PVQ 10, 13, 20, 32, 40 & 45 Piston Pumps

- For Mobile and Industrial Use
- Rated Speed at 1800 rpm
- Low Noise Level
- Same Day Shipments
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sales@FluiDyneFP.com • (586) 296-7200
FluiDyne PVQ piston pumps are in-line, variable displacement pumps. They are available in six sizes. Displacement is varied by means of a max volume stop compensator controls. A variety of compensator options are offered for a maximum operating flexibility.

Our PVQ series is capable of operating with many types of hydraulic oil. Water glycol and phosphate ester oils can be used, in addition to the typical petroleum based and synthetic oils.

*Other options available in Reman. Contact our sales team today for a quote!

### Operating Data  
**Q Series Displacement, Speed and Pressure Ratings**

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Displacement in $3/r$</th>
<th>Rated Speed RPM</th>
<th>Max Pressure PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVQ10</td>
<td>0.643</td>
<td>1800</td>
<td>3000</td>
</tr>
<tr>
<td>PVQ13</td>
<td>0.843</td>
<td>1800</td>
<td>2000</td>
</tr>
<tr>
<td>PVQ20</td>
<td>1.290</td>
<td>1800</td>
<td>3000</td>
</tr>
<tr>
<td>PVQ32</td>
<td>2.010</td>
<td>1800</td>
<td>2000</td>
</tr>
<tr>
<td>PVQ40</td>
<td>2.500</td>
<td>1800</td>
<td>3000</td>
</tr>
<tr>
<td>PVQ45</td>
<td>2.750</td>
<td>1800</td>
<td>2700</td>
</tr>
</tbody>
</table>
**Model Code Breakdown**

**PVQ10 & PVQ13**

- **Model Series**
  - PVQ - Inline Piston Pump
  - Variable Volume
  - Quiet Series

- **Displacement**
  - **10** - 10.5 cc/rev (0.64 cir)
    - 210 bar (3000 psi)
  - **13** - 13.8 cc/rev (0.84 cir)
    - 140 bar (2000 psi)

- **Mounting Flange**
  - **A2** - SAE “A” 2-bolt Flange

- **Shaft Rotation** (viewed at shaft end)
  - **R** - Right hand (clockwise)
  - **L** - Left hand (counterclockwise)

- **Ports, Type and Location**
  - **SE** - SAE O-Ring. Rear port,
    - 1 1/16-12 inlet/outlet
  - **SS** - SAE O-Ring. Side port,
    - 1 5/16-12 inlet/outlet

- **Control Type**
  - **C-11** - Pressure Compensator
  - **CM-11** - Low Pressure Compensator
  - **C** - Load Sensing with bleed down orifice
  - **PV** - Load Sensing without bleed orifice
  - **CG-20** - Pressure Compensator modified for hyd remote control
  - **CD** - Electric Dual Range Pressure

- **Control Option**
  - **Blank** - Without adjusting Max. displacement stop (std)
  - **D** - Max adjustable displacement stop (optional)

- **Shaft, Inputs**
  - **1** - Straight keyed
    - .75” dia x. 1.75” long
  - **3** - .625 dia x. 9T

- **Seals**
  - **S** - Buna N, standard
  - **F** - Fluorocarbon, optional

- **Special Pump Option**
  - **S2** - Shaft up mounting

*Call us for other options!"
### Ratings & Controls

<table>
<thead>
<tr>
<th>Model #</th>
<th>Max Geometric Displacement in³/r</th>
<th>Rated Speed r/min</th>
<th>Max Pressure psi</th>
<th>Input Power at Max. Pressure and Rated Speed hp</th>
<th>Approx. Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVQ10</td>
<td>0.643</td>
<td>1800</td>
<td>3000</td>
<td>10</td>
<td>16 lb</td>
</tr>
<tr>
<td>PVQ13</td>
<td>0.843</td>
<td>1800</td>
<td>2000</td>
<td>8.75</td>
<td>16 lb</td>
</tr>
</tbody>
</table>

**Pressure Limits:**
- Case pressure: -5 psig maximum
- Inlet pressure: -5 in. Hg vacuum to 30 psig

**Pressure Control, “C” Option:**
The pressure compensator control automatically varies pump flow to maintain volume requirements of the system at a preselected operating pressure. Maximum pump flow is maintained to approximately 50 psi below the pressure setting before being reduced. The pressure control operates on one side of center and has an adjustment range as designated in the model code.

**Pressure Control with Adjustable Maximum Displacement Stop, “CC” Option:**
The adjustable maximum stop pressure control enables the maximum pump flow to be externally adjusted from 25% to 100% while maintaining all of the standard features of a pressure compensated pump. To assist initial priming, manual adjustment control setting must be at least 40% of maximum flow position.

**Remote Control Pressure Compensator, “CG” Option:**
It is the same as the “C” (pressure compensation option) except the machine operator is able to change the compensator setting through a remote pilot relief valve.

**Electric Dual Range Pressure Control, “CD” Option**
The dual range pressure compensator control automatically adjusts pump flow to maintain volume requirements of the system at either two preselected operating pressures. Maximum pump flow is maintained to approximately 50 psi below either pressure control setting before being reduced.

Control type and pressure range are designated in the model code.

