</td>
<td>66</td>
<td>64</td>
<td>62</td>
<td>60</td>
<td>58</td>
<td>56</td>
</tr>
</tbody>
</table>

Typical Noise Levels at 1500 and 1000 r/min. with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Sound pressure data equivalent to NFPA.</th>
<th>0</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500 r/min max. flow</td>
<td>72</td>
<td>70</td>
<td>68</td>
<td>66</td>
<td>64</td>
<td>62</td>
</tr>
<tr>
<td>1500 r/min min. flow</td>
<td>70</td>
<td>68</td>
<td>66</td>
<td>64</td>
<td>62</td>
<td>60</td>
</tr>
<tr>
<td>1000 r/min max. flow</td>
<td>68</td>
<td>66</td>
<td>64</td>
<td>62</td>
<td>60</td>
<td>58</td>
</tr>
<tr>
<td>1000 r/min min. flow</td>
<td>66</td>
<td>64</td>
<td>62</td>
<td>60</td>
<td>58</td>
<td>56</td>
</tr>
</tbody>
</table>
Performance

**PVM081**

**Delivery and Efficiency at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Delivery – l/min (USgpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>25 (7)</td>
</tr>
<tr>
<td>20</td>
<td>50 (13)</td>
</tr>
<tr>
<td>30</td>
<td>75 (20)</td>
</tr>
<tr>
<td>40</td>
<td>100 (26)</td>
</tr>
<tr>
<td>50</td>
<td>125 (33)</td>
</tr>
</tbody>
</table>

**Overall Efficiency**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Efficiency – %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

**Volumetric Efficiency**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Efficiency – %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

---

**Input Torque and Power at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Torque – Nm (in.lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>50 (442)</td>
</tr>
<tr>
<td>20</td>
<td>100 (885)</td>
</tr>
<tr>
<td>30</td>
<td>150 (1327)</td>
</tr>
<tr>
<td>40</td>
<td>200 (1770)</td>
</tr>
<tr>
<td>50</td>
<td>250 (2212)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Power – kW (hp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>25 (34)</td>
</tr>
<tr>
<td>20</td>
<td>50 (67)</td>
</tr>
<tr>
<td>30</td>
<td>75 (101)</td>
</tr>
</tbody>
</table>

**Input Torque, Full Stroke**

**Input Power, Full Stroke**

---

**Delivery and Efficiency at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Delivery – l/min (USgpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>25 (7)</td>
</tr>
<tr>
<td>20</td>
<td>50 (13)</td>
</tr>
<tr>
<td>30</td>
<td>75 (20)</td>
</tr>
<tr>
<td>40</td>
<td>100 (26)</td>
</tr>
<tr>
<td>50</td>
<td>125 (33)</td>
</tr>
</tbody>
</table>

**Overall Efficiency**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Efficiency – %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>20</td>
<td>80</td>
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<tr>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

**Volumetric Efficiency**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Efficiency – %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

---

**Input Torque and Power at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Torque – Nm (in.lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>50 (442)</td>
</tr>
<tr>
<td>20</td>
<td>100 (885)</td>
</tr>
<tr>
<td>30</td>
<td>150 (1327)</td>
</tr>
<tr>
<td>40</td>
<td>200 (1770)</td>
</tr>
<tr>
<td>50</td>
<td>250 (2212)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Power – kW (hp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>25 (34)</td>
</tr>
<tr>
<td>20</td>
<td>50 (67)</td>
</tr>
<tr>
<td>30</td>
<td>75 (101)</td>
</tr>
</tbody>
</table>

**Input Torque, Full Stroke**

**Input Power, Full Stroke**

---
Performance

PVM081

Delivery and Efficiency at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Delivery and Efficiency at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Performance

PVM081

Case Flow versus Outlet Pressure at 1800 r/min, Full Flow, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow versus Outlet Pressure at Cutoff, 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Performance

Typical Noise Levels at 1800 and 1200 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

Typical Noise Levels at 1500 and 1000 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet
Performance

**PVM098**

**Delivery and Efficiency at 1800 r/min**

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

**Outlet Pressure - bar (psi)**

0 50 (13) 100 (26) 150 (40) 200 (53)

**Input T orque, Full Stroke**

**Input Power, Full Stroke**

**Input T orque, Cut-off**

**Input Power - kW (hp)**

0 25 (34) 50 (67) 75 (101) 100 (134)

**Input Torque - Nm (in.lb.)**

0 50 (442) 100 (885) 150 (1327) 200 (1770)

**Delivery-l/min (USgpm)**

0 50 (13) 100 (26) 150 (40) 200 (53)
Performance

**Delivery and Efficiency at 1500 r/min**
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

**Input Torque and Power at 1500 r/min**
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Input Torque, Full Stroke**
- **Input Power, Full Stroke**
Performance

**Delivery and Efficiency at 1200 r/min**
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Delivery – l/min (USgpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>100 (53)</td>
</tr>
<tr>
<td>75</td>
<td>200 (101)</td>
</tr>
<tr>
<td>100</td>
<td>300 (67)</td>
</tr>
<tr>
<td>150</td>
<td>400 (48)</td>
</tr>
<tr>
<td>200</td>
<td>500 (34)</td>
</tr>
<tr>
<td>250</td>
<td>550 (28)</td>
</tr>
<tr>
<td>300</td>
<td>650 (22)</td>
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<tr>
<td>350</td>
<td>750 (16)</td>
</tr>
<tr>
<td>400</td>
<td>850 (10)</td>
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<tr>
<td>450</td>
<td>950 (5)</td>
</tr>
<tr>
<td>500</td>
<td>1050 (1)</td>
</tr>
</tbody>
</table>

**Input Torque and Power at 1200 r/min**
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- **Input Torque, Full Stroke**
- **Input Power, Full Stroke**

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Torque – Nm (in.lb.)</th>
<th>Input Power – kW (hp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>550 (4867)</td>
<td>100 (134)</td>
</tr>
<tr>
<td>75</td>
<td>500 (4425)</td>
<td>75 (101)</td>
</tr>
<tr>
<td>100</td>
<td>450 (3982)</td>
<td>50 (67)</td>
</tr>
<tr>
<td>150</td>
<td>400 (3540)</td>
<td>25 (34)</td>
</tr>
<tr>
<td>200</td>
<td>350 (3097)</td>
<td>10 (13)</td>
</tr>
<tr>
<td>250</td>
<td>300 (2655)</td>
<td>10 (13)</td>
</tr>
<tr>
<td>300</td>
<td>250 (2212)</td>
<td>10 (13)</td>
</tr>
<tr>
<td>350</td>
<td>400 (1770)</td>
<td>10 (13)</td>
</tr>
<tr>
<td>400</td>
<td>200 (1327)</td>
<td>10 (13)</td>
</tr>
<tr>
<td>450</td>
<td>150 (885)</td>
<td>10 (13)</td>
</tr>
<tr>
<td>500</td>
<td>100 (442)</td>
<td>10 (13)</td>
</tr>
</tbody>
</table>

PVM098
Performance

PVM098

Delivery and Efficiency at 1000 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Volumetric Efficiency

Overall Efficiency

Delivery (effective flow)

Input Torque and Power at 1000 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure - bar (psi)
Performance

PVM098

Case Flow Versus Outlet Pressure at Full Flow, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow - l/min (USgpm)

Outlet Pressure - bar (psi)

Case Flow Versus Outlet Pressure at Cutoff, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow - l/min (USgpm)

Outlet Pressure - bar (psi)
Performance

PVM106

Typical Noise Levels at 1800 and 1200 r/min.
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

Typical Noise Levels at 1500 and 1000 r/min.
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet
Performance

**PVM106**

**Delivery and Efficiency at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Volumetric Efficiency, Overall Efficiency, Delivery (effective flow) vs Outlet Pressure in bar (psi) for 1800 r/min.]

**Delivery and Efficiency at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Volumetric Efficiency, Overall Efficiency, Delivery (effective flow) vs Outlet Pressure in bar (psi) for 1500 r/min.]

**Input Torque and Power at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Input Torque and Power vs Outlet Pressure in bar (psi) for 1800 r/min.]

**Input Torque and Power at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Input Torque and Power vs Outlet Pressure in bar (psi) for 1500 r/min.]

EATON Vickers  M Series Industrial Variable Displacement Piston Pumps Technical Focus  V-PP-MC-0004-E  August 2002
Performance

PVM106

Delivery and Efficiency at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Delivery and Efficiency at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Input Torque and Power at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Performance

Case Flow versus Outlet Pressure at 1800 r/min, Full Flow, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow versus Outlet Pressure at Cutoff, 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet
Typical Noise Levels at 1800 and 1200 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet

Sound pressure data equivalent to NFPA

Typical Noise Levels at 1500 and 1000 r/min
with Petroleum Oil (10W) at 50°C (120°F)
and 1.0 bar absolute (0 psi gauge) Inlet
Performance

**PVM131**

---

**Delivery and Efficiency at 1800 r/min**
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

![Graph showing delivery and efficiency at 1800 r/min.](image)

- **Volumetric Efficiency**
- **Overall Efficiency**
- **Delivery (effective flow)**

---

**Input Torque and Power at 1800 r/min**
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

![Graph showing input torque and power at 1800 r/min.](image)

- **Input Torque**
- **Input Power, Full Stroke**
- **Input Torque, Cut-off**

---

*Note: The graphs illustrate performance metrics under specified conditions.*

---

*EATON Vickers M Series Industrial Variable Displacement Piston Pumps Technical Focus V-PP-MC-0004-E August 2002*
Performance

PVM131

Delivery and Efficiency at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Efficiency – %

Volumetric Efficiency
Overall Efficiency
Delivery (effective flow)

Delivery – l/min (USgpm)

Input Torque and Power at 1500 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Outlet Pressure – bar (psi)

Input Torque – Nm (in.lb.)

