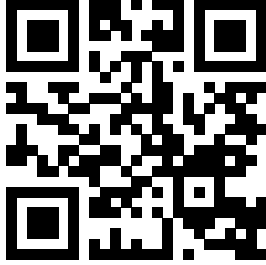


Wilo-COF Helix



en Installation and operating instructions



COF Helix
<https://qr.wilo.com/648>

Fig. 1a

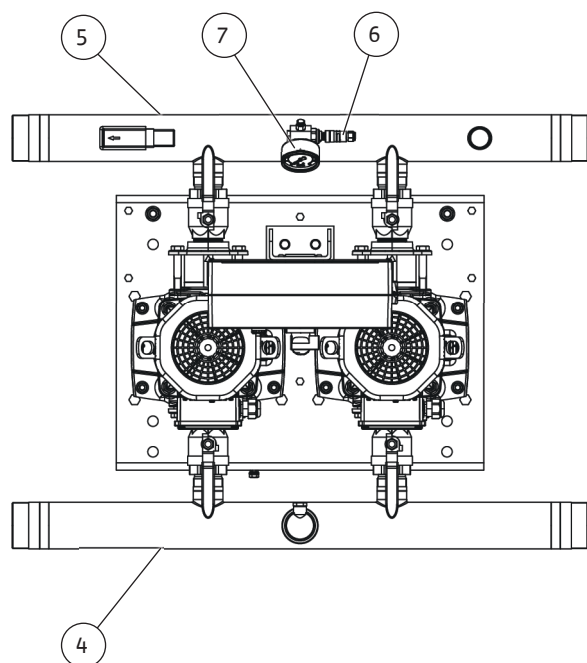
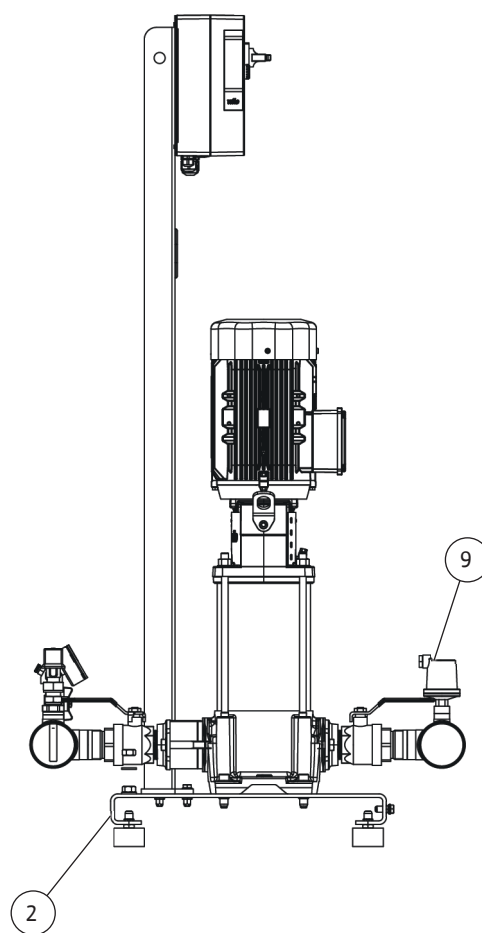
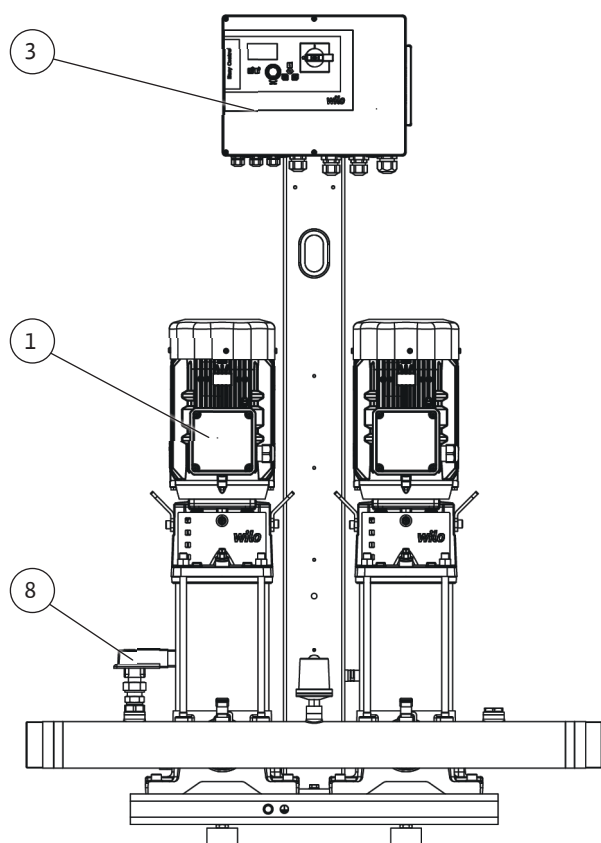


