

AXIAL PISTON PUMP PA & PAI



PAI - 3 Bolt



PA - 4 Bolt

A fixed displacement Axial Piston Pump designed to offer a robust solution with long service life for high pressure requirements in Transport Hydraulics.

Features:

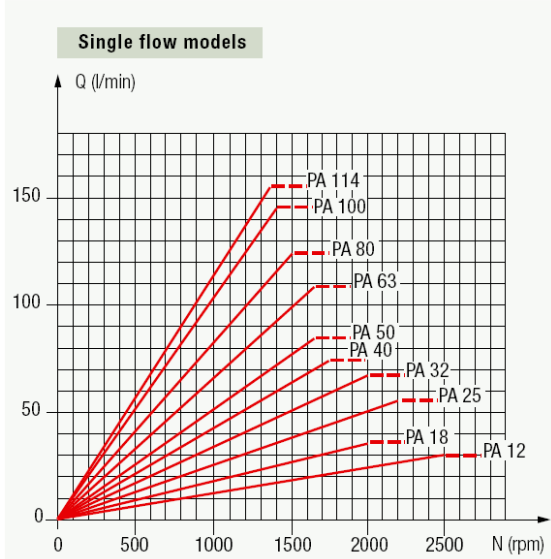
- PZB 3 Bolt or ISO 4 Bolt Mount.
- Dual Rotation.
- Captive Pistons.
- 350bar continuous.
- 500bar instantaneous peak.
- 97% efficient at 350bar at 1000rpm.
- Twin shaft seals.
- Simple & robust design.

Pump Specification

CODE	DISPLACEMENT CM ³ / REV	PRESSURE BAR (CONT)	RPM MAX CONT	SUCTION PORT	PRESSURE PORT	WEIGHT KG
PAI25-0521370	25cc	350	2200	G1 1/2"	G3/4"	15
PAI40-0520160	40cc	350	1750	G1 1/2"	G3/4"	15
PAI50-0520170	50cc	350	1650	G1 1/2"	G3/4"	15
PAI60-0520180	60cc	350	1650	G1 1/2"	G3/4"	15
PA50-0511525	50cc	350	1650	G1 1/2"	G3/4"	15
PA60-0512100	60cc	350	1650	G1 1/2"	G3/4"	15

Performances

Flow



Calculating power as a function of torque

$$C = \frac{\mathcal{P}(\text{kW})}{\omega} \times 100 = \text{m.daN}$$

$$\omega = \frac{\pi N}{30} \quad \mathcal{P}(\text{kW}) = \frac{\Delta P \times Q}{600}$$

where :

