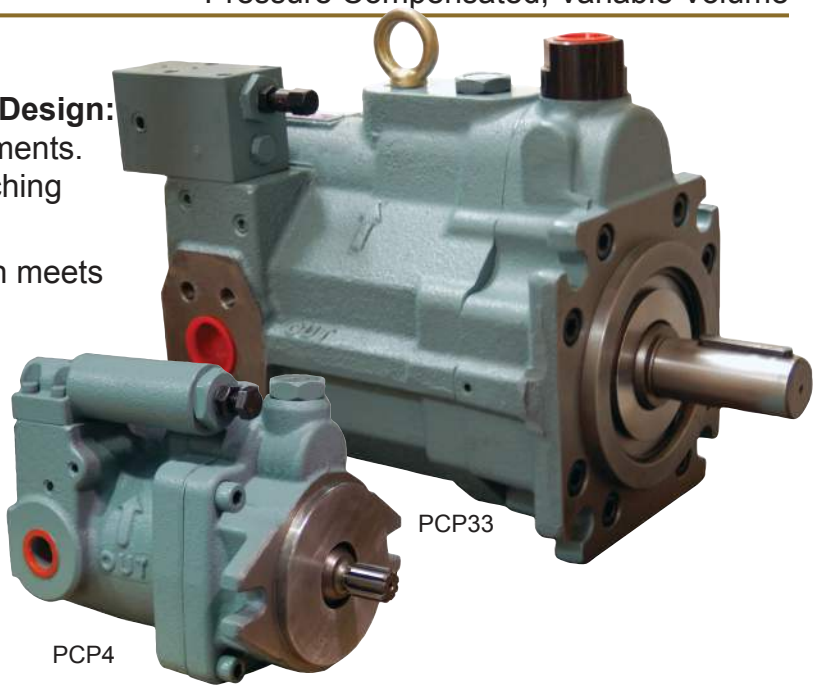
PCP Series Piston Pumps - Industrial

Pressure Compensated, Variable Volume

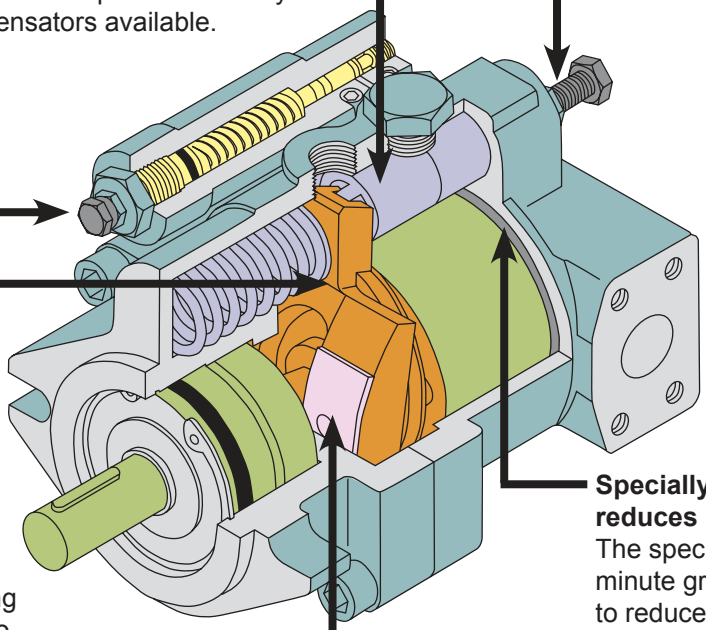
Features

- **Variable Volume, Pressure Compensated Design:** Reduces heat, noise and horsepower requirements. Pump maintains constant pressure while matching system flow demands.
- **Super Quiet Operation:** Swash plate design meets low noise demands.
- **Compact and Simple Design:** Dependable operation-compensator not prone to contamination.
- **Long Service Life:** Sturdy construction, precise machining ensures durability.
- **Volume Adjustment Standard:** Pump flow may be varied to match system requirements.



Sharp cut-off flow adjustment
The flow adjusting mechanism, operating with the action of the semi-cylindrical swash plate, allows very sharp cut-off characteristics.

