PB VP1 95-110-130

GEJE Truck Hydraulics

Specifications

Frame size VP1--	045	060	075	095	110	130
Displacement [cm^3/rev]	45	60	75	95	110	128
Max operating pressure [bar]						
continuous	350	350	350	400	400	400
intermittent [1)]	400	400	400	420	420	420
Mass moment of inertia J [kgm^2]	0.00606	0.00606	0.00606	0.00681	0.00690	0.00690
Shaft speed [2)] [rpm]						
- short circuited pump (low press.)	3000	3000	3000	3000	3000	3000
- max selfpriming speed [2)]	3000	2700	2500	2300[3)]	2200[3)]	2100[3)]
Control type	LS					
Shaft end spline	DIN 5462					
Mounting flange	ISO 7653-1985					
Weight (with control) [kg]	27					

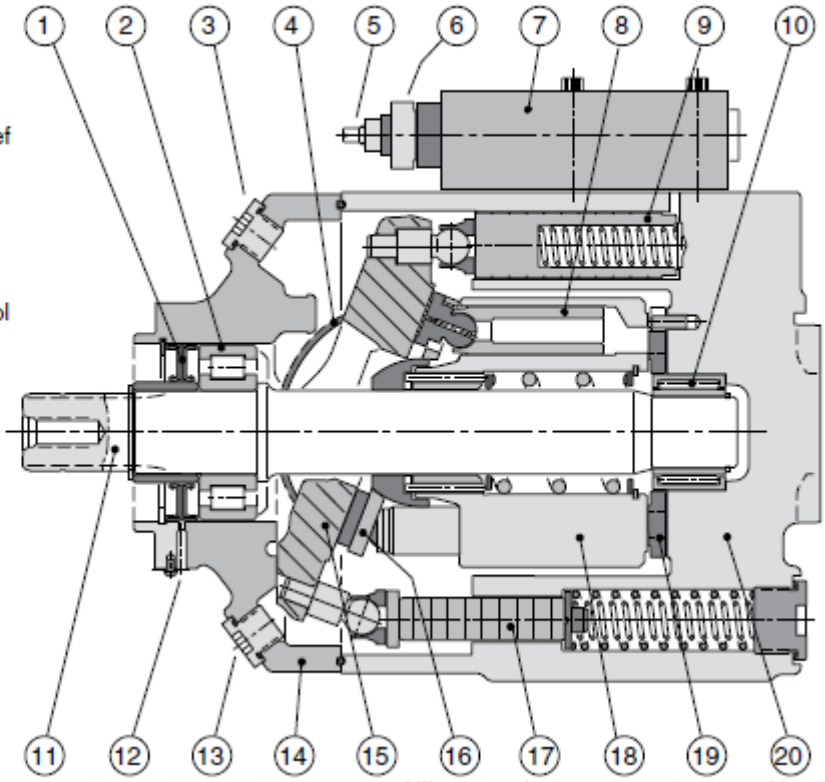
1) Max 6 seconds in any one minute.

2) At an inlet pressure of 1.0 bar (abs.) with mineral oil at a viscosity of 30 mm^2/s (cSt).