**Note:** The symbol shows external valve(s) and cylinder to demonstrate usage.

**Load-Sensing and Pressure Limiting Control, “CVP(C)” Option:**
The compensator provides load-sensing control under all pressure conditions, up to the desired maximum. It automatically adjusts pump flow in response to a remote pressure signal. It maintains outlet pressure at a level slightly above load pressure. The integral pressure limiter overrides the load sensing control, reducing pump displacement as the preset maximum operating pressure is reached.

Standard load-sense differential pressure settings, by control type, follow. See model code for setting range.

Standard load-sensing and pressure limiting control with 11 bar differential pressure (standard factory setting). Includes bleed-down orifice to exhaust load-sense signal for low pressure standby condition. Same as C**V11B, but with bleed-down orifice plugged. Same as C**V11B/P, but with factory differential pressure setting of 24 bar.

---

(†orifice open)  
(†orifice plugged)
Performance Curves
PVQ10

Oil type: SAE 10W
Oil temperature: 120°F
Inlet: 5 in. Hg

Note: To obtain full flow operation, pressure control setting should be 200 psi above desired operating pressure. Full flow curves were obtained with control settings 200 psi above 3000 psi maximum rated pressure.
Performance Curves
PVQ13

Oil type: SAE 10W
Oil temperature: 20°F
Inlet: 5 in. Hg

**Note:** To obtain full flow operation, pressure control setting should be 200 psi above desired operating pressure. Full flow curves were obtained with control settings 200 psi above 3000 psi maximum rated pressure.
Operating Data
PVQ10 & PVQ13 Speed, Pressure Rating & Response Data

Response Data

<table>
<thead>
<tr>
<th>Control Type</th>
<th>PVQ10</th>
<th>PVQ13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On Stroke</td>
<td>Off Stroke</td>
</tr>
<tr>
<td>Pressure Compensator</td>
<td>0.040 sec</td>
<td>0.020 sec</td>
</tr>
</tbody>
</table>

Installation Dimensions

PVQ10 and PVQ13 with Rear Ports
Millimeters (inches)

PVQ10 and PVQ13 with Side Ports

Outlet connection 1.3125-12 UN-2B straight thd. (1.00 O.D. tubing) for R.H. rotation models
Outlet connection 1.3125-12 UN-2B straight thd. (1.00 O.D. tubing) for L.H. rotation models
Shaft Options
PVQ10/13

Control Options

Load-Sensing with Pressure Limiting Compensator, “CVP(C)”

Adjustment:
1. Turn pressure control (such as C-175) CCW to minimum setting.
2. Turn compensator adjustment plug to desired minimum pressure (250 psi or higher).
3. Full pressure range can now be obtained with pressure control.

Caution: Effective control pressure will be compensator control setting (250-1000 psi) plus remote relief valve setting.
Control Options
Electric Dual Range Pressure Compensator Control, “CD”

Adjustment:
1. With the directional valve de-energized, loosen locknut “5” and turn the adjusting screw “4” to the desired first stage pressure setting, then tighten locknut “5”.
2. With solenoid de-energized, turn adjusting spool “1” counterclockwise until nut “3” is bottomed in adjusting screw slot. (Second stage setting is now equal to first stage pressure setting). Turn adjusting spool clockwise to desired second stage pressure requirements. One complete turn of adjusting spool equals approximately 41 bar (600 psi). Energize solenoid and check pressure setting. De-energize solenoid and re-adjust if necessary. Secure this setting by tightening locknut “2”.

Solenoid Data

<table>
<thead>
<tr>
<th>Solenoid Current</th>
<th>Inrush amps (R.M.S.)</th>
<th>Holding amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>115/120V AC 60 Hz -</td>
<td>2.0</td>
<td>.54</td>
</tr>
<tr>
<td>110V AC 50 Hz</td>
<td></td>
<td>.64*</td>
</tr>
</tbody>
</table>

*Maximum peak inrush amps approximately 1.4 x R.M.S. value shown.
Controls
Electric Dual Range Pressure Compensator with Maximum Displacement Stop, “CDC”

Maximum Flow Adjustment:
With the system pressure below both compensator settings, loosen maximum stop adjusting screw locknut and adjust screw to desired flow position (turning screw clockwise decreases flow and turning screw counterclockwise increases flow). To lock screw in position tighten lock-nut. To assist initial priming, adjust control setting to at least 40% of maximum flow position.

Compensator Control:
1. With the directional valve de-energized, loosen locknut “5” and turn the adjusting screw “4” to the desired first stage pressure setting, then tighten locknut “5”.
2. With directional valve de-energized, turn adjusting spool “1” counterclockwise until nut “3” is bottomed in adjusting screw slot. (Second stage setting is now equal to first stage pressure setting). Turn adjusting spool clockwise to desired second stage pressure requirements. One complete turn of adjusting spool equals approximately 41 bar (600 psi). Energize solenoid and check pressure setting. De-energize solenoid and re-adjust if necessary. Secure this setting by tightening locknut “2”.

