HYDAC INTERNATIONAL

Fixed Displacement Vane Pumps

Installation Manual

FIXED DISPLACEMENT

PVF100-1-6
PVF100-1-8
PVF100-1-10
PVF100-1-12
PVF100-1-14
PVF100-1-17
PVF100-1-19
PVF100-1-23
PVF100-1-25
PVF100-1-31
PVF100-2-41
PVF100-2-47
PVF100-2-53
PVF100-2-59
PVF100-2-65
PVF100-3-76
PVF100-3-94
PVF100-3-116
PVF100-4-136
PVF100-4-153
PVF100-4-184
PVF100-4-200
PVF100-4-237

FIXED DISPLACEMENT – DOUBLE PUMP

PVF101-12-
PVF101-13-
PVF101-23-
PVF101-33-
PVF101-14-
PVF101-24-
PVF101-34-

To prevent serious accidents, equipment damage, and other property damage, please observe the following precautions, as well as all related regulations regarding safety.

Before using the product, make sure you read and understand all the instructions in the Operator‘s Manual entirely.

In this catalogue, safety precautions are classified under three headings:
DANGER, WARNING, and CAUTION.
These words are defined as follows:

DANGER
Indicates an imminent danger that is very likely to cause death or severe injury unless the situation is avoided.

WARNING
Indicates a potential danger that may cause death or severe injury unless the situation is avoided.

CAUTION
Indicates a potential danger that may cause a minor or moderate injury or that may result in property damage.

INFORMATION
Indicates useful hints and system tips. They are necessary for correct installation and safe use of the product.

PRECAUTIONS FOR USE

CAUTION
1. To avoid possible injury when handling the products, wear protective safety equipment in accordance with the instructions in the Operator’s Manual.

CAUTION
2. Failure to support the weight of the product or lifting the product with improper posture may result in injury to the hands or back. Be sure to follow the instructions in the Operator's Manual.

CAUTION
3. Do not climb on, strike, drop or exert unnecessary force on the product.This may lead to injury or fire due to incorrect operation, damage, or oil leakage.

CAUTION
4. Oil on the product or floor must be cleaned up thoroughly. Oil could cause you to drop the product or slip on the floor.

PRECAUTIONS FOR INSTALLATION, REMOVAL, AND MAINTENANCE

WARNING
1. All installation, removal, maintenance, piping or wiring work should be carried out by properly trained personnel.

WARNING
2. Before beginning any installation, removal, maintenance, piping or wiring work, the following procedures must be carried out. Failure to do so may cause the equipment to move suddenly or oil to spill during the work which may result in serious accidents.

- Shut off the power supply to the equipment and make sure that all the electrical motors or machines cannot restart unintentionally.
- Secure the cylinder rods before installing/removing the cylinder.
- Reduce the pressure in the pipes and cylinders in the hydraulic system to zero pressure.

WARNING
3. Before working on any electrical wiring, be sure to shut off the power supply. Failure to do this may cause an electric shock.

CAUTION
4. Keep all installation holes and surfaces clean. Failure to do this may cause insufficient tightening of the bolts which may lead to a fire due to oil leakage.

CAUTION
5. Before commissioning the device, make sure that all bolts are tightened to the specified torque. Failure to comply with the specifications may result in incorrect operation, damage, oil leakage, etc.

PRECAUTIONS FOR OPERATION

DANGER

1. Never operate any device in an environment where there is danger of explosion or fire, unless the device is fully protected. This may lead to major and serious accidents including explosion or fire.

WARNING

2. Do not approach pumps or motors when in operation. Hands or clothes can be caught up and wound into the pumps and motors which can lead to serious injury.

WARNING

3. In event of abnormal operation (unusual sounds, oil leakage, smoke, etc.), immediately stop operation and take appropriate corrective measures.

WARNING

4. Completely discharge air from the cylinder at low pressure. Failure to do so may result in unexpected movement of the cylinder, which in turn may cause injury.

WARNING

5. To adjust the damping, gradually increase the cylinder speed from a low speed (50 mm/s or less). Rapidly accelerating the cylinder may produce an abnormal pressure surge, resulting in damage to the cylinder or the machinery and causing a serious accident.

WARNING

6. Before operating this device for the first time, check that hydraulic and electrical circuits are properly connected and that adjoining surfaces are tightly aligned.

WARNING

7. Do not use the product outside of the specifications described in the catalogue, related data sheets, drawings, etc. Failure to adhere to them may cause improper operation, damage or injury.

