

FP25 / FP1.25

INSTALLATION INSTRUCTIONS

DIAPHRAGM PUMP



Before operating the pump and the accessories, please read the Installation Instructions and safety precautions.

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1 General

1.1 Information about the instructions

Content	The Installation Instructions describe the requirements for installing the product correctly and safely into the complete machine.
Storage location	These Installation Instructions are a part of the product. The safety-relevant information should be taken over for the documentation of the complete machine.
Project pumps	With customer-specific project pumps (pump types which begin with "PL" or "PML"), there may be differences from the Installation Instructions.

1.2 Warnings

Warnings in the Installation Instructions are marked by the hazard symbol, the keywords, and the color. These features provide information about the extent of the hazard.



⚠ DANGER

This indicates a dangerous situation that will directly cause death or serious injury if not prevented.



⚠ WARNING

This indicates a dangerous situation that may cause death or serious injury if not prevented.



⚠ CAUTION

This indicates a dangerous situation that may cause moderate or slight injuries if not prevented.

NOTICE

This indicates a situation that may cause damage to property if not prevented.

1.3 Disclaimer

The manufacturer accepts no liability for damage or malfunctions that are caused by non-compliance with the Installation Instructions.

The manufacturer accepts no liability for damage or malfunctions that are caused by modifications to or conversions of the device or by improper handling.

The manufacturer accepts no liability for damage or malfunctions that are caused by using spare parts or accessories that are not approved by the manufacturer.

1.4 Manufacturer's address

KNF Flodos AG
Wassermatte 2
6210 Sursee, Switzerland
Phone +41 (0)41 925 00 25
Fax +41 (0)41 925 00 35
www.knf.com

1.5 Supporting documents

The listed documents must also be observed. The valid versions are available at www.knf.com.

- Data sheet
- 3D model

The following must also be observed:

- Local T&Cs
- Sales documents and agreement between KNF and the customer
- Drive specification

2 Safety

2.1 Intended use

The pump is intended solely for the following uses:

- Transferring liquids and gases
- For operation in accordance with the operating parameters specified in the technical data of the supporting documents

2.2 Reasonably foreseeable misuse

The pump must not:

- be operated in an explosive atmosphere
- be used to transfer explosive media
- be used to transfer media whose compatibility with the pump head, valves, diaphragm, and seals has not been proven

2.3 Responsibility of the user

The user is responsible for ensuring that the safety precautions in these Installation Instructions are complied with. Applicable safety, accident prevention, and environmental protection regulations must be complied with.

2.4 Product-specific risks

Remaining risks that were determined in a risk assessment are described in this section. Safety precautions and warnings in this section and in the other sections of the Installation Instructions must be observed to prevent dangerous situations.

DANGER

Danger of injuries and damage to property due to dangerous substances

Poisoning and chemical burns or unintended reactions caused by leaking dangerous substances

- Observe the safety data sheets of the transferred media.
- Before transferring a medium, check whether it can be transferred safely in the specific application case.
- Ensure that the system is not subject to any risks of explosion – not even under extreme operating conditions (temperature, pressure) or in case of malfunctions.
- Ensure the pump is used only by suitably trained, skilled employees.
- Clarify the chemical resistance of the head materials.
- Check that the pump and the system do not leak at the operating temperature of the transferred medium.
- Check the pump for damage regularly.
- Operate the pump only when you are sure it has no technical malfunctions.
- Operate the pump in accordance with the technical data.
- Work on the pump or fluid circulation system only after they have been decontaminated and/or a decontamination declaration is present.



**⚠ DANGER****Danger of injuries and damage to property due to leaks at the interfaces to the pump head**

Poisoning and chemical burns or unintended reactions caused by leaking dangerous substances

- Wear personal protective equipment.
- Connect the pump correctly.
- Operate the pump only when you are sure it has no technical malfunctions.
- Operate the pump in accordance with the technical data.

**⚠ DANGER****Danger of injuries and damage to property due to uncontrolled flow while the pump is not in operation**

Poisoning and chemical burns or unintended reactions caused by leaking dangerous substances

- Construct the fluid system so that the operating pressure at the pressure side of the pump is higher than at the suction side.
- Install a shut-off valve in the fluid circulation system.

