Catalogue HY11-2500/UK

Introduction

Pump with Standard Pressure Compensator, code PVS

Pump with Pressure Flow Compensator, code PVM

With thru shaft option for multiple pump options for open circuit

- Mounting pattern according to VDMA 24560/1 specification
- 4 bolt flange ISO 3019/2 (metric)
- Fast response
- Wide range of controls for diverse tasks
- Low noise level
- Good efficiency

Pump with Two-Stage Compensator, code PVH

Pump with Proportional Pressure Compensator, code PVL

Parker Hannifin GmbH & Co. KG
Hydraulic Controls Division
Kaarst, Germany
Technical data

Displacement [cm³/rev] from 8 to 50
Operating pressures
Outlet [bar] 140
Inlet min. [bar] 1.0
Drain port [bar] max. 0.8 absolute
Speed ranges [min⁻¹] 1000...1800
Press. fluid temperature [°C] -10...+70
Viscosity range [mm²/s] 22 - 100
Rotation clockwise

Catalogue HY11-2500/UK
Vane Pump
Series PVS

Characteristics

<table>
<thead>
<tr>
<th>Model</th>
<th>Displacement cm³/rev</th>
<th>Output flow at 1500 rpm l/min</th>
<th>Input power at nominal pressure kW</th>
<th>Weight in kg single pump</th>
<th>Weight in kg main pump</th>
<th>Weight in kg intermediate pump</th>
<th>Weight in kg second pump</th>
</tr>
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<tbody>
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<td>PVS08</td>
<td>8.3</td>
<td>12</td>
<td>3.65</td>
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<td>23</td>
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<td>16.8</td>
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<td>30.8</td>
<td>33.0</td>
<td>30.6</td>
</tr>
</tbody>
</table>

Displacement [cm³/rev] from 8 to 50

Ordering code

PV
Vane pump adjustable
Control options
Displacement
Combinations
Nominal pressure up to 140 bar
Series
Design series
Lock

Code | Control options
-----|-------------------
S     | Servo pressure compensator
Y     | Remote control compensator
D     | Two pressure compensator
H     | Low pressure – high pressure
M     | Two pressure compensator
K     | High pressure - low pressure
L     | Pressure flow compensator (load-sensing)
C     | Pressure flow / press. compen.
L     | Proportional pressure compensator

Code | Displacement
-----|----------------
08   | 8.3 cm³/rev
12   | 12.8 cm³/rev
16   | 16.0 cm³/rev
25   | 24.0 cm³/rev
32   | 31.0 cm³/rev
40   | 40.0 cm³/rev
50   | 51.5 cm³/rev

Bold letters = Short-term availability
Typical noise levels for single pumps, measured in an unechoic chamber according to DIN 45 635 (microphone distance 1 m, speed n = 1,500 rpm). All values measured with mineral oil at a viscosity of 30 mm²/s and 50°C.
Characteristic curves determin. at speed $n = 1500$ rpm
All values were measured with mineral oil at a viscosity of 30 mm²/s and 50° C.
All characteristics shown are typical. They can deviate by up to 5% of the shown values depending on production tolerances of new pumps under certain conditions.

**Please note:** The values shown for drain and pilot oil apply for quasi-static operation (constant operation conditions).

During the pilot processes, significantly higher pilot oil flows can take place in short-term and can exceed 20 l/min in extreme cases. Therefore, it is absolutely necessary to set up the drain line without restrictions and as short as possible to avoid unacceptably high pressure peaks in the pump body.
Catalogue HY11-2500/UK

Vane Pump

Dimensions

Series PVS

PVS 08 / 12, single pump

Second pump to BG1

Second pump to BG2 and BG3

Parker Hannifin GmbH & Co. KG
Hydraulic Controls Division
Kaarst, Germany
PVS 16 / 25, single pump

Dimensions

Second pump
PVS 32 / 40 / 50, single pump

Dimensions

Parker Hannifin GmbH & Co. KG
Hydraulic Controls Division
Kaarst, Germany

Second pump

Compensator mounting optional 90°

To remove key 157

With lock 137

Compens. "S" 101.5

Gage port G1/8

P Ø14

L Ø38

M Ø16

S Ø1 1/2"
**Catalogue HY11-2500/UK**

**Dimensions**

**Vane Pump**

**Series PVS**

**Thru drive**

<table>
<thead>
<tr>
<th>Pump</th>
<th>L</th>
<th>D</th>
<th>F</th>
<th>G</th>
<th>Thru drive shaft &quot;W&quot;</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>E1</th>
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<td>PVS 16 or 25</td>
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<td>40°</td>
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<td>M10</td>
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<td>125</td>
<td>160</td>
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</tbody>
</table>
### PVS Pumps with Thru Drive

The drawing displays the mounting possibilities for Parker pumps.