Fast reliable pressure compensator
Simple construction improves reliability. Remote compensators available.



Pressure balanced shoe
Pressure balance of the shoe and the swash plate in the lateral direction is accomplished by connecting discharged fluid pressure to the cavity of the shoe. This creates a completely hydraulically balanced assembly. The resulting smooth operation contributes to the high efficiency, low noise and extended life.

Specially shaped valve plate reduces noise
The special shaped fluid passages and minute grooves have been developed to reduce noise and thus makes the operating sound low.

Stable swash plate design
The swash plate, a semi-cylindrical design concept, is an advancement to the conventional type. In addition to the innovative form, the swash plate adopts special bearings, to control radial motion to further increase efficiency. Power output is not affected by load changes.

31341 Friendship Drive, Magnolia, TX 77355 • Tel.: 281-259-7768 Fax: 281-259-7249 • www.hyvair.com

Notes

Notes On Pump Installation

1. A flexible coupling to connect the drive shaft and pump shaft is recommended so that minimum radial and thrust loads are applied to the pump shaft.
2. The alignment of the pump shaft with the drive shaft should be within 0.002 in. The eccentric angle should be within one degree.
3. The length of the coupling on the pump shaft should be more than two-thirds the width of the coupling.
4. The pump mounting base should be rigid structure.
5. The pump suction pressure should not exceed -4.3psi (the suction port flow velocity less than 6.5 ft/sec.
6. The pump should be mounted with the drain port at a position to maintain fluid in the pump case. The drain back pressure should be less than 14.3 psi.

Fluid Conditions

1. Use good quality petroleum fluid. The fluid viscosity should be 20 – 200 cSt (98 - 900 SUS). For general use, R&O type and anti-wear type of ISO VG32 and 68 are recommended. The optimum viscosity during operation in 20 – 50 cSt (98 – 232 SUS).
2. Operating temperature range is 41 – 140 F. During start up at temperature below 32 F, perform warmup operations at a low pressure and low speed and do not flow the pump until fluid temperature reaches (41F).
3. Use a suction strainer with a filtering level of 100u *150 mesh). Use a 20u line and magnet filters to extend the life of the pump.

Precautions When Starting

1. Before starting the pump, fill the pump case with fluid.

Hydraulic fluid case capacities:

Model	Capacity
PCP4	13.4 cu-in
PCP8, PCP10	18.3 cu-in
PCP16, PCP21	30.5 cu-in

2. Make certain the pump turns in the direction indicated by the arrow- Clockwise facing the shaft.
3. Entrained air in the pump and piping will cause noise and vibrations. (We recommend a flooded suction when possible.) On initial start-up; start the pump unloaded over the relief at low pressure to bleed air. Raise the relief and set the pump pressure compensator. Note: The system relief is used as a safety should always be set at least 10% above the pump's pressure. Thereafter, if your circuit is difficult to purge the air at starting, we recommend use of an air bleed valve in your circuit.

Setting the Pressure and Flow Rate

The flow rate is set at maximum and the pressure is set at minimum at the factory.

