the smart electrohydraulics

Service Center Training

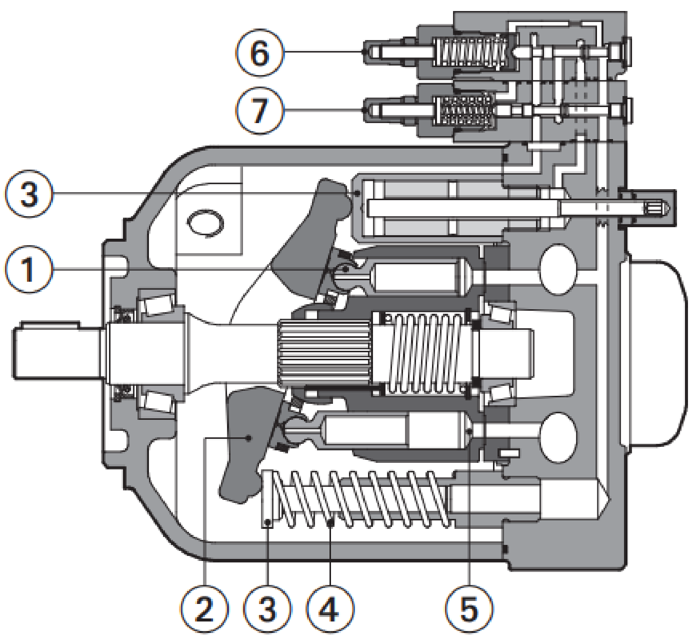
PVPC-C/L

Axial piston pumps, mechanical controls

PVPC-C/L

Axial piston pumps, variable displacement with mechanical control

CE



① Pistons
② Swash plate
③ Servo piston
④ Spring
⑤ Rotating barrel
⑥ Max pressure compensator
⑦ Load sensing compensator
⑧ Remote pressure transducer

PVPC-L-4046

PVPC

Variable displacement axial piston pumps with swash plate design suited for high pressure open circuits.

They are characterized by low noise emission, short response time and flexible operation thanks to the wilde range of mechanical controls, see section 12 and 13 .

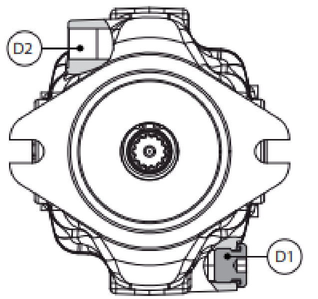
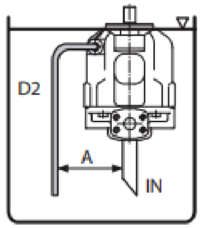
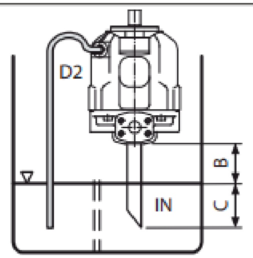
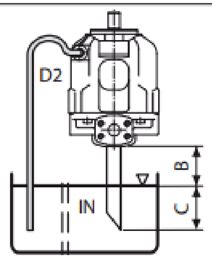
For PVPC pumps with electrohydraulic proportional controls, see tech table AS170.

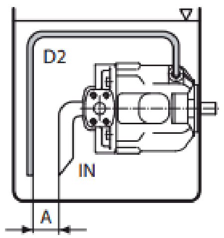
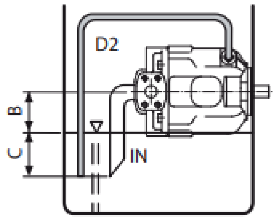
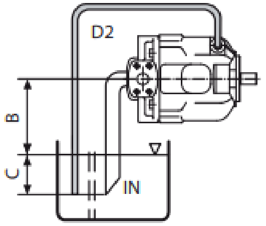
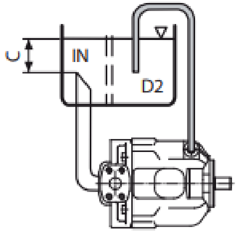
SAE J744 mounting flange and shaft.