\mathcal{P} = theoretical hydraulic power

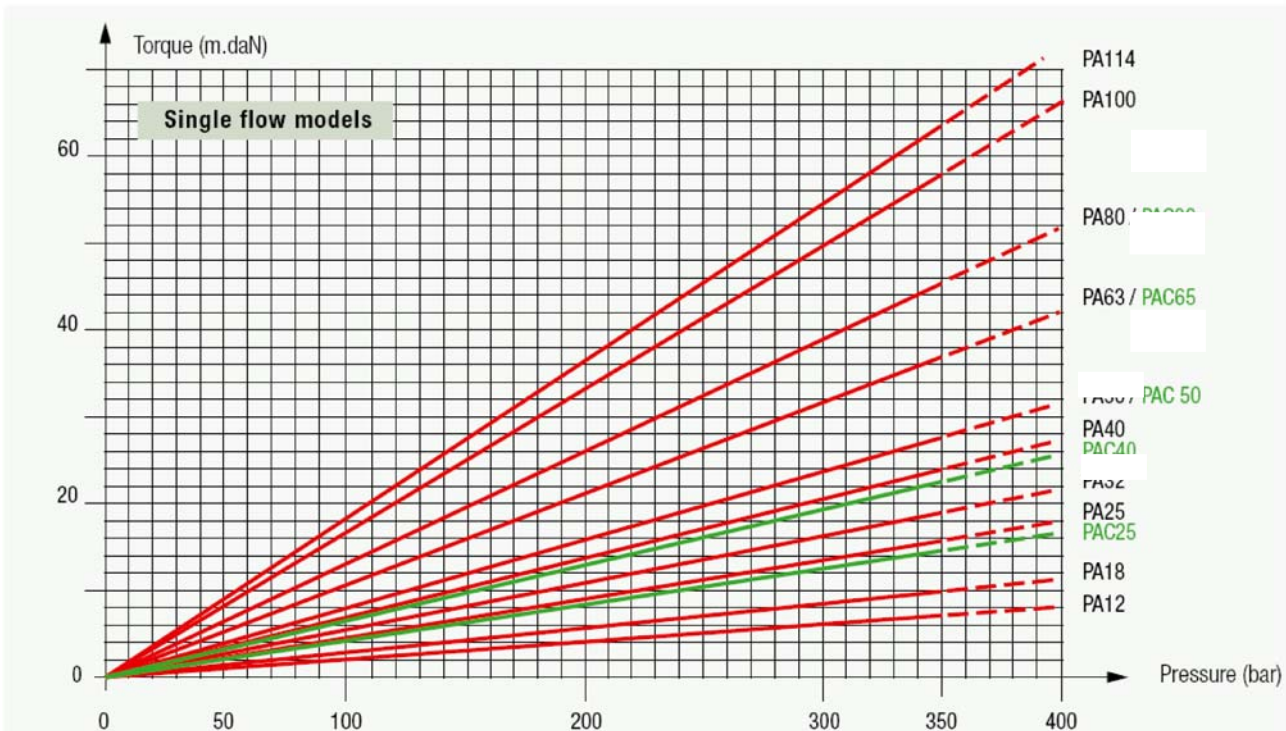
C = torque

N = rotating speed in rpm

P = service pressure in bar

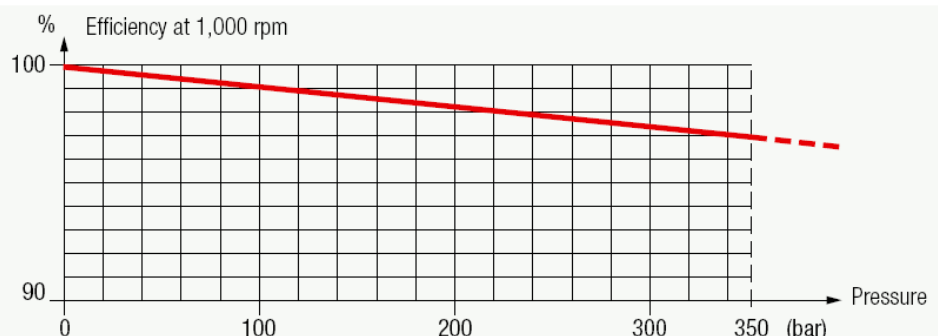
Q = flow in l/min

Torque absorbed as a function of pump output pressure

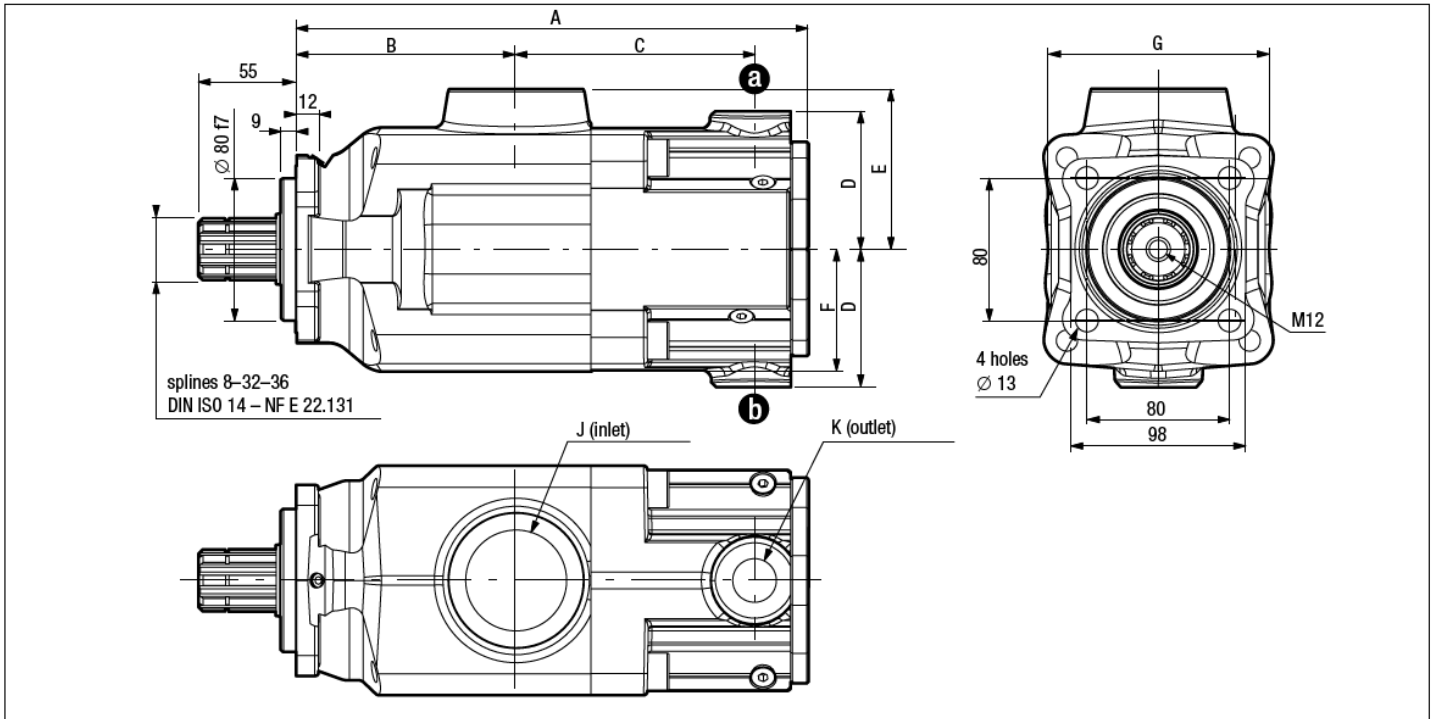


Volumetric efficiency

These graphs are the results of test-work done in the HL R&D laboratory, on a specific test bench, with an ISO 46 fluid at 77°F/25°C (100 cSt), the pump is fitted with a 2" HL inlet fitting, hosing is 13 feet (4 metres) long, and tank situated slightly above pump.

