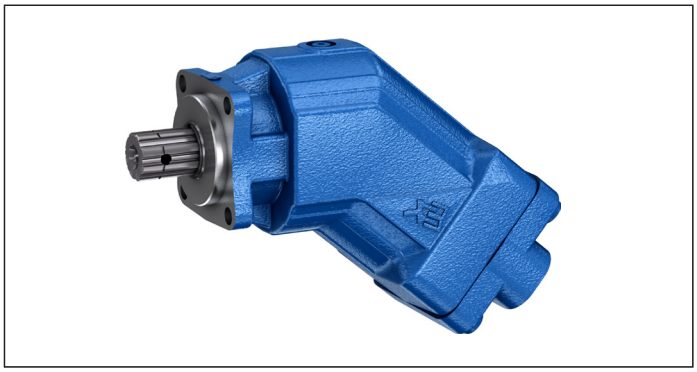
Data sheet
RE 91510/2026-07-14
Replaces: 11.2015

Axial piston fixed pump A17FNO series 10



- High-pressure pump for use in commercial vehicles
- Size 125
- Nominal pressure 250 bar
- Maximum pressure 300 bar
- Bent-axis design
- Open circuit

Features

- Flange and shaft designed for direct mounting on the power take-off of commercial vehicles
- Weight-optimized thanks to diecast aluminum housing
- No case drain line necessary
- Reduced noise
- Straightforward adjustment of direction of drive
- Excellent suction performance
- High total efficiency
- Long service life

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Ordering code

01	02	03		04	05	06	07	08	09	10		11
A17FN	**O**		**/**	**10**	**N**	**L**	**W**	**K0**	**E8**	**1**	**–**	

Axial piston unit

01	Bent-axis design, fixed, nominal pressure 250 bar, maximum pressure 300 bar, for commercial vehicles (truck)	**A17FN**

Operating mode

02	Pump, open circuit	**O**

Sizes (NG)

03	Geometric displacement, see “Technical data” on page 6	**125**

Series

04	Series 1, index 0	**10**

Configuration of port and fastening threads

05	Metric, port threads with profiled sealing ring according to DIN 3852	**N**

Direction of rotation[1)]

06	Viewed on drive shaft	counter-clockwise	**L**

Sealing material

07	FKM (fluorocarbon rubber) including the 2 shaft seal rings in FKM	**W**

Mounting flange

08	Special flange ISO 7653-1985 (for trucks)	**K0**

Drive shaft

09	Splined shaft similar to DIN ISO 14 (for trucks)	**E8**

Service line port

10	Threaded ports **A** and **S** at rear	**1**

Standard / special version

11	Standard version	**0**
	Special version	**S**

Notice

- Note the project planning notes on page 15!
- In addition to the type code, please specify the relevant technical data when placing your order.
- Please note that not all type code combinations are available even if the individual functions are marked as available.

1) Changing the direction of rotation see operating instructions 91520-01-B, chapter 6.4.2

Hydraulic fluid

The axial piston unit is designed for operation with HLP mineral oil according to DIN 51524.
Application instructions and requirements for hydraulic fluid selection, behavior during operation as well as disposal and environmental protection should be taken from the following data sheets before the start of project planning:

- 90220: Hydraulic fluids based on mineral oils and related hydrocarbons
- 90221: Environmentally acceptable hydraulic fluids.
- 90222: Fire-resistant, water-free hydraulic fluids (HFDR/HFDU)
- 90225: Limited technical data for operation with waterfree and water-containing fire-resistant hydraulic fluids (HFDR, HFDU, HFA, HFB, HFC, HFC-E)

Selection of hydraulic fluid

Bosch Rexroth evaluates hydraulic fluids on the basis of the Fluid Rating according to the technical data sheet 90235.
Hydraulic fluids with positive evaluation in the Fluid Rating are provided in the following technical data sheet:

- 90245: Bosch Rexroth Fluid Rating List for Rexroth hydraulic components (pumps and motors)

