P1 Series
Axial Piston Pumps
Variable Displacement

Catalog HY28-2664/NA,EU
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Variable Displacement Piston Pumps

Series P1

General Information

Description
- variable displacement, axial piston pump for open-circuit applications
- medium pressure, continuous operation at pressures up to 280 bar
- high drive speed models for mobile markets
- quiet and efficient control capability

Benefits
- compact overall package size
- quiet operation
- low flow ripple to further reduce noise
- elastomer seals that eliminate gaskets and external leakage
- high operating efficiency for lower power consumption and reduced heat generation
- simple hydraulic controls with “no-leak” adjustments
- SAE and ISO standard mounting flanges and ports
- long life, tapered-roller shaft bearings
- long life, low friction, hydrostatically balanced cam bearings
- full power through-drive capability
- end or side inlet and outlet ports
- case drain ports for horizontal or vertical, shaft-up mounting
- optional minimum and maximum displacement adjustments
- optional case-to-inlet check valve to extend shaft seal life
- easy to service
Pump Series

Displacement

Type

Mounting & Ports

Shaft Options

Shaft Seal

Shaft Rotation

Application

Seal Material

Design Level

Series P1 Standard

Code Displacement

075 75 cc/rev (4.58 in³/rev)
100 100 cc/rev (6.41 in³/rev)
140 140 cc/rev (8.85 in³/rev)

Code Type

P Open circuit, Variable displacement

Code Shaft Options

01 SAE Spline
03 ISO/DIN Spline

Code Shaft Seal

S Single Shaft Seal

Code Shaft Rotation

R Clockwise Rotation
L Counterclockwise rotation

Code Application

M Mobile

Code Seal Material

5 Fluorocarbon Viton

Code Design Level

A Current Design Series

NOTE: For keyed shaft, consult factory.
### Variable Displacement Piston Pumps
**Series P1**

#### Ordering Information

<table>
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<th>Port Orientation</th>
<th>Mechanical Displacement Adjustment</th>
<th>Case-to-Inlet Check Valve</th>
<th>Thru-Drive Mounting Pad &amp; Coupling</th>
<th>Paint</th>
<th>Special Features</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Code
- **0**: No Paint
- **PB**: Black Paint

#### Codes
- **0**: None
- **A**: SAE 82-2 (A) & 16 (A) Coupling
- **H**: SAE 82-2 (A) & 19 (B) Coupling
- **B**: SAE 101-2 (B) & 22 (B) Coupling
- **Q**: SAE 101-2 (B) & 25 (B-B) Coupling
- **C**: SAE 127-4 (C) & 32 (C) Coupling
- **N**: SAE 127-4 (C) & 38 (C-C) Coupling
- **D**: SAE 152-4 (D) & 44 (D&E) Coupling
- **R**: ISO 80A2 & K20N coupling
- **S**: ISO 100A2 & K20N coupling
- **T**: ISO 100A2 & K25N coupling
- **V**: ISO 125B4 & K32N coupling
- **W**: ISO 125B4 & K40N coupling
- **X**: ISO 180B4 & K50N coupling

- **0**: No Special Features
- **M2**: Special Modification

#### Code
- **Port Orientation**
  - **E**: End Ports
  - **S**: Side Ports
  - **T**: Side Ports with Thru Drive

#### Code
- **Additional Control Options**
  - **0**: None

#### Case-to-Inlet Check Valve
- **0**: No
- **1**: Yes

#### Code
- **Mechanical Displacement Adjustment**
  - **0**: None
  - **1**: Adjustable Maximum Displacement (not available on thru-drive)
  - **2**: Adjustable Minimum Displacement (not available on thru-drive)
  - **3**: Adjustable Maximum & Minimum Displacement (not available on thru-drive)

#### Code
- **Thru-Drive Mounting Pad/Coupling**
  - **0**: None (valid for end or side ported only)
  - **A**: SAE 82-2 (A) & 16 (A) Coupling
  - **H**: SAE 82-2 (A) & 19 (B) Coupling
  - **B**: SAE 101-2 (B) & 22 (B) Coupling
  - **Q**: SAE 101-2 (B) & 25 (B-B) Coupling
  - **C**: SAE 127-4 (C) & 32 (C) Coupling
  - **N**: SAE 127-4 (C) & 38 (C-C) Coupling
  - **D**: SAE 152-4 (D) & 44 (D&E) Coupling
  - **R**: ISO 80A2 & K20N coupling
  - **S**: ISO 100A2 & K20N coupling
  - **T**: ISO 100A2 & K25N coupling
  - **V**: ISO 125B4 & K32N coupling
  - **W**: ISO 125B4 & K40N coupling
  - **X**: ISO 180B4 & K50N coupling

- **0**: No Special Features
- **M2**: Special Modification

---

*Available on 075 thru 140 models.
** Available on 100 thru 140 models.
*** Available on 140 models.