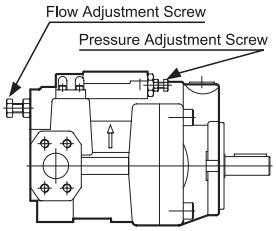
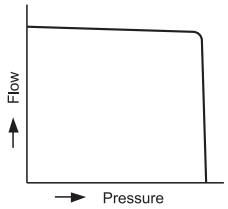
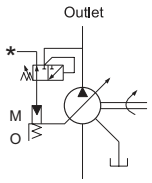
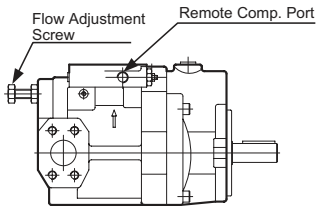
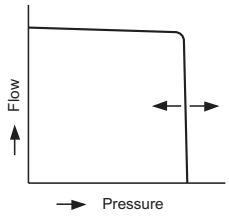
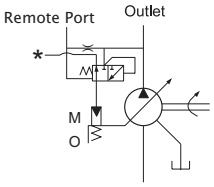
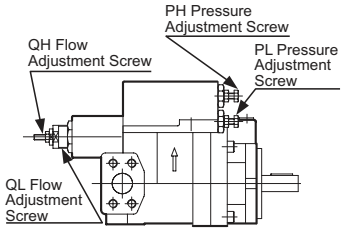
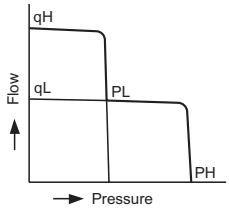
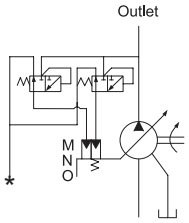
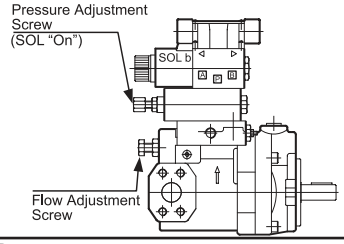
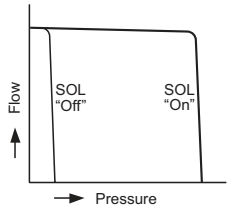
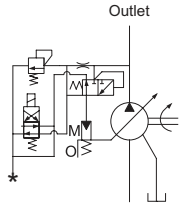
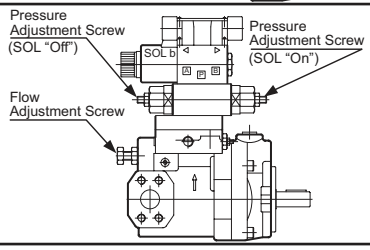
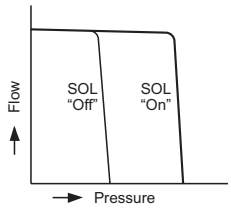
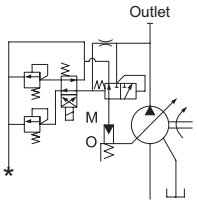
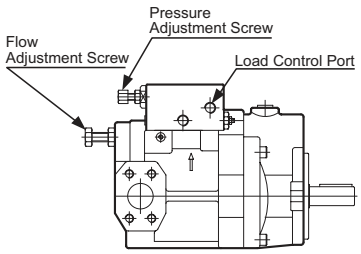
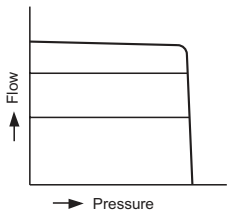
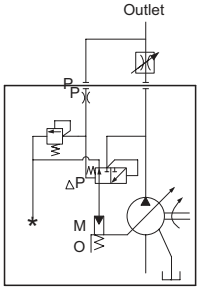
Pressure adjustment: turn the pressure adjusting screw clockwise to increase pressure.

Flow rate adjustment: turn the flow adjusting screw clockwise to decrease the flow rate.

Minimum Flow settings:

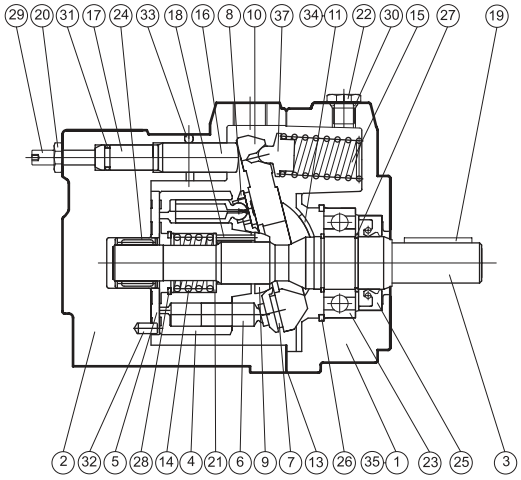
Model	Flow
PCP4	2 gpm
PCP8	4 gpm
PCP10	5 gpm
PCP16	8 gpm
PCP21	10 gpm
PCP33	16 gpm

