

# FL 10

## INSTALLATION INSTRUCTIONS

# DIAPHRAGM PUMP



FL 10 DC-P



FL 10 AC

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



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## 1 General

### 1.1 Information about the instructions

Table of Contents	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**

Indicates a dangerous situation, which will directly cause death or serious injury if not prevented.



#### **⚠ WARNING**

Indicates a dangerous situation, which may cause death or serious injury if not prevented.



#### **⚠ CAUTION**

Indicates a dangerous situation, which may cause moderate or slight injuries if not prevented.

#### **NOTICE**

Indicates a situation, which 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](http://www.knf.com)

### 1.5 Supporting documents

The listed documents must also be observed. The valid versions are available on [www.knf.com/downloads](http://www.knf.com/downloads).

- Data sheet
- 3D model

Further attention must be paid to:

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

## 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, diaphragms, 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
- Ensure the pump is used only by suitably trained, skilled employees
- Clarify the wear resistance of the head material
- Check the pump and the system for leaks
- Regularly check the pump for damage
- 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

- Install a shut-off valve in the fluid circulation system

**⚠ WARNING****Danger from magnetic field**

The pump generates a strong local magnetic field, which may cause pacemakers or other devices that are affected by magnetic fields to malfunction.

- Ensure that these devices are kept at least 10 cm away from the pump when it is operating
- If necessary, attach additional shielding devices

### 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

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

#### **3.2 Mechanical mounting**

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

#### **3.3 Connecting the fluid system**

Use suitable means to check the fluid connection for leaks.

For 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
- Contact protection and additional insulation
- Ground connections
- Protection against vibrations, tensile stress, and corrosion

#### 3.4.1 DC coils

#### ⚠ CAUTION



#### **Danger from burns or fire, poisoning from flue gases**

If the pump is connected incorrectly, it may overheat and catch fire.

- Connect the pump to the correct voltage
- Operate the pump in accordance with the technical data
- Take suitable precautions to limit maximum power consumption.

#### 3.4.2 AC coils

#### ⚠ DANGER



#### **Danger from electric shock**

- Connect the pump to the correct voltage
- Wear personal protective equipment
- Operate the pump only when you are sure it has no technical malfunctions
- Operate the pump in accordance with the technical data
- In case of a malfunction, leaking medium must not come into contact with live components
- Ensure that the fluid circulation system is grounded
- Check the pump for damage regularly
- Disconnect the pump from the power supply when carrying out maintenance work
- In case of fixed installation, install a maintenance switch

- Installation only by trained, skilled personnel who have knowledge of the applicable international regulations
- Ensure contact protection for live parts (persons, cable, and device protection)

## 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.

### CAUTION

#### **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 may be exceeded, which can damage the pump and the system.

- Prevent operation against a closed system
- Use only parts that come into contact with the fluid that are designed to at least withstand 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



### 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 precautions to prevent burns from fluid components.



Before switching on the pump, check the following points:

- All hoses attached properly
- Specifications of the power supply correspond with the data on the pump's type plate
- Pump discharge not blocked
- All cables attached properly
- Contact protection for electrical connections and moving parts installed

## 5 Maintenance

This product contains no parts that can be replaced and it cannot be maintained.

## 6 Rectifying transfer problems

Symptom	Cause	Remedy
Pump does not work, no movement or sounds detectable	No or incorrect control	Check that voltage and signal form comply with the specification
Pump does not work, drive is very hot	The coil is controlled with DC voltage or another, incorrect signal form	Check that voltage and signal form comply with the specification
The pump does not suck or vacuum is insufficient	External valve is closed	Check external valve
	Counter pressure 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 output values Remove restriction (e.g. valve) if necessary. If applicable, use larger-diameter hoses or connectors
	Higher counter pressure 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
	Pump has reached the end of its service life	Replace the pump
Leak of pump head	Diaphragm or oscillating diaphragm defective	Replace the pump

If the malfunction cannot be rectified, contact your local KNF representative ([www.knf.com](http://www.knf.com))

## 7 Returning the pump

1. Rinse the pump to remove dangerous and aggressive liquids from the pump head.
2. Dismantle the pump
3. Send the pump with completed decontamination declaration (see [www.knf.com/download](http://www.knf.com/download)) to KNF.