![Diagram of the compensator control](image-url)
Model Code Breakdown
PVQ20 & PVQ32

Model Series
PVQ - Inline Piston Pump
Variable Volume
Quiet Series

Displacement
PVQ
20 - 20 cc/rev (1.28 cir)
210 bar (3000 psi)
32 - 32 cc/rev (2.01 cir)
140 bar (2000 psi)

Mounting Flange
B2 - SAE “B” 2-bolt flange

Shaft Rotation (viewed at shaft end)
R - Right hand (clockwise)
L - Left hand (counterclockwise)

Ports, Type and Location
SE - SAE O-Ring. Rear port,
1 5/8-12 inlet/outlet
SS - SAE O-Ring. Side port,
1 5/8-12 inlet/outlet

Thru-Drive without Coupling
(available with side ports only)
Blank - No thru-drive
A9 - SAE J744 82-2 (SAE A) w/9T spline
A11 - SAE J744 82-2 (SAE A) w/11T spline

Control Type
C-11 - Pressure Compensator
CM-11 - Low Pressure Compensator
C**V**B-12 - Load Sensing with bleed down orifice
C**V**P-12 - Load Sensing without bleed orifice
CG-20 - Pressure Compensator modified for hyd remote control
CD - Electric Dual Range Pressure

Control Option
Blank - Without Max. displacement stop (std)
D - Max adjustable displacement stop

Special Pump Option
S2 - Shaft up mounting

Seals
S - Buna N, standard
F - Fluorocarbon, optional

Shaft, Inputs
1 - Straight keyed SAE “B” (0.875” Dia. x 2.31”)
3 - Splined SAE “B” modified (13T 16/32 DP major dia.fit)

*Call us for other options!
See Page 25 for Reference

Committed to Quality
Ratings & Controls

<table>
<thead>
<tr>
<th>Model #</th>
<th>Max Geometric Displacement in³/r</th>
<th>Rated Speed r/min</th>
<th>Max Pressure psi</th>
<th>Input Power at Max. Pressure and Rated Speed hp</th>
<th>Approx. Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVQ20</td>
<td>1.290</td>
<td>1800</td>
<td>3000</td>
<td>20</td>
<td>14 lb</td>
</tr>
<tr>
<td>PVQ32</td>
<td>2.010</td>
<td>1800</td>
<td>2000</td>
<td>21</td>
<td>14 lb</td>
</tr>
</tbody>
</table>

**Pressure Limits:**
Case pressure - 5 psig maximum
Inlet pressure - 5 in. Hg vacuum to 30 psig

**Pressure Controls, “C” Option**
The pressure control automatically varies pump flow to maintain volume requirements of the system at a preselected operating pressure. Maximum pump flow is maintained to approximately 75 psi (PVQ20) or 100 psi (PVQ32) below the pressure setting before being reduced. The pressure control operates on one side of center and has an adjustment range as designated in the model code.

**Pressure Compensator Control with Adjustable Maximum Displacement Stop, “CC” Option**
The adjustable maximum stop pressure control enables the maximum pump flow to be externally adjusted from 25% to 100% while maintaining all of the standard features of a pressure compensated pump. To assist initial priming, manual adjustment control setting must be at least 40% of maximum flow position.

**Remote Control Pressure Compensator “CG” Option**
It is the same as the “C” (pressure compensation option) except the machine operator is able to change the compensator setting through a remote pilot relief valve.

**Electric Dual Range Pressure Control, “CD” Option**
The dual range pressure compensator control automatically adjusts pump flow to maintain volume requirements of the system at either of two preselected operating pressures. Maximum pump delivery is maintained to approximately 75 psi (PVQ20) or 100 psi (PVQ32) below either pressure control setting before being reduced.

Control type and pressure range are designated in the model code.

**Note:** The symbol shows external valve(s) and cylinder to demonstrate usage.

**Load-Sensing and Pressure Limiting Control, “CVP(C)” Option**
The compensator provides load-sensing control under all pressure conditions up to the desired maximum. It automatically adjusts pump flow in response to a remote pressure signal and maintains outlet pressure at a level slightly above load pressure. The integral pressure limiter overrides the load sensing control, reducing pump displacement as the preset maximum operating pressure is reached.

Standard load-sense differential pressure settings, by control type, follow. See model code for setting range.

Standard load-sensing and pressure limiting control with 11 bar differential pressure (standard factory setting). Includes bleed-down orifice to exhaust load-sense signal for low pressure standby condition. Same as C**V11B, but with bleed-down orifice plugged. Same as C**V11B/P, but with factory differential pressure setting of 24 bar.
Performance Curves
PVQ20

Oil type: SAE 10W
Oil temperature: 120°F
Inlet: 5 in. Hg

Note: To obtain full flow operation, pressure control setting should be 200 psi above desired operating pressure. Full flow curves were obtained with control settings 200 psi above 3000 psi maximum rated pressure.
Performance Curves
PVQ32

Oil type: SAE 10W
Oil temperature: 120°F
Inlet: 5 in. Hg

Note: To obtain full flow operation, pressure control setting should be 200 psi above desired operating pressure. Full flow curves were obtained with control settings 200 psi above 3000 psi maximum rated pressure.
Operating Data
PVQ20 & PVQ32 Speed, Pressure Ratings & Response Data