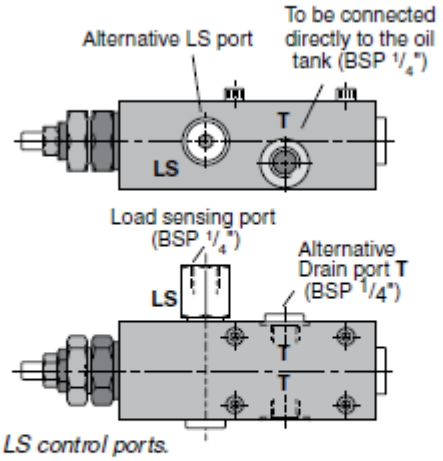
3) Valid with 3" inlet (suction) line

VP1-095/-110/-130 cross section

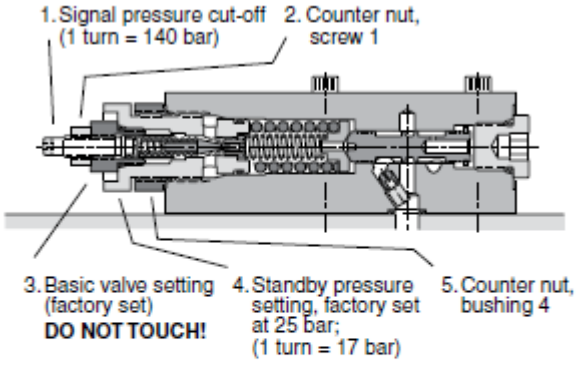
1. Shaft seal
2. Roller bearing
3. 'Upper' purge plug
4. Bearing shell
5. Setting screw (pressure relief valve)
6. Setting bushing (standby pressure)
7. Control
8. Piston with piston shoe
9. 'Upper' setting piston (control pressure)
10. Needle bearing
11. Shaft
12. Drain hole, shaft seals
13. 'Lower' purge plug
14. Bearing housing
15. Swash plate
16. Retainer plate
17. 'Lower' setting piston (pump pressure)
18. Cylinder barrel
19. Valve plate
20. Barrel housing



LS control (for VP1-095/-110/-130)



LS control ports.