Max displacement (cm^3/rev)	**Max pressure working** (bar)	**Max pressure peak** (bar)
29, 46, 73, 140, 160	280	350
88	250	315

PVPC-C/L

Installation position and first use instructions

	VERTICAL INSTALLATION		
			
The pump is supplied with drain D2 open, and D1 plugged. Before installation fill the pump with hydraulic oil 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

HORIZONTAL INSTALLATION			
			
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

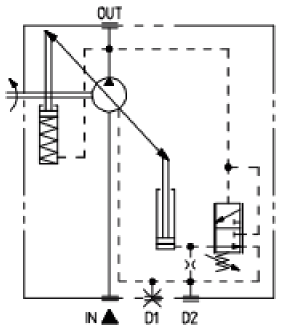
IN: inlet line - **D2:** drain line - **A:** minimum distance between inlet and drain line - **B+C:** permissible suction height - **C:** inlet line immersion dept

Please note:
Fill the pump with hydraulic oil for at least ¾ of its volume, keeping it in horizontal position, using D2 drain port.

atos

Type of control, see sections 12 and 13 :

C = manual pressure compensator **(2)**
CH = manual pressure compensator, with venting
R = remote pressure compensator **(1)**
L = load sensing (pressure & flow)
LW = constant power (combined pressure & flow) **(3)**



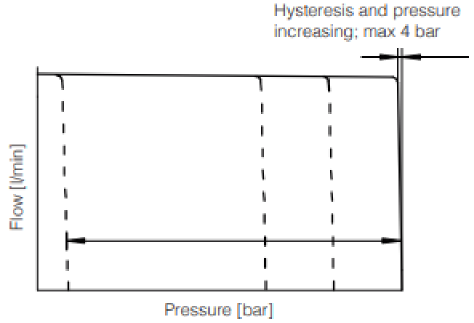
C

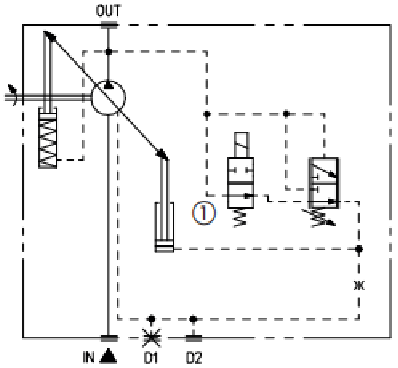
Manual pressure compensator

The pump displacement is zeroed when the line pressure approaches the setting pressure of the compensator.

Compensator setting range:
20 ÷ 280 bar for 3029, 4046, 5073
20 ÷ 250 bar for 5090

Compensator standard setting:
280 bar for 3029, 4046, 5073
250 bar for 5090





1 solenoid venting valve

CH

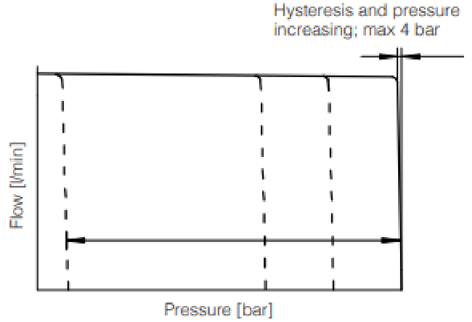
Manual pressure compensator with venting

As C plus venting function, when a long unloading time is required and heat generation and noise have to be kept at lowest level.

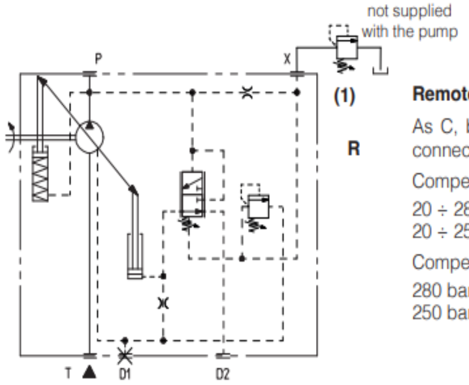
Venting valve solenoid voltage, see section 4
Venting valve OFF = null displacement
Venting valve ON = max displacement

Compensator setting range:
20 ÷ 280 bar for 3029, 4046, 5073
20 ÷ 250 bar for 5090, 6140

