Axial piston pumps type PVC

variable displacement, by a full line of mechanical controls

Available only on request

PVC are variable displacement axial piston pumps for medium pressure operation, low noise level, suitable for open circuit systems.

They are available with following hydraulics controls (see section 6):
- A: mechanical pressure compensator with manual adjustment
- GM: compensator with ISO 4401 size 06 mounting surface with P and T connections. This solution allows different type of controls, like multiple pressure selection, venting, etc. which can be realized by installing proper control valves (to be separately ordered), see sections 8 and 9
- HLC: load sensing compensator

Mounting flange with 2 holes and in addition interface with 4 holes
Max displacement: 23 cm³/rev.
Max pressure: 210 bar

---

1 MODEL CODE

<table>
<thead>
<tr>
<th>PVC</th>
<th>A</th>
<th>R</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable displacement axial piston pump</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Displacement:
- 15 = 15 cm³/rev
- 23 = 23 cm³/rev

Type of control (see section 8):
- A = manual pressure compensator
- GM = manual pressure compensator, with mounting surface size 06 for venting or remote pressure control (valve to be ordered separately)
- HLC = load sensing (pressure & flow)

Pressure regulation range:
- 4 = 20 ÷ 250 bar

Direction of rotation (viewed at the shaft end):
- R = clockwise

2 OPERATING CHARACTERISTICS

<table>
<thead>
<tr>
<th>Pump model</th>
<th>PVC-15</th>
<th>PVC-23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>[cm³/rev]</td>
<td>15,0</td>
</tr>
<tr>
<td>Theoretical max flow at 1450 rpm</td>
<td>[l/min]</td>
<td>21,7</td>
</tr>
<tr>
<td>Max working pressure</td>
<td>[bar]</td>
<td>210</td>
</tr>
<tr>
<td>Min inlet pressure</td>
<td>[bar abs.]</td>
<td>0,8</td>
</tr>
<tr>
<td>Max pressure on drain port</td>
<td>[bar abs.]</td>
<td>1,4</td>
</tr>
<tr>
<td>Power consumption at 1450 rpm and at maximum pressure and displacement</td>
<td>[kW]</td>
<td>11</td>
</tr>
<tr>
<td>Max drain flow</td>
<td>[l/min]</td>
<td>1,5</td>
</tr>
<tr>
<td>Speed rating</td>
<td>[rpm]</td>
<td>500 ÷ 1800</td>
</tr>
</tbody>
</table>
3 MAIN CHARACTERISTICS

<table>
<thead>
<tr>
<th>Installation position</th>
<th>Any position. The drain port must be on the top of the pump. Drain line must be separated and unrestricted to the reservoir and extended below the oil level as far from the inlet as possible. Suggested maximum line length is 3 m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>From -10°C to +70°C</td>
</tr>
<tr>
<td>Fluid</td>
<td>Hydraulic oil as per DIN 51524...535;</td>
</tr>
<tr>
<td>Recommended viscosity</td>
<td>15÷100 mm²/sec at 40°C (ISO VG 15÷100). Maximum start-up viscosity: 800 mm²/sec</td>
</tr>
<tr>
<td>Fluid contamination class</td>
<td>ISO 19/17/14 ISO4406 (class 9 NAS1638)</td>
</tr>
<tr>
<td>Fluid temperature</td>
<td>+20°C ÷ 60°C (+0°C ÷ 80°C with viton seal)</td>
</tr>
</tbody>
</table>

4 INSTALLATION POSITION

The pump is supplied with drain DR open, and D2 oil filling port plugged. Before installation fill the pump with hydraulic oil through port D2 for at least 3/4 of its volume, keeping it in horizontal position. With exception of pump mounted below the oil level, we recommend to interpose a baffle plate between inlet and drain line.

- **INSIDE THE TANK**
  - Minimum oil level equal or above the pump mounting surface.
  - A ≥ 200mm

- **INSIDE THE TANK**
  - Minimum oil level below the pump mounting surface.
  - Minimum inlet pressure = 0.8 bar absolute
  - B ≤ 800mm, C= 200mm

- **OUTSIDE THE TANK, above oil level**
  - Minimum inlet pressure = 0.8 bar absolute
  - B ≤ 800mm, C= 200mm

- **OUTSIDE THE TANK, below oil level**
  - C= 200mm

5 DIAGRAMS at 1450 rpm (based on mineral oil ISO VG 46 at 50°C)

**Noise level curves**

Ambient noise levels measured in compliance with ISO 4412-1 oleohydraulics.