Input Torque
Input Power, Full Stroke
Input Power – kW (hp)
Performance

**PVM131**

**Delivery and Efficiency at 1200 r/min**

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- Volumetric Efficiency
- Overall Efficiency
- Delivery (effective flow)

**Input Torque and Power at 1200 r/min**

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

- Input Torque
- Input Power, Full Stroke
Performance

### Delivery and Efficiency at 1000 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Efficiency – %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>50</td>
<td>90</td>
</tr>
<tr>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>150</td>
<td>70</td>
</tr>
<tr>
<td>200</td>
<td>60</td>
</tr>
<tr>
<td>250</td>
<td>50</td>
</tr>
<tr>
<td>300</td>
<td>40</td>
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<td>350</td>
<td>30</td>
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<td>400</td>
<td>20</td>
</tr>
<tr>
<td>450</td>
<td>10</td>
</tr>
<tr>
<td>500</td>
<td>0</td>
</tr>
</tbody>
</table>

### Input Torque and Power at 1000 r/min

50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

<table>
<thead>
<tr>
<th>Outlet Pressure – bar (psi)</th>
<th>Input Torque – Nm (in.lbf)</th>
<th>Input Power – kW (hp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>60 (531)</td>
<td>60 (531)</td>
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<tr>
<td>100</td>
<td>120 (1062)</td>
<td>120 (1062)</td>
</tr>
<tr>
<td>150</td>
<td>180 (1593)</td>
<td>180 (1593)</td>
</tr>
<tr>
<td>200</td>
<td>240 (2124)</td>
<td>240 (2124)</td>
</tr>
<tr>
<td>250</td>
<td>300 (2655)</td>
<td>300 (2655)</td>
</tr>
<tr>
<td>300</td>
<td>360 (3186)</td>
<td>360 (3186)</td>
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<tr>
<td>350</td>
<td>420 (3717)</td>
<td>420 (3717)</td>
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<td>480 (4248)</td>
<td>480 (4248)</td>
</tr>
<tr>
<td>450</td>
<td>540 (4779)</td>
<td>540 (4779)</td>
</tr>
<tr>
<td>500</td>
<td>600 (5310)</td>
<td>600 (5310)</td>
</tr>
</tbody>
</table>
Performance

PVM131

Case Flow Versus Outlet Pressure at Full Flow, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow Versus Outlet Pressure at Cutoff, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
Performance

Typical Noise Levels at 1800 and 1200 r/min with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Typical Noise Levels 1500 and 1000 r/min with Petroleum Oil (10W) at 50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Sound pressure data equivalent to NFPA.
Performance

**PVM141**

**Delivery and Efficiency at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph 1: Volumetric Efficiency, Overall Efficiency, Delivery (effective flow) vs Outlet Pressure](image1)

**Delivery and Efficiency at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph 2: Volumetric Efficiency, Overall Efficiency, Delivery (effective flow) vs Outlet Pressure](image2)

**Input Torque and Power at 1800 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph 3: Input Torque, Full Stroke, Cut-off vs Outlet Pressure](image3)

**Input Torque and Power at 1500 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph 4: Input Torque, Full Stroke vs Outlet Pressure](image4)
**Performance**

PVM141

**Delivery and Efficiency at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Volumetric Efficiency, Overall Efficiency, Delivery (effective flow), Delivery l/min (USgpm) vs Outlet Pressure (bar, psi)]

**Delivery and Efficiency at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Volumetric Efficiency, Overall Efficiency, Delivery (effective flow), Delivery l/min (USgpm) vs Outlet Pressure (bar, psi)]

**Input Torque and Power at 1200 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Input Torque (Nm, in.lb.), Input Power (kW, hp) vs Outlet Pressure (bar, psi)]

**Input Torque and Power at 1000 r/min, 50°C (120°F), and 1.0 bar absolute (0 psi gauge) Inlet**

![Graph showing Input Torque (Nm, in.lb.), Input Power (kW, hp) vs Outlet Pressure (bar, psi)]
Performance

Case Flow Versus Outlet Pressure at Full Flow, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet

Case Flow Versus Outlet Pressure at Cutoff, 1800 r/min
50°C (120°F) and 1.0 bar absolute (0 psi gauge) Inlet
End-ported Models

PVM018/020

Dimensions in millimeters (inches)

Drain port “F” (See options on page 107.)
See shaft options starting on page 102.

Control position for right hand (clockwise) shaft rotation, as viewed from shaft end. Position for left hand rotation is shown on following page.

Adjustable maximum displacement stop (1 turn = 1.1 cm³/rev). CCW reduces displacement.

Inlet gauge port “K.” See options on page 107.

Inlet port “B.” See options on page 107.

Drain port “F.” See options on page 107.

Outlet port “C.” See options on page 106.

See shaft options starting on page 102.
End-ported Models

PVM018/020

Dimensions in millimeters (inches)

Control position for right hand rotation (Load sensing control shown)

Control position for left hand rotation (Pressure compensated control shown)

Inlet/Outlet Ports and Control Positioned for Right Hand Rotation

Inlet/Outlet Ports and Control Positioned for Left Hand Rotation
Side-ported
Models

PVM018/020

Dimensions in millimeters (inches)

Load sense port “J” (See options on page 107)
Alt. drain port “F” (See options on page 107)
Drain port “F” (See options on page 107)

See shaft options starting on page 102.

Outlet port “C.” See options on page 106.

Adjustable maximum displacement stop (1 turn = 1.1 cm³/rev). CCW reduces displacement.

Outlet gauge port “K.” See options on page 107.

Control position for right hand (clockwise) shaft rotation, as viewed from shaft end. Position for left hand rotation is shown on following page.

Outlet gauge port “K.” See options on page 107.

Inlet gauge port “K.” See options on page 107.

Inletport “B.” See options on page 106.

Outlet port “C” (above). See options on page 106.

To pilot mtg. fig.
Side-ported Models

PVM018/020

Dimensions in millimeters (inches)

Adjustable maximum displacement stop (1 turn = 1.1 cm³/rev). CCW reduces displacement.

Outlet gauge port “K.” See options on page 107.

Inlet/Outlet Ports and Control Positioned for Right Hand Rotation

Outlet gauge port “K.” See options on page 107.

Inlet/Outlet Ports and Control Positioned for Left Hand Rotation

Control position for left hand rotation (Pressure compensated control shown)

Outlet gauge port “K.” See options on page 107.

Inlet position for left hand rotation (Position for right hand rotation shown above)

Outlet

Inlet/Outlet Ports and Control Positioned for Left Hand Rotation

Outlet

Control position for right hand rotation (Load sensing control shown)
PVM018/020

Dimensions in millimeters (inches)

Load sense port “J”
(See options on page 107)

Alt. drain port “F”
(See options on page 107)

Drain port “F”
(See options on page 107)

See shaft options starting on page 107.

Control position for right hand (clockwise) shaft rotation, as viewed from shaft end. Position for left hand rotation is shown on following page.

Outlet port “C.”
See options on page 106

to pilot mtg. flg

Adjustable maximum displacement stop (1 turn = 1.1 cm³/rev). CCW reduces displacement.

Inlet port “B.”
See options on page 106.

Alt. drain port “F.”
See options on page 107.
Thru-drive Models

PVM018/020

Dimensions in millimeters (inches)

Adjustable maximum displacement stop (1 turn = 1.1 cm³/rev). CCW reduces displacement.

Inlet position for right hand rotation (Position for left hand rotation shown below)

Outlet

Control position for right hand rotation (Load sensing control shown)

Outlet

Control position for left hand rotation (Pressure compensator control shown)

Output shaft 21T, 32/64 DP, 30° PA involute spline.

Model Code Position 25

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A For SAE “A” pad with a 9T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>B For SAE “A” pad with a 11T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>G For ISO 80 A2HW pad with a 9T SAE spline</td>
</tr>
<tr>
<td>H For ISO 80 A2HW pad with a 11T SAE spline</td>
</tr>
</tbody>
</table>

Model Code Position 25

<table>
<thead>
<tr>
<th>ØG</th>
<th>H</th>
<th>K</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>82.625 (3.253)</td>
<td>82.575 (3.251)</td>
<td>53.2 (2.09)</td>
<td>375-16 UNC-2B thd. 0.75 deep min</td>
</tr>
<tr>
<td>80.046 (3.151)</td>
<td>80.002 (3.150)</td>
<td>54.5 (2.15)</td>
<td>M10 x 1,50 thd. 19.05 deep min</td>
</tr>
</tbody>
</table>

Model Code Position 25

<table>
<thead>
<tr>
<th>ØG</th>
<th>H</th>
<th>K</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.7 (3.531)</td>
<td>89.6 (3.527)</td>
<td>12.25 (0.48)</td>
<td>79.4 (3.13)</td>
</tr>
<tr>
<td>57.49 (2.26)</td>
<td>12.25 (0.48)</td>
<td>79.4 (3.13)</td>
<td>86.5 (3.41)</td>
</tr>
<tr>
<td>40.46 (1.59)</td>
<td>57.49 (2.26)</td>
<td>79.4 (3.13)</td>
<td>40.46 (1.59)</td>
</tr>
<tr>
<td>53.5 (2.11)</td>
<td>40.46 (1.59)</td>
<td>79.4 (3.13)</td>
<td>53.5 (2.11)</td>
</tr>
<tr>
<td>159.2 (6.27)</td>
<td>53.5 (2.11)</td>
<td>79.4 (3.13)</td>
<td>159.2 (6.27)</td>
</tr>
</tbody>
</table>
### Flange Designations

#### PVM018/020

<table>
<thead>
<tr>
<th>&quot;A&quot; Pilot Flange Designation</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE J744-82-2 Model Code A</td>
<td>82.55</td>
<td>11.35/10.97</td>
<td>106.4</td>
<td>53.2</td>
<td>131.5</td>
<td>33.6</td>
<td>226.9</td>
<td>219.8</td>
<td>106.5</td>
<td>166.7</td>
<td>200.7</td>
<td>65.2</td>
</tr>
<tr>
<td>ISO 3019/2-80A2HW Model Code B</td>
<td>80.00</td>
<td>11.27/11.00</td>
<td>109.0</td>
<td>54.5</td>
<td>(5.18)</td>
<td>(1.32)</td>
<td>(9.00)</td>
<td>(8.65)</td>
<td>(4.19)</td>
<td>(6.56)</td>
<td>(7.90)</td>
<td>(2.57)</td>
</tr>
<tr>
<td>&quot;B&quot; Pilot Flange Designation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAE J744-101-2 Model Code C</td>
<td>101.60</td>
<td>14.55/14.17</td>
<td>146.0</td>
<td>73.0</td>
<td>124.0</td>
<td>26.1</td>
<td>221.4</td>
<td>212.3</td>
<td>99.0</td>
<td>159.2</td>
<td>193.9</td>
<td>87.0</td>
</tr>
<tr>
<td>ISO 3019/2-100A2HW Model Code D</td>
<td>100.00</td>
<td>14.27/14.00</td>
<td>140.0</td>
<td>70.0</td>
<td>(4.88)</td>
<td>(1.03)</td>
<td>(8.72)</td>
<td>(8.36)</td>
<td>(3.90)</td>
<td>(6.27)</td>
<td>(7.63)</td>
<td>(3.43)</td>
</tr>
<tr>
<td>Pilot Flange Designation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAE J744-127-2 Model Code C</td>
<td>101.60 (4.00)</td>
<td>14.55/14.17 (5.72/5.57)</td>
<td>146.0 (5.75)</td>
<td>73.0 (2.87)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO 3019/2-100 A2HW Model Code D</td>
<td>100.00 (3.94)</td>
<td>14.27/14.00 (5.62/5.51)</td>
<td>140.0 (5.51)</td>
<td>70.0 (2.76)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
End-ported Models

PVM040/050

Dimensions in millimeters (inches)

See shaft options starting on page 102.

Drain port “F.” See options on page 107.

Alternate drain port “F”

Inlet gauge port “K”

Control position for left hand (counterclockwise) shaft rotation, as viewed from shaft end. Position for right hand rotation is shown on following page.

Load sensing control (See pressure compensated control on following page.)

Load sense port “J.” See options on page 107.

Inlet port “B.” See options on page 106.

Outlet port “C.” See options on page 106.

Alternate load sense port “J”

See shaft options starting on page 102.