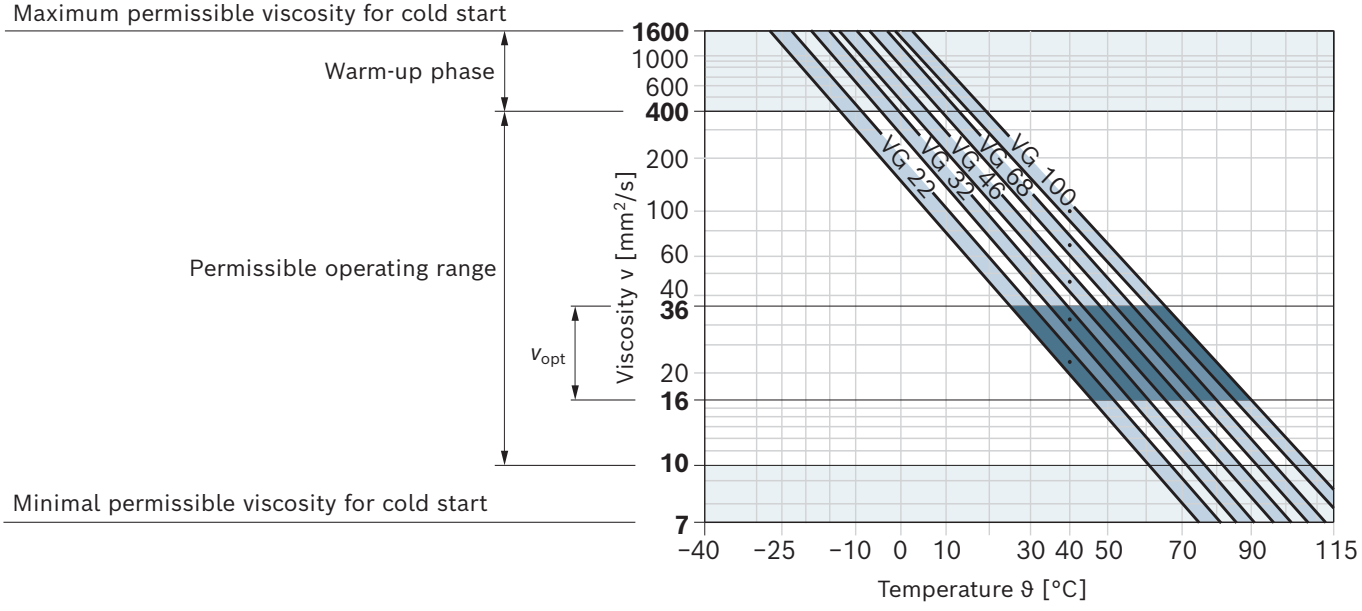
Selection of hydraulic fluid shall make sure that the operating viscosity in the operating temperature range is within the optimum range (v_{opt}; see selection diagram).

Notice
The axial piston unit is not suitable for operation with water-containing HF hydraulic fluids.

Viscosity and temperature of hydraulic fluids

	Viscosity	Shaft seal	Temperature[2]	Comment
Cold start	v_{max} ≤ 1600 mm²/s	FKM	ϑ_{St} ≥ −25 °C	t ≤ 3 min, without load (p ≤ 50 bar), n ≤ 1000 rpm Permissible temperature difference between axial piston unit and hydraulic fluid in the system maximum 25 K
Warm-up phase	v = 1600 ... 400 mm²/s			t ≤ 15 min, p ≤ 0.7 × p_{nom} and n ≤ 0.5 × n_{nom}
Permissible operating range	v = 400 ... 10 mm²/s[1]	FKM	ϑ ≤ +103 °C	measured at port **R**
	v_{opt} = 36 ... 16 mm²/s			Optimal operating viscosity and efficiency range
Short-term operation	v_{min} = 10 ... 7 mm²/s	FKM	ϑ ≤ +103 °C	t ≤ 3 min, p ≤ 0.3 × p_{nom} , measured at port **R**

▼ **Selection diagram**



1) This corresponds, for example on the VG 46, to a temperature range of +4 °C bis +85 °C (see selection diagram).
2) If the temperature at extreme operating parameters cannot be adhered to, please contact us.

Filtration of the hydraulic fluid

Finer filtration improves the cleanliness level of the hydraulic fluid, which increases the service life of the axial piston unit.

A cleanliness level of at least 20/18/15 is to be maintained according to ISO 4406.

At a hydraulic fluid viscosity of less than 10 mm^2/s (e.g. due to high temperatures during short-term operation) a cleanliness level of at least 19/17/14 according to ISO 4406 is required.

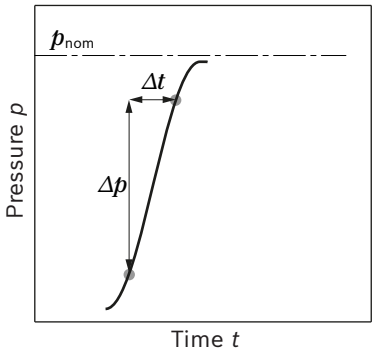
Examples of temperatures of hydraulic fluids at a viscosity of 10 mm^2/s at:

- 73 °C bei HLP 32
- 85 °C bei HLP 46

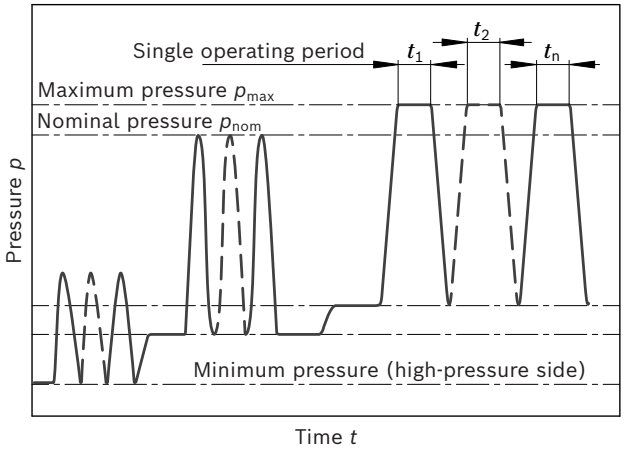
Operating pressure range

Pressure at service line port A (high-pressure side)		**Definition**
Nominal pressure p_{nom}	250 bar	The nominal pressure corresponds to the maximum design pressure.
Maximum pressure p_{max}	300 bar	The maximum pressure corresponds to the maximum operating pressure within the single operating period. The sum of the single operating periods must not exceed the total operating period.
Single operating period	5 s	
Total operating period	50 h	
Minimum pressure (high-pressure side)	10 bar	Minimum pressure at the high-pressure side (A) which is required in order to prevent damage to the axial piston unit.
Rate of pressure change $R_{A\,max}$	9000 bar/s	Maximum permissible rate of pressure rise and reduction during a pressure change over the entire pressure range.
Pressure at suction port S (inlet)		
Minimum pressure $p_{S\,min}$	0.8 bar absolute	Minimum pressure at suction port **S** (inlet) which is required in order to prevent damage to the axial piston unit. The minimum pressure is dependent on the speed of the axial piston unit.
Maximum pressure $p_{S\,max}$	2 bar absolute	

▼ **Rate of pressure change $R_{A\,max}$**



▼ **Pressure definition**



Total operating period = $t_1 + t_2 + ... + t_n$

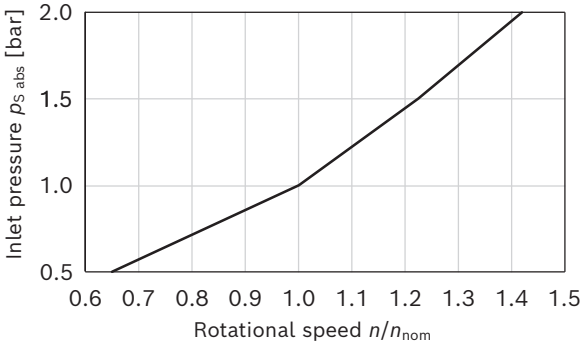
Notice

- Operating pressure range valid when using hydraulic fluids based on mineral oils. Values for other hydraulic fluids, please contact us.
- In addition to the hydraulic fluid and the temperature, the service life of the shaft seal is influenced by the rotational speed of the axial piston unit and the case pressure.

Technical data

Size		NG		125
Geometric displacement, per revolution		V_g	cm^3	125
Rotational speed maximum[1]		n_{nom}[2]	rpm	1750
		n_{max}[3]	rpm	2500
Flow	at n_{nom}	q_v	l/min	219
Power	at n_{nom} and Δp = 250 bar	P	kW	91
Torque	at Δp = 250 bar	M	Nm	497
Rotary stiffness		c	kNm/rad	11.9
Moment of inertia for rotary group		J_{TW}	kgm^2	0.0016
Case volume		V	l	0.83
Mass moment		M_G	Nm	20
Weight approx.		m	kg	15.0

▼ **Maximum speed (limiting speed)**



Notice

- Theoretical values, without efficiency and tolerances; values rounded.
- Operation above the maximum values or below the minimum values may result in a loss of function, a reduced service life or in the destruction of the axial piston unit.
- Technical data regarding torsional vibrations on request.

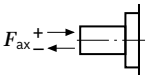
Determining of the operating characteristics			
Flow	$q_v = \frac{V_g \times n \times \eta_v}{1000}$		[l/min]
Torque	$M = \frac{V_g \times \Delta p}{20 \times \pi \times \eta_{hm}}$		[Nm]
Power	$P = \frac{2 \pi \times M \times n}{60000}$	$= \frac{q_v \times \Delta p}{600 \times \eta_t}$	[kW]

Key

V_g	Displacement per revolution [cm^3]
Δp	Differential pressure [bar]
n	Rotational speed in [rpm]
η_v	Volumetric efficiency
η_{hm}	Hydraulic-mechanical efficiency
η_t	Total efficiency ($\eta_t = \eta_v \times \eta_{hm}$)

1) The values are applicable:
   – for the optimum viscosity range from ν_{opt} = 36 to 16 mm^2/s
   – for hydraulic fluids based on mineral oils
2) The values apply at absolute pressure p_{abs} = 1 bar at suction port **S**.
3) Maximum speed (speed limit) with increased inlet pressure p_{abs} at suction port **S** (see diagram).