Compensator standard setting:
280 bar for 3029, 4046, 5073
250 bar for 5090, 6140



Type of control



(1)

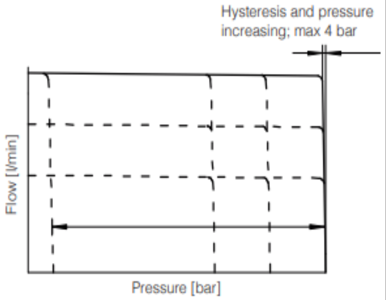
R

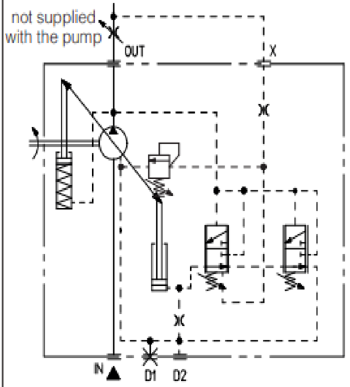
Remote pressure compensator

As C, but predisposed with X piloting port for connection of a remote pilot relief valve **(1)**.

Compensator setting range:
20 ÷ 280 bar for 3029, 4046, 5073
20 ÷ 250 bar for 5090

Compensator standard setting:
280 bar for 3029, 4046, 5073
250 bar for 5090



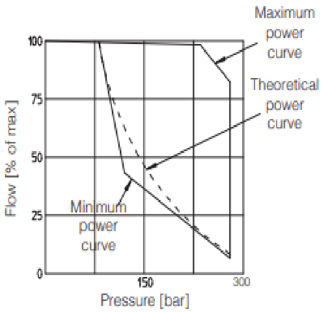


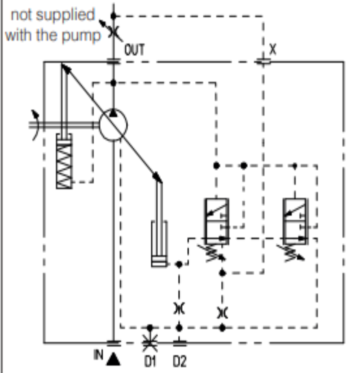
LW

Constant power

In order to achieve a constant drive torque with varying operating pressure. The swashing angle and therefore the outlet flow is varied so that the product of flow and pressure remains constant.

See section 11.4 for min power/torque setting





L

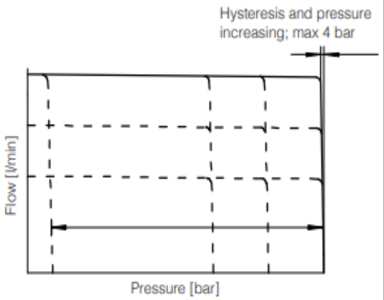
Load sensing

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 ÷ 280 bar for 3029, 4046, 5073
20 ÷ 250 bar for 5090

Compensator standard setting:
280 bar for 3029, 4046, 5073
250 bar for 5090

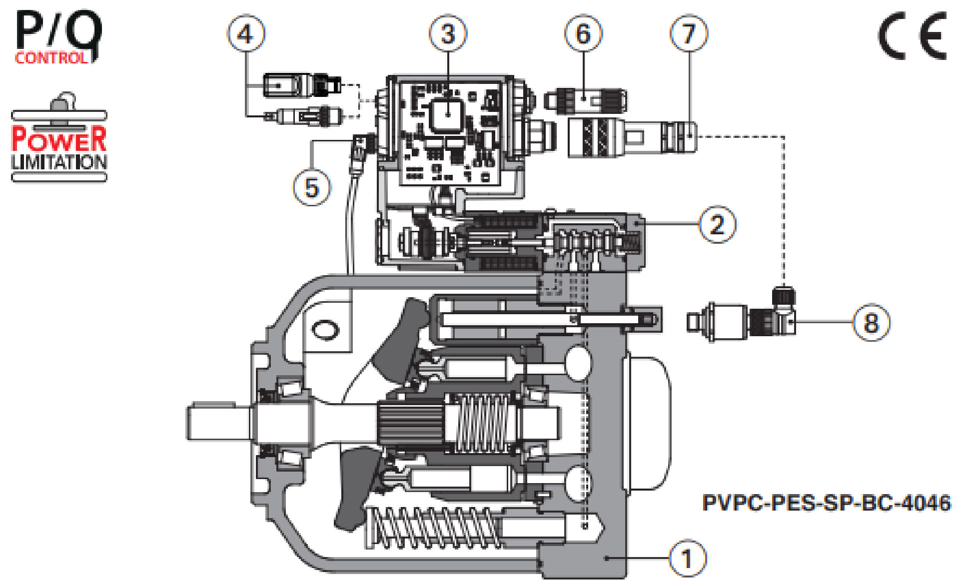
Differential pressure setting range: 10 ÷ 40 bar
Differential pressure standard setting: 14 bar