Fig. 1b

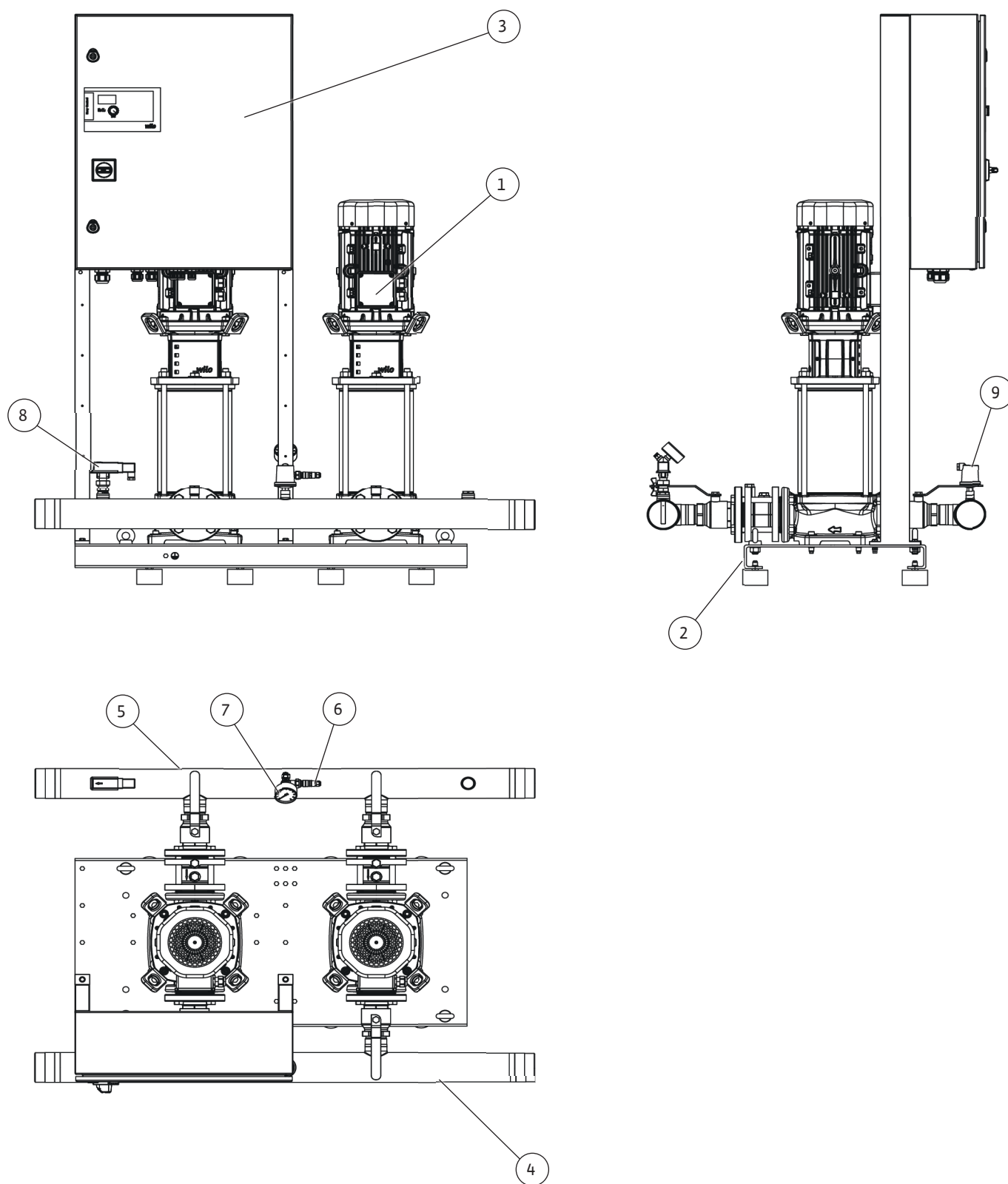


Fig. 1c

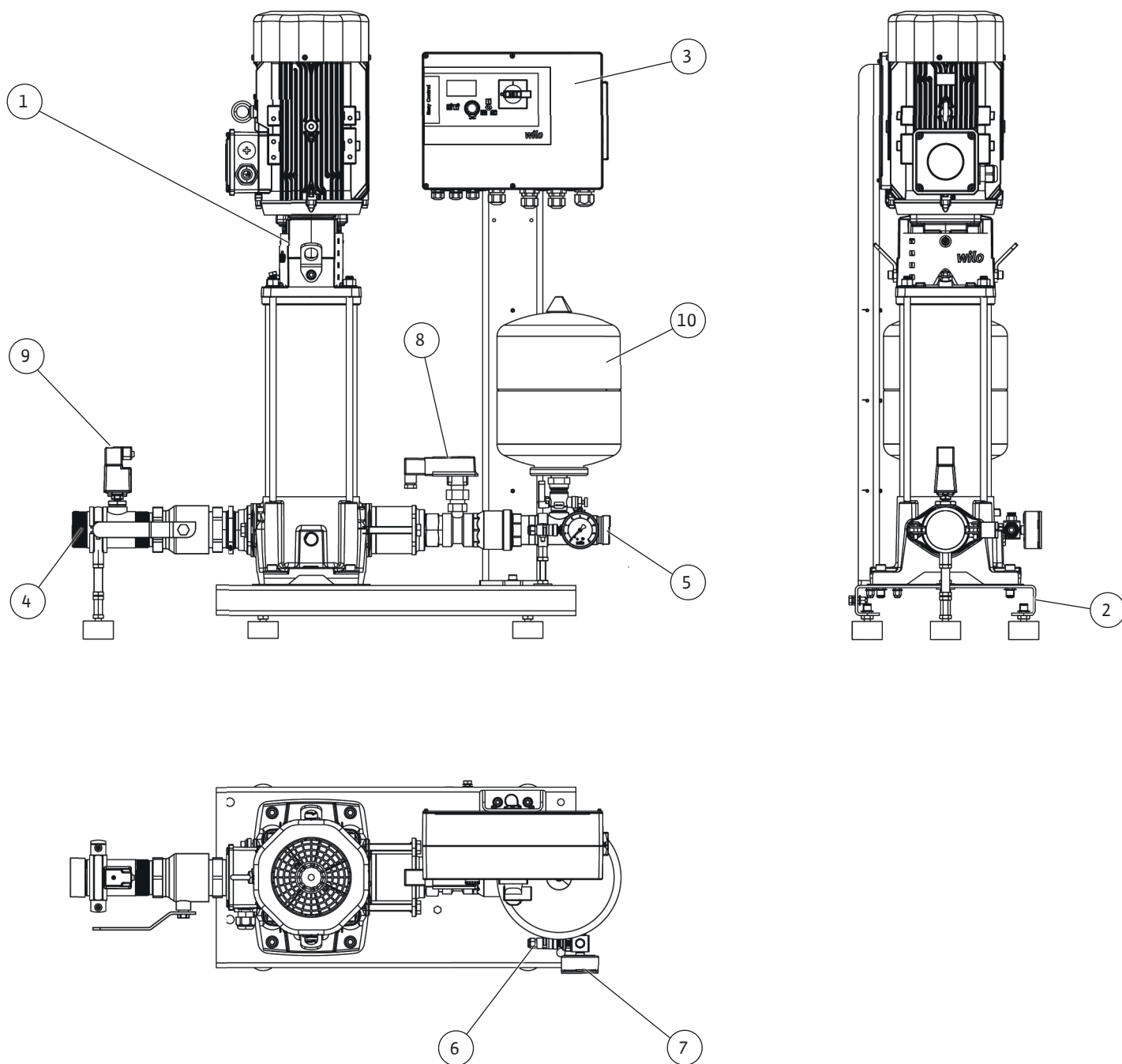
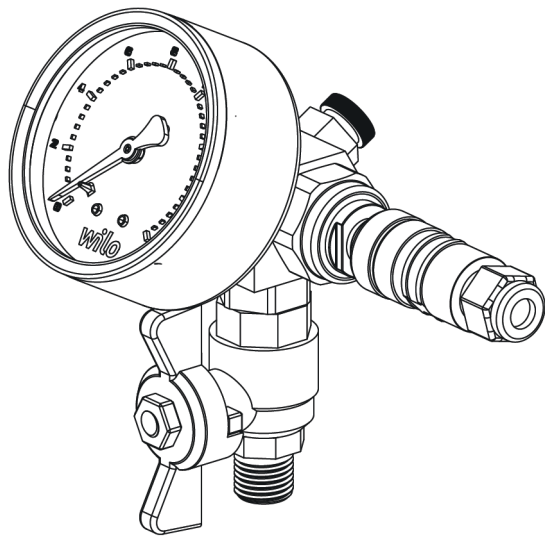
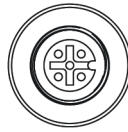


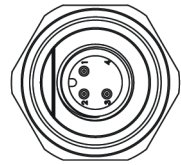
Fig. 2a



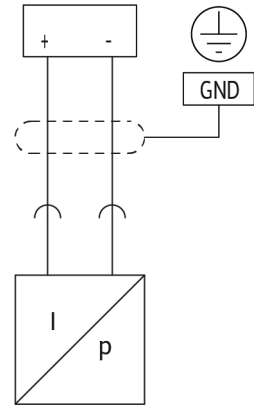
6a



6b



6b

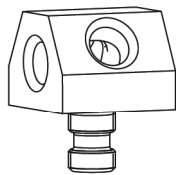
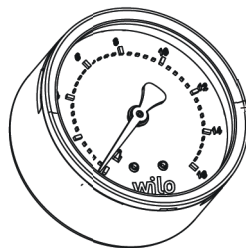


6a

12



7



6a

6b

11

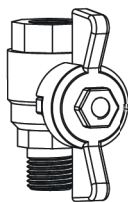
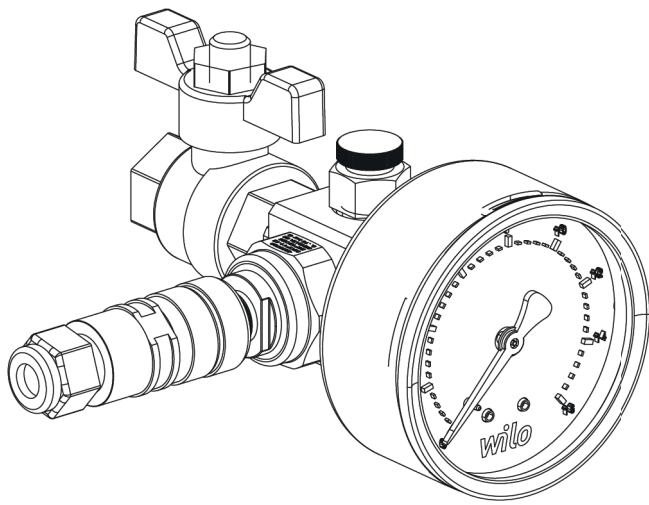
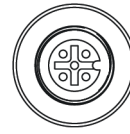


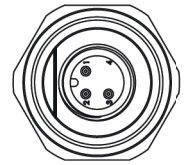
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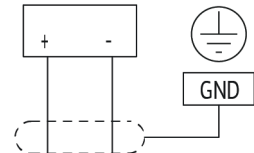
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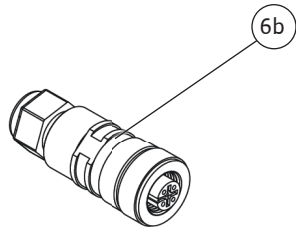
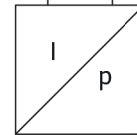
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6b



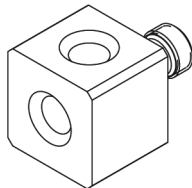
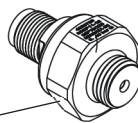
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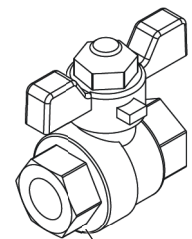
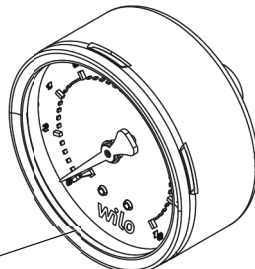
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6a