Permissible axial forces of the drive shaft

Size		NG		125
Maximum axial force, at standstill or pressure-free operation		+ $F_{ax\ max}$	N	0
		– $F_{ax\ max}$	N	77

Notice

- The values given are maximum values and do not apply to continuous operation.
- The permissible axial force in direction $-F_{ax}$ is to be avoided as the lifetime of the bearing is reduced.
- Radial forces are not permissible.

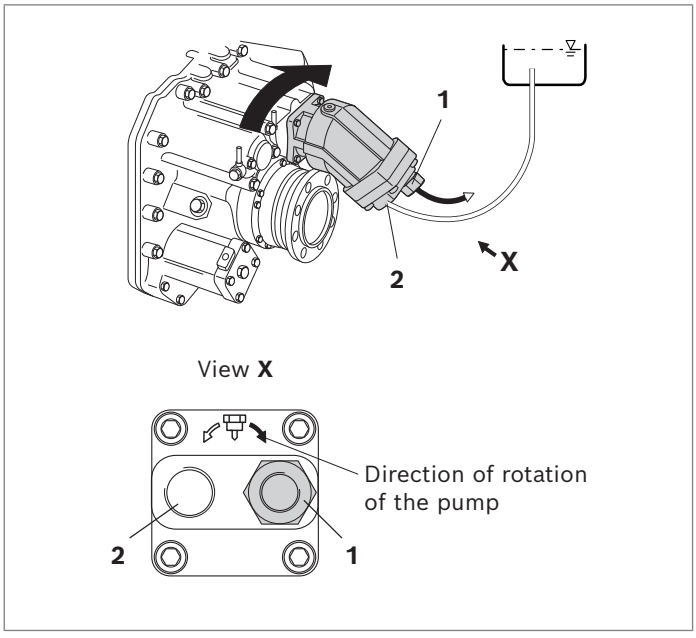
Direction of rotation

The direction of rotation of the axial piston unit is defined by means of a pressure connection screwed into the service line port and can easily be changed.
By changing the pressure connection, the service line port and the suction port are exchanged. As a result, the permissible drive direction is changed. This is necessary when mounting on a power take-off with counter-clockwise rotation, for example. The procedure for conversion of the pressure nipple can be found in the operating instructions (91520-01-B, chapter 6.4.2 “Direction of rotation and change of direction of rotation”).