Control Type

Symbol	External View	Performance Curves	Hydraulic Circuit	Description
PC				Pressure Compensating Control (Standard)
RC				Remote Compensator Control The pressure can be controlled according to the pilot pressure. The flow can be controlled manually.
2P2F				Two Pressure Two Flow (High/Low) Control By means of the sequence valve, two stage flow rate can be obtained and each flow rate has the different pressure eventually enabling energy savings.
SO				Solenoid "On/Off" Control (Single Pressure) An unloading solenoid valve is used to minimize the lost energy when the pump output is not required. Reduces dead-head HP (Heat)
2PSO				Solenoid "On/Off" Control (Dual Pressure) By means of "On/Off" electrical control of D03 solenoid valve, two different pressure compensating settings can be obtained.
LS				Load Sensing Control The "LS" compensator is used for load sensing circuits and is a true load sensor. This is the "RC" compensator with a plug in the compensator spool. The plug prevents pilot flow from entering the circuit which will eliminate creeping of the load. The "LS" compensator will let the pump deliver a constant flow rate to the circuit by providing an adjustable P across the customers orrifice or valve. The pump will operate at 250-400 psi, (17.2~27.5 bar) above "Load Pressure".

Cross Section Drawing

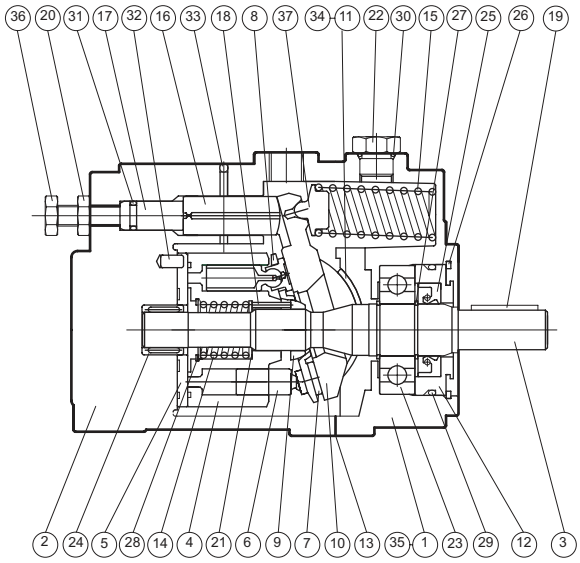
PCP4-Type



PCP4-Type

	PCP8/10-Type Size	Qty
13) Gasket	————	1
23) Ball Bearing	6205	1
24) Needle Bearing	TA 1720	1
25) Oil Seal	TCN 25 45 11	1
30) O-Ring	P11	1
31) O-Ring	P9	1

PCP8/10/16/21-Type



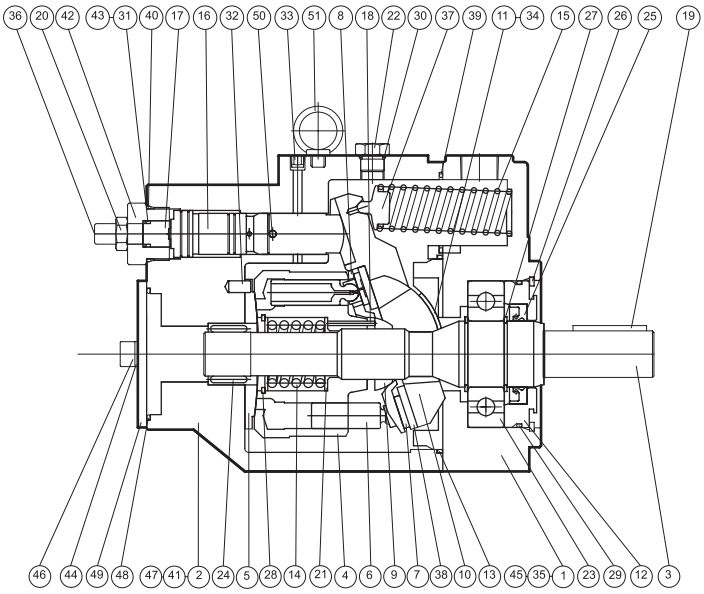
PCP8/10/16/21-Type

	PCP8/10-Type Size	PCP16/21-Type Size	Qty
13) Gasket	————	————	1
23) Ball Bearing	6305	6306	1
24) Needle Bearing	TA 1720	TA 2025	1
25) Oil Seal	TCN 25 45 11	TCN 30 50 11	1
29) O-Ring	G58	G70	1
30) O-Ring	P14	P14	1
31) O-Ring	P10A	P14	1