WARNING

8. During operation, high temperatures in the hydraulic system or solenoid valves may occur. Wear protective gloves and clothing when in the vicinity of these devices.

WARNING

9. Always operate the device with clean oil, and within established ranges for temperature, viscosity and cleanliness. Failure to adhere to the specified limits may result in incorrect operation or fire due to oil leakage.

GENERAL PRECAUTIONS

WARNING

1. Never modify the device.
If any alterations are made, unexpected machine movement may cause injury.

CAUTION

2. Do not disassemble the products without prior consent of the manufacturer.
Failure to adhere to this can cause the products to operate incorrectly which can lead to accidents or damage.

CAUTION

3. For transportation / storage of the product, pay attention to environmental conditions, such as ambient temperature and humidity, and implement anti-dust / anti-corrosion measures.

CAUTION

4. The seals may need to be replaced if the product is used after long-term storage.

CAUTION

5. Read the manual thoroughly and ensure that the seals are replaced properly.

RELATED REGULATIONS

CAUTION

To ensure that this product is used in a safe manner, it is essential to observe the above precautions, as well as all related regulations regarding safety.

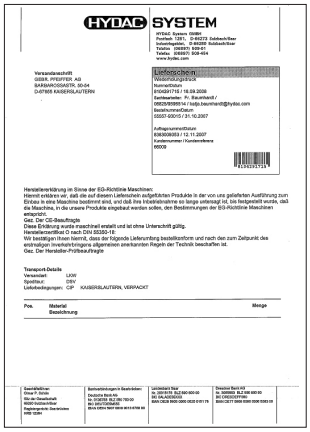
VANE PUMPS
FIXED DISPLACEMENT

Technical specifications

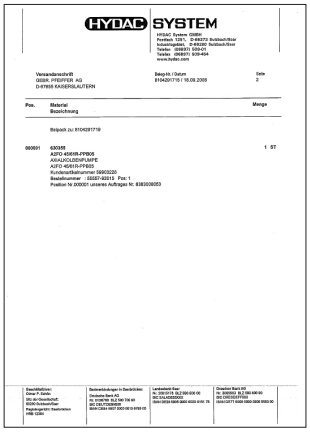
Series	Geometric displacement [cm³/U]	Operating pressure Rated [bar]	Drive speed [min⁻¹]
PVF100-1-6	5.8	210	1800
PVF100-1-8	8.0		1800
PVF100-1-10	9.4		1800
PVF100-1-12	12.2		1800
PVF100-1-14	13.7		1800
PVF100-1-17	16.6		1800
PVF100-1-19	18.6		1800
PVF100-1-23	22.7		1800
PVF100-1-25	25.3		1800
PVF100-1-31	31.0	160	1800
PVF100-2-41	41.3	210	1800
PVF100-2-47	47.2		1800
PVF100-2-53	52.5		1800
PVF100-2-59	58.2		1800
PVF100-2-65	64.7		1800
PVF100-3-76	76.4		1800
PVF100-3-94	93.6		1800
PVF100-3-116	115.6	160	1800
PVF100-4-136	136.0	175	1800
PVF100-4-153	153.0		1800
PVF100-4-184	184.0		1800
PVF100-4-200	201.0		1800
PVF100-4-237	237.0		1800

Documentation

Check the product's model code and compare it with your paper work.


HYDAC SYSTEM

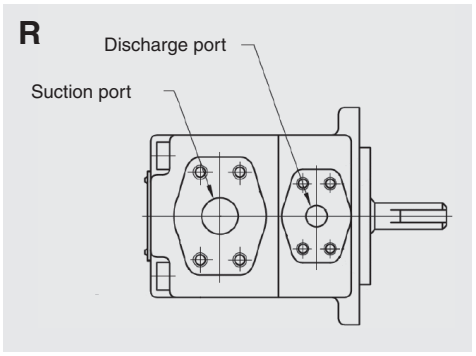
Lieferschein


HYDAC SYSTEM

Delivery note and / or sales acknowledgement.