Alternate drain port “F”

Outlet gauge port “K.” See options on page 107.

Load sensing control (See pressure compensated control on following page.)

Load sense port “J.” See options on page 107.

Inlet port “B.” See options on page 106.

Outlet port “C.” See options on page 106.
**PVM040/050**

Dimensions in millimeters (inches)

```
34.4 (1.35) 98.9 (3.89) 4.0 (0.16) 121.8 (4.80) max.

Non-maximum adjustment stop control cap. See preceding page for adjustable maximum displacement stop
```

```
Control position for left hand rotation
```

```
Control position for right hand rotation (Pressure compensated control shown)
```

```
Inlet position for right hand rotation (Position for left hand rotation shown below)
```

```
Outlet
```

```
Outlet
```

```
Control position for left hand rotation (Load sensing control shown)
```

```
Control position for right hand rotation
```

```
Inlet position for left hand rotation (Position for right hand rotation shown above)
```

Inlet/Outlet Ports and Control Positioned for **Right Hand Rotation**

```
53.0 (2.09) 87.1 (3.43) 75.1 (2.96) 47.8 (1.88)
```

```
Inlet/Outlet Ports and Control Positioned for **Left Hand Rotation**
```

Dimensions shown on preceding page.
Side-ported Models

PVM040/050

Dimensions in millimeters (inches)

Adjustable max. displacement stop (1 turn = 2 cm³/rev)

Drain port “F.” See options on page 107.

See shaft options starting on page 102.

Load sensing control (See pressure compensated control on following page.)

Alternate load sense port “J”

Load sense port “J.” See options on page 107.

Control position for right hand (clockwise) shaft rotation, as viewed from shaft end. Position for left hand rotation is shown on following page.

Outlet gauge port “K.” See option on page 107.

Outlet gauge port “K.” See option on page 107.

Outlet port “C.” See options on page 106.

Alternate drain port “F”

Alternate load sense port “J”

Outlet port “C.” See options on page 106.

Alternate drain port “F”

Outlet gauge port “K.” See option on page 107.

Outlet gauge port “K.” See option on page 107.

Outlet gauge port “K.” See option on page 107.
Side-ported Models

**PVM040/050**

Dimensions in millimeters (inches)

Control position for *left hand rotation* (Pressure compensated control shown). Inlet/outlet port positions for left hand rotation are the opposite of those shown for right hand rotation on preceding page.

Outlet gauge port “K.” See options on page 107.

Inlet/Outlet Ports and Control Positioned for *Left Hand Rotation*

Control position for *right hand rotation* (Inlet/outlet port positions for right hand rotation are shown on preceding page.)

Non-maximum adjustment stop control cap. See preceding page for adjustable maximum displacement stop.

Control position for *right hand rotation* (Load sensing control shown). Inlet/outlet port positions for right hand rotation are shown on preceding page.

Outlet gauge port “K.” See options on page 107.

Inlet/Outlet Ports and Control Positioned for *Right Hand Rotation*

Dimensions shown on preceding page.
Thru-drive Models

PVM040/050

Dimensions in millimeters (inches)

See shaft options starting on page 102.

Load sense port “J.” See options on page 107.

Load sense control position for L.H. rotation

Adjustable maximum displacement stop (1 turn = 2.1 cm³/rev)

Load sense control position for R.H. rotation

Flange dependent

Adjustable maximum displacement stop (1 turn = 2.1 cm³/rev)

Load sense control position for L.H. rotation

Load sense control position for R.H. rotation

Right Hand Rotation with Load Sensing Control and Tube Ports

Outlet port “C.” See options on page 106.

Load sense port “J.” See options on page 107.

Load sense control position for L.H. rotation

Load sense control position for R.H. rotation

Right Hand Rotation

Left Hand Rotation

Outlet gauge port “K”
### Dimensions in millimeters (inches)

#### "A" Pad

- Output shaft 26T, 32/64 DP, 30° PA involute spline.

#### "B" Pad

- Output shaft 26T, 32/64 DP, 30° PA involute spline.

<table>
<thead>
<tr>
<th>Model Code Position 25</th>
<th>ØG</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A,B</td>
<td>82.58 (3.251)</td>
<td>53.2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.375-16 UNC-2B</td>
</tr>
<tr>
<td></td>
<td>82.52 (3.249)</td>
<td>(2.09)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>thd. 0.60 deep min.</td>
</tr>
<tr>
<td>G,H</td>
<td>80.046 (3.15)</td>
<td>54.5</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>M10 thd. x 1.50</td>
</tr>
<tr>
<td></td>
<td>80.002 (3.149)</td>
<td>(2.15)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>15.0 deep min.</td>
</tr>
<tr>
<td>C,D</td>
<td>101.65 (4.002)</td>
<td>73.0</td>
<td>44.9</td>
<td>89.8</td>
<td>500-13 UNC-2B</td>
<td>500-13 UNC-2B</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>101.60 (4.000)</td>
<td>(2.87)</td>
<td>(1.77)</td>
<td>(3.54)</td>
<td>thd.</td>
<td>thd.</td>
<td>thd.</td>
</tr>
<tr>
<td>J,K</td>
<td>100.0 (3.937)</td>
<td>70.0</td>
<td>44.2</td>
<td>88.38</td>
<td>M12 thd. x 1.50</td>
<td>M10 x 1.50 thd.</td>
<td>M12 x 1.50 thd.</td>
</tr>
<tr>
<td></td>
<td>99.946 (3.935)</td>
<td>(2.76)</td>
<td>(1.74)</td>
<td>(3.48)</td>
<td>24.9 deep min.</td>
<td>thru</td>
<td>thru</td>
</tr>
</tbody>
</table>

**Thru-drive Models**

**PVM040/050**

For SAE "A" pad with a 9T, 16/32 DP, 30° pressure angle, involute spline

For SAE "B" pad with a 11T, 16/32 DP, 30° pressure angle, involute spline

For SAE "B" pad with a 13T, 16/32 DP, 30° pressure angle, involute spline

For SAE "B" pad with a 15T, 16/32 DP, 30° pressure angle, involute spline

For ISO 80-A2HW pad with a 9T SAE spline

For ISO 80-A2HW pad with a 13T SAE spline

For ISO 100-A2/B4HW pad with a 13T SAE spline
### PVM040/050

<table>
<thead>
<tr>
<th>Pilot Flange Designation</th>
<th>∅A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE J744-101-2</td>
<td>101.60/101.55 (4.000/3.998)</td>
<td>9.70/9.19 (.382/.362)</td>
<td>146.0 (5.750)</td>
<td>73.0 (2.875)</td>
<td>14.55/14.17 (.572/.557)</td>
</tr>
<tr>
<td>ISO 3019/2-100A2HW</td>
<td>100.00/99.95 (3.937/3.935)</td>
<td>9.50/9.00 (.374/.354)</td>
<td>140.0 (5.512)</td>
<td>70.0 (2.756)</td>
<td>14.27/14.00 (.562/.551)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pilot Flange Designation</th>
<th>∅A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE 2-bolt mount</td>
<td>101.60/101.55 (4.000/3.998)</td>
<td>73.0 (2.87)</td>
<td>146.0 (5.750)</td>
<td>14.55/14.17 (.572/.557)</td>
</tr>
<tr>
<td>ISO 100 2-bolt mount</td>
<td>100.00/99.95 (3.937/3.935)</td>
<td>70.0 (2.76)</td>
<td>140.0 (5.512)</td>
<td>14.27/14.00 (.562/.551)</td>
</tr>
</tbody>
</table>
End-ported
Models

PVM057/063

Dimensions in millimeters (inches)
See mounting flange options on page 101.
See shaft options starting on page 102.

Left Hand Rotation, Tube Port
with Pressure Compensator

Outlet port "C." See options on page 106.
Inlet port "B." See options on page 106.

Right Hand Rotation, Flange Port with Load Sensing Control

Outlet port "C." See options on page 106.
Inlet port "B." See options on page 106.

Load sense port "J." See options on page 107.
Outlet gauge port "K." Inlet gauge port "K" on opposite side. See options on page 107.

Drain port "F." Alternate drain port "F" on opposite side. See options on page 107.
Side-ported Models

PVM057/063

Dimensions in millimeters (inches)
See mounting flange options on page 101.
See shaft options starting on page 102.
Dimensions in millimeters (inches)
See pilot flange options on page 101.
See shaft options starting on page 102.

**Left Hand Rotation with Pressure Compensator and SAE 2-bolt “A” Flange (no adapter)**

**Right Hand Rotation with Load Sensing Control and SAE 2-bolt “A” Flange (no adapter)**
Thru-drive Models

**PVM057/063**

**Dimensions in millimeters (inches)**

```
<table>
<thead>
<tr>
<th>Coupling Length</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE &quot;A,&quot; 9T</td>
<td>62.5 (2.46)</td>
</tr>
<tr>
<td>SAE &quot;B,&quot; 13T</td>
<td>93.0 (3.66)</td>
</tr>
<tr>
<td>SAE &quot;B-B,&quot; 15T</td>
<td>93.0 (3.66)</td>
</tr>
<tr>
<td>SAE &quot;C,&quot; 14T</td>
<td>93.0 (3.66)</td>
</tr>
</tbody>
</table>
```

**"B" Adapter Flange**

To mounting face

```
<table>
<thead>
<tr>
<th>Flange</th>
<th>Bolt</th>
<th>&quot;R&quot;</th>
<th>&quot;S&quot;</th>
<th>&quot;T1&quot;</th>
<th>&quot;T2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A,B SAE &quot;A&quot;</td>
<td>SAE</td>
<td>82.65 (3.25±.001)</td>
<td>8.6/8.1 (.32/.34)</td>
<td>.375-16 UNC-2B thd.</td>
<td>N/A</td>
</tr>
<tr>
<td>G,H ISO 80</td>
<td>ISO</td>
<td>80.15 (3.15)</td>
<td>9.0/8.0 (.35/31)</td>
<td>M10 thd.</td>
<td>N/A</td>
</tr>
<tr>
<td>C,D SAE &quot;B&quot;</td>
<td>ISO</td>
<td>80.05 (3.16)</td>
<td>9.0/8.0 (.35/31)</td>
<td>M10 thd.</td>
<td>N/A</td>
</tr>
<tr>
<td>J,K ISO 100</td>
<td>ISO</td>
<td>101.65 (4.002±.001)</td>
<td>12.5/11.5 (.49/45)</td>
<td>.50-13 UNC-2B thd.</td>
<td>.50-13 UNC-2B thd.</td>
</tr>
</tbody>
</table>
```

**Model Code Position 25**

```
A SAE "A," 9T, 16/32 DP,
30° pressure angle,
involute spline

C SAE "B," 13T, 16/32 DP,
30° pressure angle,
involute spline

D SAE "B-B," 15T, 16/32 DP,
30° pressure angle,
involute spline

E SAE "C," 14T, 12/24 DP,
30° pressure angle,
involute spline

G For ISO 80-2A/HW pad
with a 9T SAE spline

J For ISO 100-2A/B4HW pad
with a 13T SAE spline

K For ISO 100-2A/B4HW pad
with a 15T SAE spline

L For ISO 125-2A/B4HW pad
with a 14T SAE spline
```

**Right hand rotation with Load Sensing Control and SAE 2-/4-bolt “B” Adapter Flange**
PVM057/063

Dimensions in millimeters (inches)
“C” Adapter Flange

Left hand rotation with Pressure Compensator and SAE 2-/4-bolt “C” Adapter Flange

<table>
<thead>
<tr>
<th>Model Code Position 25</th>
<th>Pilot Dia.</th>
<th>Pilot Depth</th>
<th>2-bolt</th>
<th>4-bolt</th>
<th>Support Mounting Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flange</td>
<td>Bolt</td>
<td>“R”</td>
<td>“S”</td>
<td>“T1”</td>
</tr>
<tr>
<td>EF</td>
<td>SAE “C”</td>
<td>SAE</td>
<td>∅127,05 (5.002±.001)</td>
<td>15.5/14.5 (.61/.57)</td>
<td>625-11 UNC-2B thd.</td>
</tr>
<tr>
<td>LM</td>
<td>ISO 125</td>
<td>ISO</td>
<td>∅125,05 (4.92)</td>
<td>15.5/14.5 (.61/.57)</td>
<td>M16 thd.</td>
</tr>
</tbody>
</table>
Outlet gauge port "K". See options on page 107.