7



11



Fig. 3

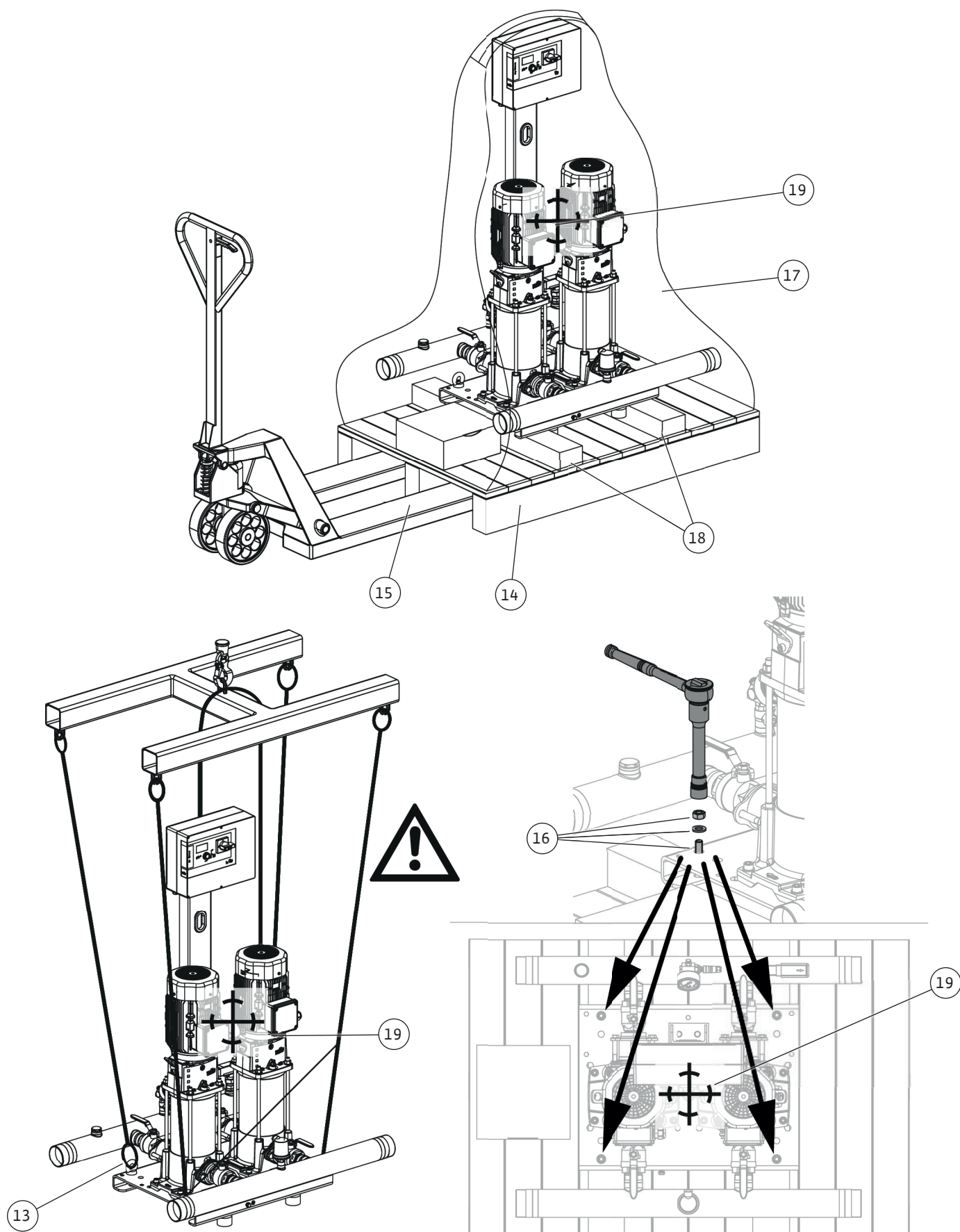


Fig. 4

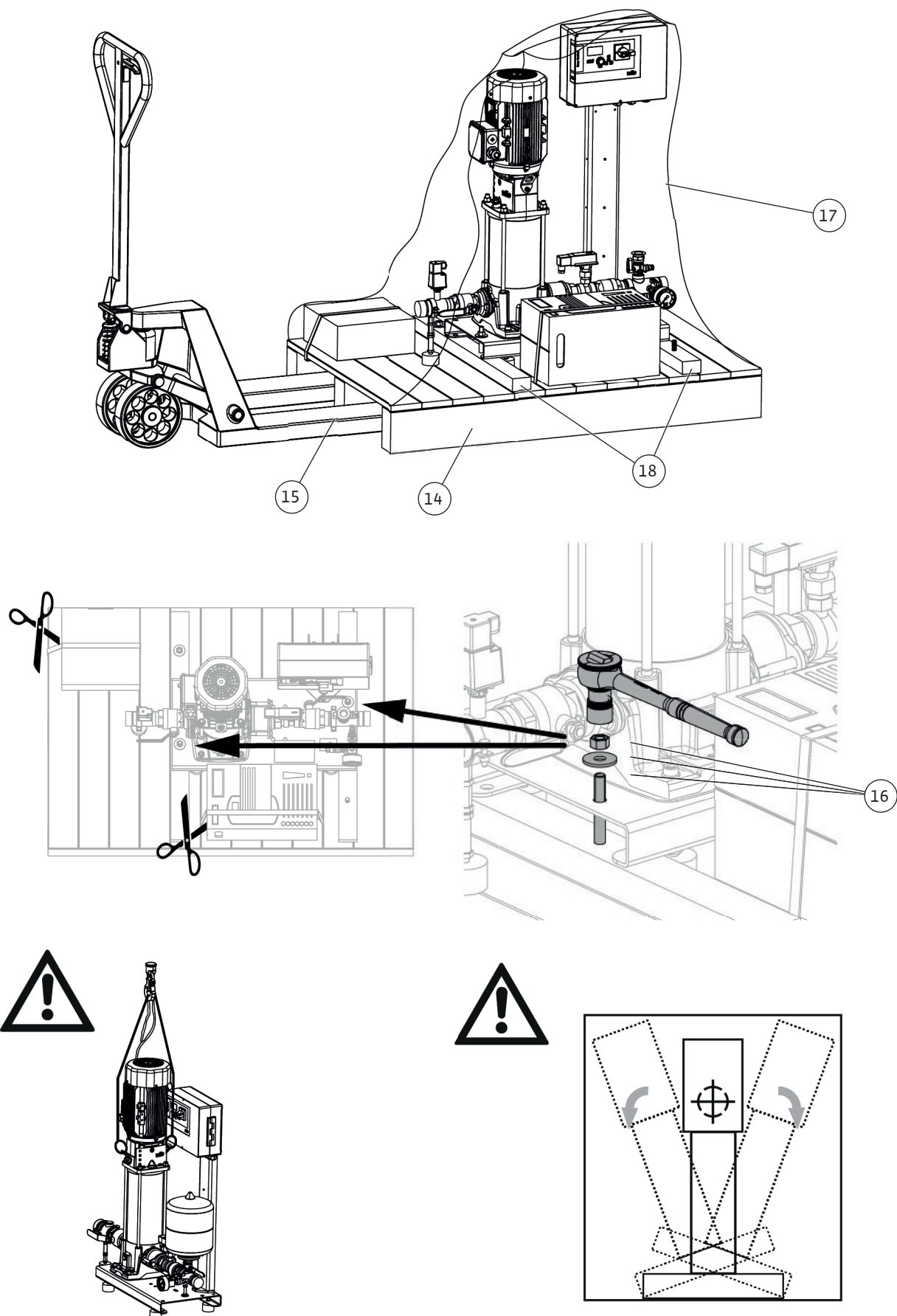


Fig. 5

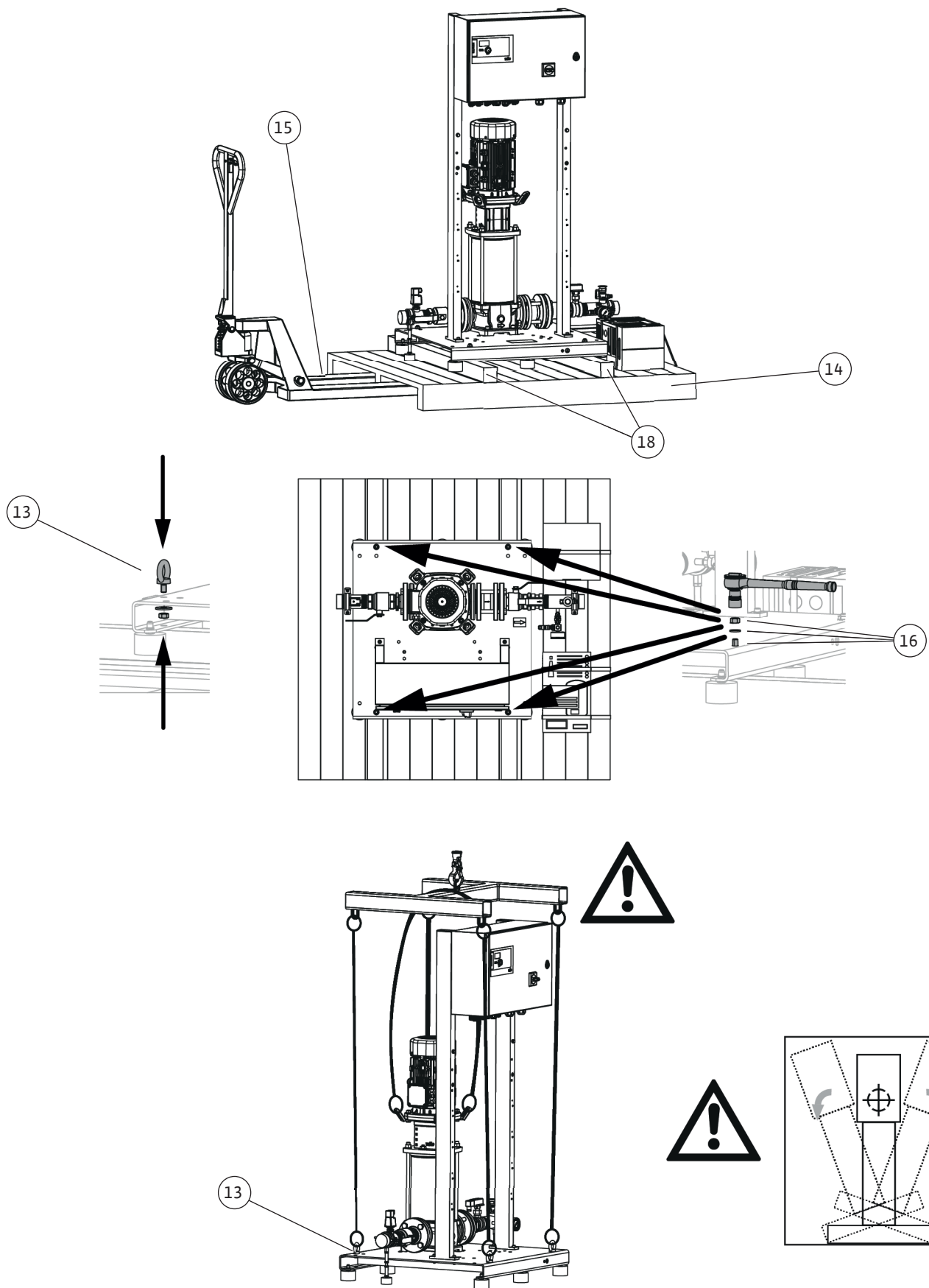


Fig. 6

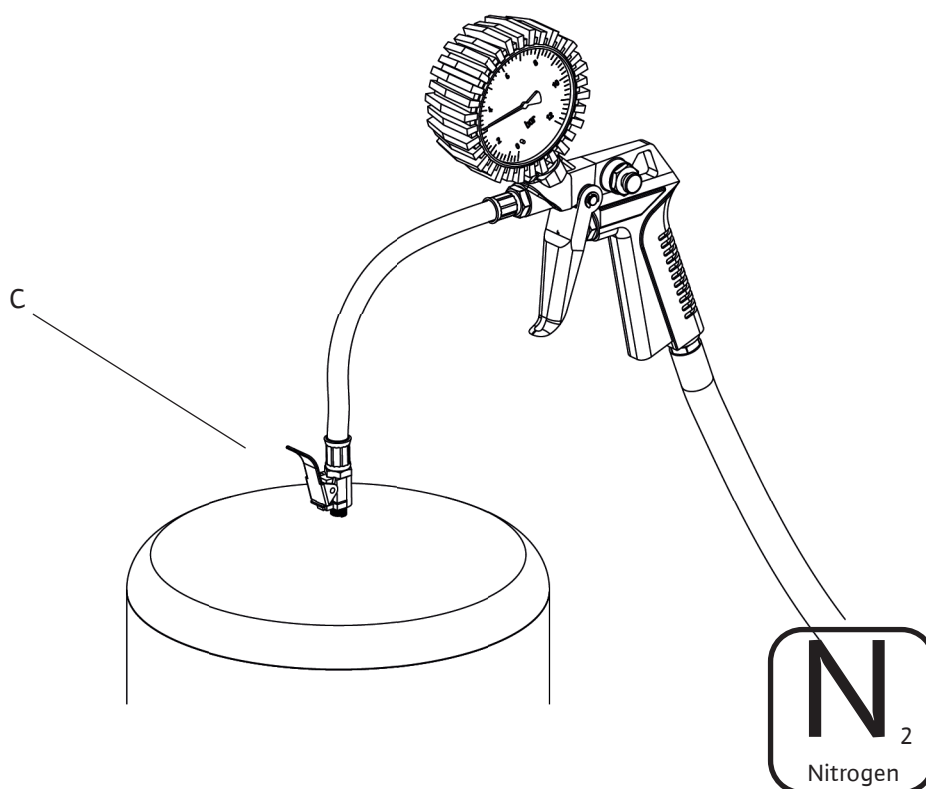
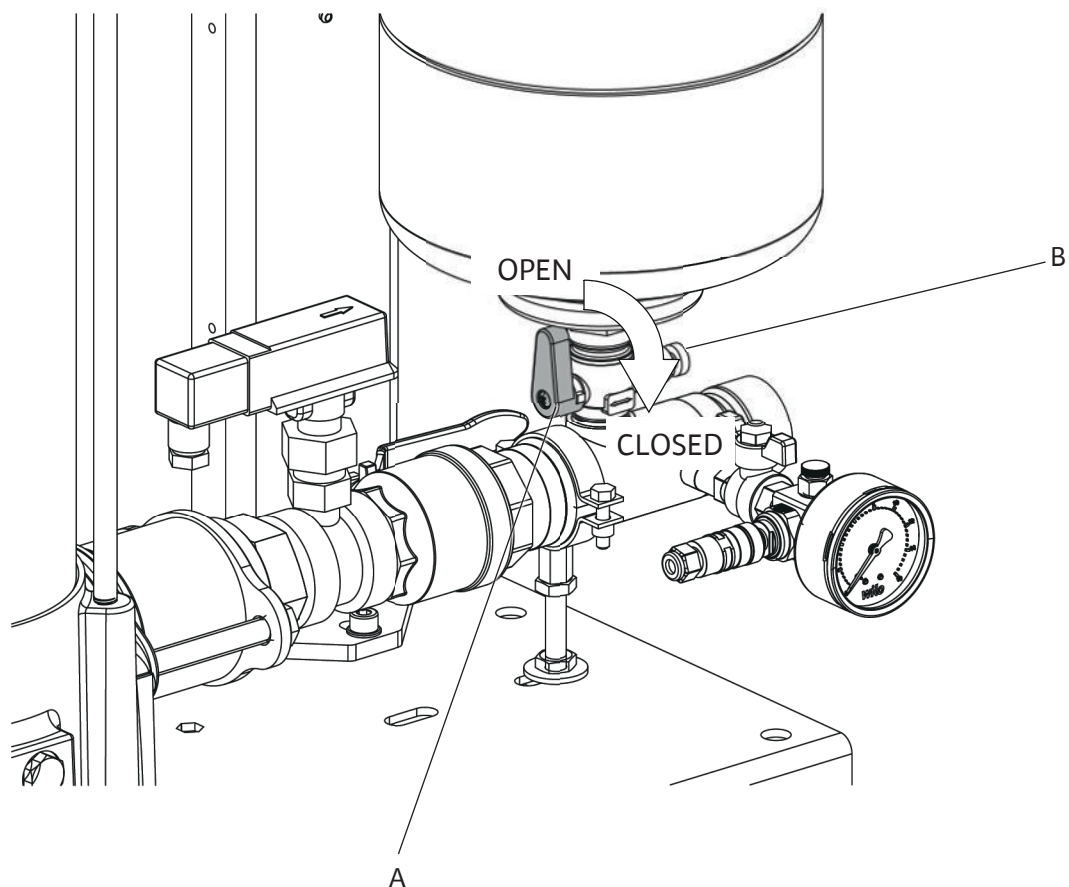


Fig. 7

Hinweis / advice / attantion / atención

Stickstoffdruck entsprechend der Tabelle / Nitrogen pressure according to the table
 Pression d'azote conformément au tableau / Presión del nitrógeno según la tabla

PE [bar] Einschalttdruck / starting pressure / Pression de démarrage / Comenzar la presión

PN₂ [bar] Stickstoffdruck / Nitrogen pressure / Pression d'azote / Presión del nitrógeno

PE	2	2,5	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5
PN ₂	1,8	2,3	2,8	3,2	3,7	4,2	4,7	5,2	5,7	6,1	6,6	7,1

PE	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13	13,5
PN ₂	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13

1bar = 100000Pa = 0,1MPa = 0,1N/mm² = 10200kp/m² = 1,02kp/cm²(at) = 0,987atm = 750Torr = 10,2mWs