2.5 Customer service and repairs

All repairs to the pumps must be carried out by the responsible KNF customer service team.

Use only genuine parts from KNF for servicing work.

2.6 Compliance

The declaration of standard SJ-T 11364-2024 “Hazardous Substance Disclosure Table 有害物质含量表” is made in accordance with the specifications detailed in the appendix to this document.

3 Installation

⚠ WARNING

Danger from incorrect installation

Injuries or damage to property from leaking media

- After installation, check the system for leaks with a safe medium.
- Observe the requirements for intended use.
- Take precautions in the design of the end device so that leaking liquids cannot come into contact with live components.
- Use only connections that are specified in the data sheet. UNF1/4"-28 thread is recommended. Do not use NPT threads or sealing tape, as cracks can occur at the plastic connections.



The following requirements apply to all activities described in this section:

3.1 Installation location

The installation location must:

- protect the pump against immersion
- keep aggressive and flammable liquids and vapors away
- allow hoses to be connected without tensile or bending stress
- take account of cooling the pump drive
- ensure that any leaks can be handled
- have appropriate precautions if flammable media are used

Mounting orientation

The following points are recommended for optimal filling and venting of the pump head.

- horizontal mounting position
- Filling / emptying pump with nominal rpm (nominal voltage).

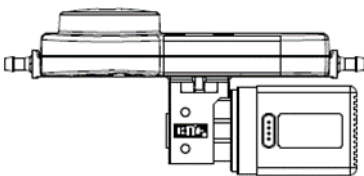


Figure 1: Horizontal orientation

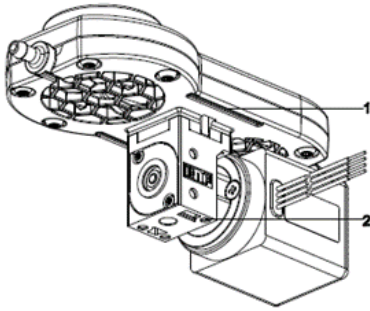


Figure 2: Mounting

3.2 Mechanical mounting

- Protect the product against impacts, knocks, and strong vibrations.
- Please refer to the product data sheet for dimensions, installation positions, and fluid connections.

Following mounting options are available

- Groove (1) for mounting of clip (for detail information and availability contact KNF).
- Holes (2) for PT screws KA30. Hole spacing and depth of holes see data sheet FP 25. Torque 0.35Nm.

3.3 Connecting the fluid system

Use suitable means to check the fluid connection for leaks.

Connections more information regarding dimensions, please refer to the data sheet.

3.4 Electrical connection

For terminal assignment, output data, and control requirements, please refer to the data sheet.

Observe the regulatory requirements for electrical installations:

- Overload protection and separating protective devices according to current value on the type plate. The pumps must be fused individually.
- Contact protection and additional insulation
- Ground connections
- Protection against vibrations, tensile stress, and corrosion

For detailed information about control, please refer to the drive specification (available from your local KNF dealer).

4 Initial start-up

The product must not be started up until it has been ensured that the machine in which the product is to be installed meets the requirements of the Machinery Directive 2006/42/EC, if applicable.



WARNING

Danger that the fluid system could rupture due to excess pressure

The pump builds up pressure. With a closed system, the max. permitted operating pressure can be exceeded. This may cause injuries to personnel, or damage to the pump or the system.

- Prevent operation against a closed system.
- In the case of parts that are in contact with the fluid, use only those that are designed to withstand at least the operating pressure of the pump.
- If necessary, take suitable measures to limit the maximum system pressure.



CAUTION

Danger of unexpected chemical reactions with water

Residues of water in the pump that come from testing in the factory may react with the transferred medium.

- Before starting the pump for the first time, rinse it with a medium that is uncritical as regards water.



VORSICHT

Danger of automatic restart

Pumps with brushless DC-motor have a thermal overload protection with automatic recovery to protect the motor from overheating. After cooling down the motor starts automatically.