---

*See previous page for information and examples.*
## Technical Data

<table>
<thead>
<tr>
<th>Model</th>
<th>P1075</th>
<th>P1100</th>
<th>P1140</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Displacement, cm³/rev</td>
<td>75</td>
<td>100</td>
<td>140</td>
</tr>
<tr>
<td>cu.in./rev</td>
<td>4.58</td>
<td>6.01</td>
<td>8.54</td>
</tr>
<tr>
<td>Outlet Pressure – Continuous, bar psi</td>
<td>280</td>
<td>4000</td>
<td></td>
</tr>
<tr>
<td>Intermittent*, bar psi</td>
<td>320</td>
<td>4500</td>
<td></td>
</tr>
<tr>
<td>Peak, bar psi</td>
<td>350</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>Maximum Speed – Boosted Inlet, rpm</td>
<td>2700</td>
<td>2500</td>
<td>2400</td>
</tr>
<tr>
<td>(1.0 bar abs inlet), rpm</td>
<td>2300</td>
<td>2100</td>
<td>2000</td>
</tr>
<tr>
<td>(0.8 bar abs inlet), rpm</td>
<td>1900</td>
<td>1700</td>
<td>1600</td>
</tr>
<tr>
<td>Minimum Speed, rpm</td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlet Pressure – Maximum, bar psi</td>
<td>10</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Rated, bar psi</td>
<td>1.0 absolute (0.0 gage)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum, bar psi</td>
<td>0.8 absolute (-0.2 gage)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case Pressure – Peak, bar</td>
<td>4.0 absolute (3.0 gage) and less than 0.5 bar above inlet pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated, bar</td>
<td>2.0 absolute (1.0 gage) and less than 0.5 bar above inlet pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid Temperature Range, °C</td>
<td>-40 to +95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>°F</td>
<td>-40 to +203</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid Viscosity – Rated, cSt</td>
<td>6 to 160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Intermittent, cSt</td>
<td>5000 (for cold starting)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. Intermittent, cSt</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid Contamination – Rated, ISO</td>
<td>18/14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum, ISO</td>
<td>19/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAE Mounting – Flange, SAE</td>
<td>127-4 (C)</td>
<td>152-4 (D)</td>
<td></td>
</tr>
<tr>
<td>Spline Shaft, SAE</td>
<td>14T-12/24P</td>
<td>17T-12/24P</td>
<td>13T-8/16P</td>
</tr>
<tr>
<td>Weight – End Port, kg lb</td>
<td>30</td>
<td>53</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>66</td>
<td>117</td>
<td>145</td>
</tr>
<tr>
<td>Side Port, kg lb</td>
<td>31</td>
<td>55</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>68</td>
<td>121</td>
<td>147</td>
</tr>
<tr>
<td>Thru-Drive, kg lb</td>
<td>35</td>
<td>51</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td>112</td>
<td>180</td>
</tr>
</tbody>
</table>

*Intermittent pressure is defined as less than 10% of operation time, not exceeding 6 successive seconds*
Control Option “C”
Pressure Limiter Control

The pressure limiter control is used to limit the maximum system pressure. The control acts such that full pump displacement is achieved unless the system valve restricts the output flow or the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will destroke to zero displacement and maintain the pressure at the setting of the compensator spring.

Pressure Limiter Control

Pressure Limiter Control with Optional Maximum & Minimum Displacement Adjustments and Case-to-Inlet Check Valve
(A minimum displacement stop requires the use of a system relief valve.)
Control Option “L”
Load Sensing and Pressure Limiter Control

These controls feature load sensing and maximum pressure compensation. Load sense controls are used to match pump flow and pressure to system demands, thus minimizing losses due to wasted horsepower. The pump automatically adjusts for changes in drive speed and load pressures to match the pump output flow to the load requirement. Since the pump load sense control will maintain a constant pressure drop across the main system throttling valve, the flow rate will remain constant, independent of changes in load pressure and pump shaft speed.