1) Body	9) Barrel Holder	17) Guide	25) Oil Seal	33) Expander Plug
2) Case	10) Swash Plate	18) Needle	26) Snap Ring	34) Machine Screw
3) Shaft	11) Thrust Brush	19) Key	27) Snap Ring	35) Machine Screw
4) Cylinder Barrel	12) Seal Holder	20) Nut	28) Snap Ring	36) Flow Adjustment Screw
5) Valve Plate	13) Gasket	21) Retainer	29) O-Ring	37) Spring Holder
6) Piston	14) Spring	22) Plug	30) O-Ring	
7) Shoe	15) Spring	23) Ball Bearing	31) O-Ring	
8) Shoe Holder	16) Control Piston	24) Needle Bearing	32) Pin	

Cross Section Drawing

PCP33/47-Type

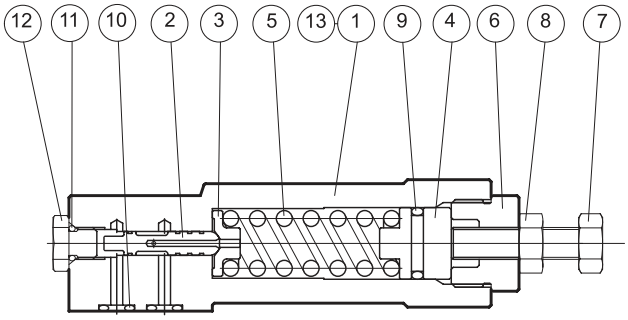


PCP33/47-Type

	PCP33-Type Size	PCP47-Type Size	Qty
13) O-Ring	G130	G155	1
23) Ball Bearing	6309	6310	1
24) Needle Bearing	RNA 6905	RNA 6906	1
25) Oil Seal	TCN 45 68 12	TCN 50 72 12	1
29) O-Ring	G95	G105	1
30) O-Ring	P14	P14	1
31) O-Ring	P14	P16	1
39) O-Ring	G50	G50	1
40) O-Ring	P34	P36	1
41) O-Ring	P9	P9	1
48) O-Ring	G85	G85	1

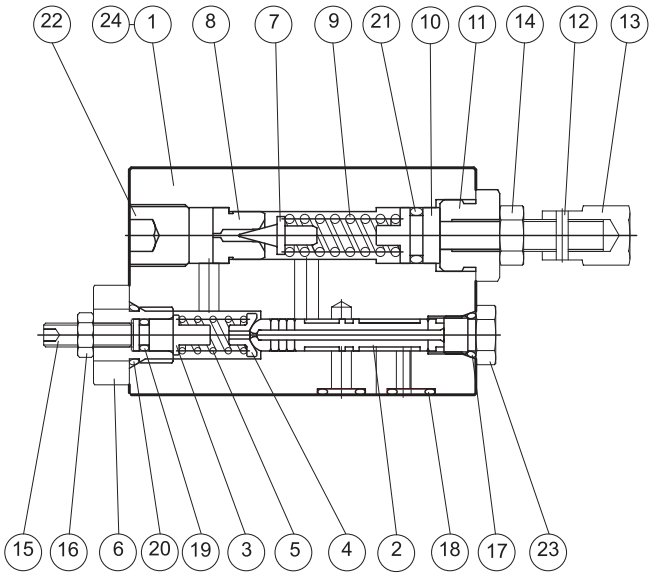
Pressure Compensator/ Cross Section Drawing