Stickstoffmessung ohne Wasser / Nitrogen measurement without water /

Mesure d'azote sans l'eau / Medida del nitrógeno sin el agua

Achtung: Nur Stickstoff einfüllen / Note: Only fill in nitrogen /

Respect : Seulement l'azote remplir / Nota: Completar solamente el nitrógeno

Fig. 8

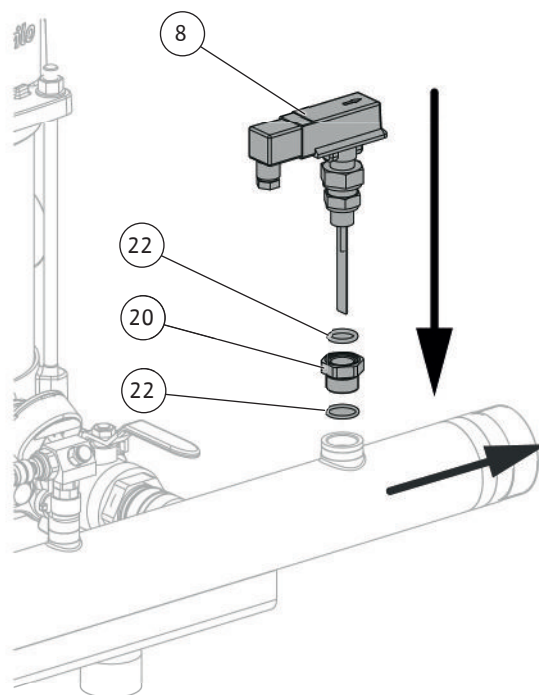
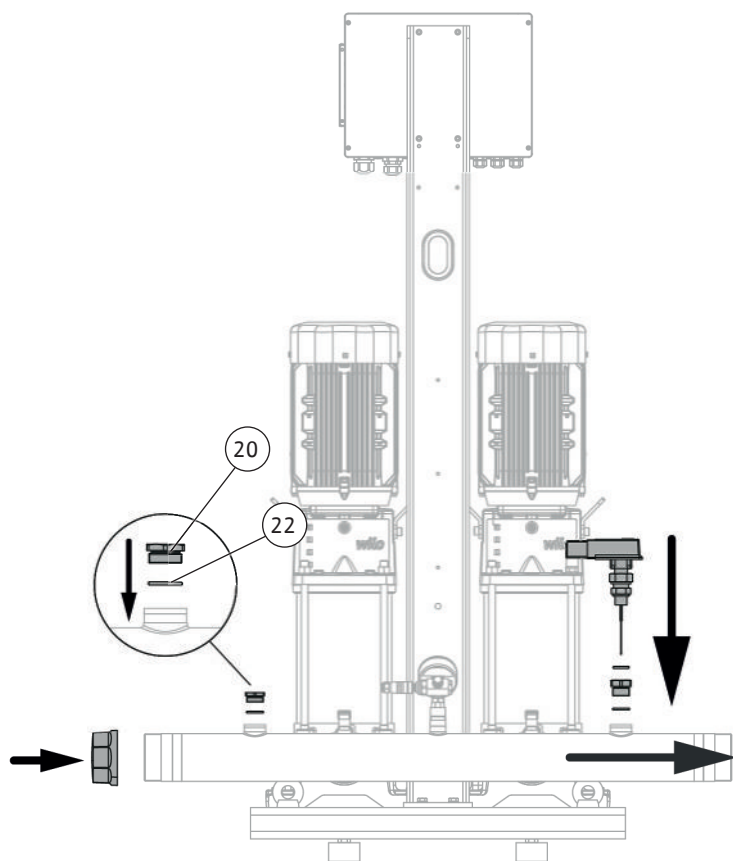
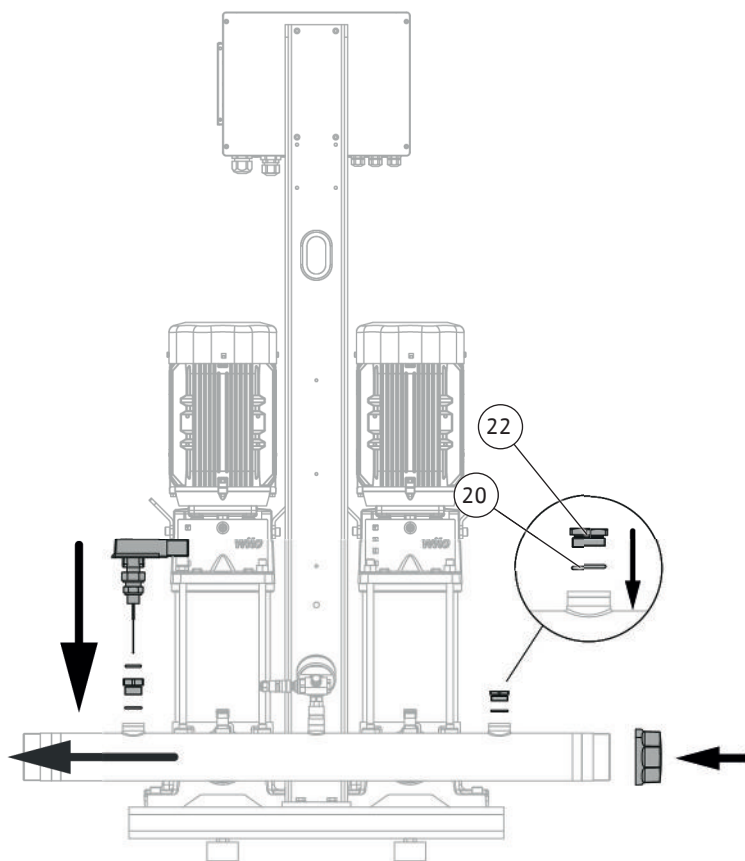
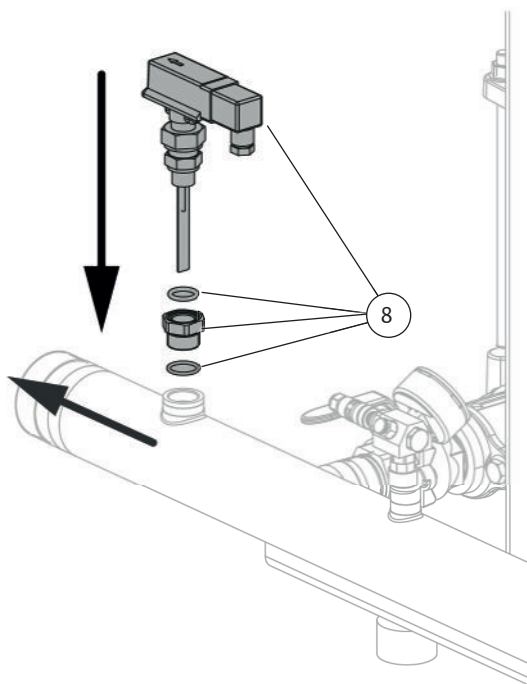