Direction of rotation

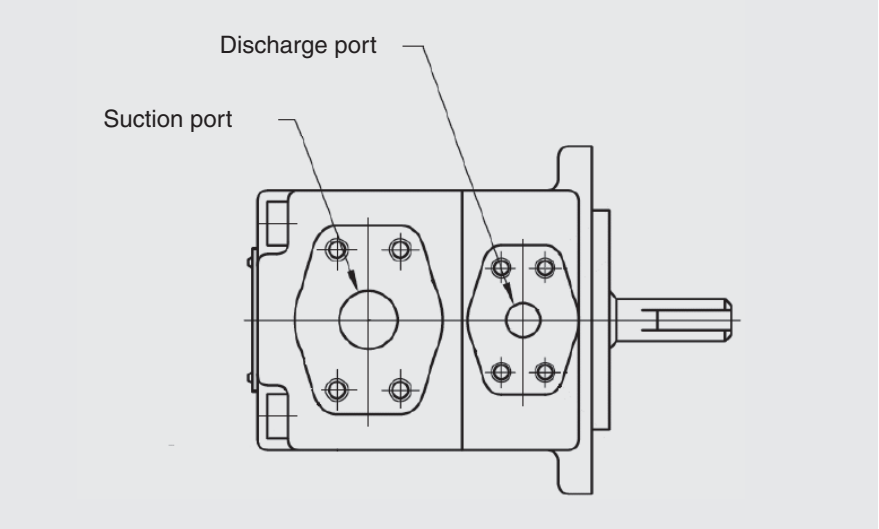
Check the direction of rotation of the shaft and compare it to the drive unit.



Clockwise shaft rotation. Viewed from (front) end of shaft.

Ports

Suction and discharge port

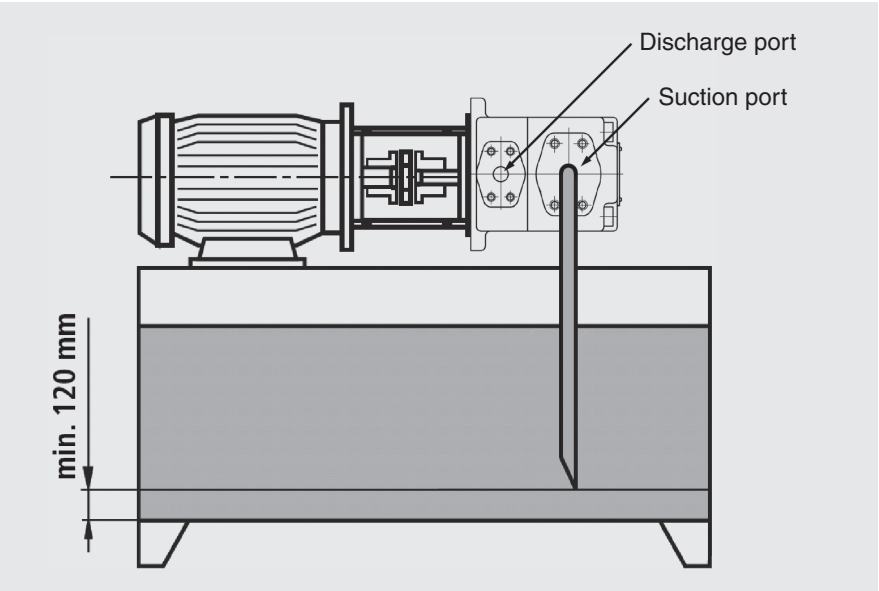


Pump Size		Suction pressure		
		Minimum		Maximum
		Mineral	Synthetic fluids, aqueous fluids	
PVF100 series	PVF100-1 PVF100-2	0.8 bar abs.	0.84 bar abs.	1.3 bar abs.
	PVF100-3 PVF100-4	0.8 bar * abs.		

*Minimum suction pressure at drive speeds > 1700 rpm:
PVF100-3-116: 1 bar abs.
PVF100-4-237: 0.87 bar abs.

Pump arrangement

Standard arrangement: pump above reservoir.



PIPING

Suction line

Do not restrict suction lines.
A restricted suction line (filter, valve etc.)
can generate excessive noise and damage the pump.

Do not reduce the suction line internal diameter.
The suction line internal diameter must always
correspond to the flange size on the pump case.

General

Use rubber hoses to reduce noise
and excessive load on the pump.
Use high pressure hoses and pipes
only at the outlet (discharge port) of the pump.

Commissioning

Prior to commissioning, the pump case must be filled
with hydraulic fluid (use filling port).
Initial commissioning should be at zero pressure
with an open circuit to enable the pump to prime.
Pressure should only be increased once
the pump has been fully primed.

Hydraulic fluid

- Hydraulic oil based on mineral oil
  (HL, HLP, ISO VG 32 or 46)
- Synthetic fluids
  (Phosphate ester, HFD-R, Polyolester, HFD-U,
  Water glycol, HFC)

Note:
For operating restrictions when using special fluids,
please contact HYDAC.