- Ensure that this does not cause a hazardous situation

**⚠ CAUTION****Danger from hot surfaces**

The pump becomes hot during operation. Burns from hot surfaces or injuries from uncontrolled movements are possible.

- Do not touch the pump while it is operating.
- Ensure a sufficient supply of cool air and keep a safe distance between the pump and neighboring components.
- Operate the pump in accordance with the technical data.
- If the temperature of the medium is above 50°C, take safety precautions to prevent burns of fluid components.

Before switching on the pump, verify the following:

- All hoses are attached properly.
- Pump is mechanically fixed in place.
- Specifications of the power supply correspond with the data on the pump's type plate.
- Pump outlet is not blocked.
- All cables are attached properly.
- Contact protection for electrical connections and moving parts is installed.

**⚠ CAUTION****Danger of scalding from hot medium leaks**

In the terminal system, check the fluid system for leaks at the operating temperature of the medium.

5 Maintenance

Ask your KNF representative about the availability of spare parts for this product.

Use only genuine parts from KNF for servicing work.

5.1 Cleaning



⚠ WARNING

Danger due to dangerous substances in the pump

Depending on the medium transferred, chemical burns or poisoning is possible.

- If necessary, wear protective equipment, such as safety gloves.
- Work on the pump or fluid circulation system only after they have been decontaminated and/or a decontamination declaration is present.
- Rinse the pump with a neutralizing liquid and then pump it empty.



⚠ WARNING

Danger from medium spraying in the environment

Due to pressure in the pump and adjacent parts, medium can spray out if hydraulic parts are manipulated or opened.

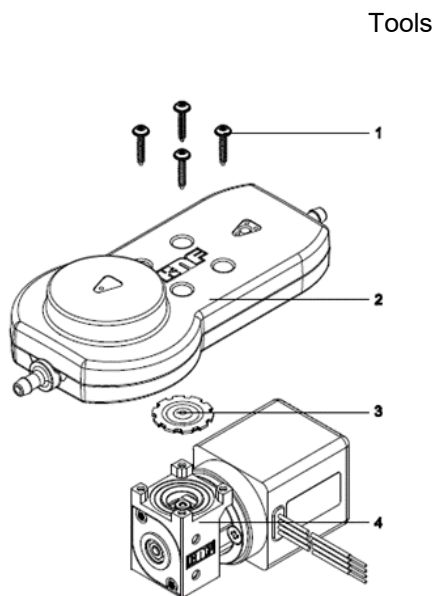
- Always depressurize the hydraulic parts of the system before carrying out any work.
- Disconnect the pump from the power supply and make sure that it cannot be switched on again inadvertently.

Clean the pump.

1. Clean and dry the parts with a cloth. Do not use solvents for cleaning, as they can harm plastic parts.
2. If compressed air is available, blow out the components.

5.2 Preparing for dismantling

1. Rinse the pump with a suitable neutralizing liquid and make sure that there are no dangerous substances left in the pump (see warnings above).
2. Pump the unit empty in horizontal mounting position with nominal rpm (nominal voltage). See also Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**
3. Disconnect electrical connections.
4. Remove hoses from pump head.



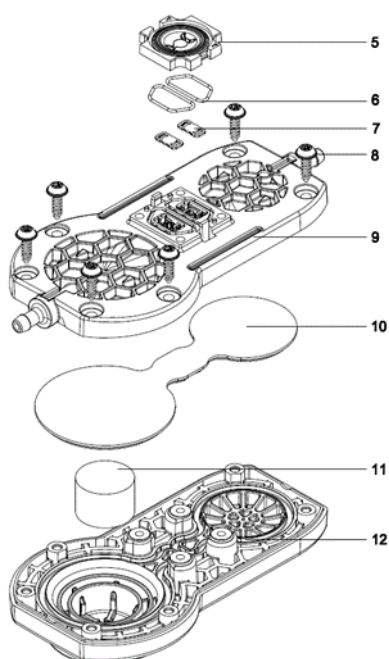
Qty	Tools
1	Torx screwdriver T10
1	Torx screwdriver T6

Table 1

5.3 Dismantling the pump head

1. Undo the four head screws (1) and remove the complete head (2) from the pump housing (4).
2. Carefully grip the diaphragm (3) and remove by turning counterclockwise.
3. Rotate head (2) like shown in Figure 4.
4. Remove the intermediate plate (5) from the connecting plate (9).
5. Remove both gaskets (6) and both valves (7) from the connecting plate (9).
6. Undo the six damper screws (8) and remove them from the connecting plate (9)
7. Remove resonating diaphragm (10) and dampening element (11) form the head plate (12).