Load Sensing and Pressure Limiter Control

Load Sensing and Pressure Limiter Control
with Optional Minimum & Maximum Displacement Adjustments and Case-to-Inlet Check Valve
(A minimum displacement stop requires the use of a system relief valve.)
Control Options “RN”
Pilot Operated Control with ISO 4401 NG6 Interface

This control allows the pump pressure compensator setting to be adjusted from a remote relief valve. The control acts such that full pump displacement is achieved unless the system valve restricts the output flow or the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will destroke to zero displacement and maintain the pressure at the setting of the remote relief valve.

“RN”
Pilot Operated Control with ISO 4401 NG6 Interface

“RN” with Optional Minimum & Maximum Displacement Adjustments and Case-to-Inlet Check Valve
(A minimum displacement stop requires the use of a system relief valve.)
Control Options “RH”
Pilot Operated Control
with Remote Control Port Z

This control allows the pump pressure compensator setting to be adjusted from a remote relief valve. The control acts such that full pump displacement is achieved unless the system valve restricts the output flow or the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will destroke to zero displacement and maintain the pressure at the setting of the remote relief valve.

* See following pages for typical control characteristics
Control Options “RM”  
Pilot Operated Pressure Limiter Control with Vent Port V

This control allows the pump pressure compensator setting to be adjusted from a remote relief valve. The control acts such that full pump displacement is achieved unless the system valve restricts the output flow or the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will destroke to zero displacement and maintain the pressure at the setting of the remote relief valve.
Control Options “RE”
Pilot Operated Pressure Limiter Control with Proportional Electronic Adjustment

This control allows the pump pressure compensator setting to be adjusted from a remote relief valve. The control acts such that full pump displacement is achieved unless the system valve restricts the output flow or the load pressure reaches the maximum setting of the control. If pump flow is restricted by the system valve, the pump will provide only the flow demanded, but at the maximum pressure setting of the compensator control. If the outlet flow is completely blocked, the pump will destroke to zero displacement and maintain the pressure at the setting of the remote relief valve.

“RE”
Pilot Operated Pressure Limiter Control with Proportional Electronic Adjustment

“RE” with Optional Minimum & Maximum Displacement Adjustments and Case-to-Inlet Check Valve
(A minimum displacement stop requires the use of a system relief valve.)
## Typical Control Response Time

<table>
<thead>
<tr>
<th>Control Description</th>
<th>Pump Operating Condition</th>
<th>Typical Control Response Time (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;C&quot; Pressure Limiter</td>
<td>Maximum Displacement to Zero</td>
<td>21 89</td>
</tr>
<tr>
<td></td>
<td>Zero Displacement to Maximum</td>
<td>26 108</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 125</td>
</tr>
<tr>
<td>&quot;L&quot; Load Sensing</td>
<td>Maximum Displacement to Zero</td>
<td>40 97</td>
</tr>
<tr>
<td></td>
<td>Zero Displacement to Maximum</td>
<td>43 189</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45 280</td>
</tr>
<tr>
<td>&quot;R&quot; Pilot Operated Control</td>
<td>Maximum Displacement to Zero</td>
<td>37 115</td>
</tr>
<tr>
<td></td>
<td>Zero Displacement to Maximum</td>
<td>39 123</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 130</td>
</tr>
</tbody>
</table>
Variable Displacement Piston Pumps
Series P1

P1 Series Pump Outlet Flow

P1 Series Overall Efficiency

P1 075
50 C inlet oil temperature - ISO VG32 fluid - maximum displacement

P1 100
50 C inlet oil temperature - ISO VG 32 fluid - maximum displacement

P1 140
50 C inlet oil temperature - ISO VG 32 fluid - maximum displacement
P1 Series Shaft Input Power

P1 075
shaft input power at zero outlet flow
50 C inlet oil temperature - ISO VG 32 fluid

P1 075
shaft input power at maximum displacement
50 C inlet oil temperature - ISO VG 32 fluid

P1 100
shaft input power at zero outlet flow
50 C inlet oil temperature - ISO VG 32 fluid

P1 100
shaft input power at maximum displacement
50 C inlet oil temperature - ISO VG 32 fluid

P1 140
shaft input power at zero outlet flow
50 C inlet oil temperature - ISO VG 32 fluid

P1 140
shaft input power at maximum displacement
50 C inlet oil temperature - ISO VG 32 fluid
P1 Series Typical Noise Characteristics
(These are anechoic sound pressure readings.)