Filtration

For maximum pump and system component life time,
the system should be protected from contamination
by effective filtration.

Cleanliness class:
NAS 1638 Class 12
or
23/21/18 ISO 4406:1999
or cleaner.

Viscosity and temperature

Normal operating viscosity range
is 20 – 400 cSt (mm²/s).

Normal operating temperature range
is 0 °C to +70 °C.

Temperature range when water glycol is used is:
0 °C to +50 °C

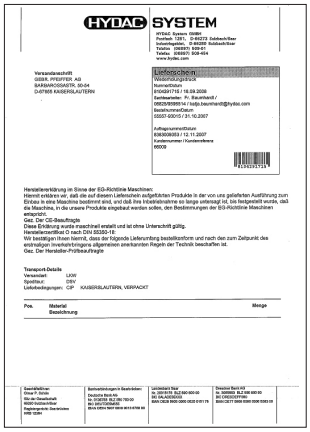
VANE PUMPS
FIXED DISPLACEMENT - DOUBLE PUMP

Technical specifications

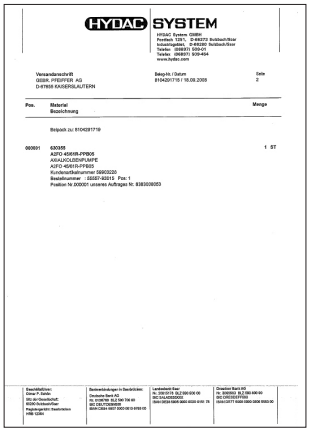
Series	Geometric displacement 2nd stage [ccm/rev]	Geometric displacement 1st stage [ccm/rev]	Operating pressure Rated [bar]	Maximum drive speed [rpm]
PVF101-12-	6 8 10 12 14 17 19 23 25 31	26 33 41 47 53 59 65	210 (160)	1800
PVF101-13-	6 8 10 12 14 17 19 23 25 31	76 94 116	210 (160)	1800
PVF101-23-	41 47 53 59 65	52 60 66 76 94 116	210 (160)	1800
PVF101-33-	76 94 116	76 94 116	210 (160)	1800
PVF101-14-	6 8 10 12 14 17 19 23	136 153 184 200 237	175	1800
PVF101-24-	26 33 41 47			
PVF101-34-	52 60 66 76 94 116			

Documentation

Check the product's model code and compare it with your paper work.


HYDAC SYSTEM

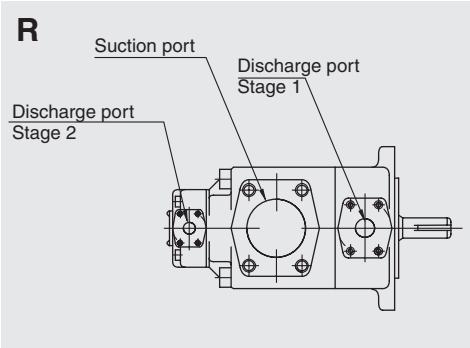
Lieferschein


HYDAC SYSTEM

Delivery note and / or sales acknowledgement.

Direction of rotation

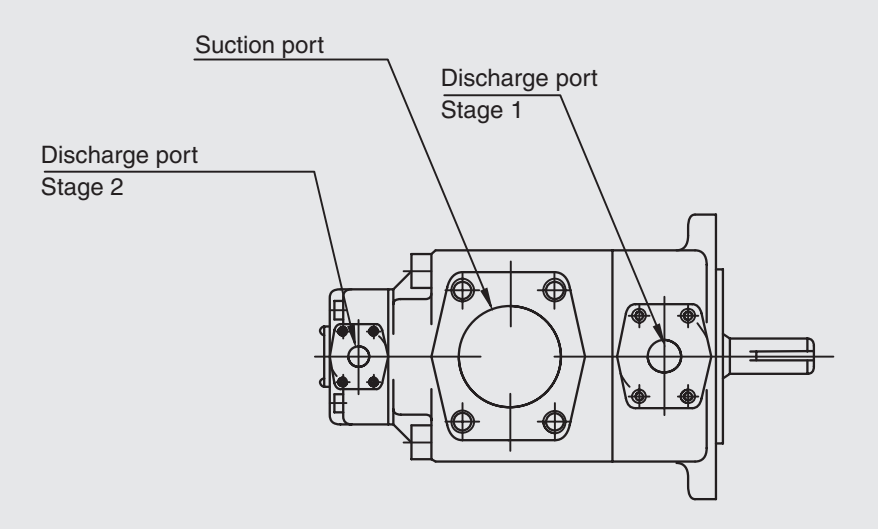
Check the direction of rotation of the shaft and compare it to the drive unit.