Response Data

<table>
<thead>
<tr>
<th>Control Type</th>
<th>PVQ20 On Stroke</th>
<th>PVQ20 Off Stroke</th>
<th>PVQ32 On Stroke</th>
<th>PVQ32 Off Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Compensator</td>
<td>0.070 sec</td>
<td>0.023 sec</td>
<td>0.080 sec</td>
<td>0.020 sec</td>
</tr>
<tr>
<td>Load-Sense Compensator</td>
<td>0.090 sec</td>
<td>0.015 sec</td>
<td>0.100 sec</td>
<td>0.018 sec</td>
</tr>
</tbody>
</table>

Shaft Torque Data
PVQ20/32A9 and PVQ20/32A11

Thru-Drive Shaft Torque Data:

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Shaft Code</th>
<th>Max Input Torque Total lb.in</th>
<th>Max Thru-Drive Torque Output lb.in</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVQ20/32A9</td>
<td>1</td>
<td>1200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1850</td>
<td>517</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>2987</td>
<td></td>
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<tr>
<td>PVQ20/32A11</td>
<td>1</td>
<td>1200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1850</td>
<td>1100</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>2987</td>
<td></td>
</tr>
</tbody>
</table>

Installation Dimensions
Vertical “Shaft-Up” Installation - “S2” Drain Port Option

Additional drain port, 3/4"-16 UNF-2B
29.2 (1.15)
Installation Dimensions
PVQ20/32 Rear Ports, “C” and “CM” Controls, No. 1 Shaft

Case drain connection .7500-16 UNF-2B straight thd. (for 0.50 O.D. tubing)

Righthand rotation

Compensator position for R.H. rotation models

Outlet connection for L.H. rotation models

Outlet connection for R.H. rotation models

Alternate case drain connection .7500-16 UNF-2B straight thd. (for 0.50 O.D. tubing)

Caution – while pump is operating do not back compensator adjustment screw out beyond dimension shown.

Our people provide extensive support:

• Engineering Expertise
• Decoding special part numbers
• Identification of parts within units
• Advice on component repair and assembly
• Component failure analysis
• Massive local stock
• New application component selection
• Same day shipment
• 18 month warranty

Call us today to find out what makes us so great!
Installation Dimensions
PVQ20/32

Side Ports

No. 3 Shaft

“N” Shaft with “MB” Flange (Flange and shaft end ISO 3019/21000A2HW-E25N)
Remote Compensator
Adjustment:
1. Turn pressure control (such as C-175) CCW to minimum setting.
2. Turn compensator adjustment plug to desired minimum pressure (250 psi or higher).
3. Full pressure range can now be obtained with pressure control.
Caution: Effective control pressure will be compensator control setting (250-1000 psig) plus remote relief valve setting.

Load-sensing with Pressure Limiter

Pressure Compensator Control with Adjustable Max. Displacement Stop
Adjustment:
First, loosen locknut on adjusting rod. Next, turn adjusting rod clockwise (CW) to decrease maximum pump flow or counterclockwise (CCW) to increase maximum pump flow until desired setting is obtained. Secure this setting by tightening locknut.
**Controls**

**Electric Dual Range Pressure Compensator Control**

**Adjustment:**
1. With the directional valve de-energized, loosen locknut “5” and turn the adjusting screw “4” to the desired first stage pressure setting, then tighten locknut “5”.
2. With solenoid de-energized, turn adjusting spool “1” counterclockwise (CCW) until nut “3” is bottomed in adjusting screw slot. (Second stage setting is now equal to first stage pressure setting). Turn adjusting spool clockwise (CW) to desired second stage pressure requirements. One complete turn of adjusting spool equals approximately 41 bar (600 psi). Energize solenoid and check pressure setting. De-energize solenoid and re-adjust if necessary. Secure this setting by tightening locknut “2”.

![Diagram of the Electric Dual Range Pressure Compensator Control]

**Solenoid Data**

<table>
<thead>
<tr>
<th>Solenoid Current</th>
<th>Inrush amps (R.M.S.)</th>
<th>Holding Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>115/120 V AC 60 Hz -</td>
<td>2.0</td>
<td>.54</td>
</tr>
<tr>
<td>110V AC 50 Hz</td>
<td></td>
<td>.64*</td>
</tr>
</tbody>
</table>

* Maximum peak inrush amps approximately 1.4 x R.M.S. value shown.
**Controls**

**Electric Dual Range Pressure Compensator with Max Displacement Stop**

**Maximum Flow Adjustment**
With the system pressure below both compensator settings, loosen maximum stop adjusting screw locknut and adjust screw to desired flow position (turning screw clockwise decreases flow and turning screw counterclockwise increases flow). To lock screw in position, tighten locknut. To assist initial priming, adjust control setting to at least 40% of maximum flow position.

**Compensator Control**
1. With the directional valve de-energized, loosen locknut “5” and turn the adjusting screw “4” to the desired first stage pressure setting, then tighten locknut “5”.
2. With directional valve de-energized, turn adjusting spool “1” counterclockwise until nut “3” is bottomed in adjusting screw slot. (Second stage setting is now equal to first stage pressure setting). Turn adjusting spool clockwise to desired second stage pressure requirements. One complete turn of adjusting spool equals approximately 41 bar (600 psi). Energize solenoid and check pressure setting. De-energize solenoid and re-adjust if necessary. Secure this setting by tightening locknut “2”.