Left hand rotation with Pressure Compensator

Outlet port "C". See options on page 106.

Outlet port "C". See options on page 106.

Dimensions in millimeters (inches)

See pilot flange options on page 101.
See shaft options starting on page 102.

Lifting point .375-16 UNC thd.
10.0 (.39) deep with SAE drain
M10 thd. 10.0 (.39) deep with ISO drain

Alt. drain port "F". See options on page 107.

Alt. drain port "F". See options on page 107.

Load sense port "J". See options on page 107.

C/G location

Drain port "F". See options on page 107.

Lifting point .375-16 UNC thd.
10.0 (.39) deep with SAE drain
M10 thd. 10.0 (.39) deep with ISO drain

Load sense port "J". See options on page 107.

C/G location

Drain port "F". See options on page 107.
Side-ported Models

PVM074/081

Dimensions in millimeters (inches)

See pilot flange options on page 101.
See shaft options starting on page 102.

Left hand rotation with Pressure Compensator

Outlet gauge port "K". See options on page 107.
Outlet port "C". See options on page 106.
Inlet port "B". See options on page 106.

Inlet gauge port "K". See options on page 107.
Max. Adj. stop. One rotation will change displacement 6.1-6.8 l/min (1.6-1.8 USgpm) at 1800 rpm

Right hand rotation with Load Sensing Control

Outlet gauge port "K". See options on page 107.
Outlet port "C". See options on page 106.
Drain port "F". See options on page 107.

Dimensions in millimeters (inches)

Lifting point .375-16 UNC thd.
10.0 (.39) deep with SAE drain
M10 thd. 10.0 (.39) deep with ISO drain

Alt. drain port "F". See options on page 107.

Alt. drain port "F". See options on page 107.

Alt. drain port "F". See options on page 107.

C/G location

PVM074/081
**Thru-drive Models**

### PVM074/081

**Dimensions in millimeters (inches)**

See pilot flange options on page 101.  
See shaft options starting on page 102.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outlet port &quot;C&quot;</td>
<td>249.6 (9.83)</td>
<td></td>
</tr>
<tr>
<td>Inlet port &quot;B&quot;</td>
<td>102.0 (4.02)</td>
<td></td>
</tr>
<tr>
<td>Outlet gauge port &quot;K&quot;</td>
<td>86.0 (3.39)</td>
<td></td>
</tr>
<tr>
<td>Inlet gauge port &quot;K&quot;</td>
<td>86.0 (3.39)</td>
<td></td>
</tr>
<tr>
<td>Lifting point</td>
<td>375.16 UNC thd.</td>
<td></td>
</tr>
<tr>
<td>Alt. drain port &quot;F&quot;</td>
<td>10.0 (.39)</td>
<td>deep with SAE drain</td>
</tr>
<tr>
<td>Alt. drain port &quot;F&quot;</td>
<td>10.0 (.39)</td>
<td>deep with ISO drain</td>
</tr>
<tr>
<td>Inlet port &quot;B&quot;</td>
<td>2X T1</td>
<td></td>
</tr>
<tr>
<td>Max. Adj. stop. One rotation will change displacement 6.1-7.4 l/min (1.7-1.9 USgpm) at 1800 rpm</td>
<td>143.3 (5.64)</td>
<td></td>
</tr>
<tr>
<td>Outlet gauge port &quot;K&quot;</td>
<td>110.0 (4.33)</td>
<td></td>
</tr>
<tr>
<td>Drain port &quot;F&quot;</td>
<td>246.6 (9.71)</td>
<td></td>
</tr>
<tr>
<td>Load sense port &quot;J&quot;</td>
<td>194.8 (7.67)</td>
<td></td>
</tr>
<tr>
<td>C/G location</td>
<td>45.0 (1.77)</td>
<td></td>
</tr>
<tr>
<td>&quot;A2&quot;</td>
<td>45.0 (1.77)</td>
<td></td>
</tr>
</tbody>
</table>

Left hand rotation with Pressure Compensator

Right hand rotation with Load Sensing Control and 2-bolt "A" flange
**PVM074/081**

**Dimensions in millimeters (inches)**

```

```

**“B” Adapter Flange**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B</td>
<td>SAE “A”</td>
<td>2-bolt</td>
<td>∅82.6</td>
<td>∅89.65</td>
<td>2.00 (.08)</td>
<td>9.0/8.0</td>
<td>375-16 UNC-2B thd.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ISO 80</td>
<td>ISO</td>
<td>∅80.05</td>
<td>∅89.75</td>
<td>2.70 (.11)</td>
<td>9.0/8.0</td>
<td>M10 thd.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>44.19</td>
</tr>
<tr>
<td>C, D</td>
<td>SAE “B”</td>
<td>ISO</td>
<td>∅101.65</td>
<td>∅108.75</td>
<td>2.00 (.08)</td>
<td>12.5/11.5</td>
<td>.50-13 UNC-2B thd.</td>
<td>.50-13 UNC-2B thd.</td>
<td>.50-13 UNC-2B thd.</td>
<td>44.9</td>
<td>73.0</td>
</tr>
<tr>
<td>ISO 100</td>
<td>ISO</td>
<td>∅100.05</td>
<td>∅108.75</td>
<td>2.70 (.11)</td>
<td>12.5/11.5</td>
<td>M12 thd.</td>
<td>M12 thd.</td>
<td>M12 thd.</td>
<td>44.19</td>
<td>70.0</td>
<td></td>
</tr>
</tbody>
</table>

**Coupling Length**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE “A,” 9T</td>
<td>64.5 (2.54)</td>
</tr>
<tr>
<td>SAE “A,” 11T</td>
<td>65.3 (2.57)</td>
</tr>
<tr>
<td>SAE “B,” 13T</td>
<td>95.3 (3.75)</td>
</tr>
<tr>
<td>SAE “B-B,” 15T</td>
<td>95.3 (3.75)</td>
</tr>
<tr>
<td>SAE “C,” 14T</td>
<td>95.3 (3.75)</td>
</tr>
<tr>
<td>SAE “C-C,” 17T</td>
<td>91.8 (3.61)</td>
</tr>
</tbody>
</table>

**Right hand rotation with Load Sensing Control and ISO or SAE 2-/4-bolt “B” adapter flange**

**EATON Vickers M Series Industrial Variable Displacement Piston Pumps Technical Focus V-PP-MC-0004-E August 2002**
PVM074/081

Dimensions in millimeters (inches)

"C" Adapter Flange

View rotated 90°

<table>
<thead>
<tr>
<th>Model Code Position</th>
<th>25 Flange</th>
<th>Bolt Type</th>
<th>Pilot Dia.</th>
<th>O-ring Dia.</th>
<th>O-ring Depth</th>
<th>Pilot Depth</th>
<th>2-bolt</th>
<th>4-bolt</th>
<th>Support Mounting Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>E,F L,M</td>
<td>ISO 125</td>
<td>ISO</td>
<td>Ø125,05</td>
<td>Ø133,75</td>
<td>2.70 (.11)</td>
<td>15,5/14,5</td>
<td>M16 thd.</td>
<td>M12 thd.</td>
<td>M12 thd. 25,0 deep</td>
</tr>
<tr>
<td></td>
<td>SAE 2-/4-bolt</td>
<td>SAE</td>
<td>Ø127,05</td>
<td>Ø133,45</td>
<td>2.00 (.08)</td>
<td>15,5/14,5</td>
<td>.625-11 UNC-2B thd.</td>
<td>.50-13 UNC-2B thd.</td>
<td>50-13 UNC-2B thd. .98&quot; deep</td>
</tr>
</tbody>
</table>

* Left hand rotation with Pressure Compensator and ISO or SAE 2-/4-bolt “C” Adapter Flange
End-ported Models

**PVM098/106**

Dimensions in millimeters (inches)

See pilot flange options on page 101.
See shaft options starting on page 102.

---

**Left hand rotation with Pressure Compensator**

---

**Right hand rotation with Load Sensing Control**

---

Max. Adj. stop. One rotation will change displacement 7.9-8.7 l/min (2.1-2.3 USgpm) at 1800 rpm
**Side-ported Models**

**PVM098/106**

**Dimensions in millimeters (inches)**

See pilot flange options on page 101.
See shaft options starting on page 102.

---

**Left hand rotation with Pressure Compensator**

---

**Left hand rotation with Load Sensing Control**

---

Lifting point .375-16 UNC thd.10.0 (.39) deep with SAE drain M10 thd. 10.0 (.39) deep with ISO drain

Alt. drain port “F”. See options on page 107.

Max. Adj. stop. One rotation will change displacement 7.9-8.7 l/min (2.1-2.3 USgpm) at 1800 rpm

Inlet gauge port “K”. See options on page 107.

Outlet port “C”. See options on page 106.

Load sense port “J”. See options on page 107.

Outlet gauge port “K”. See options on page 107.

Outlet port “C”. See options on page 106.

Drain port “F”. See options on page 107.

Inlet port “B”. See options on page 106.

To mounting face 276.9 (10.90)

Alt. drain port “F”. See options on page 107.

Alt. drain port “F”. See options on page 107.

PVM098/106
Thru-drive Models

PVM098/106

Dimensions in millimeters (inches)

See pilot flange options on page 101.
See shaft options starting on page 102.

- Inlet port "B". See options on page 106.
- Outlet port "C". See options on page 106.
- Outlet gauge port "K". See options on page 104.
- Inlet gauge port "K". See options on page 104.

Left hand rotation with Pressure Compensator

- Alt. drain port "F". See options on page 107.
- Lifting point .375-16 UNC thd. 10.0 (.39) deep with SAE drain M10 thd. 10.0 (.39) deep with ISO drain
- Alt. drain port "F". See options on page 107.

- Load sense port "J". See options on page 107.
- Outlet gauge port "K". See options on page 107.
- Outlet port "C". See options on page 106.
- Drain port "F". See options on page 107.