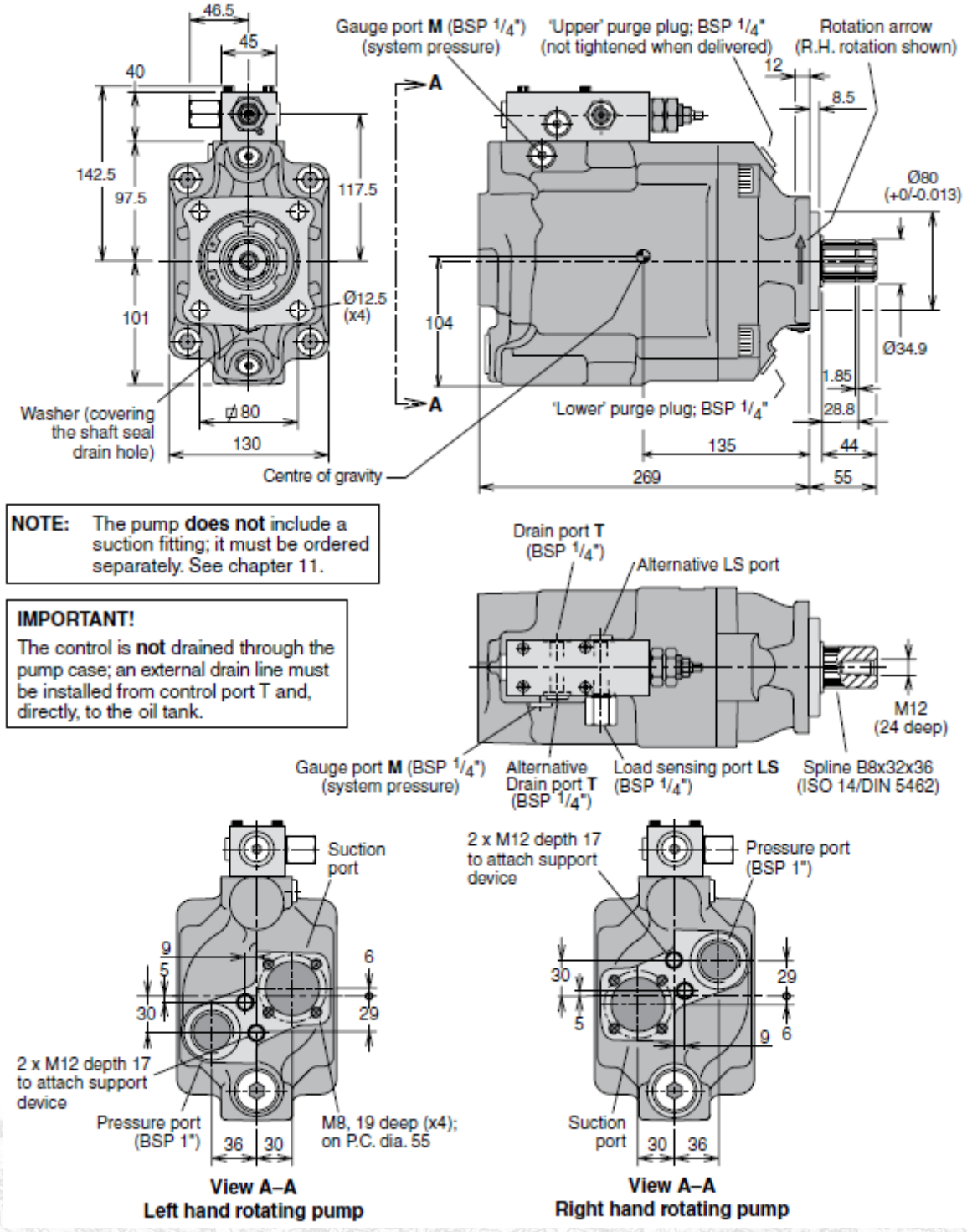


LS control cross section.

Item	Wrench / dimension
1	Hex Head Wrench / 4 mm
2	Wrench / 13 mm
3	**DO NOT TOUCH**
4	Wrench / 27 mm
5	Wrench / 27 mm

NOTE: Always run a function, after adjusting the standby pressure or the max pressure setting, before you read the value.

VP1-095/-110/-130



VP1 in load sensing systems

When installed in a load sensing system, the VP1 supplies the correct amount of flow required by the various work functions currently engaged.

This means that energy consumption and heat generation are minimised and much reduced in comparison with a fixed displacement pump used in the same system.

Diagram 1 shows the required power (flow times pressure) in a constant flow system with a fixed displacement pump.

Diagram 2 shows the sharply reduced power requirement in a load sensing system with a variable displacement pump such as the VP1.

In both cases the pump pressure is slightly higher than what is required by the heaviest load ('Load 2') but the VP1, because of the much smaller flow being delivered, needs only the power indicated by the shaded area 'Load power'.

In a constant flow system, on the other hand, excess fluid is shunted to tank and the corresponding power, 'Wasted power' (shown in diagram 1), is a heat loss.

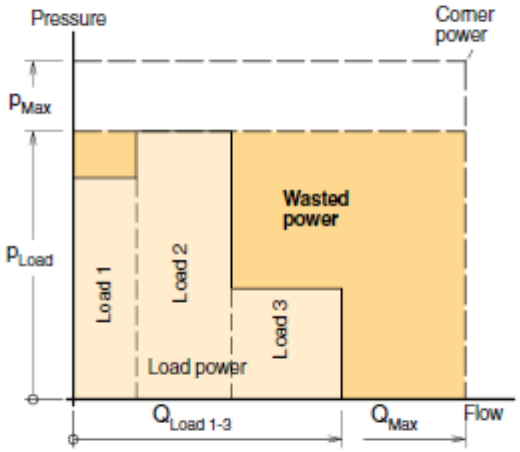


Diagram 1. Constant flow system with a fixed displacement pump.

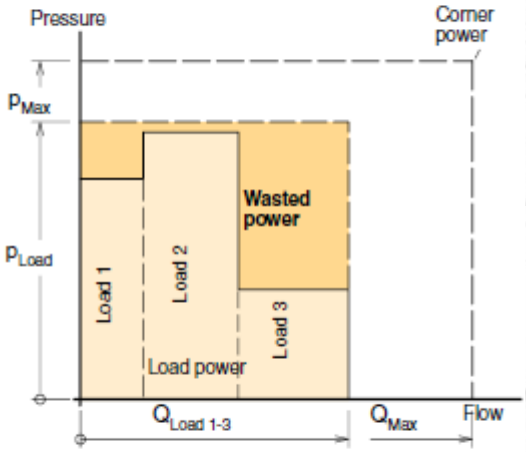


Diagram 2. Constant flow system with a variable displacement pump (e.g. VP1).