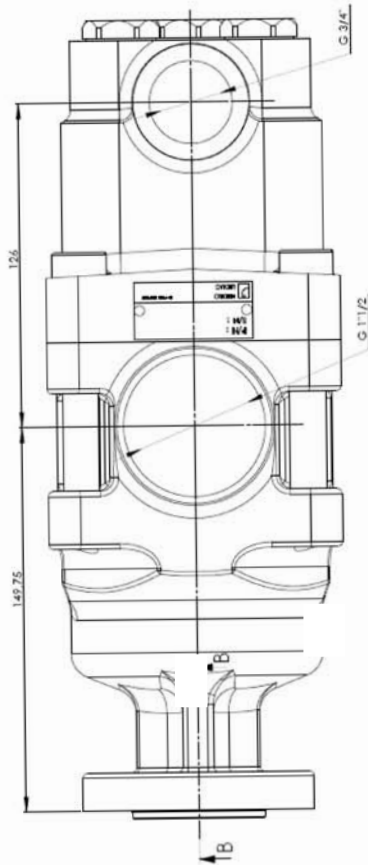
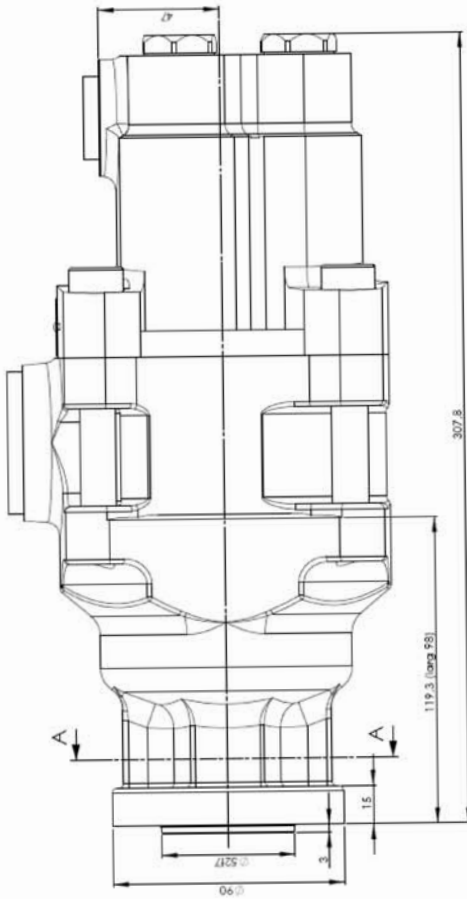
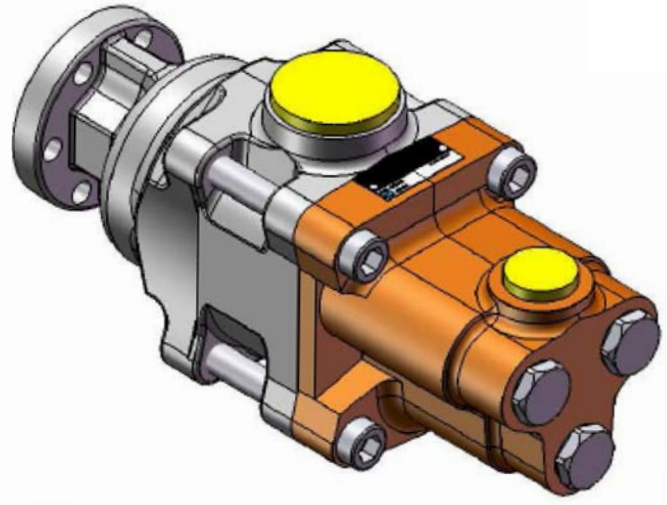
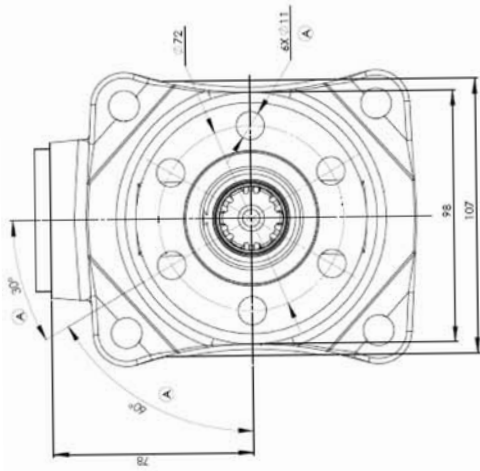


Characteristics and Dimensions PA series pumps



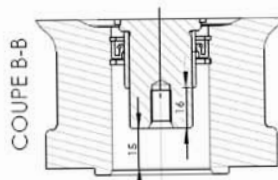
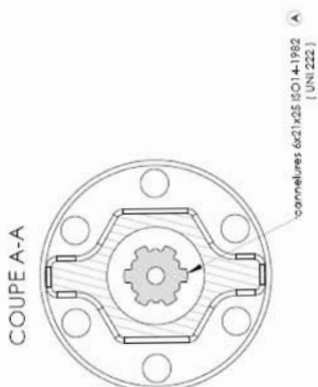
Single flow

Pump Reference	Displac. cc		A	B	C	D	E	F	G	J	K	Weight kg
	a	b										
PA50-0511525	50	-	261	102	126	47	78	64	107	G1"1/2	G3/4"	15
PA60-0512100	60	1	261	102	126	47	78	64	107	G1"1/2	G3/4"	15



DIMENSIONAL DETAIL

**PAI25
PAI40
PAI50**



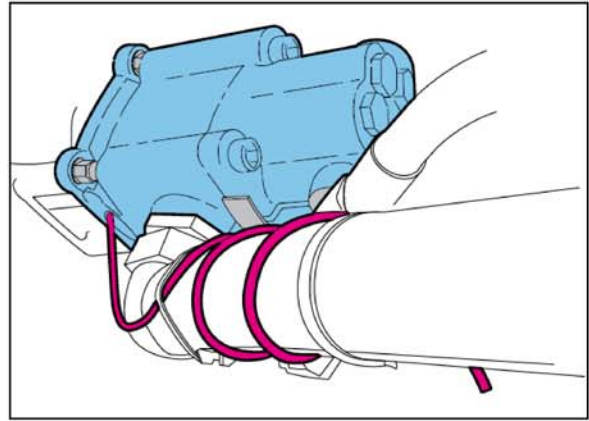
Shaft Sealing PA and PAI series pumps

Hydro Leduc pumps destined for truck hydraulics are all fitted with reinforced sealing comprising:

- two radial seals: an external seal adapted to the needs of PTOs and gear-boxes; and an internal seal adapted to the needs of hydraulic performance;
- an original protection of the pump shaft seals. This is a flexible transparent tube which avoids any entry of contaminants between the two seals, and guarantees high pressure water jet cleaning of vehicle will not damage the sealing area. It also allows air vent of the chamber between the two seals.