### Mounting Parts for Pump Combinations

<table>
<thead>
<tr>
<th>Main Pump</th>
<th>Second Pump</th>
<th>Coupling Pos.: 1</th>
<th>Adapter Pos.: 2</th>
<th>O-Ring Pos.: 3</th>
<th>Screw Pos.: 4</th>
<th>Screw Pos.: 5</th>
<th>Coupling Pos.: 6</th>
<th>O-Ring Pos.: 7</th>
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<tr>
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<td>PVS 08-12</td>
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<td>HR01090121</td>
<td>-</td>
<td>M8x35</td>
<td>M6x25</td>
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<td>PVS 16-25</td>
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<tr>
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<tr>
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<td>PVS 32-50</td>
<td>HR10056673</td>
<td>HR01090121</td>
<td>M8x35</td>
<td>M6x35</td>
<td>-</td>
<td>HR10047342</td>
<td>2-151-V747-75</td>
</tr>
</tbody>
</table>

Parker Hannifin GmbH & Co. KG
Hydraulic Controls Division
Kaarst, Germany
The compensators can only be mounted in the direction shown.

<table>
<thead>
<tr>
<th>Main pump</th>
<th>Second pump</th>
<th>Interface main pump</th>
<th>B</th>
<th>C</th>
<th>K</th>
<th>M</th>
<th>D</th>
<th>L</th>
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<tbody>
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<td>80 B4 HW</td>
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<tr>
<td>PVS 16 or 25</td>
<td>PVS 08 or 12</td>
<td>100 B4 HW</td>
<td>171.5</td>
<td>30.5</td>
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<td>149</td>
<td>161.5</td>
<td>347</td>
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<tr>
<td></td>
<td>PVS 16 or 25</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>* PVS 32, 40, or 50</td>
<td>PVS 08 or 12</td>
<td>125 B4 HW</td>
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<td>35.5</td>
<td>177</td>
<td>149</td>
<td>161.5</td>
<td>394</td>
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<tr>
<td></td>
<td>PVS 16 or 25</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>PVS 32, 40, or 50</td>
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<td></td>
<td></td>
<td></td>
<td>192.5</td>
<td>437.5</td>
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</table>

* Without lock, the compensators can be optionally mounted rotated 90°, in the following combinations:
  PVS 32/40/50 + PVS 16/25
  PVS 32/40/50 + PVS 32/40/50

**Combinations PVS/PGP (gear pump)**

<table>
<thead>
<tr>
<th>Main pump</th>
<th>Second pump</th>
<th>Interface main pump</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D*</th>
<th>K</th>
<th>L*</th>
<th>M*</th>
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<tbody>
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<td>PVS 08 or 12</td>
<td>PVS 08 or 12</td>
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<td>162</td>
<td>34.5</td>
<td>174.1 - 187.1</td>
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<td>290.2 - 316.5</td>
<td>75.2 - 101.5</td>
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<td>PVS 16 or 25</td>
<td>100 B4 HW</td>
<td>170.5</td>
<td>30.5</td>
<td>191.1 - 204.3</td>
<td>146</td>
<td>311.2 - 337.5</td>
<td>75.2 - 101.5</td>
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<tr>
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<td>PVS 32, 40, or 50</td>
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<td>195</td>
<td>35.5</td>
<td>217.1 - 230.3</td>
<td>177</td>
<td>358.2 - 384.5</td>
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</table>

* Dimensions PGP503A0008 to PGP503A0079
* For other dimensions see section PGP/PGM in this chapter.
Compensator type S (PVS: Standard pressure compensator)
The pressure is mechanically adjustable via the preload of the pilot control cartridge spring.

Schematic diagram and performance curves

![Schematic diagram](image)

Task and function
When reaching the set pressure on the compensator, the pressure flow of the servo-controlled pump is automatically adjusted to the actual pressure flow requirement of the consumer. Thus an undesired flow is avoided and only the required medium amount is delivered. As long as the system pressure is lower than the set pressure on the compensator, the stroke ring is kept in the position of maximum eccentricity, so that the pump continues its full delivery. If the system pressure exceeds the set compensator pressure, the control valve opens, and the pressure on the control piston is relieved. The stroke ring is moved by the auxiliary piston up to the central position to the point where the pressure flow corresponds to the system requirements at the set pressure. The pump is regulated.