Right hand rotation with 2-bolt "A" flange and Load Sensing Control

- Max. Adj. stop. One rotation will change displacement 7.9-8.7 l/min (2.1-2.3 USgpm) at 1800 rpm

- To mounting face 276.9 (10.90)
- 2X T1
- Alt. drain port "F". See options on page 107.
- Inlet gauge port "K". See options on page 107.
- 92.5 (3.64)
- 90.0 (3.54)
- 98.0 (3.86)
- 119.0 (4.69)
- 119.0 (4.69)
- 91.0 (3.58)
- 45.0 (1.77)
- 17.3 (0.68)
- 170.6 (6.72)
- 36.6 (1.44)
- 347.9 (13.70)
- 342.4 (13.48)
- 170.6 (6.72)
- 17,3 (0.68)
- 2X 194.5 (7.66)
- 2X 95.0 (3.74)
- 162.0 (6.38)
- 150.0 (5.91)
- 119.0 (4.69)
- 42.0 (1.65)
- 33,9 (1.33)
- 2X 194,5 (7.66)
- 366,9 (10.51)
- 2X 37,0 (1.46)
- 170,6 (6.72)
- 347,9 (13,70)
- 214,6 (8.45)
- 164,4 (6.47)
- C/G location
- 2X 95.0 (3.74)
- 162.0 (6.38)
- 150.0 (5.91)
- 119.0 (4.69)
- 42.0 (1.65)
- 33,9 (1.33)
- 2X 194,5 (7.66)
- 366,9 (10.51)
- 2X 37,0 (1.46)
- 170,6 (6.72)
- 347,9 (13,70)
- 214,6 (8.45)
- 164,4 (6.47)
- C/G location
- 2X 95.0 (3.74)
- 162.0 (6.38)
- 150.0 (5.91)
- 119.0 (4.69)
- 42.0 (1.65)
- 33,9 (1.33)
- 2X 194,5 (7.66)
- 366,9 (10.51)
- 2X 37,0 (1.46)
- 170,6 (6.72)
- 347,9 (13,70)
- 214,6 (8.45)
- 164,4 (6.47)
- C/G location
- 2X 95.0 (3.74)
- 162.0 (6.38)
- 150.0 (5.91)
- 119.0 (4.69)
- 42.0 (1.65)
- 33,9 (1.33)
- 2X 194,5 (7.66)
- 366,9 (10.51)
- 2X 37,0 (1.46)
- 170,6 (6.72)
**Thru-drive Models**

**PVM098/106**

**Dimensions in millimeters (inches)**

![Diagram](image)

- **Coupling length**
- **With adapter plate**
- **Without adapter plate**

**“B” Adaptor Flange**

- **To mtg. face**
- **With adapter plate**
- **Without adapter plate**

**Right hand rotation with Load Sensing Control**

**Model code Position 25 Description**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>SAE “A,” 9T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>B</td>
<td>SAE “A,” 11T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>C</td>
<td>SAE “B,” 13T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>D</td>
<td>SAE “B-B,” 15T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>E</td>
<td>SAE “C,” 14T, 12/24 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>F</td>
<td>SAE “C-C,” 17T, 12/24 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>G</td>
<td>For ISO 80-A2HW pad with a 9T SAE spline</td>
</tr>
<tr>
<td>H</td>
<td>For ISO 80-A2HW pad with a 11T SAE spline</td>
</tr>
<tr>
<td>J</td>
<td>For ISO 100-A2/B4HW pad with a 13T SAE spline</td>
</tr>
<tr>
<td>K</td>
<td>For ISO 100-A2/B4HW pad with a 15T SAE spline</td>
</tr>
<tr>
<td>L</td>
<td>For ISO 125-A2/B4HW pad with a 17T SAE spline</td>
</tr>
<tr>
<td>M</td>
<td>For ISO 125-A2/B4HW pad with a 17T SAE spline</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A,B</td>
<td>SAE “A”</td>
<td>9T</td>
<td>2-bolt</td>
<td>SAE</td>
<td>82.6 (3.25)</td>
<td>89.65 (3.53)</td>
<td>1.90 (.07)</td>
<td>9.0/8.0</td>
<td>375-16 UNC-2B thd. 0.59 deep</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G,H</td>
<td>ISO 80</td>
<td>ISO</td>
<td>2-bolt</td>
<td>ISO</td>
<td>80.05 (3.15)</td>
<td>89.75 (3.53)</td>
<td>2.60 (.10)</td>
<td>9.0/8.0</td>
<td>M10 thd. x 18.0 deep</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C,D</td>
<td>SAE “B”</td>
<td>13T</td>
<td>2-4-bolt</td>
<td>SAE</td>
<td>101.65 (4.00)</td>
<td>108.05 (4.25)</td>
<td>2.60 (.10)</td>
<td>12.5/11.5</td>
<td>.50-13 UNC-2B thd. (.49/45)</td>
<td>44.9</td>
<td>73.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J,K</td>
<td>ISO 100</td>
<td>ISO</td>
<td>2-4-bolt</td>
<td>ISO</td>
<td>100.05 (3.94)</td>
<td>108.75 (4.28)</td>
<td>2.60 (.10)</td>
<td>12.5/11.5</td>
<td>M12 thd. M12 thd. M12 thd. x 25.0 deep</td>
<td>44.19</td>
<td>70.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- All dimensions are in millimeters unless specified otherwise.
- Dimensions in parentheses indicate inches.
- SAE and ISO standards are referenced.
- Models provided cover a range of applications, from small to large hydraulic systems.

*Eaton Vickers M Series Industrial Variable Displacement Piston Pumps Technical Focus V-PP-MC-0004-E August 2002*
**PVM098/106**

Dimensions in millimeters (inches)

**“C” Adapter Flange**

![Diagram of PVM098/106 Adapter Flange]

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E,F L,M SAE “C”</td>
<td>2/4-bolt</td>
<td>Ø127,05</td>
<td>Ø133,45</td>
<td>2,00 (.08)</td>
<td>15,5/14,5</td>
<td>.625-11 UNIC-2B thd.</td>
<td>.50-13 UNIC-2B thd.</td>
<td>57,25 (2.25)</td>
</tr>
<tr>
<td>ISO 125 ISO</td>
<td>2/4-bolt</td>
<td>Ø125,05</td>
<td>Ø133,75</td>
<td>2,70 (.11)</td>
<td>15,5/14,5</td>
<td>M16 thd.</td>
<td>M12 thd.</td>
<td>56,57 (2.23)</td>
</tr>
</tbody>
</table>

View Rotated 90° Left hand rotation with Pressure Compensator and ISO or SAE 2-/4-bolt “C” adapter flange
End-ported Models

PVM131/141

Dimensions in millimeters (inches)
See pilot flange options on page 101.
See shaft options starting on page 102.

Optional drain port “F”
Adjustable maximum stop option.
Torque locknut to 37.45 Nm (27-33 lb ft).
One turn of screw will change pump displacement 5.7 cm³/rev (0.35 in³/rev).
Turn CCW to destroke.

Optional drain port “F”

Right hand rotation with Load Sensing Control

Left hand rotation with Pressure Compensator
Side-ported
Models

PVM131/141

Dimensions in millimeters (inches)
See pilot flange options on page 101.
See shaft options starting on page 102.

 Adjustable maximum stop option.
Torque locknut to 37-45 Nm (27-33 lb ft).
One turn of screw will change pump
displacement 5.7 cm³/rev (0.35 in³/rev)

Left hand rotation with
Pressure Compensator

Right hand rotation with
Load Sensing Control
PVM131/141

Dimensions in millimeters (inches)
See pilot flange options on page 101.
See shaft options starting on page 102.

Left Hand Rotation with Pressure Compensator
and SAE 2-bolt “A” Flange (no adapter)

Right Hand Rotation with Load Sensing Control
and SAE 2-bolt “A” Flange (no adapter)

<table>
<thead>
<tr>
<th>Model Code Position 25</th>
<th>&quot;Q1&quot; Thru-drive Flange</th>
<th>&quot;Q2&quot; 2-bolt Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>A,B</td>
<td>SAE J744-82-2</td>
<td>.375-16 UNC-2B</td>
</tr>
<tr>
<td></td>
<td>Ø82.625/82.575 bore</td>
<td>thd. 0.80 deep</td>
</tr>
<tr>
<td>G,H</td>
<td>ISO 3019/2-80A2</td>
<td>M10 thd. x 18.0 deep</td>
</tr>
<tr>
<td></td>
<td>Ø80.075/80.25 bore</td>
<td></td>
</tr>
</tbody>
</table>
**PVM131/141**

**Dimensions in millimeters (inches)**

<table>
<thead>
<tr>
<th>Model Code Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>For SAE &quot;A&quot; pad with a 9T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>B</td>
<td>For SAE &quot;A&quot; pad with a 11T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>C</td>
<td>SAE &quot;B,&quot; 13T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>D</td>
<td>SAE &quot;B-B,&quot; 15T, 16/32 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>E</td>
<td>SAE &quot;C,&quot; 14T, 12/24 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>F</td>
<td>SAE &quot;C-C,&quot; 17T, 12/24 DP, 30° pressure angle, involute spline</td>
</tr>
<tr>
<td>G</td>
<td>For ISO 80-A2HW pad with a 9T SAE spline</td>
</tr>
<tr>
<td>H</td>
<td>For ISO 80-A2HW pad with a 11T SAE spline</td>
</tr>
<tr>
<td>J</td>
<td>For ISO 100-A2/B4HW pad with a 13T SAE spline</td>
</tr>
<tr>
<td>K</td>
<td>For ISO 100-A2/B4HW pad with a 15T SAE spline</td>
</tr>
<tr>
<td>L</td>
<td>For ISO 125-A2/B4HW pad with a 14T SAE spline</td>
</tr>
<tr>
<td>M</td>
<td>For ISO 125-A2/B4HW pad with a 17T SAE spline</td>
</tr>
</tbody>
</table>

**“B” Adapter Flange**

**Model Code Position 25**

<table>
<thead>
<tr>
<th>Model Code</th>
<th>“R1” Thru-drive Flange</th>
<th>“R2” 2-bolt Thread</th>
<th>“R3” 4-bolt Thread</th>
<th>“R4” Support Mounting Points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ø101.679/101.625 bore 12,50/11,50 deep</td>
<td>0.98 deep</td>
<td>0.98 deep</td>
<td>0.98 deep</td>
</tr>
<tr>
<td>J,K</td>
<td>ISO 3019/2-100A2 &amp; B2</td>
<td>M12</td>
<td>M12</td>
<td>M12</td>
</tr>
<tr>
<td></td>
<td>Ø100.075/100.025 bore 12,50/11,50 deep</td>
<td>25.0 deep</td>
<td>25.0 deep</td>
<td>25.0 deep</td>
</tr>
</tbody>
</table>

**Right Hand Rotation with SAE 2-/4-Bolt “B” Flange and ISO 100 Adapter Flange**

EATON Vickers  M Series Industrial Variable Displacement Piston Pumps  Technical Focus  V-PP-MC-0004-E  August 2002
### Dimensions in millimeters (inches)