■ Example of tube attachment



✓ Recommendations for attaching the protective tube:



- make a siphon with the tube so as to avoid any introduction of:
 - dirt from road;
 - water or damp from high pressure washing of vehicle.
- put the end of the tube downwards, or in a place sheltered from any projections;
- fix the tube in place using a collar/clip.

✗ Avoid:

- attaching the tube to any parts which may move, this could lead to it being damaged or torn off;
- any pinching or folds in the tube when fixing it in place;
- any obturation of the end of the tube.



HYDRO LEDUC stresses that on non-sealed PTO installations, it is the hydraulic pump which ensures the sealing of the vehicle gearbox. This is why Hydro Leduc offers tried and tested solutions approved by vehicle manufacturers. Note in particular the pump – PTO sealing via a frontal square section ring seal ensuring metal to metal contact between pump and PTO.



Installation and Start-up PA and PAI series pumps

Make sure your pump lives a long happy life !

■ The tank: **

Generally, hydraulic pumps much prefer a tank above the pump. HYDRO LEDUC pumps can also operate with oil level beneath the pump, for further information on such installations, please contact our Technical Department.
Correct inlet conditions are between 0.8 to 2 bar absolute pressure.

The tank should preferably have a separation between inlet side and return. This avoids fluid emulsion and the introduction of air into the hydraulic circuit. Ensure also that the suction is not from the very bottom of the tank, so as to protect the pump from any deposits (particles).

■ Hosing:

Should be dimensioned to ensure flow between 0.5 and 0.8 m/second. Choose as direct a supply line as possible, avoiding sharp bends.

■ Filtration:

HYDRO LEDUC recommends using a very clean tank, filtered during filling and with filter on air vent.

The pump supply line must be cleaned (decontaminated) and the return line should be filtered as follows:

- for relatively simple circuits (e.g. tippers):
use a 20 micron filter on pump return line.
- for more complex circuits (e.g. cranes):

Ideal solution:

- high pressure filter between the pump and the crane hydraulic circuit;
- 10 to 20 micron filter;
- clogging indicator.

■ The fluid:

Use a mineral hydraulic oil with viscosity between 10 and 400 cSt. It is in this viscosity range that the pumps keep their volumetric characteristics. If you wish to use other fluids, please consult our Technical Department.
Maximum temperature of fluid in the pump should not exceed 100°C.

■ Drive and assembly recommendations:

For PTO mount applications, be careful to respect the tightening recommendations in terms of pump onto PTO and PTO onto vehicle gearbox.
PA-PAC-PAD pumps are not designed to withstand any axial load on the pump shaft. Check your installation conforms to this requirement.

**** Mega Pacific strongly recommends Flooded Suction Installation configuration only.**

■ Preparation of the pump:

PA, PAC and PAD pumps rotate either clockwise or anti-clockwise (no user intervention necessary).

Before start-up, the pumps should preferably be filled with oil.

■ Start-up:

- open the supply valve if there is one;
- check the valve is in "back to tank" position;
- partially unscrew the output fitting;
- start up at low speed, or by successive starts/stops;
- retighten the output connector as soon as air bubbles have disappeared;
- let the pump run for one to two minutes, and check that the flow is well established;
- check the pump is running correctly, with no vibrations nor abnormal noise;
- after several hours of operation, check the tightening torque of the pump fixture to PTO.

■ Maintenance:

Some regular checks are necessary, namely:

- tightening of pump to PTO;
- cleanliness of fluid;
- state of filter;



if you notice traces of oil in the plastic tube, it is essential to check the sealing between PTO and pump.

Each HYDRO LEDUC pump is supplied with a leaflet with installation and start-up recommendations.