- Test procedure to define the ambient noise level - Pumps

<table>
<thead>
<tr>
<th>PVC-15</th>
<th>PVC-23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating pressure (bar)</td>
<td>Noise level (dB)</td>
</tr>
<tr>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td>15</td>
<td>65</td>
</tr>
<tr>
<td>20</td>
<td>70</td>
</tr>
<tr>
<td>25</td>
<td>75</td>
</tr>
</tbody>
</table>

Shaft speed: 1450 rpm.

Qmax = Qmax

Qmin = Qmin
**Manual pressure compensator**
The pump displacement decreases when the line pressure approaches the setting pressure of the compensator. The pump supplies only the fluid required by the system. Pressure may be steplessly adjusted at the pilot valve.
Compensator setting range: 20 ÷ 210 bar
Compensator standard setting: 140 bar

**General purpose compensator with ISO 4401 size 06 mounting surface**
This solution allows different type of controls, like multiple pressure selection, venting, etc. which can be realized by installing proper control valves. The valves must be separately ordered. The pump must be equipped at least with a pressure setting valve.

**Load sensing**
The pump displacement is automatically adjusted to maintain a constant (load independent) pressure drop across an external throttle. Changing the throttle regulation, the pump flow is consequently adjusted. Load sensing control always incorporates an hydraulic compensator to limit the maximum pressure.
Compensator setting range: 20 ÷ 210 bar
Compensator standard setting: 140 bar
Differential pressure setting range: 13 ÷ 27 bar
Differential pressure standard setting: 21 bar

**SHAFT DIMENSION**

**PVC-15**

**PVC-23**
PORTS DIMENSION

IN = 3/4” BSPP
OUT = 3/4” BSPP
DR = Drain port, 3/8” BSPP
D2 = Oil filling port, 3/8” BSPP

1 = Regulation screw for max displacement; clockwise rotation for max displacement reduction
2 = Regulation screw for max pressure regulation; clockwise rotation for pressure increasing.

Mass: 13 kg
PORTS DIMENSION
IN = 3/4” BSPP
OUT = 3/4” BSPP
DR = Drain port, 3/8” BSPP
D2 = Oil filling port, 3/8” BSPP

= Regulation screw for max displacement; clockwise rotation for max displacement reduction

Mass: 13.5 kg
Mass: 13.5 kg

PORTS DIMENSION
IN = 3/4” BSPP
OUT = 3/4” BSPP
DR = Drain port, 3/8” BSPP
D2 = Oil filling port, 3/8” BSPP
X = Load sensing port, 1/4” BSPP
① = Regulation screw for max displacement; clockwise rotation for max displacement reduction
② = Regulation screw for min. pressure regulation; clockwise rotation for pressure increasing (standard setting 21 bar)
③ = Regulation screw for max pressure regulation; clockwise rotation for pressure increasing

DIMENSIONS OF PVC-15HLC

view from B

view from A
DIMENSIONS OF PVC-23A

PORTS DIMENSION
IN = 1" BSPP
OUT = 3/4" BSPP
DR = Drain port, 3/8" BSPP
D2 = Oil filling port, 3/8" BSPP
① = Regulation screw for max displacement; clockwise rotation for max displacement reduction
② = Regulation screw for max pressure regulation; clockwise rotation for pressure increasing.

Mass: 22 kg
PORTS DIMENSION

IN = 1" BSPP
OUT = 3/4" BSPP
DR = Drain port, 3/8" BSPP
D2 = Oil filling port, 3/8" BSPP

regulation screw for max displacement; clockwise rotation for max displacement reduction

DIMENSIONS OF PVC-23GM

view from B

view from A

Mounting surface
ISO4401-03-02-0-05

Mass: 22.5 kg
DIMENSIONS OF PVC-23HLC

PORTS DIMENSION

<table>
<thead>
<tr>
<th>IN</th>
<th>OUT</th>
<th>DR</th>
<th>D2</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot; BSPP</td>
<td>3/4&quot; BSPP</td>
<td>Drain port, 3/8&quot; BSPP</td>
<td>Oil filling port, 3/8&quot; BSPP</td>
<td>Load sensing port, 1/4&quot; BSPP</td>
</tr>
</tbody>
</table>

1 = Regulation screw for max displacement; clockwise rotation for max displacement reduction
2 = Regulation screw for min. pressure regulation; clockwise rotation for pressure increasing (standard setting 21 bar)
3 = Regulation screw for max pressure regulation; clockwise rotation for pressure increasing

Mass: 22.5 kg