**“C” Adapter Flange**

<table>
<thead>
<tr>
<th>Model Code</th>
<th>“S1” Thru-drive Flange</th>
<th>“S2” 2-bolt Thread</th>
<th>“S3” 4-bolt Thread</th>
<th>“R4” Support Mounting Points</th>
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<tr>
<td></td>
<td>Ø127.075/127.025 bore 15,50/14,50 deep</td>
<td>0.98 deep</td>
<td>0.98 deep</td>
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<tr>
<td>L,M</td>
<td>ISO 3019/2-125A2 &amp; B4</td>
<td>M16</td>
<td>M12</td>
<td>M12</td>
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<tr>
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<td>Ø125.075/125.025 bore 15,50/14,50 deep</td>
<td>25.0 deep</td>
<td>25.0 deep</td>
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</table>

<table>
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<tr>
<td>SAE</td>
<td>2.50 inch dia. SAE J518</td>
<td>500-13 UNC-2B thd.</td>
<td>1.25 inch dia. SAE J518</td>
<td>500-13 UNC-2B thd.</td>
<td>146.8</td>
<td>114.9</td>
</tr>
<tr>
<td></td>
<td>Code 61, low pressure</td>
<td>1.19 deep minimum</td>
<td>Code 62, high pressure</td>
<td>1.00 deep minimum</td>
<td>(5.78)</td>
<td>(4.52)</td>
</tr>
<tr>
<td>ISO</td>
<td>64mm diameter. ISO</td>
<td>M12 thread</td>
<td>32mm diameter. ISO</td>
<td>M12 thread</td>
<td>148.5</td>
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<tr>
<td>6162</td>
<td>6162 Type II, 315 bar</td>
<td>31,0 deep minimum</td>
<td>ISO 6162, 400 bar</td>
<td>27,0 deep minimum</td>
<td>(5.85)</td>
<td>(4.59)</td>
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*4-bolt flange port. See page 101 for load sensing, drain, and gage port threads.*
Mounting Flange
Options

Dimensions in millimeters (inches)

<table>
<thead>
<tr>
<th>Series</th>
<th>2-bolt or 4-bolt Flange</th>
<th>Code</th>
<th>Flange Description</th>
<th>A</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
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<td>PVM018</td>
<td>2-bolt “A”</td>
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<td>SAE J744-92-2</td>
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<td>(4.38)</td>
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<td>ISO 3019/2-80A2HW</td>
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<td>101,58</td>
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<td>(2.87)</td>
<td>(5.75)</td>
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<td>PVM020</td>
<td>2-bolt “B” (special)</td>
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<td>ISO 3019/2-100A2HW</td>
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<td>140,0</td>
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<td>99,95</td>
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<td>PVM057</td>
<td>2-bolt “C”</td>
<td>E</td>
<td>SAE J744-127-2</td>
<td>17,4</td>
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<td>181,0</td>
<td>–</td>
<td>–</td>
<td>127,00</td>
<td>126,95</td>
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<td></td>
<td>(6.85)</td>
<td>(3.562)</td>
<td>(7.125)</td>
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<td>(4.998)/4.998</td>
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<tr>
<td>PVM074</td>
<td>4-bolt “C”</td>
<td>F</td>
<td>ISO 3019/2-125A2HW</td>
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<td>180,0</td>
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<td>–</td>
<td>125,00</td>
<td>124,95</td>
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<td>(7.09)</td>
<td>(3.543)</td>
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<td>–</td>
<td>(4.919)/4.919</td>
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<tr>
<td>PVM081</td>
<td>4-bolt “C”</td>
<td>G</td>
<td>SAE J744-127-4</td>
<td>14,2</td>
<td>–</td>
<td>–</td>
<td>57,25</td>
<td>114,50</td>
<td>127,00</td>
<td>126,95</td>
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<td>ISO 3019/2-125B4HW</td>
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<td>–</td>
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<td>–</td>
<td>125,00</td>
<td>124,95</td>
<td>80,0</td>
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<td>(4.919)/4.919</td>
<td>(3.150)</td>
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<td>PVM131</td>
<td>4-bolt “D”</td>
<td>J</td>
<td>SAE J744-152-4</td>
<td>20,6</td>
<td>–</td>
<td>–</td>
<td>80,82</td>
<td>161,64</td>
<td>152,40</td>
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<td>(3.182)</td>
<td>(6.364)</td>
<td>(6.299)/5.998</td>
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<tr>
<td>PVM141</td>
<td>4-bolt “D”</td>
<td>K</td>
<td>ISO 3019/2-160B4HW</td>
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<td>–</td>
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<td>160,00</td>
<td>159,95</td>
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<td>(7.09)</td>
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<td>–</td>
<td>–</td>
<td>(3.937)/3.937</td>
<td>(7.874)</td>
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*Flanges for PVM020 and PVM050 are shown on pages 73 and 80, respectively.
### Shaft Options

#### Dimensions in millimeters (inches)

![SAE Splined Shaft Diagram]

<table>
<thead>
<tr>
<th>Model Series</th>
<th>SAE Spline Shaft Designation</th>
<th>Shaft Code</th>
<th>A max.</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Max. Input Torque Nm (lb. in.)</th>
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</thead>
<tbody>
<tr>
<td>PVM018/020</td>
<td>SAE J744-16-4 SAE &quot;A&quot; (9T)</td>
<td>03</td>
<td>15,88 (.625)</td>
<td>9T 16/32 DP</td>
<td>37,0 (1.46)</td>
<td>32,0 (1.26)</td>
<td>58 (517)</td>
</tr>
<tr>
<td></td>
<td>SAE J744-19-4 SAE &quot;A&quot; (11T)</td>
<td>04</td>
<td>19,05 (.750)</td>
<td>11T 16/32 DP</td>
<td>30,0 (1.18)</td>
<td>38,0 (1.50)</td>
<td>123 (1100)</td>
</tr>
<tr>
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<td>SAE J744-22-4 SAE &quot;B&quot; (13T)</td>
<td>07</td>
<td>21,81 (.859)</td>
<td>13T 16/32 DP</td>
<td>33,0 (1.31)</td>
<td>41,0 (1.61)</td>
<td>208 (1850)</td>
</tr>
<tr>
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<td>SAE J744-25-4 SAE &quot;B-B&quot; (15T)</td>
<td>08</td>
<td>24,98 (.983)</td>
<td>15T 16/32 DP</td>
<td>38,0 (1.50)</td>
<td>46,0 (1.81)</td>
<td>337 (2987)</td>
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<tr>
<td>PVM045/050</td>
<td>SAE J744-22-4 SAE &quot;B&quot; (13T)</td>
<td>07</td>
<td>21,81 (.859)</td>
<td>13T 16/32 DP</td>
<td>33,0 (1.31)</td>
<td>41,0 (1.61)</td>
<td>208 (1850)</td>
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<td>SAE J744-25-4 SAE &quot;B-B&quot; (15T)</td>
<td>08</td>
<td>24,98 (.983)</td>
<td>15T 16/32 DP</td>
<td>38,0 (1.50)</td>
<td>46,0 (1.81)</td>
<td>337 (2987)</td>
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<tr>
<td>PVM057/063</td>
<td>SAE J744-22-4 SAE &quot;B&quot; (13T)</td>
<td>07</td>
<td>21,81 (.859)</td>
<td>13T 16/32 DP</td>
<td>33,0 (1.31)</td>
<td>41,0 (1.61)</td>
<td>208 (1850)</td>
</tr>
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<td>SAE J744-25-4 SAE &quot;B-B&quot; (15T)</td>
<td>08</td>
<td>24,98 (.983)</td>
<td>15T 16/32 DP</td>
<td>38,0 (1.50)</td>
<td>46,0 (1.81)</td>
<td>337 (2987)</td>
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<tr>
<td></td>
<td>SAE J744-32-4 SAE &quot;C&quot; (14T)</td>
<td>11</td>
<td>31,22 (1.23)</td>
<td>14T 12/24 DP</td>
<td>48,0 (1.89)</td>
<td>56,0 (2.20)</td>
<td>640 (5660)</td>
</tr>
<tr>
<td>PVM074/081</td>
<td>SAE J744-32-4 SAE &quot;C&quot; (14T)</td>
<td>11</td>
<td>31,22 (1.23)</td>
<td>14T 12/24 DP</td>
<td>48,0 (1.89)</td>
<td>56,0 (2.20)</td>
<td>640 (5660)</td>
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<tr>
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<td>SAE J744-38-4 SAE &quot;C-C&quot; (17T)</td>
<td>12</td>
<td>37,57 (1.479)</td>
<td>17T 12/24 DP</td>
<td>54,0 (2.13)</td>
<td>62,0 (2.44)</td>
<td>1215 (10,750)</td>
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<tr>
<td>PVM131/141</td>
<td>SAE J744-32-4 SAE &quot;C&quot; (14T)</td>
<td>11</td>
<td>31,22 (1.23)</td>
<td>14T 12/24 DP</td>
<td>48,0 (1.89)</td>
<td>56,0 (2.20)</td>
<td>640 (5660)</td>
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<td>SAE J744-38-4 SAE &quot;C-C&quot; (17T)</td>
<td>12</td>
<td>37,57 (1.479)</td>
<td>17T 12/24 DP</td>
<td>54,0 (2.13)</td>
<td>62,0 (2.44)</td>
<td>1215 (10,750)</td>
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<td>SAE J744-44-4 SAE &quot;D&quot; (13T)</td>
<td>14</td>
<td>43,71 (1.721)</td>
<td>13T 8/16 DP</td>
<td>67,0 (2.63)</td>
<td>75,0 (2.95)</td>
<td>1215 (10,750)</td>
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### Shaft Options