Figure 3



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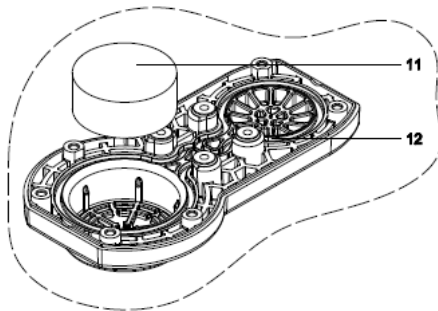
To ensure maximum tightness after opening the pump head, we recommend replacing all elastomer parts. See chapter 7 for spare parts kit.

8. Clean all the parts with a cloth, making sure that all residues are removed and blow them off with compressed air.

5.4 Assembling the pump head

1. Insert the diaphragm (3) and tighten it well by hand.
2. By slightly pressing on the diaphragm, the ridge on the underside of the diaphragm can be positioned into the groove of the housing.
3. Place the head plate (12) according to Figure 4.

Figure 4



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Figure 5

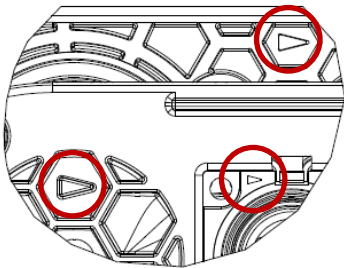


Figure 6: Direction of arrow

4. Insert the dampening element (11) into the cylindrical part of the head plate (12).
5. Place the resonating diaphragm (10) on the head plate (12). Make sure that the ridge on the underside is properly placed in the groove of the head plate (12).
6. Place the connecting plate (9) on the head plate (12). Observe the direction of the arrow ► on both parts for easier assembly. The arrows must point in the same direction.
7. Tighten the six damper screws (8) in a diagonal sequence. Tightening torque 1.5Nm.
8. Place both valves (7) and both gaskets (6) into the connecting plate.
9. Snap the intermediate plate (5) into the connection plate (9). Observe the direction of the arrow ► on both parts for easier assembly. The arrows must point in the same direction.
10. Place complete head (2) onto the pump housing (4).
11. Insert the four head screws (1) and tighten the screws in a diagonal sequence. Tightening torque 0.4Nm.
12. Re-connect the hoses to the pump head.



⚠ CAUTION

Caution, escaping liquid

After assembly, the pump may not be leak-tight due to incorrect assembly, damaged or soiled seal faces, or other reasons.

- Run the pump for several minutes with a harmless medium at maximum operating pressure.
- Check that the pump is leak-tight.

6 Rectifying transfer problems

Symptom	Cause	Remedy
Pump does not work; no movement or sounds are detectable.	No or incorrect control	Check that voltage and signal form comply with the specification.
Pump does not work; drive becomes very hot.	Motor is controlled with an incorrect signal.	Check that voltage and signal form comply with the specification.
The pump does not prime, or vacuum is insufficient.	External valve is closed.	Check external valve.
	Counterpressure on pressure side is too high.	Change the pressure conditions on the pressure side.
	Particles in the pump head	Rinse the pump head. Use a preventive preliminary filter.
Pump does not transfer.	External valve is closed, or filter is clogged or too small.	Check external valves and filter.
	Connections or hoses are blocked.	Check connections and hoses. Remove blockage.
Flow rate is insufficient or unstable.	Incorrect control	Check that voltage and signal form comply with the specification.
	Cross-section of hydraulic hoses or connectors too narrow or restricted	Disconnect the pump from the system and determine performance data. Remove restriction (e.g. valve), if necessary. If applicable, use larger-diameter hoses or connectors.
	Higher counterpressure in the system than assumed for the design	Contact KNF representative.
	Particles in the pump head	Rinse the pump head. Use a preventive preliminary filter. Replace pump head.
	Pump has reached the end of its service life.	Replace the pump.
Leak on pump head	Damage to the valve O-rings	Replace the O-rings.
	Diaphragm damaged	Replace the diaphragm.
	Resonating diaphragm damaged	Replace resonating diaphragm.