![Diagram of Electric Dual Range Pressure Compensator with Max Displacement Stop]

- **Position for L.H. models**
- **Electrical conduit connection 1/2 NPTF thd.**
- **Minimum delivery position (flush with nut). Do not adjust below flush.**
- **Locknut – 1,2 (0.44) across flats**
- **Maximum stop (adjusting screw) .250-20 UNC thd.**
- **Maximum delivery position**
- **Adjusting spool— sets second stage pressure**
- **Locknut— 17,3 (0.68) across flats**
- **Locknut— must be contained within slot of adjusting screw as shown**
- **Adjusting screw 25,4 (1.00) across flats— sets first stage pressure**
- **Locknut— 31,7 (1.25) across flats**

**www.FluiDyneFP.com**
Thru-Drives
PVQ20/32 “A9” and “A11” SAE “A”

No. 1 shaft. Input torque not to exceed 73 Nm (650 lb. in.)
plus tabulated auxiliary pump torque with no overhung load.
Applications requiring overhung load capability or other
shaft ends are subject to approval.

Construction plug. Do not remove.

Caution: While pump is operating,
do not back compensator adj. out
beyond 28,4 (1.12) dim. shown.

Excellence Under Pressure
Thru-Drives
PVQ20/32 “A9” and “A11” SAE “A”

Note: Ports are reversed for L.H. rotation. Control location same for both L.H. and R.H. rotation.

Thru-Drive Cutaway View

PVQ20/32 A9 & A11 SAE “A”

<table>
<thead>
<tr>
<th>Model #</th>
<th>Spline Data</th>
<th>Max. Torque in. lb</th>
<th>A</th>
<th>B</th>
<th>Coupling Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A9</td>
<td>B5.15-1960 9 teeth 16/32 DP Flat root side fit</td>
<td>517</td>
<td>0.66</td>
<td>1.30</td>
<td>02-136810</td>
</tr>
<tr>
<td>A11</td>
<td>B92.1-1970 11 teeth 16/32 DP Flat root side fit</td>
<td>1100</td>
<td>0.73</td>
<td>1.54</td>
<td>02-306041</td>
</tr>
</tbody>
</table>

Note: Order the couplings, screws and washers separately to mount on the rear pump.

Typical Rear Pumps (with shaft codes) for PVQ20*32 Thru-Drives

<table>
<thead>
<tr>
<th>Model #</th>
<th>Typical Rear Pump</th>
<th>Rear Pump Shaft Code</th>
<th>Thru-Drive Coupling Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A9</td>
<td>PVQ10/13</td>
<td>3</td>
<td>02-136810</td>
</tr>
<tr>
<td></td>
<td>PVB5/6</td>
<td>S124 Suffix</td>
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<tr>
<td></td>
<td>V10</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V20</td>
<td>62</td>
<td></td>
</tr>
</tbody>
</table>

Note: “A11” (not listed above) is intended for special applications only.
Model Code Breakdown
PVQ40 & PVQ45

Model Series
PVQ - Inline Piston Pump
Variable Volume
Quiet Series

Displacement
40 - 41 cc/rev (2.50 cir)
210 bar (3000 psi)
45 - 45.1 cc/rev (2.75 cir)
186 bar (2700 psi)

Mounting Flange
B2 - Flange SAE J744 101-2 (SAE B)

Shaft Rotation (viewed at shaft end)
R - Right hand (clockwise)
L - Left hand (counterclockwise)

Thru-Drive Without Coupling
(available with side ports only)
Blank - No thru-drive
A9* - SAE J744 82-2 (SAE A) w/9T Spline
A11* - SAE J744 82-2 (SAE A) w/11T Spline
B26* - SAE J744 101-2 (SAE B) w/26T Spline

Ports, Type and Location
SE - SAE O-Ring. Rear port, (standard)
SS - SAE O-Ring. Side port (optional)
FS* - SAE 4-bolt. Side port (preferred for SAE A thru-drive. Not available on SAE B thru-drive)

Seals
S - Buna N, standard
F - Fluorocarbon, optional

* Only available in Reman!

FluiDyne
FLUID POWER
Ratings & Controls

<table>
<thead>
<tr>
<th>Model #</th>
<th>Max Geometric Displacement in³/r</th>
<th>Rated Speed r/min</th>
<th>Max Pressure psi</th>
<th>Input Power at Max. Pressure and Rated Speed hp</th>
<th>Approx. Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVQ40</td>
<td>2.500</td>
<td>1800</td>
<td>3000</td>
<td></td>
<td>45 lb</td>
</tr>
<tr>
<td>PVQ45</td>
<td>2.750</td>
<td>1800</td>
<td>2700</td>
<td></td>
<td>45 lb</td>
</tr>
</tbody>
</table>

Pressure Limits:
Inlet pressure - 0.2 bar (5 in. Hg) vacuum to 2 bar (30 psig)
Case pressure - 0.35 bar (5 in. Hg) maximum

**Note:** Integral relief valve limits case pressure peaks to 0.7 bar (10 psi) higher than inlet pressure to protect pump. Flow from valve is returned directly to pump inlet. Use of case drain line required to limit steady-state case pressure.

**Pressure Comp Control, “G” Option:**
This control automatically varies pump displacement to meet the system flow demand for a constant system pressure. Displacement starts to reduce to 0 within 14 bar (200 psi) of the compensator setting. Power draw-off is minimized, therefore, system relief valves should not be required.