Axial piston pumps, variable displacement with p/Q control

Proportional controls for axial piston pumps

pressure, flow or p/Q controls, power limitation



① Pump body
② Proportional valve
③ On-board driver with p/Q control
④ Bluetooth/USB connection
⑤ Swash plate transducer connection
⑥ Fieldbus connector
⑦ Main connector
⑧ Remote pressure transducer

PVPC

Variable displacement axial piston pumps with swash plate design suited for high pressure open circuits, they are provided with advanced electrohydraulic proportional controls:

- **CZ** open loop pressure control
- **LQZ** open loop flow control (load sensing)
- **PES** closed loop p/Q control

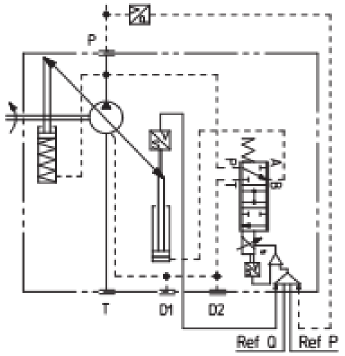
PES performs alternate closed loop controls of pressure, flow and max power limitation. It is also available with optional sequence module (PERS versions) that allows to reduce close to zero the pressure to the delivery line.

SAE J744 mounting flange and shaft.

Max displacement (cm³/rev)	**Max pressure working** (bar)	**Max pressure peak** (bar)
29, 46, 73	280	350
88	250	315
140	350	420
160	315	390

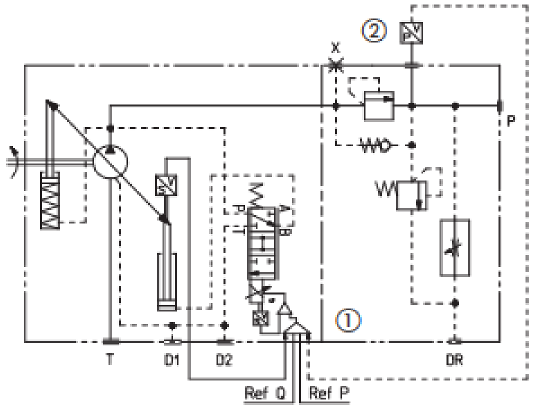
PVPC-PE(R)S

Pressure transducer not included



PES

Pressure transducer
included only for PERS/X



PERS
PERS/X

The p/Q control algorithm automatically selects which control, between pressure and flow rate is active.
Flow control is active when the actual system pressure is lower than the pressure reference input signal: the pump flow is regulated according to the flow reference input.
Pressure control is activated when the actual pressure grows up to the pressure reference input signal: the pump flow is then reduced in order to regulate and limit the max system pressure (if the pressure tends to decrease under its command value, the flow control returns active).
The p/Q control algorithm needs a remote pressure transducer to be installed on the system and its feedback has to be interfaced to the pump on-board digital driver.

