



Installation instructions

General

The axial piston unit must be filled with hydraulic fluid and air bled during commissioning and operation. This must also be observed following a longer standstill as the axial piston unit empty via the hydraulic lines.

Especially with the installation position "drive shaft upwards" or "drive shaft downward", attention must be paid to a complete filling and air bleeding since there is a risk, for example, of dry running.

The case drain fluid in the motor housing must be directed to the reservoir via the highest case drain port (L1, L2, L3).

For combinations of multiple units, make sure that the respective case pressure in each unit is not exceeded. In the event of pressure differences at the case drain ports of the units, the shared case drain line must be changed so that the minimum permissible case pressure of all connected units is not exceeded in any situation. If this is not possible, separate case drain lines must be laid if necessary.

To achieve favorable noise values, decouple all connecting lines using elastic elements and avoid above-reservoir installation.

In all operating conditions, the suction line and case drain line must flow into the reservoir below the minimum fluid level. The permissible suction height h_S is a result of the overall pressure loss, but may not be greater than $h_{S \max} = 31.50$ inch (800 mm). The minimum suction pressure at port S must also not fall below 12 psi (0.8 bar) absolute during operation.

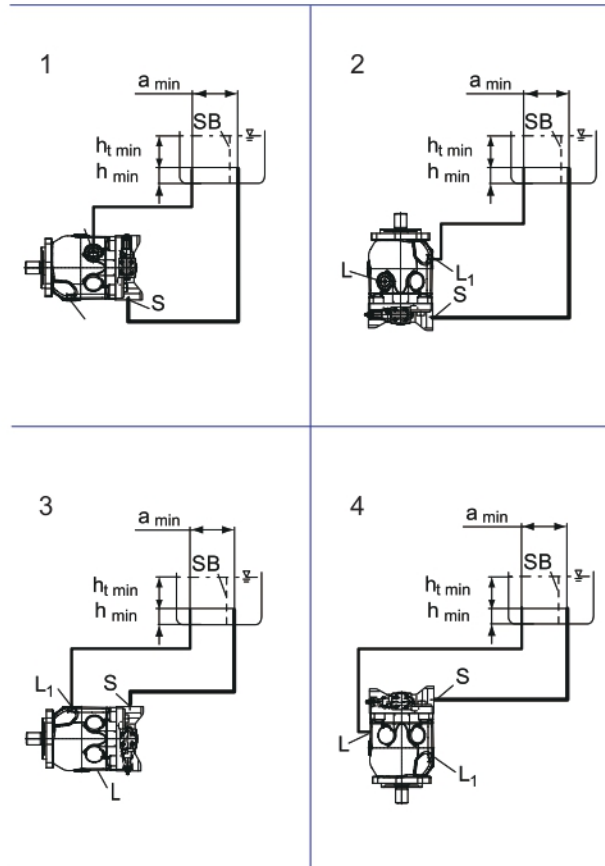
Installation position

See the following examples 1 to 12.

Additional installation positions are available upon request.
Recommended installation positions: 1 and 3.

Below-reservoir installation (standard)

Below-reservoir installation means the axial piston unit is installed outside of the reservoir below the minimum fluid level.



Installation position	Air bleed	Filling
1	L	S + L ₁
2	L ₁	S + L
3	L ₁	S + L
4	L	S + L ₁

please following page A-63.

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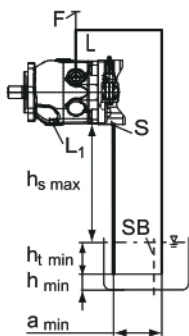
Above-reservoir installation

Above-reservoir installation means the axial piston unit is installed above the minimum fluid level of the reservoir.

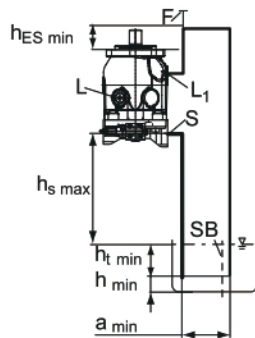
To prevent the axial piston unit from draining, a height difference $h_{ES \min}$ of at least 0.98 inch (25 mm) at port L 1 is required in installation position 6. Observe the maximum permissible suction height $h_{S \max} = 31.50$ inches (800 mm)

A check valve in the case drain line is only permissible in individual cases. Consult us for approval.

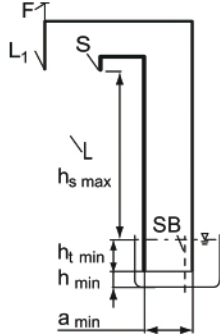
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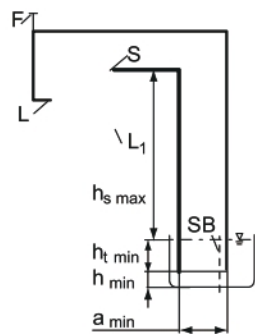
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Installation position	Air bleed	Filling
5	F	L (F)
6	F	L ₁ (F)
7	F	S + L ₁ (F)
8	F	S + L (F)

Inside-reservoir installation

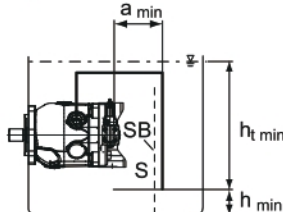
Inside-reservoir installation is when the axial piston unit is installed in the reservoir below the minimum fluid level.