Systems comparison

System	Constant flow	Load-sensing
Pump	Fixed displ.	VP1 variable displ.
Pump adjustments	Pressure only	Pressure and flow
Load *	Some influence	Some influence
Energy consumption	High	Low
Heat generation	High	Low

* Simultaneous operation of loads with non-equal flows and pressures; refer to the above diagrams.

LS load sensing control function

Refer to corresponding hydraulic schematic below.

A selected 'opening' of the directional control valve spool corresponds to a certain flow to the work function. This flow, in turn, creates a pressure differential over the spool and, consequently, also a Δp between the pump outlet and the LS port.

When the differential pressure decreases (e.g. the directional valve is 'opened' further) the Δp also decreases and the LS valve spool moves to the left. The pressure to the setting pistons then decreases and the pump displacement increases.

The increase in pump displacement stops when the Δp finally reaches the setting (e.g. 25 bar) and the forces acting on the valve spool are equal.

If there is no LS signal pressure (e.g. when the directional valve is in the neutral, no-flow position) the pump only delivers sufficient flow to maintain the standby pressure as determined by the Δp setting.

LS control adjustments

Pressure limiter

Pump size	Factory setting [bar]	Max pressure intermittent [bar]
VP1-045/060/075	350	400
VP1- 095/110/130	350	420

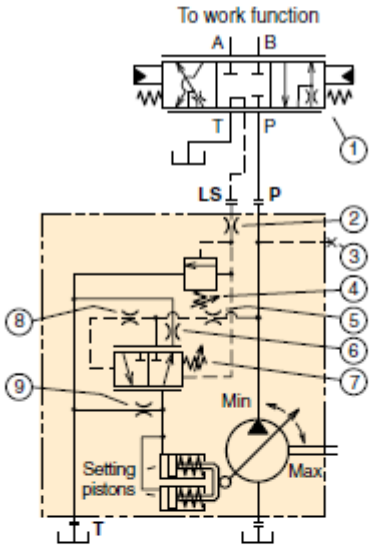
LS load sensing valve

Pump size	Factory setting [bar]	Min pressure [bar]	Max pressure [bar]
VP1-045/060/075	25	20	35
VP1- 095/110/130	25	15	40

The factory setting, and the standard orifice sizes shown in the corresponding schematic below, will usually provide an acceptable directional valve characteristic as well as system stability.

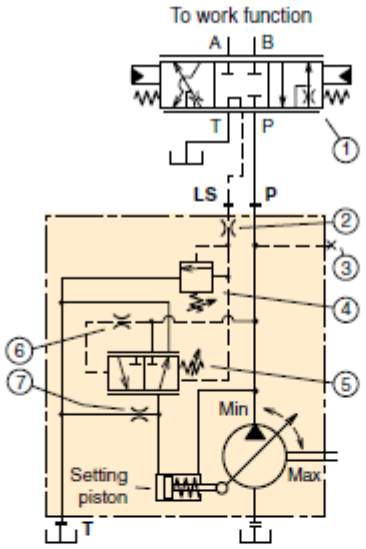
For additional information, contact Parker Hannifin.

Hydraulic schematic for VP1-45/-060/-075



1. Directional, load sensing control valve
2. Load signal orifice (1.0 mm; fixed)
3. Gauge port
4. Signal pressure limiter adjustment
5. System pressure dampening nozzle (2.0 mm)
6. Return line nozzle (0.6 mm)
7. Standby (Δp) pressure adjustment
8. System pressure dampening orifice (fixed)
9. Bleed-off nozzle (0.6 mm).

Hydraulic schematic for VP1-095/-110/-130



1. Directional, load sensing control valve
2. Load signal orifice (0.8 mm)
3. Gauge port
4. Signal pressure limiter adjustment
5. Standby (Δp) pressure adjustment
6. System pressure dampening orifice (fixed)
7. Bleed-off nozzle (1.2 mm)