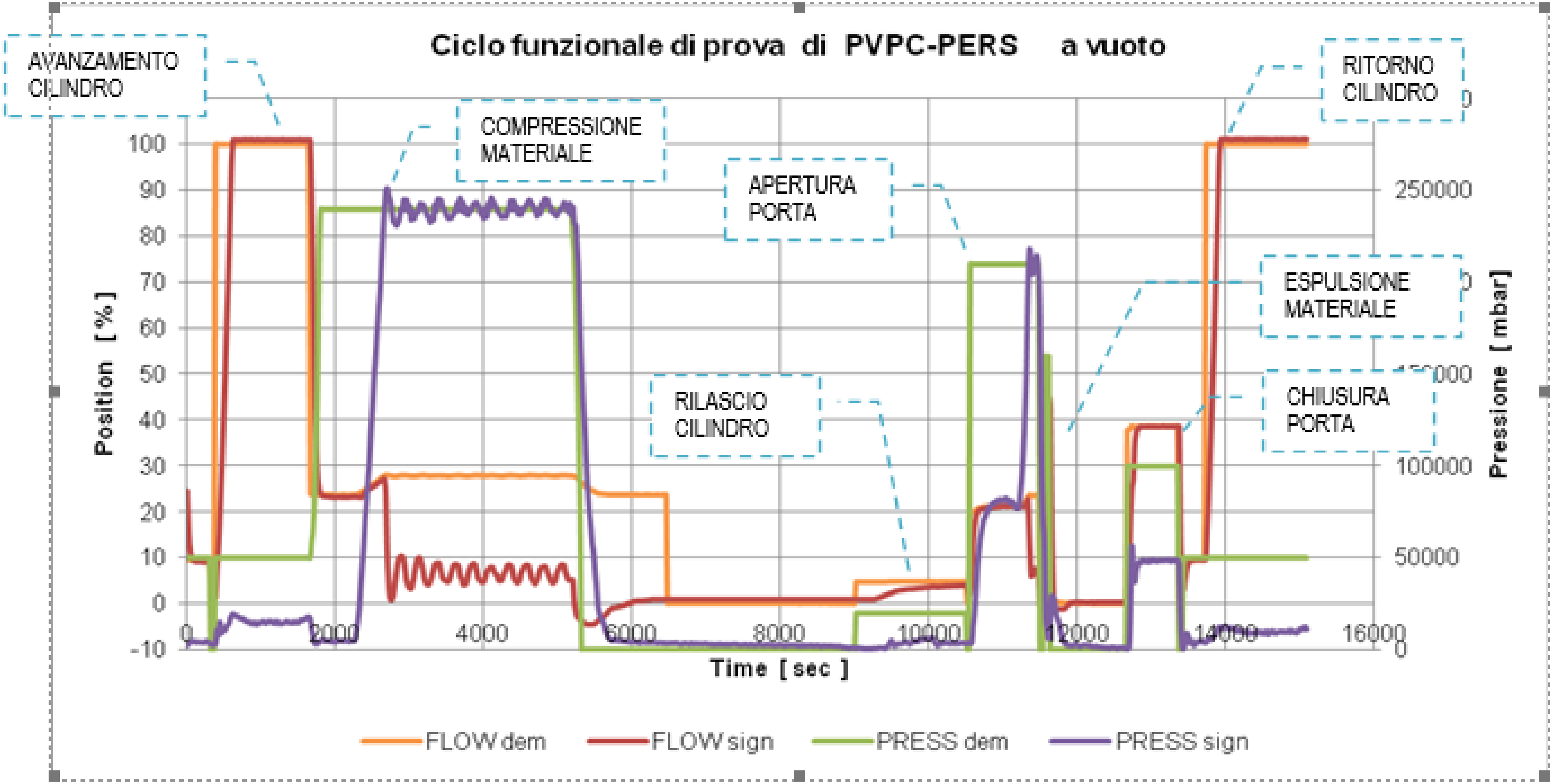
PVPC-PES basic version, without sequence module and without pressure transducer, which has to be installed on the main line and wired to the 12 poles connector of the pump on-board digital driver.

PVPC-PERS as PES version plus sequence module RESC ① which grant a minimum piloting pressure (18 bar) when the actual pressure falls below that value. Without pressure transducer.

PVPC-PERS/X as PERS version plus integrated pressure transducer ②, with output signal 4÷20 mA, factory wired to the pump on-board digital driver.

PVPC-PE(R)S

Machine cycle (Example)



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