Fig. 9a

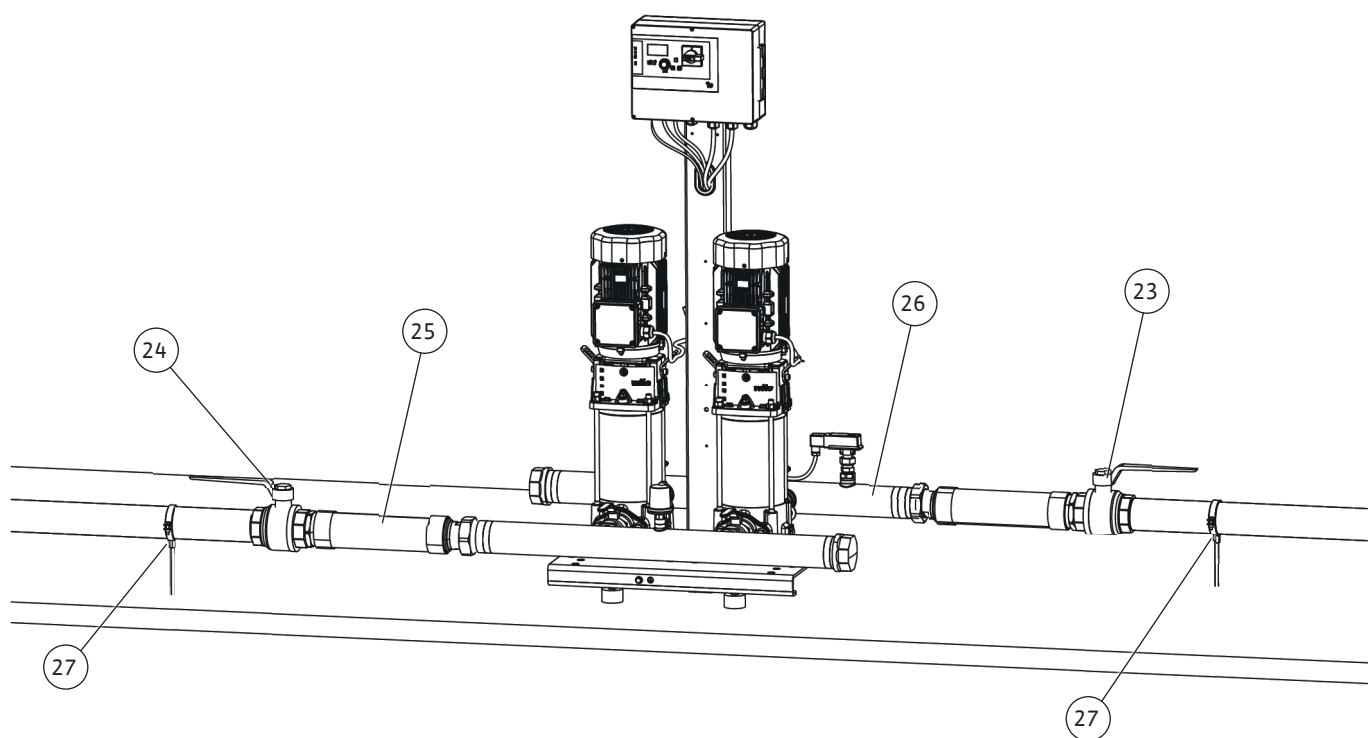


Fig. 9b

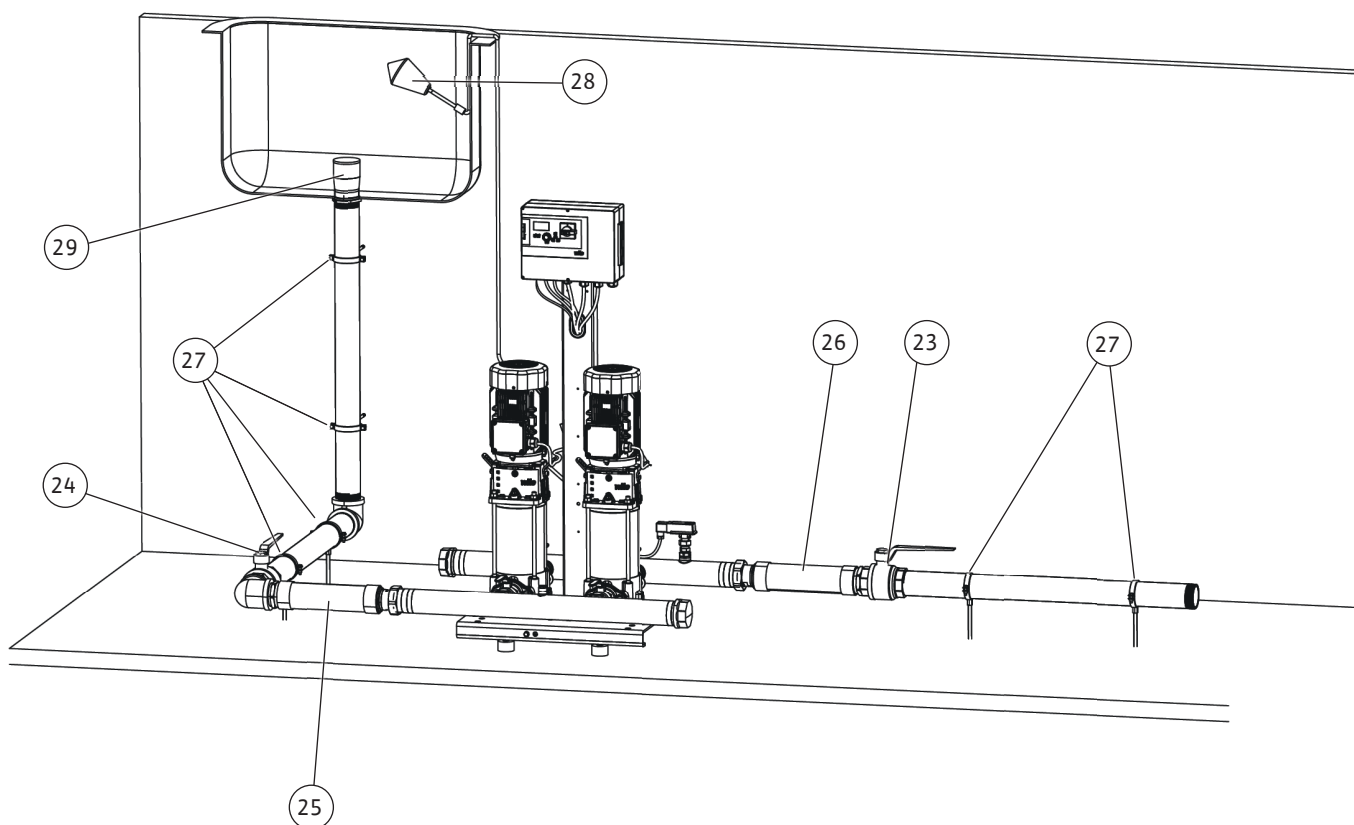


Fig. 9c

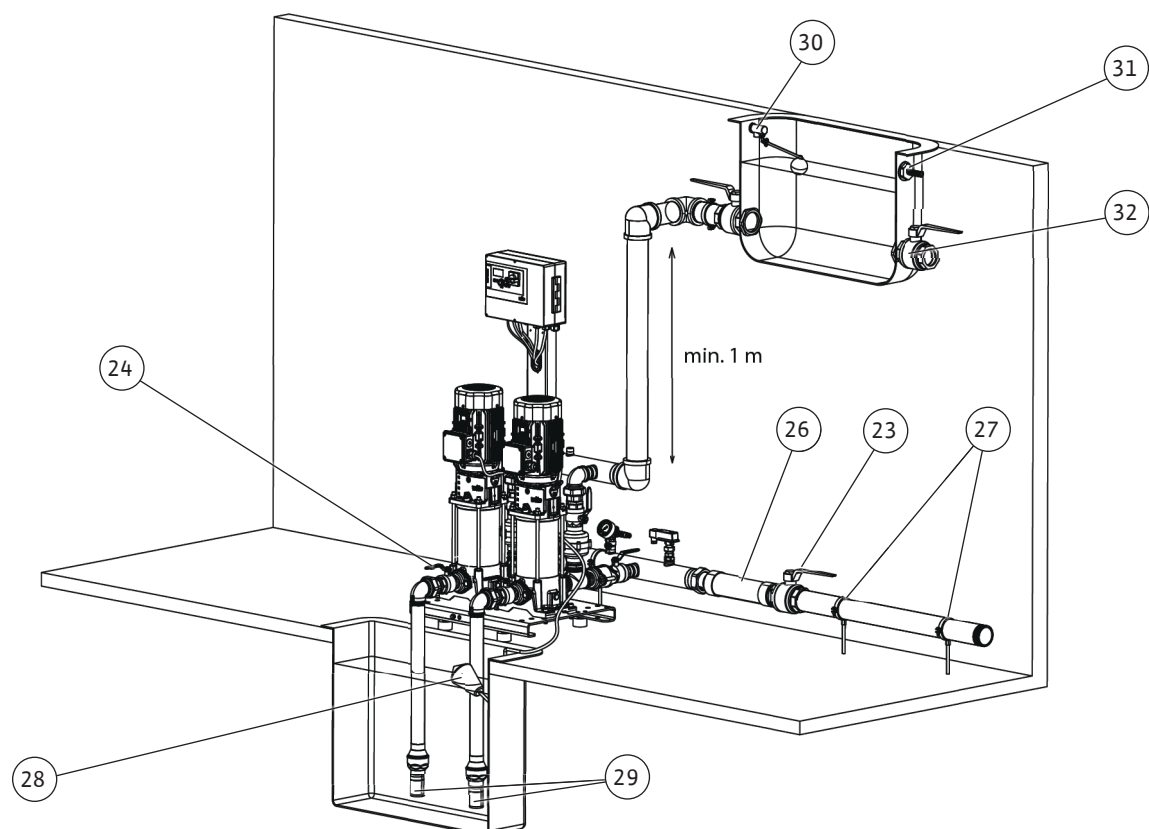




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1 General

1.1 About these instructions

These instructions form part of the product. Compliance with the instructions is essential for correct handling and use:

- Read the instructions carefully before all activities.
- Keep the instructions in an accessible place at all times.
- Observe all product specifications.
- Observe the markings on the product.

The language of the original operating instructions is German. All other languages of these instructions are translations of the original operating instructions.

1.2 Copyright

WILO SE © 2025

The reproduction, distribution and utilisation of this document in addition to communication of its contents to others without express consent is prohibited. Offenders will be held liable for payment of damages. All rights reserved.

1.3 Subject to change

Wilo shall reserve the right to change the listed data without notice and shall not be liable for technical inaccuracies and/or omissions. The illustrations used may differ from the original and are intended as an exemplary representation of the product.

1.4 Exclusion from warranty and liability

Wilo shall specifically not assume any warranty or liability in the following cases:

- Inadequate configuration due to inadequate or incorrect instructions by the operator or the client
- Non-compliance with these instructions
- Improper use
- Incorrect storage or transport
- Incorrect installation or dismantling
- Insufficient maintenance
- Unauthorised repairs
- Inadequate construction site
- Chemical, electrical or electrochemical influences
- Wear

2 Safety

This chapter contains basic information for the individual phases of the life cycle. Failure to observe this information carries the following risks:

- Injury to persons from electrical, mechanical and bacteriological factors as well as electromagnetic fields
- Environmental damage from discharge of hazardous substances
- Property damage
- Failure of important functions of the product

Failure to observe the information contained herein will result in the loss of claims for damages.

The instructions and safety instructions in the other chapters must also be observed!

2.1 Identification of safety instructions

These installation and operating instructions set out safety instructions for preventing personal injury and damage to property. These safety instructions are shown differently:

- Safety instructions relating to personal injury start with a signal word, are **preceded by a corresponding symbol** and are shaded in grey.



DANGER

Type and source of the danger!

Consequences of danger and instructions for avoidance.

- Safety instructions relating to property damage start with a signal word and are displayed **without** a symbol.

CAUTION

Type and source of the danger!

Consequences or information.

Signal words

- **DANGER!**
Failure to follow the instructions will result in serious injuries or death!