Clockwise shaft rotation. Viewed from (front) end of shaft.

Ports

Suction and discharge port

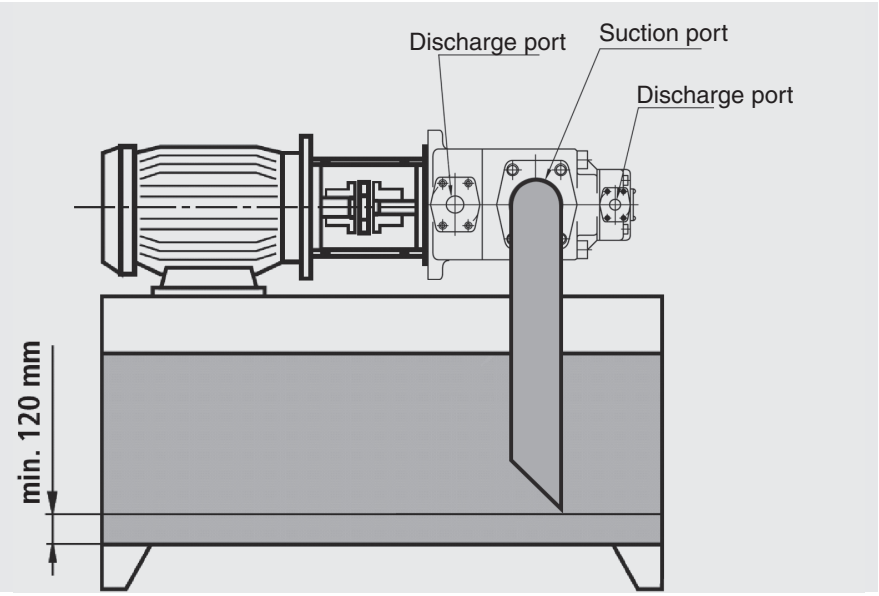


Pump type		Suction pressure		
		Minimum		Maximum
		Mineral oil	Phosphate ester, Aqueous fluid	
PVF101 series Double pumps	PVF101-12	-0.2 bar	-0.16 bar abs.	+0.3 bar abs.
	PVF101-13	-0.2 bar* abs.		
	PVF101-23			
	PVF101-33			
	PVF101-14			
	PVF101-24			
	PVF101-34			

* Min. suction pressure at drive speed > 1700 rpm
PVF101 with displacement 94 or 116 cm³/rev: 0 bar (1 bar abs.)
PVF101 with displacement 76 cm³/rev: -0.07 bar
PVF101 with displacement 237 cm³/rev: -0.13 bar

Pump arrangement

Standard arrangement: pump above reservoir.



PIPING

Suction line

Do not restrict suction lines.
A restricted suction line (filter, valve etc.)
can generate excessive noise and damage the pump.

Do not reduce the suction line internal diameter.
The suction line internal diameter must always
correspond to the flange size on the pump case.

General

Use rubber hoses to reduce noise
and excessive load on the pump.
Use high pressure hoses and pipes
only at the outlet (discharge port) of the pump.

Commissioning

Prior to commissioning, the pump case must be filled
with hydraulic fluid (use filling port).
Initial commissioning should be at zero pressure
with an open circuit to enable the pump to prime.
Pressure should only be increased once
the pump has been fully primed.

Hydraulic fluid

- Hydraulic oil based on mineral oil
  (HL, HLP, ISO VG 32 or 46)
- Synthetic fluids
  (Phosphate ester, HFD-R, Polyolester, HFD-U,
  Water glycol, HFC)

Note:
For operating restrictions when using special fluids,
please contact HYDAC.

Filtration

For maximum pump and system component life time,
the system should be protected from contamination
by effective filtration.

Cleanliness class:
NAS 1638 Class 12
or
23/21/18 ISO 4406:1999
or cleaner.

Viscosity and temperature

Normal operating viscosity range
is 20 – 400 cSt (mm²/s).

Normal operating temperature range
is 0 °C to +70 °C.

Temperature range when used with water glycol:
0 °C to +50 °C