Direction of rotation on delivery

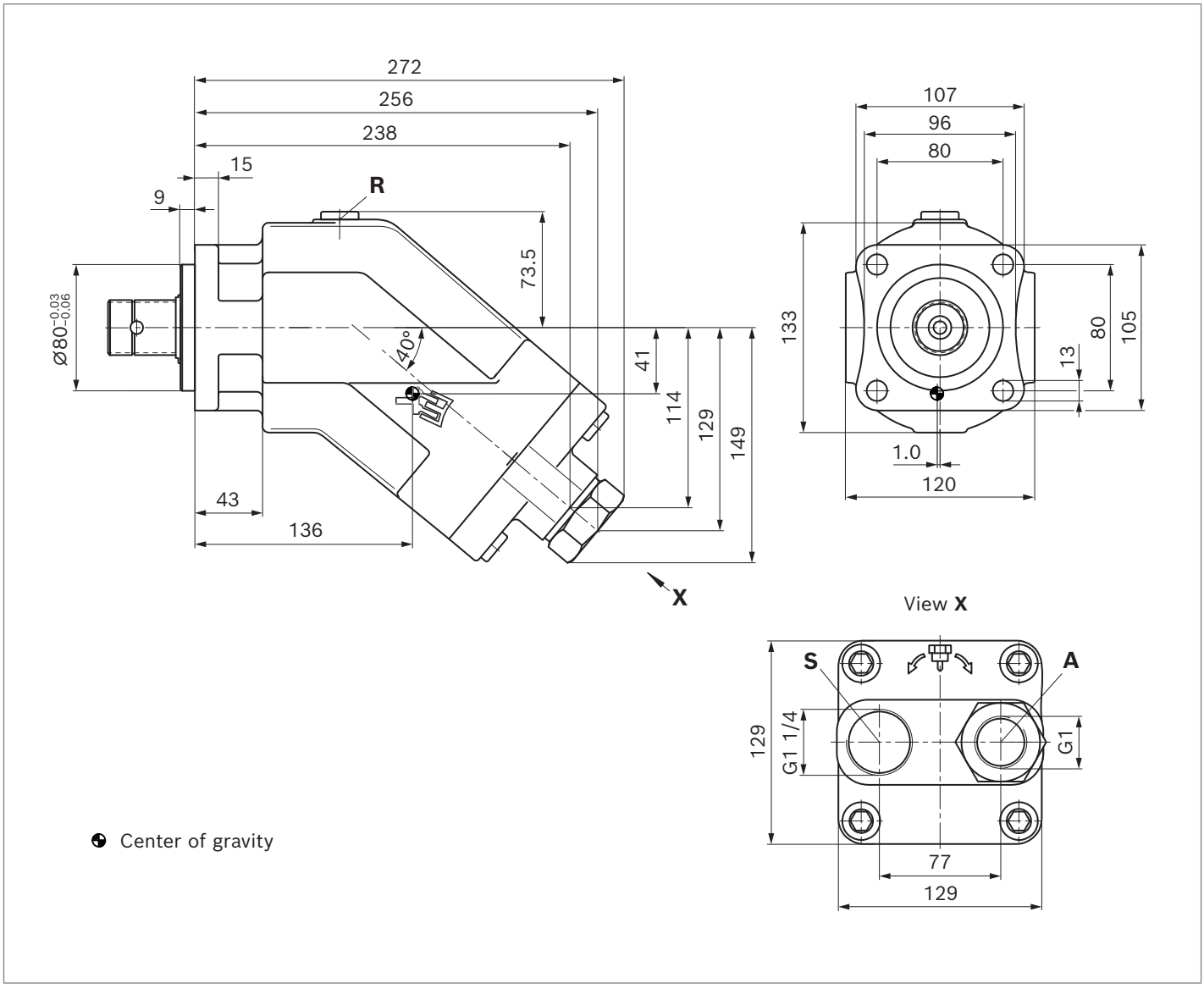
On delivery, the pressure connection (**1**) is pre-assembled in the right-hand service line port of the axial piston unit.
The permissible drive direction of the pump looking at the drive shaft: counter-clockwise.
The power take-off turns clockwise.

Notice
The pressure connection is pre-installed upon delivery and must be tightened with the torque stipulated for the appropriate thread size prior to installation (see operating instructions).



Legende	
1	Pressure connection (in right port)
2	Suction port **S**

Dimensions size 125

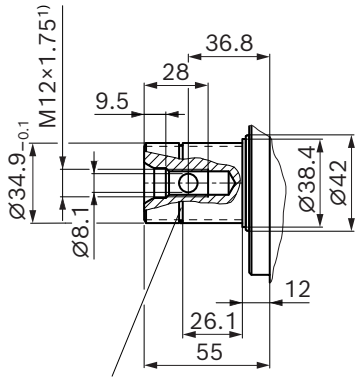


Ports		Standard	Size	p_{max} [bar][1]	State[4]
A	Working port	DIN ISO 228	G1; 18 deep	300	O
S	Suction port	DIN ISO 228	G1 1/4; 20 deep	2	O
R	Air bleed port	DIN 3852[2]	M10 × 1; 8 deep	2	X[3]

1) Depending on the application, momentary pressure peaks can occur. Keep this in mind when selecting measuring devices and fittings.
2) The countersink may be deeper than specified in the standard.
3) Only open port **R** for filling and air bleeding.
4) O = Must be connected (plugged on delivery)
X = Plugged (in normal operation)