#### Dimensions in millimeters (inches)

- **SAE Keyed Shaft**

<table>
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<th>Model Series</th>
<th>SAE Keyed Shaft Designation</th>
<th>Shaft Code</th>
<th>A (in.)</th>
<th>B (in.)</th>
<th>C (in.)</th>
<th>D (in.)</th>
<th>E (in.)</th>
<th>Max. Input Torque Nm (lb. in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM018/020</td>
<td>SAE J744-16-1 SAE &quot;A&quot;</td>
<td>01</td>
<td>15.88 (.625)</td>
<td>17.73 (.698)</td>
<td>24.0 (.94)</td>
<td>32.0 (1.26)</td>
<td>4.0 (.157)</td>
<td>58 (517)</td>
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<tr>
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<td>SAE J744-19-1 SAE &quot;19-1&quot;</td>
<td>02</td>
<td>19.05 (.750)</td>
<td>21.23 (.836)</td>
<td>24.0 (.94)</td>
<td>32.0 (1.26)</td>
<td>4.81 (.189)</td>
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<td>SAE J744-22-1 SAE &quot;B&quot;</td>
<td>05</td>
<td>22.22 (.875)</td>
<td>25.12 (.989)</td>
<td>33.0 (1.31)</td>
<td>41.0 (1.61)</td>
<td>6.35 (.250)</td>
<td>135 (1200)</td>
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<tr>
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<td>SAE J744-25-1 SAE &quot;B-B&quot;</td>
<td>06</td>
<td>25.37 (.999)</td>
<td>28.22 (1.111)</td>
<td>38.0 (1.50)</td>
<td>46.0 (1.81)</td>
<td>6.35 (.250)</td>
<td>215 (1900)</td>
</tr>
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<td>SAE J744-22-1 SAE &quot;B&quot;</td>
<td>05</td>
<td>22.22 (.875)</td>
<td>25.12 (.989)</td>
<td>33.0 (1.31)</td>
<td>41.0 (1.61)</td>
<td>6.35 (.250)</td>
<td>135 (1200)</td>
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<td>06</td>
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<td>28.22 (1.111)</td>
<td>38.0 (1.50)</td>
<td>46.0 (1.81)</td>
<td>6.35 (.250)</td>
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<td>28.22 (1.111)</td>
<td>38.0 (1.50)</td>
<td>46.0 (1.81)</td>
<td>6.35 (.250)</td>
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<tr>
<td></td>
<td>SAE J744-32-1 SAE &quot;C&quot;</td>
<td>09</td>
<td>31.75 (1.25)</td>
<td>35.32 (1.390)</td>
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<td>56.0 (2.20)</td>
<td>7.93 (.312)</td>
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</tr>
<tr>
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<td>SAE J744-32-1 SAE &quot;C&quot;</td>
<td>09</td>
<td>31.75 (1.25)</td>
<td>35.32 (1.390)</td>
<td>48.0 (1.89)</td>
<td>56.0 (2.20)</td>
<td>7.93 (.312)</td>
<td>450 (3980)</td>
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<tr>
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<td>SAE J744-38-1 SAE &quot;C-C&quot;</td>
<td>10</td>
<td>38.10 (1.50)</td>
<td>42.39 (1.67)</td>
<td>54.0 (2.13)</td>
<td>62.0 (2.44)</td>
<td>9.52 (.375)</td>
<td>765 (6770)</td>
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<tr>
<td>PVM131/141</td>
<td>SAE J744-32-1 SAE &quot;C&quot;</td>
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<td>31.75 (1.25)</td>
<td>35.32 (1.390)</td>
<td>48.0 (1.89)</td>
<td>56.0 (2.20)</td>
<td>7.93 (.312)</td>
<td>450 (3980)</td>
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<tr>
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<td>SAE J744-38-1 SAE &quot;C-C&quot;</td>
<td>10</td>
<td>38.10 (1.50)</td>
<td>42.39 (1.67)</td>
<td>54.0 (2.13)</td>
<td>62.0 (2.44)</td>
<td>9.52 (.375)</td>
<td>765 (6770)</td>
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<td>SAE J744-44-1 SAE &quot;D&quot;</td>
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<td>44.45 (1.75)</td>
<td>49.46 (1.95)</td>
<td>67.0 (2.63)</td>
<td>75.0 (2.95)</td>
<td>11.11 (.438)</td>
<td>1200 (10,620)</td>
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</table>

**Note:**
- Dimensions are provided in millimeters and inches.
- The table lists dimensions for various SAE keyed shafts.
- The max. input torque is given in Nm and lb. in.
- The model series include PVM018/020, PVM045/050, PVM057/063, PVM074/081, and PVM131/141.
## Shaft Options

### Dimensions in millimeters (inches)

![ISO Keyed Shaft](image)

<table>
<thead>
<tr>
<th>Model Series</th>
<th>ISO Keyed Shaft Designation</th>
<th>Shaft Code</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Max. Input Torque Nm (lb. in.)</th>
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<tbody>
<tr>
<td>PVM018/020</td>
<td>ISO 3019/2 E20N</td>
<td>15</td>
<td>19.9 (.786)</td>
<td>8.5 (.335)</td>
<td>36 (1.42)</td>
<td>6 (.236)</td>
<td>22.5 (.886)</td>
<td>113 (1000)</td>
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<td>ISO 3019/2 E25N</td>
<td>16</td>
<td>25 (.984)</td>
<td>8.5 (.335)</td>
<td>42 (1.65)</td>
<td>8 (.315)</td>
<td>28.0 (1.102)</td>
<td>215 (1900)</td>
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<td>Short Spigot</td>
<td>ISO 3019/2 E25N</td>
<td>17</td>
<td>25 (.984)</td>
<td>10 (.393)</td>
<td>42 (1.65)</td>
<td>8 (.315)</td>
<td>28.0 (1.102)</td>
<td>215 (1900)</td>
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<td>10 (.393)</td>
<td>42 (1.65)</td>
<td>8 (.315)</td>
<td>28.0 (1.102)</td>
<td>215 (1900)</td>
</tr>
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<td>32 (1.26)</td>
<td>10 (.393)</td>
<td>58 (2.28)</td>
<td>10 (.394)</td>
<td>35.0 (1.378)</td>
<td>450 (3980)</td>
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<td>12 (.472)</td>
<td>43.0 (1.693)</td>
<td>870 (7700)</td>
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</table>

*(1)ISO 80mm pilot only – B  
(2)ISO 80mm pilot only – D

*Torque of non-thru-drive PVM pump, or combined torque of PVM thru-drive pump and thru-driven pump.

**NOTE:** In those cases where geometric tolerances of mounting are critical, or where specific tolerance ranges are required and not specified, consult Eaton Engineering for specific limits.
### SAE SPLINED SHAFTS

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Shaft Designation</th>
<th>Shaft Code</th>
<th>Max. Input Torque†</th>
<th>Max. Thru-drive Output Torque‡</th>
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<tbody>
<tr>
<td>PVM018/020</td>
<td>SAE J744-16-4 (SAE &quot;A,&quot; 9T)</td>
<td>03</td>
<td>58 (513)</td>
<td>Exceeds maximum input torque</td>
</tr>
<tr>
<td></td>
<td>SAE J744-22-4 (SAE &quot;B,&quot; 13T)</td>
<td>07</td>
<td>208 (1850)</td>
<td>123 (1100)</td>
</tr>
<tr>
<td></td>
<td>SAE J744-25-4 (SAE &quot;B-B,&quot; 15T)</td>
<td>08</td>
<td>337 (2987)</td>
<td>123 (1100)</td>
</tr>
<tr>
<td>PVM045/050</td>
<td>SAE J744-22-4 (SAE &quot;B,&quot; 13T)</td>
<td>07</td>
<td>208 (1850)</td>
<td>208 (1850)*</td>
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<td>SAE J744-25-4 (SAE &quot;B-B,&quot; 15T)</td>
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<td>337 (2987)</td>
<td>337 (2987)</td>
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<tr>
<td>PVM057/063</td>
<td>SAE J744-22-4 (SAE &quot;B,&quot; 13T)</td>
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<td>208 (1850)</td>
<td>208 (1850)*</td>
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<tr>
<td></td>
<td>SAE J744-22-4 (SAE &quot;C,&quot; 14T)</td>
<td>11</td>
<td>640 (5660)</td>
<td>337 (2987)</td>
</tr>
<tr>
<td>PVM074/081</td>
<td>SAE J744-32-4 (SAE &quot;C,&quot; 14T)</td>
<td>11</td>
<td>640 (5660)</td>
<td>515 (4560)</td>
</tr>
<tr>
<td>PVM098/106</td>
<td>SAE J744-32-4 (SAE &quot;C,&quot; 17T)</td>
<td>12</td>
<td>1215 (10750)</td>
<td>515 (4560)</td>
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<tr>
<td>PVM131/141</td>
<td>SAE J744-32-4 (SAE &quot;C,&quot; 17T)</td>
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<td>SAE J744-44-4 (SAE &quot;D,&quot; 13T)</td>
<td>14</td>
<td>1215 (10750)</td>
<td>640 (5660)</td>
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</tbody>
</table>

†Maximum total torque of the thru-drive pump and the thru-driven pump(s).
‡Maximum torque that can be applied to the thru-driven pump(s).
*This value is limited by the maximum input torque.

### SAE KEYED SHAFTS

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Shaft Designation</th>
<th>Shaft Code</th>
<th>Max. Input Torque†</th>
<th>Max. Thru-drive Output Torque‡</th>
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<tbody>
<tr>
<td>PVM018/020</td>
<td>SAE J744-16-1 (SAE &quot;A&quot;)</td>
<td>01</td>
<td>58 (513)</td>
<td>Exceeds maximum input torque</td>
</tr>
<tr>
<td></td>
<td>SAE J744-19-1 (SAE &quot;19-1&quot;)</td>
<td>02</td>
<td>104 (920)</td>
<td>Exceeds maximum input torque</td>
</tr>
<tr>
<td></td>
<td>SAE J744-22-1 (SAE &quot;B&quot;)</td>
<td>05</td>
<td>135 (1200)</td>
<td>123 (1100)</td>
</tr>
<tr>
<td></td>
<td>SAE J744-25-1 (SAE &quot;B-B&quot;)</td>
<td>06</td>
<td>215 (1900)</td>
<td>123 (1100)</td>
</tr>
<tr>
<td>PVM045/050</td>
<td>SAE J744-22-1 (SAE &quot;B&quot;)</td>
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<td>215 (1900)*</td>
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<tr>
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<td>SAE J744-25-1 (SAE &quot;B-B&quot;)</td>
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<td>215 (1900)</td>
<td>215 (1900)*</td>
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<tr>
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<td>SAE J744-32-1 (SAE &quot;C&quot;)</td>
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<td>SAE J744-32-1 (SAE &quot;C&quot;)</td>
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<td>450 (3980)</td>
<td>450 (3980)*</td>
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<tr>
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<td>SAE J744-38-1 (SAE &quot;C-C&quot;)</td>
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<tr>
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<td>450 (3980)*</td>
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<td>SAE J744-38-1 (SAE &quot;C-C&quot;)</td>
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<td>765 (6770)</td>
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<td>SAE J744-44-1 (SAE &quot;D&quot;)</td>
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<td>1200 (10620)</td>
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### ISO KEYED SHAFTS

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<th>Model Series</th>
<th>Shaft Designation</th>
<th>Shaft Code</th>
<th>Max. Input Torque†</th>
<th>Max. Thru-drive Output Torque‡</th>
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<tr>
<td>PVM018/020</td>
<td>ISO 3019/2 E20N (B mount only)</td>
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<tr>
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<td>ISO 3019/2 E25N (B mount only)</td>
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<td>215 (1900)</td>
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<tr>
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<td>ISO 3019/2 E25N (D mount only)</td>
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<td>PVM045/050</td>
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<td>215 (1900)*</td>
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<tr>
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<td>ISO 3019/2 E25N</td>
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<td>215 (1900)*</td>
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<td>PVM074/081</td>
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<td>337 (2987)</td>
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## Port Options