Dimensions

![Dimensions](image)
Remote Control Compensator

Compensator type Y (PVY: Remote controlled pressure compensator)
Pressure is adjustable hydraulically via pilot valve connected to Y port.

Schematic diagram and performance curves

Task and function
The range of application for the remote control compensator is similar to the proportional compensator. The pump can be mounted in an inaccessible position (e.g. in an oil container). It is possible for the operating personnel to adjust the desired system pressure via a pressure limiting valve from a remote control desk.

It should be noted, however, that the response times for the pump increase with increasing control cable length.

The remote control compensator functions in principle like a pilot-operated pressure limiting valve. In contrast to the servo pressure compensator, the force contained in the equilibrium of the system pressure on the compensator piston is applied not only by the compensator valve spool, but also by additional pressure from the spool area together with an external pilot valve (pressure limiting valve). The actual control process in the pump corresponds to that of the servo pressure compensator (an external pilot valve is not included with the pump).

Note
For safety reasons, the Y port of the remote control compensator must never be closed. Otherwise, the pump will not compensate.

Dimensions
Compensator type D, low pressure – high pressure (PVD: Two-stage pressure compensator)
High pressure and low pressure mechanically adjustable via spring pre-loading, electric switching.

Schematic diagram and performance curves

Task and function
The double pressure compensator offers the user the possibility to electrically select between two different pressures. Hydraulic systems, where a higher pressure is only needed in peaks, can be created to be very energy-saving, based on such a design. The double pressure compensator can also be labelled as a double servo pressure compensator, divided into low and high pressure stages. Both compensator pistons are connected together via an integrated directional valve. Initially both compensator pistons are pressurised with system pressure at the unloaded directional valve. The compensator piston with the lower spring pre-loading is responsible for the system pressure. If the directional valve piston is changed over from LP to HP via electrical signal, the connection to the low pressure compensator piston is interrupted. Then, only the high pressure compensator piston is connected to the pilot oil space. The actual control process for the pump corresponds to one from a servo pressure compensator.

Dimensions
Double Pressure Compensator

Catalogue HY11-2500/UK

Vane Pump

Series PVS

Compensator type H, low pressure – high pressure (PVH: Two-stage pressure compensator)

High pressure and low pressure mechanically adjustable via spring pre-loading, electric switching.

Schematic diagram and performance curves

Task and function

The double pressure compensator offers the user the possibility to electrically select between two different pressures. Hydraulic systems, where a lower pressure is only needed for short intervals, can be created very easily, based on such a design. The double pressure compensator can also be labelled as a double servo pressure compensator, divided into low and high pressure stages. Both compensator pistons are connected together via an integrated directional valve.

Only the high pressure stage is pressurised with system pressure at the unloaded directional valve. If the directional valve piston is changed over from HP to LP via electrical signal, the connection to the low pressure compensator piston is created. Both compensator pistons are then connected with the pilot oil space. The compensator piston with the lower spring pre-loading is responsible for the system pressure. The actual control process for the pump corresponds to one from a servo pressure compensator.

Dimensions

[Diagram showing dimensions]
Compensator type M, pressure flow compensator (PVM: Pressure flow compensator)
Flow adjustable via main stream throttle valve, load pressure independent flow control, no internal pressure compensation.

Schematic diagram and performance curves

Task and function
The pressure flow compensator is responsible to keep the pressure flow of the pump to the metering position (orifice, choke, proportional valve, etc.) constant despite fluctuations in load and input speed. However, it must be remembered that this compensation is not possible at Qmax. To ensure proper control behaviour, a maximum of approx. 2/3 Qmax should be worked with. The necessary constant pressure differential is achieved for constant flow at the metering position by directing both pressures (pressure before and after the metering position) on to the compensator piston, such that the lower pressure (pressure behind the metering position) with the compensator valve spool works against the pump pressure (2 way pressure compensator function). (Throttle and external pressure limiting valve are not included with the pump).

Note
When using the pressure flow compensator, max. pressure protection via an external pressure limiting valve is absolutely necessary. Otherwise, the pump will not compensate.

Dimensions
Compensator type K, pressure flow pressure compensator (PVK: Pressure flow pressure compensator)
Flow adjustable via main stream throttle valve, pressure mechanically adjustable via pre-load spring, load pressure independent flow control.