- **WARNING!**
Failure to follow the instructions can lead to (serious) injury!
- **CAUTION!**
Failure to follow the instructions can lead to potentially irreparable property damage as well as to total loss.
- **NOTICE!**
Useful information on handling the product

Markups

- ✓ Prerequisite
- 1. Work step/list
 - ⇒ Notice/instructions
 - Result

Symbols

These instructions use the following symbols:



General danger symbol



Danger caused by electric voltage



General warning symbol



Useful information

2.2 Personnel qualifications

- Personnel have been instructed on locally applicable regulations governing accident prevention.
- Personnel have read and understood the installation and operating instructions.
- Electrical work: qualified electrician
Person with appropriate technical training (according to EN 50110-1), knowledge and experience who can identify and prevent electrical hazards.
- Lifting work: trained specialist for the operation of lifting devices
Lifting equipment, lifting gear, attachment points
- Installation/dismantling must be carried out by a qualified technician who is trained in the use of the necessary tools and fixation materials.
- Operation/control: Operating personnel, instructed in the functioning of the complete system

2.3 Electrical work

- Observe applicable local regulations when connecting to the mains power supply.
- Comply with the requirements of the local energy supply company.
- Have electrical work carried out by a qualified electrician.
- Earth the device.
- Carry out the electrical connection according to the instructions of the switchgear and control device.
- Train personnel on how to make electrical connections.
- Train personnel on the options for switching off the device.
- Disconnect device from the mains and secure it against being switched on again without authorisation.
- Replace defective connection cables. Contact customer service.

2.4 Monitoring devices

The following monitoring devices must be provided on-site:

Circuit breaker

- Design the power and switching characteristics of the circuit breakers according to the rated current of the connected product.
- Observe local regulations.

Motor protection switch

- Product without plug: install a motor protection switch!
The minimum requirement is a thermal relay/motor protection switch with temperature compensation, differential trip and reactivation lock according to local regulations.
- Instable mains supply systems: if necessary, install further protective devices on-site (e.g. overvoltage, undervoltage or phase failure relays, etc.).

Residual-current device (RCD)

- Install a residual-current device (RCD) in accordance with the regulations of the local energy supply company.
- If people can come into contact with the device and conductive fluids, install a residual-current device (RCD).
- For systems/pumps with frequency converters, use a universal-current-sensitive residual-current device (type B RCD).

2.5 Transport

- Wear the following protective equipment:
 - Safety footwear
 - Safety helmet (when using lifting equipment)
- Locally applicable laws and regulations on work safety and accident prevention must be complied with.
- Only use legally prescribed and approved lifting and hoisting gear.
- Select the lifting gear based on the prevailing conditions (weather, attachment point, load, etc.).
- Always attach the lifting gear to the attachment points.
- Ensure that the lifting gear is securely attached.
- Ensure that the hoisting gear is stable.
- Ensure a second person is present to coordinate the procedure if required (e.g. if the operator's field of vision is blocked).
- Standing under suspended loads is not permitted. Do **not** move suspended loads over workplaces where people are present.

2.6 Installing/dismantling

- Wear the following protective equipment:
 - Safety footwear
 - Safety gloves for protection against cuts
- Locally applicable laws and regulations on work safety and accident prevention must be complied with.
- Disconnect device from the mains and secure it against being switched on again without authorisation.
- All rotating parts must stop.
- Clean the device thoroughly.

2.7 During operation

- Wear protective equipment according to work regulations.
- Demarcate and cordon off the working area.
- No persons are allowed in the working area during operation.
- Depending on the process, the product is activated and deactivated using separate controls. Product may automatically activate following power cuts.
- Superior must be informed immediately of any faults or irregularities.
- Operator must switch product off immediately if faults occur.
- Open all gate valves in the inlet and pressure pipe.
- Ensure protection against dry running.

2.8 Maintenance tasks

- Wear the following protective equipment:
 - Safety footwear
 - Safety gloves for protection against cuts
- Disconnect device from the mains and secure it against being switched on again without authorisation.
- Ensure cleanliness, dryness and good lighting in the work area.
- Only carry out maintenance tasks described in these installation and operating instructions.
- Only original parts of the manufacturer may be used. The use of any non-original parts releases the manufacturer from any liability.
- Collect any leakage of fluid and operating fluid immediately and dispose of it according to the locally applicable guidelines.
- Clean the device thoroughly.

2.9 Operator responsibilities

- Provide installation and operating instructions in a language which the personnel can understand.
- Make sure that the personnel have received the required training for the specified work.
- Provide protective equipment. Ensure that the protective equipment is worn by personnel.
- Ensure that safety and information signs mounted on the device are always legible.
- Train the personnel on how the system operates.
- Eliminate any risk from electrical current.
- Demarcate and cordon off the working area.
- Define a personnel work plan for safe workflow.
- Carry out a sound pressure measurement. From a sound-pressure level of 85 dB(A) upward, wear hearing protection. Include a note in the work regulations!

Observe the following points when handling the device:

- Use is not permitted for persons under the age of 16.
- Persons under the age of 18 must be supervised by a technician!
- Use is not permitted for persons with limited physical, sensory or mental capacities!

3 Application/use

3.1 Intended use

The pressure-boosting system is designed for professional deployment in fire-fighting systems with fire hose reels.

- Water supply for the fire hose reels through pressure boosting and pressurisation for firefighting.

The pressure-boosting system is used in:

- Residential buildings, offices, administrative buildings, hotels, hospitals, trade, industry

Water for the pressure-boosting system is supplied via the municipal water supply network or via a replenishment reservoir.

For your safety

- Completely reading and following all instructions in these Installation and operating instructions.
- Observing the statutory accident prevention and environmental regulations.
- Complying with inspection and maintenance regulations.
- Complying with in-house regulations and instructions.

The pressure-boosting system is built according to the manufacturer's specifications as well as the state of the art and the recognised safety regulations. Incorrect operation or misuse may result in danger to life and limb of the operator or third parties or damage to the pressure-boosting system itself and other material assets.

The pressure-boosting system may only be used in technically fault-free condition and in accordance with its intended use, in a safety-conscious and hazard-conscious manner and in compliance with these installation and operating instructions. Faults that may affect safety must be rectified immediately by qualified personnel.

3.2 Improper use

Possible misuse

The pressure-boosting system is not designed for applications that are not explicitly intended for it by the manufacturer. This includes, in particular:

- Pumping fluids that chemically or mechanically attack the materials used in the system
- Pumping fluids that contain abrasive or long-fibre components
- Pumping fluids that are not intended for this purpose by the manufacturer

Persons under the influence of intoxicating substances (e.g. alcohol, drugs, narcotics) are not authorised to operate, maintain or modify the pressure-boosting system in any way.

Improper use

Improper use occurs when parts other than those specified in the intended use are processed in the pressure-boosting system. Modification of the components of the pressure-boosting system also leads to improper use.

All spare parts must comply with the technical requirements specified by the manufacturer. There is no guarantee that third-party parts are designed and manufactured in accordance with appropriate safety and operational requirements. This is always guaranteed when using original spare parts.

Modifications to the pressure-boosting system (mechanical or electrical changes to the function sequence) invalidate any liability on the part of the manufacturer for any resulting damage. This also applies to the installation and adjustment of safety devices and valves as well as the modification of load-bearing parts.

4 Product description

4.1 Type key

Example	Wilo-COF-2Helix606-T-V-CPI
Wilo	Brand name
COF	Pressure-boosting system for fire-fighting systems with fire hose reels
Helix	Pump type
606	Nominal volume flow and number of stages
T	Mains voltage – three-phase 400 V

Example	Wilo-COF-2Helix606-T-V-CPI
V	Protection against low water level depending on the type of water supply to the system: V = municipal water network B = break tank
CPI	CPI = insulation monitoring device integrated in the switchgear

4.2 Technical data

Mains voltage	3~ 400 V $\pm 10\%$ (L1, L2, L3, N, PE)
Mains frequency	50 Hz
Max. operating pressure	16 bar
Ambient temperature	+0 °C TO +40 °C
Fluid temperature	+3 °C TO +50 °C

- Carry out installation in accordance with safety standard NF-C 15-100.
- For further technical information, see the rating plate of the motor and the switchgear.

4.3 Scope of delivery

- Pressure-boosting system
 - Ready for connection
 - Pre-assembled and set at the factory
 - Checked for impermeability
- System installation and operating instructions
- Pump installation and operating instructions
- Switchgear installation and operating instructions
- Wiring diagram

4.4 Accessories

Accessories must be ordered separately as required.

- Shut-off valve
- Vibration damping bushings
- Pressure reducer
- Diaphragm expansion tank
- Strainer for foot valve
- Rotating light
- Priming tank

4.5 Components of the system



NOTICE

These installation and operating instructions contain a general description of the complete system.



NOTICE

For detailed information about the pump in this pressure-boosting system, see the enclosed installation and operating instructions for the pump.

4.5.1 Connection

The pressure-boosting system can be connected to the municipal water supply network in two ways:

- Direct connection (Fig. 9a).
- Indirect connection (Fig. 9b, 9c).
- Information on the pump type used can be found in the attached installation and operating instructions for the pump.

4.5.2 Components of the pressure-boosting system

The complete system is made up of various main components.



NOTICE

Observe the respective installation and operating instructions for the individual component.

- Vertical multistage pumps
- Base frame for support and fixation
- Switchgear and automation control

- Suction manifold
- Discharge manifold
- Pressure sensor
- Pressure gauge
- Flow controller
- Pressure controller for low water (city version)
- Diaphragm expansion tank (optional for multi-pump systems)



NOTICE

Each pump is equipped with suction-side shut-off valves, non-return valves and drain valves. Each collector tank is also fitted with a plug.