If the malfunction cannot be rectified, contact your local KNF representative (www.knf.com).

7 Spare parts

Spare parts kit "elastomer" FP25

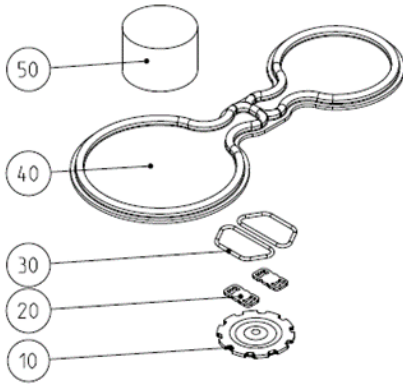


Figure 7: Spare parts kit "elastomer" FP25

Pos	Name	Material	Order-No.	Pieces in set	Pieces in set	Pieces in set
	Kit_P Elastomer FP25		341841			
	Kit_P.51 Elastomer FP25		341842			
	Kit_T Elastomer FP25		341843			
10	Diaphragm	EPDM		-	1	1
		PTFE		1	-	-
20	Valve	EPDM		-	2	2
		FFKM		2	-	-
30	Gasket	EPDM		-	2	2
		FKM		2	-	-
40	Resonating diaphragm	EPDM		-	1	1
		PTFE		1	-	-
50	Dampening element	Sylodyn		1	1	1

Spare parts kit "elastomer" FP1.25

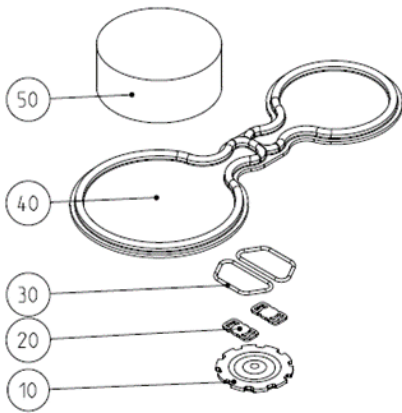
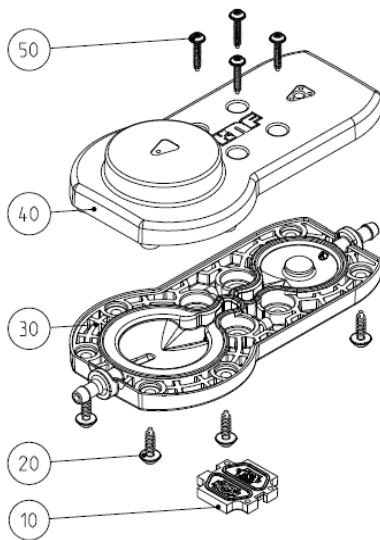


Figure 8: Spare parts kit "elastomer" FP1.25

Pos	Name	Material	Order-No.	Pieces in set	Pieces in set	Pieces in set
	Kit_P Elastomer FP1.25		341844			
	Kit_P.51 Elastomer FP1.25		341845			
	Kit_T Elastomer FP1.25		341846			
10	Diaphragm	EPDM		-	1	1
		PTFE		1	-	-
20	Valve	EPDM		-	2	2
		FFKM		2	-	-
30	Gasket	EPDM		-	2	2
		FKM		2	-	-
40	Resonating diaphragm	EPDM		-	1	1
		PTFE		1	-	-
50	Dampening element	Sylodyn		1	1	1