### INLET AND OUTLET PORTS

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Inlet/Outlet Port Option (per model code, page 5)</th>
<th>Port Code</th>
<th>Inlet Port “B”</th>
<th>Outlet Port “C”</th>
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<tbody>
<tr>
<td><strong>PVM018/020</strong></td>
<td>Inch Flange 02</td>
<td>SAE J518 Code 61, standard pressure. 1.25 inch diameter, 4375-14 x 1.12 bolt holes</td>
<td>SAE J518 Code 61, standard pressure. 0.75 inches diameter, 375-16 x .88 bolt holes</td>
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<tr>
<td></td>
<td>Metric Flange 04</td>
<td>ISO 6162 Type II, 315 bar, 31,75mm diameter, M10 x 28 bolt holes</td>
<td>ISO 6162 Type II, 315 bar, 19,05mm diameter, M10 x 22 bolt holes</td>
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<tr>
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<td>Inch Tube 01</td>
<td>SAE J514 O-ring –20, for 1-1/4 inch O.D. tube</td>
<td>SAE J514 O-ring -12, for 3/4 inch O.D. tube</td>
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<tr>
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<td>Metric Tube 03</td>
<td>ISO 6149-1, M42 thread</td>
<td>ISO 6149-1, M27 thread</td>
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<td>British Parallel Pipe 05</td>
<td>ISO 228-1:1994 (E), G 1-1/4 thread</td>
<td>ISO 228-1:1994 (E), G 3/4 thread</td>
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<tr>
<td><strong>PVM045/050</strong></td>
<td>Inch Flange 02</td>
<td>SAE J518 Code 61, standard pressure. 2.00 inch diameter, 500-13 x 1.06 bolt holes</td>
<td>SAE J518 Code 61, standard pressure. 1.00 inch diameter, 375-16 x .87 bolt holes</td>
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<tr>
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<td>Metric Flange 04</td>
<td>ISO 6162 Type II, 315 bar, 51mm diameter, M12 x 27 bolt holes</td>
<td>ISO 6162 Type II, 315 bar, 25mm diameter, M10 x 22 bolt holes</td>
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<tr>
<td></td>
<td>Inch Tube 01</td>
<td>SAE J514 O-ring -24, for 1-1/2 inch O.D. tube</td>
<td>SAE J514 O-ring -16, for 1 inch O.D. tube</td>
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<tr>
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<td>Metric Tube 03</td>
<td>ISO 6149-1, M48 thread</td>
<td>ISO 6149-1, M33 thread</td>
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<td>British Parallel Pipe 05</td>
<td>ISO 228-1:1994 (E), G 1-1/2 thread</td>
<td>ISO 228-1:1994 (E), G1 thread</td>
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<tr>
<td><strong>PVM057/063</strong></td>
<td>Inch Flange 02</td>
<td>SAE J518 Code 61, standard pressure. 2.00 inch diameter, 500-13 x 1.06 bolt holes</td>
<td>SAE J518 Code 61, standard pressure. 1.00 inch diameter, 375-16 x .88 bolt holes</td>
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<tr>
<td></td>
<td>Metric Flange 04</td>
<td>ISO 6162 Type II, 350 bar, 51mm diameter, M12 x 29 bolt holes</td>
<td>ISO 6162 Type, 350 bar, 25mm diameter, M10 x 23 bolt holes</td>
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</tr>
<tr>
<td></td>
<td>Inch Tube (End ported models only) 01</td>
<td>SAE J514 O-ring -24, for 1-1/2 inch O.D. tube</td>
<td>SAE J514 O-ring -16 for 1 inch O.D. tube</td>
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<tr>
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<td>Metric Tube (End ported models only) 03</td>
<td>ISO 6149-1, M48 thread</td>
<td>ISO 6149-1, M33 thread</td>
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<tr>
<td><strong>PVM074/081</strong></td>
<td>Inch Flange 02</td>
<td>SAE J518 Code 61, standard pressure. 2.00 inch diameter, 500-13 x 1.19 bolt holes</td>
<td>SAE J518 Code 62, high pressure. 1.00 inch diameter, 375-16 x .88 bolt holes</td>
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</tr>
<tr>
<td></td>
<td>Metric Flange 04</td>
<td>ISO 6162 Type II, 315 bar, 51mm diameter, M12 x 20 bolt holes</td>
<td>ISO 6162 Type, 400 bar, 25mm diameter, M10 x 17 bolt holes</td>
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<tr>
<td><strong>PVM098/106</strong></td>
<td>Inch Flange 02</td>
<td>SAE J518 Code 61, standard pressure. 2.50 inch diameter, 500-13 x 1.19 bolt holes</td>
<td>SAE J518 Code 61, standard pressure. 1.00 inch diameter, 375-16 x .88 bolt holes</td>
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<tr>
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<td>Metric Flange 04</td>
<td>ISO 6162 Type I, 350 bar, 64mm diameter, M12 x 31 bolt holes</td>
<td>ISO 6162 Type I, 350 bar, 25mm diameter, M10 x 23 bolt holes</td>
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</tr>
<tr>
<td><strong>PVM131/141</strong></td>
<td>Inch Flange 02</td>
<td>SAE J518 Code 61, standard pressure. 2.50 inch diameter, 500-13 x 1.19 bolt holes</td>
<td>SAE J518 Code 62, high pressure. 1.25 inch diameter, 500-15 x 1.00 bolt holes</td>
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<tr>
<td></td>
<td>Metric Flange 04</td>
<td>ISO 6162 Type II, 315 bar, 64mm diameter, M12 x 31 bolt holes</td>
<td>ISO 6162 Type, 400 bar, 32mm diameter, M12 x 27 bolt holes</td>
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</table>
## Port Options

### DRAIN, LOAD SENSING, AND GAUGE PORTS

<table>
<thead>
<tr>
<th>Model Series</th>
<th>Inlet/Outlet Port Option (per model code, page 5)</th>
<th>Port Code</th>
<th>Drain Port “F”</th>
<th>Load Sensing Port “J”</th>
<th>Gauge Port “K”</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVM018/020</td>
<td>Inch Flange or Tube</td>
<td>01, 03</td>
<td>SAE J514 O-ring, .50'' O.D. tube, .750-16 UNF 2B thread</td>
<td>SAE J514 O-ring, .25'' O.D. tube, .4375-20 UNF 2B thread</td>
<td>SAE J514 O-ring, .25'' tube, .4375-20 UNF 2B thread</td>
</tr>
<tr>
<td></td>
<td>Metric Flange or Tube</td>
<td>03, 04</td>
<td>ISO 6149-1 O-ring M16 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M12 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M12 x 1,5 thread</td>
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<tr>
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<td>Metric Flange or Tube</td>
<td>03, 04</td>
<td>ISO 6149-1 O-ring M22 x 1,5 thread</td>
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<tr>
<td></td>
<td>Metric Flange or Tube</td>
<td>03, 04</td>
<td>ISO 6149-1 O-ring M22 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M14 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M14 x 1,5 thread</td>
</tr>
<tr>
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<td>Metric Flange</td>
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<td>ISO 6149-1 O-ring M22 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M14 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M14 x 1,5 thread</td>
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<tr>
<td></td>
<td>Metric Flange</td>
<td>04</td>
<td>ISO 6149-1 O-ring M22 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M14 x 1,5 thread</td>
<td>ISO 6149-1 O-ring M14 x 1,5 thread</td>
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</table>
Operating Requirements

### Inlet Pressure, Case Pressure, and Operating Temperature Requirements

<table>
<thead>
<tr>
<th>Inlet Pressure</th>
<th>Case Pressure (gauge)</th>
<th>Operating Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated Absolute bar (psi)</strong></td>
<td><strong>Minimum bar, absolute (in. Hg)</strong></td>
<td><strong>Maximum Gauge bar (psi)</strong></td>
</tr>
<tr>
<td>1,0 (14.5)</td>
<td>0,85 (5)</td>
<td>3,5 (50)</td>
</tr>
</tbody>
</table>

### Hydraulic Fluids

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Recommended Operating Viscosity Range cSt (SUS)</th>
<th>Maximum Viscosity at Startup cSt (SUS)</th>
<th>Minimum Viscosity @ Max. Intermittent Temperature of 104°C (220°F) cSt (SUS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use antiwear hydraulic oil, or automotive type crankcase oil (designations SC, SD, SE, or SF) per SAE J183 FEB80</td>
<td>16 to 40 (83 to 187)</td>
<td>1000 (4550)</td>
<td>10 (60)</td>
</tr>
</tbody>
</table>

For more information, see Eaton publication 579. For operation on other alternative or environmentally friendly fluids, please contact your Eaton Representative.

### Fluid Cleanliness

The M Series pumps are rated in anti-wear petroleum fluids with a contamination level of 20/18/13 (Eaton) or ISO 18/13. Operation in fluids with levels more contaminated than this is not recommended. Fluids other than petroleum, severe service cycles, or temperature extremes are cause for adjustment of these codes. Please contact your Eaton Representative for specific duty cycle recommendations and details.

Eaton M Series pumps, as with any variable displacement piston pumps, will operate with apparent satisfaction in fluids up the rating specified here. Experience has shown, however, that pump and hydraulic system life is not optimized with high fluid contamination levels (high ISO cleanliness codes). Proper fluid condition is essential for long and satisfactory life of hydraulic components and systems. Hydraulic fluid must have the correct balance of cleanliness, materials, and additives for protection against wear of components, elevated viscosity, and inclusion of air. Essential information on the correct methods for treating hydraulic fluid is included in Eaton publication 561 – “Eaton Guide to Systemic Contamination Control” – Available from your local Eaton distributor. In this publication, filtration and cleanliness levels for extending the life of axial piston pumps and other system components are listed. Included is an excellent discussion of the selection of products needed to control fluid condition.
Warning: Care should be taken that mechanical and hydraulic resonances are avoided in the application of the pump. Such resonances can seriously compromise the life and/or safe operation of the pump.

Drive Data
Mounting attitude can be either horizontal or vertical, using the appropriate case drain ports to ensure that the case remains full of fluid at all times. Consult your local Eaton Representative if a different arrangement is required.

In those cases where geometric tolerances of mounting are critical, or where specific tolerance ranges are required and not specified, consult Eaton Engineering for specific limits. Direction of shaft rotation, viewed from the electric motor end, must be as indicated in the model designation on the pump—either right hand (clockwise) or left hand (counter-clockwise).
Direct coaxial drive through a flexible coupling is recommended. If drives imposing radial shaft loads are considered, please consult your Eaton Representative.

Start-up Procedure
Make sure the reservoir and circuit are clean and free of dirt/debris prior to filling with hydraulic fluid.
Fill the reservoir with filtered oil and fill to a level sufficient enough to prevent vortexing at the suction connection to pump inlet. It is good practice to clean the system by flushing and filtering, using an external slave pump.
Caution: Before the pump is started, fill the case through the uppermost drain port with hydraulic fluid of the type to be used. The case drain line must be connected directly to the reservoir and must terminate below the oil level.

Once the pump is started, it should prime within a few seconds. If the pump does not prime, check to make sure that there are no restrictions between the reservoir and the inlet to the pump, that the pump is being rotated in the proper direction, and that there are no air leaks in the inlet line and connections. Also check to make sure that trapped air can escape at the pump outlet.
After the pump is primed, tighten the loose outlet connections, than operate for five to ten minutes (unloaded) to remove all trapped air from the circuit.
If the reservoir has a sight gage, make sure the fluid is clear—not milky.