Schematic diagram and performance curves

Task and function
The pressure flow - pressure compensator is a compensation device that was specially designed for use in load sensing systems. The displacement control is executed dependent on load, i.e. the optimal ratio of pressure and flow are set independent of pending load pressure on the consumer (e.g. hydro-motor). A characteristic feature of all load sensing compensators is the feedback of the load pressure (Y). In systems with variable load pressures, this control is characterised by the energetic and functional superiority compared to conventional compensators. On the compensator are two basic system-depantant settings undertaken, the setting for the differential pressure (Dp) necessary for the pressure flow (Q) and the setting of the maximum pressure (D). The setting (Q) is a result of the differential pressure (Dp) with which a metering position is flown through (orifice, choke, proportional valve, etc.). If the load pressure is altered at the consumer or the pressure in the feedback (Y), the pump decreases or increases its pressure until the differential pressure set on (Q) is reached again (2 way pressure compensator function). This process takes place continuously, up until the pressure set on (D) is reached.

Dimensions
Compensator type L, proportional pressure compensator (PVL: Proportional pressure compensator)
Pressure can be adjusted electrically using a proportional solenoid and control electronics.

Schematic diagram and performance curves

Task and function
The range of application for the proportional compensator is similar to the remote control compensator. The pump can be mounted in an inaccessible position. It is possible for the operating personnel to adjust the desired system pressure from a remote control desk, manually or by a program. Further advantages are the controllable process of the transition between various command settings, the reproducibility of the control pressure, and fast response times. The principle of the proportional compensator is similar to the servo pressure compensator. Setting the pressure does not take place at the compensator, but instead through infinitely variable control via a pilot valve with proportional solenoid.

Dimensions
Bell housing, coupling and foot flange

Can be purchased at:

**Raja**
Rahmer + Jansen GmbH
Vorhstr. 1
58775 Werl, Germany
phone: +49 (0) 2392-5090, fax: +49 (0) 2392-4966

or **KTR**
Kupplungstechnik GmbH
Roder Damm
48432 Rheine, Germany
phone: +49 (0) 5971-7980, fax: +49 (0) 5971-798443

Pressure, suction and drain port

For more information about connections please see Parker Tube Fittings Catalogue 4100-6/UK by:

**Parker Hannifin GmbH**
Tube Fittings Division
Am Metallwerk 9
33659 Bielefeld, Germany
phone: +49 (0) 521-40480, fax: +49 (0) 521-4048280
Fluid recommendations

Premium quality hydraulic mineral oil fluids are recommended, like H-LP oils to DIN 51524, part 2. The viscosity range should be 25 to 50 mm²/s (cSt) at 50 °C.

Normal operating viscosity range between 12 and 100 mm²/s (cSt). Maximum start-up viscosity is 800 mm²/s (cSt). Operating temperature -30 to + 70 °C.

For other fluids such as phosphoric acid esters or for other operating conditions consult your Parker representative for assistance.

Seals

NBR (nitrile) seals are used for operation with hydraulic fluids based on mineral oil. For synthetic fluids, as perhaps phosphoric acid esters, Fluorocarbon seals are required. Consult your Parker representative for assistance.

Filtration

For maximum pump and system component functionality and life, the system should be protected from contamination by effective filtration.

Fluid cleanliness should be in accordance with ISO classification ISO 4406:1999. The quality of filter elements should be in accordance with ISO standards.

Minimum requirement for filtration rate \( x (\text{mm}) \):

- General hydraulic systems for satisfactory operation: Class 20/18/15, to ISO 4406:1999
- Hydraulic systems with maximised component life and functionality: Class 18/16/13, to ISO 4406:1999

It is recommended to use return line or pressure filters. Parker Filter Division offers a wide range of these filters for all common applications and mounting styles. The use of suction filters should be avoided, especially with fast response pumps. Bypass filtration is a good choice for best filter efficiency.

Installation and mounting

Horizontal mounting: Outlet port side or top. Inlet port side or bottom, drain port always uppermost.

Vertical mounting: Shaft pointing upwards.

Install pump and suction line in such a way that the maximum inlet pressure never exceeds 0.8 bar absolute. The inlet line should be as short and as straight as possible. A short suction line cut to 45° is recommended when the pump is mounted inside the reservoir, to improve the inlet conditions. All connections to be leak-free, as air in the suction line will cause cavitation, noise, and damage to the pump.

Attention: Check motor rotation direction.

For more details see PVS pump installation manual HY11-AL332-M1/UK.