**Pressure Comp Control with Adjustable Maximum Displacement Stop**
The adjustable maximum stop pressure control enables the maximum pump flow to be externally adjusted from 25% to 100% while maintaining all of the standard features of a pressure compensated pump. To assist initial priming, manual adjustment control setting must be at least 40% of maximum flow position.

**Remote Control Pressure Compensator, “J” Option:**
It is the same as the “C” (pressure compensation option) except the machine operator is able to change the compensator setting through a remote pilot relief valve.

**Other Standard Load Sense Options:**
1. Bleed-down orifice plugged.
2. Factory differential pressure setting of 24 bar.

**Electric Dual Range Pressure Control, “C” Option**
The dual range pressure compensator control automatically adjusts pump flow to maintain volume requirements of the system at either two preselected operating pressures. Maximum pump flow is maintained to approximately 50 psi below either pressure control setting before being reduced.

Control type and pressure range are designated in the model code.

**Note:** The symbol shows external valve(s) and cylinder to demonstrate usage.

**Load-Sensing and Pressure Limiting Control, “H” Option:**
The compensator provides load-sensing control under all pressure conditions, up to the desired maximum. It automatically adjusts pump flow in response to a remote pressure signal. It maintains outlet pressure at a level slightly above load pressure. The integral pressure limiter overrides the load sensing control, reducing pump displacement as the preset maximum operating pressure is reached.

Standard load-sense differential pressure settings, by control type, follow. See model code for setting range.

Standard load-sensing and pressure limiting control with 11 bar differential pressure (standard factory setting). Includes bleed-down orifice to exhaust load-sense signal for low pressure standby condition.
Performance Curves
PVQ40

Oil type: SAE 10W
Oil temperature: 180° F
Inlet: 0 psi

Note: To obtain full flow operation, pressure control setting should be 200 psi above desired operating pressure. Full flow curves were obtained with control settings 200 psi above 3000 psi maximum rated pressure.
Performance Curves
PVQ45

Oil type: SAE 10W
Oil temperature: 180°F
Inlet: 0 psi

Note: To obtain full flow operation, pressure compensator setting should be 200 psi above desired operating pressure. Full flow curves were obtained with control settings 200 psi above 2700 psi maximum rated pressure.
Operating Data
PVQ40 & PVQ45 Speed, Pressure Ratings & Response Data

Response Data

<table>
<thead>
<tr>
<th>Control Type</th>
<th>PVQ40</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On Stroke</td>
</tr>
<tr>
<td>Pressure Compensator</td>
<td>0.050 sec</td>
</tr>
<tr>
<td>Load-Sense Compensator</td>
<td>0.040 sec</td>
</tr>
</tbody>
</table>

Yoke response recorded at rated speed and pressure, 0 psi inlet, 1800F, SAE 10W oil. Pressure rise was 100,000 psi per second.

Controls
Side Port Controls, Mounting and No. 2 Input Shaft

Note: Ports are reversed for L.H. rotation

Caution - While pump is operating do not back compensator adjustment screw out beyond dimension shown. Plug shown for industrial models.
Rear Ports

Inlet port “A” see note.
1.875-12 UN-2B thd. SAE O-ring boss connection
1,500 O.D. tubing. Shown for R.H. rotation

Alternate drain port D2
.875-14 UNF-2B thd. SAE O-ring boss connection
.625 O.D. tubing

Outlet port “B” see note.
1.3125-12 UN-2B thd. SAE O-ring boss connection
1,000 O.D. tubing. Shown for R.H. rotation

# 1 Shaft: SAE “B” Straight Keyed

# 5 Shaft
SAE “B” Splined

# 8 Shaft
SAE “B-B” Splined

Alternate

Inlet port “A” see note.
1.875-12 UN-2B thd. SAE O-ring boss connection
1,500 O.D. tubing. Shown for R.H. rotation

Alternate drain port D2
.875-14 UNF-2B thd. SAE O-ring boss connection
.625 O.D. tubing

Outlet port “B” see note.
1.3125-12 UN-2B thd. SAE O-ring boss connection
1,000 O.D. tubing. Shown for R.H. rotation

# 1 Shaft: SAE “B” Straight Keyed

# 5 Shaft
SAE “B” Splined

# 8 Shaft
SAE “B-B” Splined

Alternate

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1.875-12 UN-2B thd. SAE O-ring boss connection
1,500 O.D. tubing. Shown for R.H. rotation

Alternate drain port D2
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.625 O.D. tubing

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Alternate

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.625 O.D. tubing

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Alternate drain port D2
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# 5 Shaft
SAE “B” Splined

# 8 Shaft
SAE “B-B” Splined

Alternate
Pressure Compensator with Load Sensing

Remote Control

Compensator adj. knob. Do not back out adj. knob beyond 28.45 (1.12) dimension shown while pump is operating.

Load sensing comp. control port location for R.H. rotation
.4375-20 UNF-2B thd. SAE O-ring boss connection .250 O.D. tubing

Load sensing control port location for L.H. rotation

Comp. control port location fo R.H. rotation .4375-20 UNF-2B thd. SAE O-ring boss connection .250 O.D. tubing
Adjustment
Loosen locknut on adjusting rod. Turn adjusting rod clockwise to decrease maximum pump flow or counterclockwise to increase maximum pump flow until desired setting is obtained. Secure this setting by tightening locknut. To assist initial priming, manual adjustment control setting must be at least 40% of maximum flow position.