The axial piston unit is completely below the hydraulic fluid.

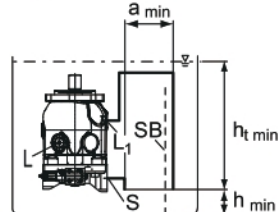
If the minimum fluid level is equal to or below the upper edge of the pump, see chapter "Above-reservoir installation".

Axial piston units with electrical components (e.g. electric control, sensors) may not be installed in a reservoir below the fluid level.

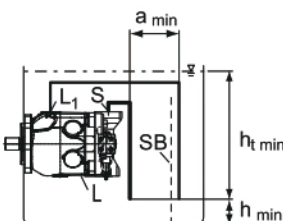
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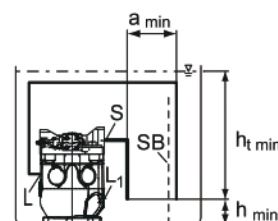
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Installation position	Air bleed	Filling
9	L	L, L ₁
10	L ₁	L, L ₁
11	L ₁	S + L, L ₁
12	L	S + L, L ₁

S	Suction port
F	Filling / air bleeding
L, L ₁	Case drain port
SB	Baffle (baffle plate)
ht min	Minimum necessary immersion depth (7.87 inch (200 mm))
h min	Minimum necessary spacing to reservoir bottom (3.94 inch (100 mm))
hes min	Minimum necessary height needed to protect the axial piston unit from draining (0.98 inches (25 mm)).
hs max	Maximum permissible suction height (31.50 inch (800 mm))
a min	When designing the reservoir, ensure adequate distance between the suction line and the case drain line. This prevents the heated, return flow from being drawn directly back into the suction line.



Tightening torques

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- Fittings:

Observe the manufacturer's instruction regarding the tightening torques of the used fittings.

- Mounting bolts:

For mounting bolts with metric ISO thread according to DIN 13 or thread according to ASME B1.1

- Female threads in axial piston unit :

The maximum permissible tightening torques $M_{G \max}$ are maximum values for the female threads and must not be exceeded. For values, see the following table.

- Threaded plugs :

For the metal threaded plugs supplied with the axial piston unit, the required tightening torques of the threaded plugs M_V apply. For values, see the following table.

Metric Ports Standard	Thread size	Maximum permissible tightening torque for female threads $M_{G \max}$	Required tightening torque for threaded plugs M_V	Size of hexagon socket of threaded plugs
DIN 385	M14 x 1.5	80 Nm	45 Nm	6 mm
	M16 x 1.5	100 Nm	50 Nm	8 mm
	M18 x 1.5	140 Nm	60 Nm	8 mm
	M22 x 1.5	210 Nm	80 Nm	10 mm
	M27 x 2	330 Nm	135 Nm	12 mm
DIN ISO 228	G 1/4 in	70 Nm	—	—

SAE Ports Standard	Thread size	Maximum permissible tightening torque for female threads $M_{G \max}$	Required tightening torque for threaded plugs M	Size of hexagon socket of threaded plugs
DIN 3852 ¹⁾	G1/4	52 lb-ft	—	—
		70 Nm	—	—
	M14 x 1.5	59 lb-ft	26 lb-ft	0.24 inch
		80 Nm	35 Nm	6 mm
DIN ISO 228	G1/4	52 lb-ft	22 lb-ft	0.24 inch
		70 Nm	30 Nm	6 mm
ISO 11926	7/16-20UNF-2B	29 lb-ft	13 lb-ft	3/16 in
		40 Nm	18 Nm	
	9/16-18UNF-2B	59 lb-ft	26 lb-ft	1/4 in
		80 Nm	35 Nm	
	3/4-16UNF-2B	118 lb-ft	52 lb-ft	5/16 in
		160 Nm	70 Nm	
	7/8-14UNF-2B	177 lb-ft	81 lb-ft	3/8 in
		240 Nm	110 Nm	
	1 1/16-12UN-2B	266 lb-f	125 lb-f	9/16 in
		360 Nm	170 Nm	

¹⁾The tightening torques of the threaded plugs M_V apply for screws in the „dry“ state as received on delivery and in the „lightly oiled“ state for installation

General instructions

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- The PA10VSO pump is designed to be used in open circuit.
- Project planning, installation and commissioning of the axial piston unit require the involvement of qualified personnel.
- Before operating the axial piston unit, please read the appropriate instruction manual thoroughly and completely. If necessary, request these from YEOSHE.
- During and shortly after operation, there is a risk of burns on the axial piston unit and especially on the solenoids. Take appropriate safety measures (e.g. by wearing protective clothing).
- Depending on the operating conditions of the axial piston unit (operating pressure, fluid temperature), the characteristics may shift.
- Service line ports:
 - The ports and fastening threads are designed for the specified maximum pressure. The machine or system manufacturer must ensure that the connecting elements and lines correspond to the specified application conditions (pressure, flow, hydraulic fluid, temperature) with the necessary safety factors.
 - The service line ports and function ports are only designed to accommodate hydraulic lines.
- Pressure cut-off and pressure control do not provide security against pressure overload. A separate pressure relief valve is to be provided in the hydraulic system.
- The data and notes contained herein must be adhered to.
- The product is not approved as a component for the safety concept of a general machine according to ISO 13849 / DIN EN ISO 13849.