▼ **Splined shaft similar to DIN ISO 14**

E8 – 8×32×35

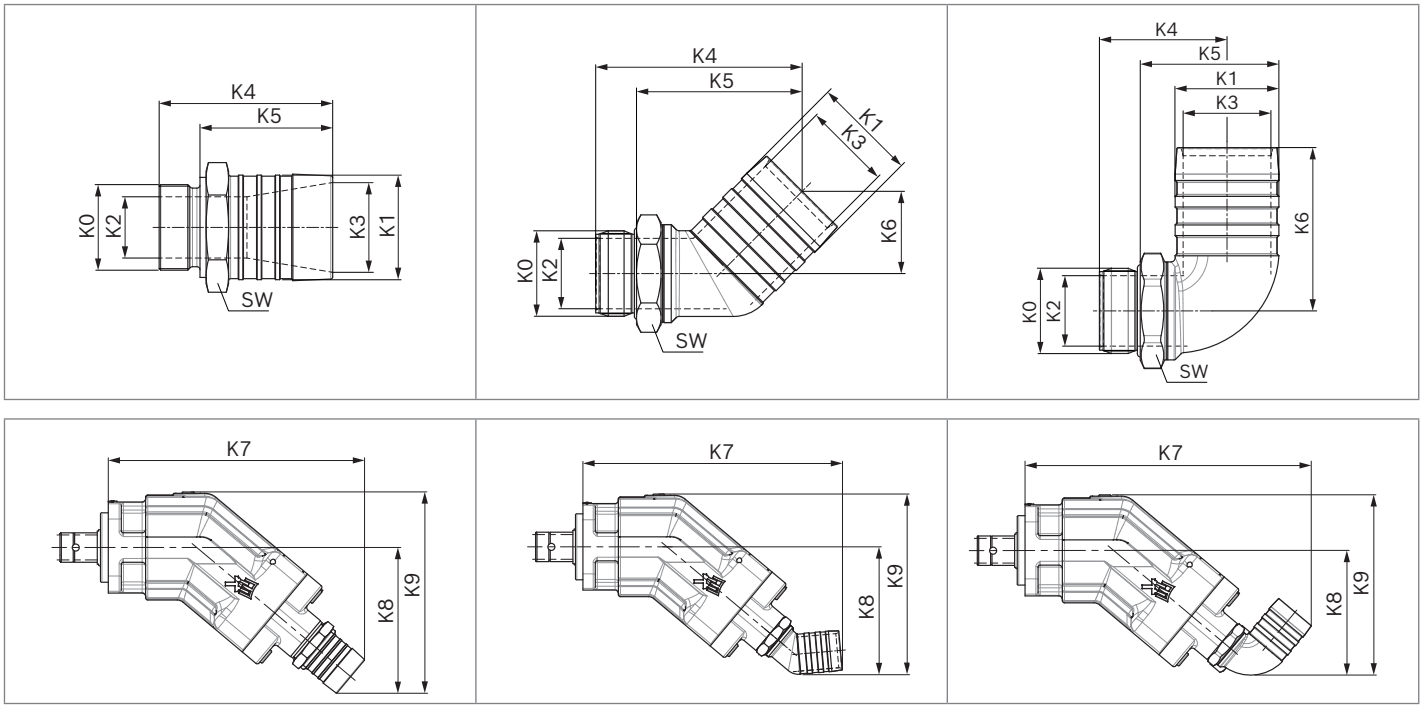


Groove for retaining ring 35 × 1.5 DIN 471

1) Center bore according to DIN 332 (thread according to DIN 13)

Accessories

▼ **Dimensions of suction adapters**



Version	Pump size	Hose nominal width	Material number	Thread K0	K1	K2	K3	K4	K5	K6	K7	K8	K9	SW
Straight	125	2“	R902600252	G1 1/4	51	30	44	85	65	–	306	177	245	55
		2 1/2“	R902601630	G1 1/4	63	31	54	82	64	–	308	180	248	65
45°	125	2“	R909831597	G1 1/4	51	34	43	101	81	40	328	165	234	50
		2 1/2“	R902601631	G1 1/4	63	35	54	100	81	44	331	169	237	50
90°	125	2“	R909831598	G1 1/4	51	35	43	63	43	80	341	153	221	50

Notice

The suction adapter is not included in the scope of delivery and must be ordered separately.

Notices regarding the suction line

- Keep as short and straight as possible, without bend
- Use a supporting ring for plastic hoses.
- Use two hose clamps to protect the suction hose against air suction.
- Notice pressure resistance of suction hose against ambient pressure.

Replacing seals

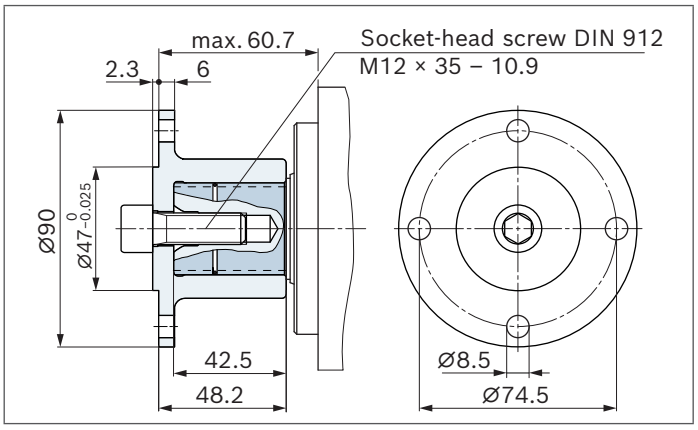
The O-rings used as seals against air ingress into the suction line must be replaced after every disassembly or reinstallation to ensure a complete sealing.
Material number for O-rings:

- R909083808: O-ring for suction adapter G1 1/4

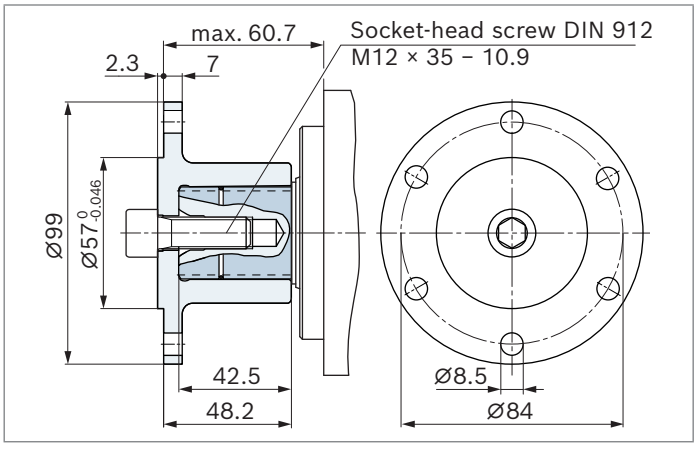
Coupling flange

There are special, modified coupling flanges in 4-hole and 6-hole design for the cardan shaft drive.
The coupling flange is not included in the scope of delivery and must be ordered separately.

▼ **4-hole coupling flange, complete – Ø90**
Material number: R902060152



▼ **6-hole coupling flange, complete – Ø100**
Material number: R902060153



Notice

- Assembly of the coupling flange is carried out by pulling it onto the drive shaft using the threaded bore in the drive shaft end.
- The coupling flange must be clamped on the drive shaft using a socket-head screw. In addition, permanent lubrication should be applied between the drive shaft and the coupling flange.
- The socket-head screw must be secured in a suitable manner (e.g. gluing with Loctite 276) and tightened with a tightening torque of 130 Nm.
- Sudden axial impact upon the drive shaft will lead to rotary group damage and therefore must be avoided.

Installation instructions

General

The axial piston unit must be filled with hydraulic fluid and air bled during commissioning and operation. This must also be adherd to following a longer standstill as the axial piston unit may empty via the hydraulic lines.
The pump housing is internally connected to the suction chamber. A separate drain line from the housing to the reservoir is not required.
To prevent the transmission of structure-borne noise, use elastic elements to decouple all connecting lines from all vibration-capable components (e.g. reservoir, frame parts).
Under all operating conditions, the suction line must enter the reservoir below the minimum fluid level. The permissible suction height h_S results from the total pressure loss, it must not, however, be higher than $h_{S\ max}$ = 800 mm. The minimum suction pressure at port S must not fall below 0.8 bar absolute during operation and during cold start.

Installation position

See the following examples **1** to **4**.
Further installation positions are available upon request.
Recommended installation position: **1** and **2**.

Notice

Port **F** is part of the external piping and must be provided on the customer side to make filling and air bleeding easier.

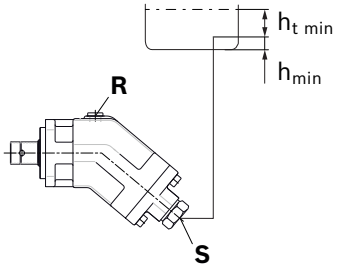
Key	
F	Filling / air bleeding
R	Air bleeding
S	Suction port
$h_{t\ min}$	Minimum required immersion depth (200 mm)
$h_{\ min}$	Minimum required spacing to reservoir bottom (100 mm)
$h_{S\ max}$	Maximum permissible suction height (800 mm)

Below-reservoir installation (standard)

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

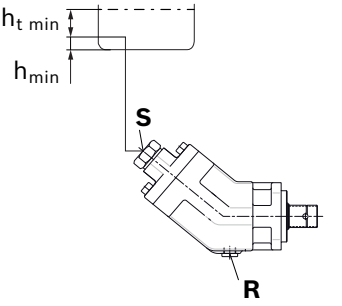
▼ **Installation position 1**

Air bleed	Filling
R	**S**



▼ **Installation position 2**

Air bleed	Filling
–	**S**

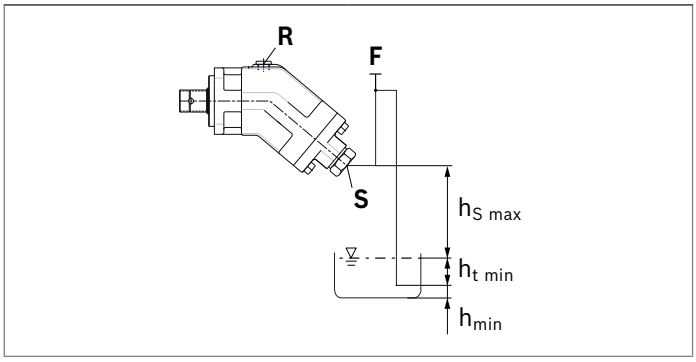


Above-reservoir installation

Above-reservoir installation means that the axial piston unit is installed above the minimum fluid level of the reservoir.
Observe the maximum permissible suction height $h_{S\ max}$ = 800 mm.