P1 075 Mobile Pump Typical Sound Level
anechoic conditions - ISO VG 32 fluid - 50 C inlet oil temperature

P1 100 Mobile Pump Typical Sound Level
anechoic conditions - ISO VG 32 fluid - 50 C inlet oil temperature

P1 140 Mobile Pump Typical Sound Level
anechoic conditions - ISO VG 32 fluid - 50 C inlet oil temperature
P1 Series Shaft Bearing Life

### P1 075
- Shaft bearing B-10 life at maximum displacement
- Duty cycle average pump outlet pressure (bar)
- RPM values: 2300 rpm, 1800 rpm, 1550 rpm, 1200 rpm, 1000 rpm, 600 rpm
- Shaft bearing B-10 life (hours): 100,000, 200,000, 300,000

### P1 100
- Shaft bearing B-10 life at maximum displacement
- Duty cycle average pump outlet pressure (bar)
- RPM values: 2300 rpm, 1800 rpm, 1550 rpm, 1200 rpm, 1000 rpm, 600 rpm
- Shaft bearing B-10 life (hours): 100,000, 200,000, 300,000

### P1 140
- Shaft bearing B-10 life at maximum displacement
- Duty cycle average pump outlet pressure (bar)
- RPM values: 2300 rpm, 1800 rpm, 1550 rpm, 1200 rpm, 1000 rpm, 600 rpm
- Shaft bearing B-10 life (hours): 100,000, 200,000, 300,000
Pump Installation - P1075
Input Shafts

### Dimensional Data

#### P1075

<table>
<thead>
<tr>
<th>ISO</th>
<th>SAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA</td>
<td>22.0</td>
</tr>
<tr>
<td>BB</td>
<td>36</td>
</tr>
<tr>
<td>BC</td>
<td>47.0/46.0</td>
</tr>
</tbody>
</table>

#### BD

- SPLINE: ISO 3019/202991-P32N (REF DIN 5480)
- INVOLUTE SPLINE DATA
- FLAT ROOT SIDE FIT
- NUMBER OF TEETH - 14
- MODULE - M2
- PRESSURE ANGLE - 30
- TOOTH THICKNESS - 9e

- SPLINE: SAE J744
- SAE 32-4C INVOLUTE SPLINE DATA
- CLASS 2 FLAT ROOT SIDE FIT
- NUMBER OF TEETH - 14
- PITCH - 12/24
- PRESSURE ANGLE - 30
- MAJOR DIAMETER - 1.2268 IN
- PITCH DIAMETER - 1.1666

#### CA

- ISO 3019/202991 125B4SW
- SAE J744 JUN96 127.4 C

#### CB

- 13.77/13.50
- 14.4 DIA.

#### CC

- 56.6
- 57.2

#### CD

- 113.2 SQUARE
- 114.5 SQUARE

#### CE

- 125.00/124.94 ISO 3019/2
- 127.00/126.95 SAE J744

#### CF

- 9.5/9.0
- 12.7/12.2
Variable Displacement Piston Pumps
Series P1

Pump Installation - P1075
End Port
“L” Control Option

CCW Pump will have inlet and outlet gauge ports reversed.

<table>
<thead>
<tr>
<th>P1075 Port Sizes</th>
<th>SAE</th>
<th>ISO</th>
<th>BSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ØA Inlet</td>
<td>50mm</td>
<td>code 61&lt;sup&gt;c&lt;/sup&gt;</td>
<td>50mm DN 51&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>W Threads</td>
<td>½ - 13 UNC-2B&lt;sup&gt;c&lt;/sup&gt;</td>
<td>M12 x 1.75&lt;sup&gt;b&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td>ØB Outlet</td>
<td>25mm</td>
<td>code 61&lt;sup&gt;c&lt;/sup&gt;</td>
<td>25mm DN25&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Y Threads</td>
<td>⅜ - 16 UNC-2B&lt;sup&gt;c&lt;/sup&gt;</td>
<td>M10 x 1.5&lt;sup&gt;b&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td>BG</td>
<td>SAE-4&lt;sup&gt;d&lt;/sup&gt;</td>
<td>M12x1.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>¼&quot;E</td>
</tr>
<tr>
<td>D1 D2 D3</td>
<td>SAE-12&lt;sup&gt;d&lt;/sup&gt;</td>
<td>M27x2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>⅜&quot;E</td>
</tr>
<tr>
<td>X</td>
<td>SAE-4&lt;sup&gt;d&lt;/sup&gt;</td>
<td>M12x1.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>¼&quot;E</td>
</tr>
</tbody>
</table>