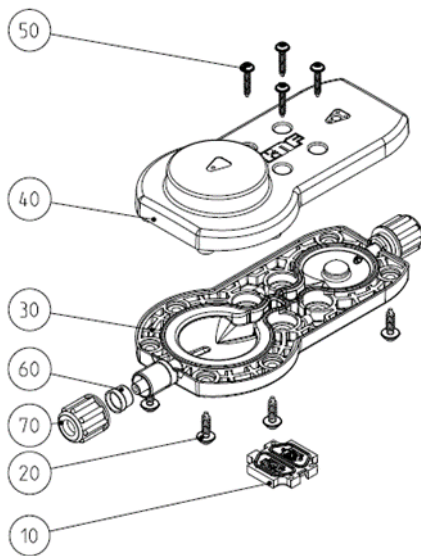
Spare parts kit "plastic" FP25



Pos	Name	Material	Order-No.	Pieces in set	Pieces in set
	Kit R_ Plastic FP25		341847		
	Kit R_51 Plastic FP25		341848		
10	Intermediate plate	PPS GF40%		1	1
20	PT Screw 30x10	Inox		6	6
30	Connection Plate	PPS GF40%		1	1
40	Head plate	PA GF40%		1	1
50	PT Screw 22x12	Inox		4	4

Figure 9: Spare parts kit "plastic" FP25

Spare parts kit "plastic" FP1.25



Pos	Name	Material	Order-No.	Pieces in set	Pieces in set
	Kit R_ Plastic FP1.25		341860		
	Kit R_51 Plastic FP1.25		341861		
10	Intermediate plate	PPS GF40%		1	1
20	PT Screw 30x10	Inox		6	6
30	Connection Plate	PPS GF40%		1	1
40	Head plate	PA GF40%		1	1
50	PT Screw 22x12	Inox		4	4
60	Clamping ring DN4/6	PP		2	2
70	Connecting nut DN4/6	PP		2	2

Figure 10: Spare parts kit "plastic" FP1.25

8 Returning the pump

i KNF undertakes to repair the pump only on condition that the customer provides a certificate of the pumped medium and cleaning of the pump. For this, please follow the instructions on www.knf.com/repairs.

Please contact your KNF sales representative directly if you need additional support for your return service.

9 Appendix

9.1 RoHS Declaration for China

SJ-T 11364-2024 Hazardous Substance Disclosure Table / SJ-T 11364-2024 有害物质含量表

This declaration is valid for the KNF products produced by:
 本声明适用于由以下KNF公司生产的产品:

KNF Flodos AG

CH-6210 Sursee

Switzerland

The following information has been made available to comply with SJ-T 11364-2024 the Marking for Control of Pollution Caused by Electronic Information Products as required by China's Management Methods for the Control of Pollution from Electronic Information Products.
 提供以下信息旨在遵守中国《电子信息产品污染控制管理办法》所要求的 SJ-T 11364-2024 《电子信息产品污染控制标识》标准。

Part Name 部件名称	Hazardous Substances Table 有害物质含量表						EFUP / 环境友好使用期限	China RoHS comment / 中国RoHS注释	EU RoHS compliant / 符合欧盟RoHS指令
	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 镉 (Cd)	Hexavalent Chromium 六价铬 (Cr(VI))	Polybrominated biphenyls 多溴联苯 (PBB)	Polybrominated diphenyl ethers 多溴二苯醚 (PBDE)			
Pump head / 泵头	X	0	0	0	0	0	20	Lead within EU RoHS exemption limit / 铅含量在欧盟RoHS豁免限值以内	Yes / 是
Pump housing / 泵体	X	0	0	0	0	0	20	Lead within EU RoHS exemption limit / 铅含量在欧盟RoHS豁免限值以内	Yes / 是
Pump motor / 泵的电机电机	X	0	0	0	0	0	20	Lead within EU RoHS exemption limit / 铅含量在欧盟RoHS豁免限值以内	Yes / 是
Additional components for systems / 系统附加部件	X	0	0	0	0	0	20	Lead within EU RoHS exemption limit / 铅含量在欧盟RoHS豁免限值以内	Yes / 是
O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ-T 11364-2024. 表示该有害物质在该部件所有均质材料中的含量均在 SJ-T 11364-2024 规定的限量要求以下。 X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ-T 11364-2024. 表示该有害物质至少在该部件的某一均质材料中的含量超出 SJ-T 11364-2024 规定的限量要求。									
EFUP / 环境友好使用期限: Environment Friendly Using Period / 环境友好使用期限									