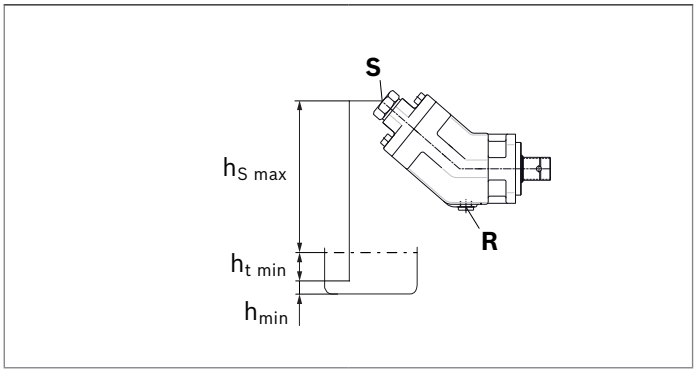
▼ **Installation position 3**

Air bleed	Filling
R	F



▼ **Installation position 4**

Air bleed	Filling
–	S



Project planning notes

- The pump is designed to be used in open circuits.
- The project planning, installation and commissioning of the axial piston unit requires the involvement of qualified skilled personnel.
- Before using the axial piston unit, please read the corresponding operating instructions completely and thoroughly. If necessary, this can be requested from Bosch Rexroth.
- Before finalizing your design, please request a binding installation drawing.
- The specified data and notes contained herein must be observed.
- Depending on the operating conditions of the axial piston unit (working pressure, fluid temperature), the characteristic curve may shift.
- Preservation: Our axial piston units are supplied as standard with preservative protection for a maximum of 12 months. If longer preservative protection is required (maximum 24 months), please specify this in plain text when placing your order. The preservation periods apply under optimal storage conditions, details of which can be found in the data sheet 90312 or in the operating instructions.
- Not all versions of the product are approved for use in a safety function according to ISO 13849. Please consult the responsible contact person at Bosch Rexroth if you require reliability parameters (e.g. $MTTF_D$) for functional safety.
- Be sure to add a pressure relief valve to the hydraulic system. Observe the technical limits of the pressure relief valves here.
- Please note that a hydraulic system is an oscillating system. This can lead, for example, to the stimulation the natural frequency within the hydraulic system during operation at constant rotational speed over a longer period of time. The excitation frequency of the pump is 7 times the rotational speed frequency. This can be prevented, for example, with suitably designed hydraulic lines.
- Please note the details regarding the tightening torques of port threads and other threaded joints in the operating instructions.
- The ports and fastening threads are designed for the permissible pressures p_{max} of the respective ports, see the port tables. The machine or system manufacturer must ensure that the connecting elements and lines correspond to the specified operating conditions (pressure, flow, hydraulic fluid, temperature) with the necessary safety factors.
- The working ports and function ports are only intended to accommodate hydraulic lines.

Safety instructions

- During and shortly after operation, there is a risk of burns on the axial piston unit. Take appropriate safety measures (e.g. by wearing protective clothing).

Related documentation

Additional pumps with special features and dimensions for use in commercial vehicles

Document type	Title	Document number
Data sheet	Axial piston fixed pump A17FO	91520
	Axial piston variable pumpe A18VO	92270
	Axial piston variable pumpe A18VLO	92280

Product-specific documentation

Document type	Title	Document number
Operating instructions	Axial piston fixed pump A17FO/A17FNO Series 10	91520-01-B
Data sheet	Storage and preservation of axial piston units	90312

Documentation for hydraulic fluids

Document type	Title	Document number
Data sheet	Hydraulic fluids based on mineral oils and related hydrocarbons	90220
	Environmentally acceptable hydraulic fluids	90221
	Fire-resistant, water-free hydraulic fluids (HFDR/HFDU)	90222
	Axial piston units for operation with fire-resistant hydraulic fluids (HFDR, HFDU, HFA, HFB, HFC, HFC-E)	90225
	Rating of hydraulic fluids used in Rexroth hydraulic components (pumps and motors)	90235
	Bosch Rexroth Fluid Rating List for Rexroth hydraulic components (pumps and motors)	90245

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