PCP4/8/16/21-Type



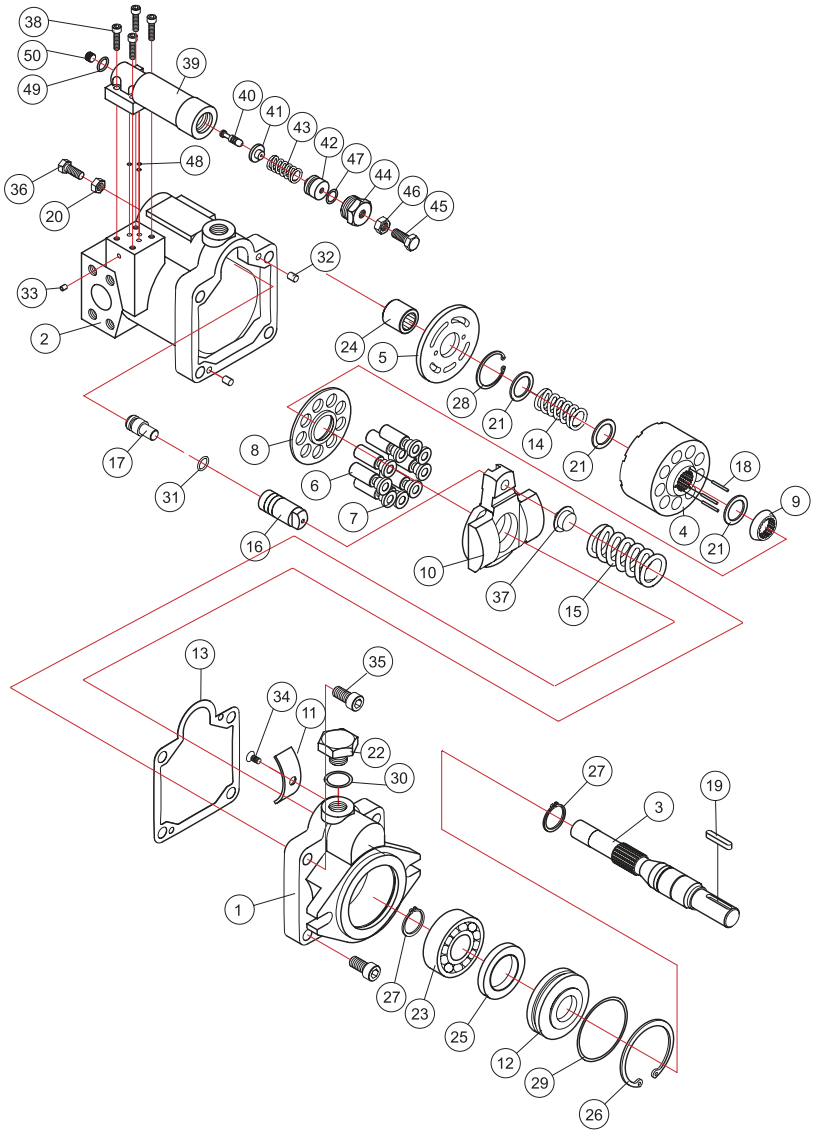
	Size	Qty
9) O-Ring	P14	1
10) O-Ring	P6	1
11) O-Ring	P6	1

PCP33/47-Type



	Size	Qty
17) O-Ring	P8	1
18) O-Ring	P9	1
19) O-Ring	P5	1
20) O-Ring	P12	1
21) O-Ring	P10A	1

Parts Breakdown



1) Body	11) Thrust Brush	21) Retainer	31) O-Ring	41) Holder
2) Case	12) Seal Holder	22) Plug	32) Pin	42) Plunger
3) Shaft	13) Gasket	23) Ball Bearing	33) Expander Plug	43) Spring
4) Cylinder Barrel	14) Spring C	24) Needle Bearing	34) Machine Screw	44) Retainer
5) Valve Plate	15) Spring S	25) Oil Seal	35) Machine Screw	45) Pressure Adjusting Bolt
6) Piston	16) Control Piston	26) Snap Ring	36) Flow Adjustment Bolt	46) Nut
7) Shoe	17) Guide	27) Snap Ring	37) Spring Holder	47) O-Ring
8) Shoe Holder	18) Needle	28) Snap Ring	38) Machine Screw	48) O-Ring
9) Barrel Holder	19) Key	29) O-Ring	39) Body	49) O-Ring
10) Swash Plate	20) Nut	30) O-Ring	40) Spool	50) Plug