Note A: Metric o-ring boss port conforms to ISO 6149-1
Note B: Metric 4-bolt flange port conforms to ISO 6162
Note C: Inch 4-bolt flange port conforms to SAE J518
Note D: Inch o-ring boss port conforms to SAE J514
Note E: BSP boss port conforms to ISO 228-1
**Variable Displacement Piston Pumps**

**Series P1**

### Pump Installation - P1075

**Side Port**

“L” Control Option

### Dimensional Data

#### P1075 Port Sizes

<table>
<thead>
<tr>
<th></th>
<th>SAE</th>
<th>ISO</th>
<th>BSP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ØA Inlet</strong></td>
<td>50mm code 61&lt;sup&gt;c&lt;/sup&gt;</td>
<td>50mm DN 51&lt;sup&gt;a&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td><strong>W Threads</strong></td>
<td>½ - 13 UNC-2B&lt;sup&gt;c&lt;/sup&gt;</td>
<td>M12 x 1.75&lt;sup&gt;b&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td><strong>ØB Outlet</strong></td>
<td>25mm code 61&lt;sup&gt;c&lt;/sup&gt;</td>
<td>25mm DN25&lt;sup&gt;b&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td><strong>Y Threads</strong></td>
<td>¾ - 16 UNC-2B&lt;sup&gt;c&lt;/sup&gt;</td>
<td>M10 x 1.5&lt;sup&gt;b&lt;/sup&gt;</td>
<td>—</td>
</tr>
<tr>
<td><strong>BG</strong></td>
<td>SAE-4&lt;sup&gt;d&lt;/sup&gt;</td>
<td>M12x1.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>¼&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>D1 D2 D3</strong></td>
<td>SAE-12&lt;sup&gt;d&lt;/sup&gt;</td>
<td>M27x2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>¾&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>X</strong></td>
<td>SAE-4&lt;sup&gt;d&lt;/sup&gt;</td>
<td>M12x1.5&lt;sup&gt;a&lt;/sup&gt;</td>
<td>¼&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

---

**Note A:** Metric o-ring boss port conform to ISO 6149-1

**Note B:** Metric 4-bolt flange port conforms to ISO 6162

**Note C:** Inch 4-bolt flange port conforms to SAE J518

**Note D:** Inch o-ring boss port conforms to SAE J514

**Note E:** BSP boss port conforms to ISO 228-1
Variable Displacement Piston Pumps
Series P1

Pump Installation - P1075
Side Ports with Thru-Drive
“L” Control Option

P1075 Port Sizes

<table>
<thead>
<tr>
<th>Port</th>
<th>SAE</th>
<th>ISO</th>
<th>BSP</th>
</tr>
</thead>
<tbody>
<tr>
<td>ØA Inlet</td>
<td>50mm</td>
<td>50mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>code 61°C</td>
<td>DN 51¹</td>
<td></td>
</tr>
<tr>
<td>W Threads</td>
<td>½ - 13 UNC-2B°C</td>
<td>M12 x 1.75⁰</td>
<td></td>
</tr>
<tr>
<td>ØB Outlet</td>
<td>25mm</td>
<td>25mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>code 61°C</td>
<td>DN25¹</td>
<td></td>
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<td>¼&quot;E</td>
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</table>

Shaft Location | P1075 Shaft Size & Type | Shaft Torque Capacity (Nm)
--- | --- | ---
Input End | SAE C 14T Spline | 915
| ISO 14T Spline | 915
Thru-Drive End | Spline Coupling | 458

Note A: Metric o-ring boss port conform to ISO 6149-1
Note B: Metric 4-bolt flange port conforms to ISO 6182
Note C: Inch 4-bolt flange port conforms to SAE J518
Note D: Inch o-ring boss port conforms to SAE J514
Note E: BSP boss port conforms to ISO 228-1
Variable Displacement Piston Pumps
Series P1