This control enables the maximum pump flow to be externally adjusted from 25% to 100% while maintaining all of the standard features of a pressure compensated pump. Please note, it is not available with thru-drive models.
Controls
Electric Dual Range Pressure Compensator with Max. Displacement Stop

Solenoid Data

<table>
<thead>
<tr>
<th>Solenoid Current</th>
<th>Inrush amps (R.M.S.)</th>
<th>Holding Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>115/120 V AC 60 Hz</td>
<td>2.0</td>
<td>.54</td>
</tr>
<tr>
<td>110V AC 50 Hz</td>
<td></td>
<td>.64*</td>
</tr>
</tbody>
</table>

* Maximum peak inrush amps approximately 1.4 x R.M.S. value shown.

**Note:** Any sliding spool valve, if held shifted under pressure for long periods of time, may stick and not spring return due to fluid residue formation and, therefore, should be cycled periodically to prevent this from happening.
### Controls

**Electric Dual Range Pressure Compensator Control**

#### Adjustment

1. With the directional valve de-energized, loosen locknut “5” and turn the adjusting screw “4” to the desired first stage pressure setting, then tighten locknut “5”.

2. With solenoid de-energized, turn adjusting spool “1” counterclockwise until nut “3” is bottomed in adjusting screw slot. (Second stage setting is now equal to first stage pressure setting). Turn adjusting spool clockwise to desired second stage pressure requirements. Once complete turn of adjusting spool equals approximately 600 psi. Energize solenoid and check pressure setting. De-energize solenoid and readjust if necessary. Secure this setting by tightening locknut “2”.

![Diagram of control](image)

**Solenoid Data**

<table>
<thead>
<tr>
<th>Solenoid Current</th>
<th>Inrush amps (R.M.S.)</th>
<th>Holding Amps</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2.0</td>
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</tr>
<tr>
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<td></td>
<td>.64*</td>
</tr>
</tbody>
</table>

*Maximum peak inrush amps approximately 1.4 x R.M.S. value shown.

**Note:** Any sliding spool valve, if held shifted under pressure for long periods of time, may stick and not spring return due to fluid residue formation and, therefore, should be cycled periodically to prevent this from happening.
Controls
Unloading Valve Control “E” Option

With the unloading valve control the variable pump will unload at a preset pressure. The pump will maintain this no flow, low pressure (approximately 200 psi) standby condition, until system pressure drops to about 85% of the preset unloading pressure. The pump will then return on stroke and provide full flow until the preset unloading pressure is reached again. With this control, an efficient accumulator charging circuit is obtained. The pump will provide full flow to fill the accumulator until the maximum charging pressure is reached. The pump then goes to a standby condition until the accumulator pressure drops to 85% of the desired maximum. The accumulator is then recharged as the cycle starts over again. A separate right angle check valve must be provided to maintain the accumulator hydraulic charge and prevent back flow when the pump is unloaded. The check valve’s internal leakage must not exceed five drops per minute. The control port must be connected to system pressure, downstream of the check valve.

Adjustment Range
PVQ 40  1500-3000 psi
PVQ 45  1500-2700 psi

Cut-in pressure is 85% of unloading pressure, minimum.

Setting Pressures
1. Back out accumulator unloading pressure adjustment screw to below desired unloading pressure.
2. Adjust desired standby pressure.
3. Set accumulator pressure by screwing in the accumulator unloading adjustment screw. Accumulator recharge (cut-in) pressure is a function of the maximum accumulator pressure and is not adjustable.
4. Check pressure settings and re-adjust if necessary.
Thru-Drives
PVQ40 and PVQ45 SAE “A”

Inlet port "A": See note
1.50 diameter inlet. SAE J518 4-bolt flange. Standard pressure series

Load sensing control port
.4375-20 UNF-2B thd. SAE O-ring boss connection .250 O.D. tubing

Outlet port "B": See note. 1.00 diameter inlet. SAE J518 4-bolt flange. Standard pressure series

Note: Ports are reversed for L.H. rotation.

Alternate drain port "D2"

Outlet port "B" face

Output spline – see thru-drive table on next page

Outlet port "B". See note. 1.00 diameter inlet. SAE J518 4-bolt flange. Standard pressure series

.375-16 UNC-2B thd. .88 deep – 4 places

Do not back out comp. adjusting knob beyond this dimension while pump is operating.

"A" flange

FluiDyne
FLUID POWER

Powered by Customer Service
Thru-Drives
PVQ40 and PVQ45 SAE “B”

Do not back out comp. adjusting knob beyond this dimension while pump is operating.

No. 4 shaft
Modified involute spline – SAE BB

No. 2 shaft
6.35 (0.25) x 31.75 (1.250) lg. key

Outlet port “B” see note.
1.3125-12 UN-2B thd. SAE O-ring boss connection 1.00 O.D. tubing

Inlet port “A” see note.
1.875-12 UN-2B thd. SAE O-ring boss connection 1.500 O.D. tubing

Load sensing control port
.4375-20 UNF-2B thd. SAE O-ring boss connection .250 O.D. tubing

Note: Ports are reversed for L.H. rotation.