Dimensional Data

Pump Installation - P1100
Input Shafts

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<tr>
<th>P1100</th>
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Pump Installation - P1100
End Ports
“L” Control Option

For Shaft & Flange Dimensions, see page 22

<table>
<thead>
<tr>
<th>P1100 Port Sizes</th>
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<th>ISO</th>
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Note A: Metric o-ring boss port conform to ISO 6149-1
Note B: Metric 4-bolt flange port conforms to ISO 6182
Note C: Inch 4-bolt flange port conforms to SAE J518
Note D: Inch o-ring boss port conforms to SAE J514
Note E: BSP boss port conforms to ISO 228-1
Pump Installation - P1100
Side Ports
“L” Control Option

P1100 Port Sizes

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<tr>
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<td>¼&lt;sup&gt;e&lt;/sup&gt;</td>
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Note A: Metric o-ring boss port conform to ISO 6149-1
Note B: Metric 4-bolt flange port conforms to ISO 6162
Note C: Inch 4-bolt flange port conforms to SAE J518
Note D: Inch o-ring boss port conforms to SAE J514
Note E: BSP boss port conforms to ISO 228-1
Variable Displacement Piston Pumps
Series P1

Pump Installation - P1100
Side Ports with Thru-Drive
“L” Control Option

Dimensional Data

P1100 Port Sizes

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Note A: Metric o-ring boss port conforms to ISO 6149-1
Note B: Metric 4-bolt flange port conforms to ISO 6162
Note C: Inch 4-bolt flange port conforms to SAE J518
Note D: Inch o-ring boss port conforms to SAE J514
Note E: BSP boss port conforms to ISO 228-1

Shaft Location | P1100 Shaft Size & Type | Shaft Torque Capacity (Nm)
---------------|-------------------------|------------------------
Input End      | SAE C-C 17T Spline      | 1220                   |
                | ISO 18T Spline           | 1220                   |
Thru-Drive End | Spline Coupling          | 610                    |

For Shaft & Flange Dimensions, see page 32
### Variable Displacement Piston Pumps

**Series P1**

#### Pump Installation - P1140

**End Ports**

**“L” Control Option**

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Variable Displacement Piston Pumps
Series P1

Pump Installation - P1140
End Ports
“L” Control Option

Dimensional Data

P1140 Port Sizes

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<td>W Threads</td>
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<td>M12x1.5</td>
<td>¼</td>
</tr>
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Notes:
A: Metric o-ring boss port conform to ISO 6149-1
B: Metric 4-bolt flange port conforms to ISO 6162
C: Inch 4-bolt flange port conforms to SAE J518
D: Inch o-ring boss port conforms to SAE J514
E: BSP boss port conforms to ISO 228-1
Pump Installation - P1140

Side Ports
"L" Control Option

P1140 Port Sizes

<table>
<thead>
<tr>
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<td>ØB Outlet</td>
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<tr>
<td>Y Threads</td>
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<td>M12 x 1.75</td>
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<td>SAE-4</td>
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<tr>
<td>D1 D2 D3</td>
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<td>X</td>
<td>SAE-4</td>
<td>M12x1.5</td>
<td>¼&quot;</td>
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Note A: Metric o-ring boss port conform to ISO 6149-1
Note B: Metric 4-bolt flange port conforms to ISO 6162
Note C: Inch 4-bolt flange port conforms to SAE J518
Note D: Inch o-ring boss port conforms to SAE J514
Note E: BSP boss port conforms to ISO 228-1
Variable Displacement Piston Pumps
Series P1

Pump Installation - P1140
Side Ports with Thru-Drive
"L" Control Option

Catalog HY28-2664/NA,EU

Shaft Location | P1140 Shaft Size & Type | Shaft Torque Capacity (Nm)
--- | --- | ---
Input End | SAE D 13T Spline | 1708
ISO 24T Spline | 1708
Thru-Drive End | Spline Coupling | 854

P1140 Port Sizes

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Note A: Metric o-ring boss port conform to ISO 6149-1
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Note E: BSP boss port conforms to ISO 228-1
Dimensional Data

Pump Installation - P1140
Side Ports with Thru-Drive
Mounting Options
Variable Displacement Piston Pumps
Series P1

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8. Buyer’s Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer’s property, may be considered obsolete and may be destroyed or disposed of if such actions have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller’s possession or control.

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