Note:
Coupling, screws, and washers must be ordered separately to mount rear pump. “A” O-ring and “B” O-ring are included with each thru-drive pump. Couplings for “B26” are step type for 13 and 15 tooth as shown.

<table>
<thead>
<tr>
<th>Thru-Drive Shaft</th>
<th>Spline Data</th>
<th>Max. Torque in. lb</th>
<th>Dimension A (in)</th>
<th>Coupling Type</th>
<th>Thru-Drive Coupling</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>ASA B5.15-1960 9 teeth 16/32 DP Flat root side fit</td>
<td>517</td>
<td>0.43</td>
<td>1.30</td>
<td>02-136810</td>
</tr>
<tr>
<td>AB</td>
<td>ANS B92. 1-1970 11 teeth 16/32 DP Flat root side fit</td>
<td>1050</td>
<td>0.495</td>
<td>1.54</td>
<td>02-306041</td>
</tr>
<tr>
<td>AE</td>
<td>Special Eaton 26 teeth 32/64 DP Flat root side fit</td>
<td>1587</td>
<td>0.98</td>
<td>26T/26T</td>
<td>627168</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.43</td>
<td>26T/13T</td>
<td>864307</td>
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<td></td>
<td>0.81</td>
<td>26T/15T</td>
<td>475134</td>
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</tbody>
</table>

www.FluidyneFP.com
# Thru-Drives

## Shaft Torque Data PVQ40/45

### Thru-Drive Shaft Torque Data

<table>
<thead>
<tr>
<th>Shaft</th>
<th>Input Shaft Code</th>
<th>Max. Input Torque Total (lb. in.)</th>
<th>Max. Thru-Drive Torque Output (lb. in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9T</td>
<td>2</td>
<td>1900</td>
<td>517</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>2987</td>
<td></td>
</tr>
<tr>
<td>11T</td>
<td>2</td>
<td>1900</td>
<td>1100</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>2987</td>
<td></td>
</tr>
<tr>
<td>26T</td>
<td>2</td>
<td>1900</td>
<td>1587</td>
</tr>
<tr>
<td></td>
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<td>1850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>2987</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Both input and output limits must be met.*

### Typical Rear Pumps (with shaft codes) for PVQ40/45 Thru Drives

<table>
<thead>
<tr>
<th>Thru-Drive Shaft</th>
<th>Typical Rear Pump</th>
<th>Rear Pump Shaft Code</th>
<th>Thru-Drive Coupling</th>
</tr>
</thead>
<tbody>
<tr>
<td>9T</td>
<td>PVQ10/13</td>
<td>3</td>
<td>864224</td>
</tr>
<tr>
<td></td>
<td>PVB5/6</td>
<td>S124 suffix</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V10</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V20</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>26T</td>
<td>PVE12</td>
<td>2</td>
<td>864307</td>
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<tr>
<td></td>
<td>28</td>
<td>627168</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PVQ20/32</td>
<td>3</td>
<td>864307</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>627168</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PVQ40/45</td>
<td>3</td>
<td>864307</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>475134</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>627168</td>
<td></td>
</tr>
<tr>
<td></td>
<td>V2010 or V2020</td>
<td>11</td>
<td>864307</td>
</tr>
<tr>
<td></td>
<td>20V</td>
<td>151</td>
<td>864307</td>
</tr>
<tr>
<td></td>
<td>2520V</td>
<td>166</td>
<td>475134</td>
</tr>
</tbody>
</table>

*Note: 11T (not listed above) is intended for special application only.*
An optional support bracket should be used when a heavy second pump is mounted to a thru-drive PVQ40 or PVQ45. The support bracket, two screws, and two washers must be ordered separately.

If you have any questions, or need a quote, please contact our customer service team! We are happy to help.
Application Data

<table>
<thead>
<tr>
<th>System Pressure Level bar (psi)</th>
<th>Product</th>
<th>&lt;70 (&lt;1000)</th>
<th>70-210 (1000-3000)</th>
<th>210+ (3000+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piston Pumps - Variable</td>
<td></td>
<td>18/16/14</td>
<td>17/15/13</td>
<td>16/14/12</td>
</tr>
</tbody>
</table>

Hydraulic Fluids and Temperature Ranges

Use antiwear hydraulic oil, or automotive type crankcase oil designations SC, SD, SE or SF per SAE J183FEB80. Select a viscosity grade that will allow optimum viscosity, between 40 cSt (180 SUS) and 16 cSt (80 SUS) to be achieved within the optimum performance envelope shown below.

![Viscosity and Temperature Chart]

Installation and Start-Up (Commissioning)

Before a pump is started, fill the case through the uppermost drain port with hydraulic oil of the type to be used. The case drain line must be connected to the reservoir below oil levels. For multiple pump arrangements that include non-PVQ sections, the requirements of the non-PVQ units must be considered.

Couplings, O-rings, capscrews and washers must be ordered separately for all thru-drive pumps!

Ordering Procedure:

If you are interested in ordering our FluiDyne brand PVE piston pumps, please contact our customer service representatives with the model code. Don’t have a model code or need help building it? Don’t hesitate to contact us - we will help you build the correct code. Call, Email or LiveChat us Today!