Variants

Depending on the installation type, the pressure-boosting system comes in two versions.

- Variant 1: Protection against low water level
 - Version V: The pressure-boosting system is supplied with a pressure controller that is connected to the suction manifold.



NOTICE

Min. permissible operating pressure: 1 bar

- Version B: The pressure-boosting system is supplied with a float switch for installation in the break tank.
- Variant 2: Insulation monitoring device
 - With CPI: The switchgear has an integrated insulation monitoring device (CPI) for the pump and monitors the motor insulation and earthing. Mandatory equipment for energy-related products (ErP).
 - Without CPI.

Switchgear

The switchgear (Fig. 1, Item 3) is responsible for the safety and control of the pressure-boosting system.



NOTICE

Detailed instructions for the operation and handling of the switchgear can be found in the attached installation and operating instructions.

5 Transport and storage



WARNING

Risk of injury from a lack of protective equipment!

Danger of (serious) injuries during work.

- Wear protective gloves to protect against cuts.
- Wear safety shoes.
- If lifting accessories are used, wear a safety helmet.



WARNING

Risk of injury from falling parts!

Never allow anyone to stand under suspended loads!

- Do not move the load over workplaces where persons are present.

CAUTION

Property damage due to improper transport!

Unsuitable lifting gear can cause the system to slip out or fall down.

- Only use suitable and approved lifting gear.
 - Never attach the lifting gear to the piping. Use the existing stop lugs (Fig. 3, Item 13) for fixation.
 - Ensure the stability because, with the vertical pump design, the centre of gravity is shifted to the top area (top-heavy, Fig. 3, Item 19).
-

CAUTION

Property damage due to incorrect loading!

Subjecting the pipes and valves to loads while in transit can result in leakages.

CAUTION

Property damage due to environmental influences!

The system can be damaged by environmental influences.

- Take suitable measures to protect the system from moisture, frost and heat as well as mechanical damage.
-



NOTICE

- After removing the packaging, store or assemble the system in accordance with the installation conditions described (see Installation and electrical connection [► 25]).
-

5.1 Delivery

The pressure-boosting system is fixed onto a pallet (Fig. 3, Item 14,), delivered on transport boards or in a crate and is foil-wrapped (Fig. 3, Item 17) to protect it against moisture and dust.

- Observe transport and storage instructions attached to the packaging.
- The transport dimensions, weights, necessary passageways and transport areas of the pressure-boosting system can be found on the supplied pressure-boosting system installation plan or documentation.
- When receiving and before unpacking the pressure-boosting system and the supplied accessories, first check the packaging for damage.

If damage is found which may have been caused by the system having fallen or similar impacts:

- Check the pressure-boosting system and accessories for possible damage, and
- notify the delivery company (forwarding agent) or our customer service, even if you do not find any obvious damage to the system or its accessories.

5.2 Transport

The pressure-boosting system is packed in plastic wrap to protect it against moisture and dirt (Fig. 3, Item 17).

- If the outer packaging is damaged or no longer present, apply suitable protection from humidity and dirt.
- Do not remove the outer packaging until you are at the installation site.
- If the pressure-boosting system is transported again at a later date, fit new suitable protection against moisture and dirt.
- Demarcate and cordon off the working area.
- Keep unauthorised persons away from the working area.
- Use approved lifting slings: Sling chains or polyester webbing slings.
- Attach lifting slings to base frame:
 - Transport with forklift
 - Transport with lifting gear.
 - Fixation lugs on base frame: Sling chain with sling hook with safety latch.
 - Screw in the loosely supplied ring eyelets: Sling chain or polyester webbing sling with shackle.
- Permissible angle specifications for the lifting sling (Fig. 1a, 1b, 1c, Fig. 3, Item 13)
 - Fixation with sling hook: $\pm 24^\circ$

- Fixation with shackle: $\pm 8^\circ$
- If the angle specifications cannot be complied with, use a spreader beam.

5.3 Storage

- Place the system on a firm and even surface.
- Ambient conditions: 10 °C to 40 °C, max. humidity: 50 %.
- Dry hydraulics and pipework before packing.
- Protect the system from humidity and dirt.
- Protect the system from direct exposure to sunlight.

6 Installation and electrical connection

6.1 Installation location

Requirements for the installation location:

- Dry, well ventilated and frost-resistant.
- Separate and lockable (e.g. requirement of DIN 1988 standard).
- Sufficiently sized floor drainage (e.g. sewer connection).
- Free of harmful gases and secured against gas ingress.
- Maximum ambient temperature of +0 °C to 40 °C at a relative humidity of 50 %.
- Horizontal and level installation surface.
- Slight height adjustment for stabilisation possible with the oscillation absorbers in the base frame:

1. Loosen the counter nut.
2. Turn the appropriate vibration absorber out or in.
3. Fix the counter nut again.

Also note:

- Ensure adequate space for maintenance work. The main dimensions can be found in the supplied installation plan. The system should be freely accessible from at least two sides.
- Wilo advises against installation and operation near living rooms and bedrooms.
- To avoid the transmission of structure-borne noise and to ensure a stress-free connection to upstream and downstream pipes, use compensators with extension limiters or flexible connection pipes.

6.2 Installation



DANGER

Danger of death due to electrical current!

Improper conduct when carrying out electrical work can lead to death due to electric shock!

- Only have electrical connection established by an electrician approved by the local energy supply company.
- Observe applicable local regulations.
- Before swapping the phases, switch off the main switch of the system and secure it against unauthorised restarting.

6.2.1 Foundation/bearing surface

The pressure-boosting system is designed for installation on a level concrete floor. The base frame is mounted on height-adjustable vibration absorbers as means of insulation against structure-borne noise.



NOTICE

For transport reasons, the vibration absorbers may not be mounted upon delivery. Before installing the pressure-boosting system, check that all the vibration absorbers are fitted and locked by the threaded nut.

If the customer also wants to secure the installation to the floor, suitable measures must be taken to avoid structure-borne noise transmission.

6.2.2 Hydraulic connection and pipes

The water is supplied by the municipal water supply (version "V") or a break tank (version "B").

- The nominal connection diameter of the manifold is 1 ¼".
- The manifold on the suction and discharge side can be connected on either the right or left side. The unused openings can be closed using the plugs supplied.
- Before connecting the pressure-boosting system, install the shut-off valves on both manifolds.
- Observe the following when connecting the discharge-side flow controller:

- The pipework must be horizontal.
- The flow controller must be positioned in the direction of flow of the fluid (Fig. 8).
- Align the sensor of the flow controller vertically (Fig. 8).
- If the pressure-boosting system is connected to a pressurised municipal water supply, ensure that the pressure-boosting system can withstand the maximum pump pressure at zero flow rate plus the pressure of the municipal water supply. If this requirement is not met, fit a pressure reducer at the output of the pressure-boosting system.
- To avoid pressure fluctuations at the input of the pressure-boosting system, Wilo recommends installing a differential pressure control device on the incoming water pipe.

Connection to the municipal water network (Fig. 9a)

- The pipe diameter of the suction line must not be less than the pipe diameter of the pump.
- Keep the horizontal length of the suction-side pipework as short as possible and avoid friction losses (constrictions, elbows, etc.).
- Avoid air intake.
- Use pressure-resistant, vacuum-proof pipes.
- Ensure protection against low water level by means of a pressure controller.
- Avoid counter-slope, which leads to the formation of air pockets.
- Avoid using automatic drain cocks.
- Observe the maximum permissible volume flow of the water meter.

Connection to the municipal water network (break tank with positive suction head) (Fig. 9b)

- Generously dimension the suction-side manifold.
- Avoid air intake.
- Use pressure-resistant, vacuum-proof pipes.
- Ensure protection against low water level by means of a float or electrode in the break tank.
- Avoid steep water gradients near the suction-side manifold. (If necessary, fit an anti-vortex strainer).
- Avoid counter-slope, which leads to the formation of air pockets.
- Avoid using automatic drain cocks on the suction manifold. Never allow the water level in the break tank to fall below the highest point of the pump hydraulics.

If the pressure-boosting system draws from the break tank, the friction losses must not exceed the suction capacity of the pumps. Wilo recommends installing a strainer with low friction losses for the foot valve and pipework with a diameter greater than or equal to the nominal diameter of the pump on the suction side.

- Install the discharge-side diaphragm expansion tank in the pressure-boosting system in accordance with NF S 62-201 and R5 (only applies to COF 2Helix).

Each pump must be designed as an automatic centrifugal pump and be self-priming or equipped with an automatic venting device.

Suction-side connection (negative suction head) (Fig. 9c)

- Install one suction pipe per pump, with a gradient of at least 2% to the pump.
- Use pressure-resistant and vacuum-proof suction lines.
- The pipe diameter of the suction line must not be less than that of the pump.
- Keep horizontal lengths of the suction-side pipework as short as possible and avoid friction losses (constrictions, elbows, etc.).
- Avoid air intake.
- Avoid steep water gradients near the suction-side manifold.
- Ensure protection against low water levels using a float, sensor or electrode.
- Avoid using automatic drain cocks on the suction manifold.
- Avoid friction losses due to accessories (valve, elbow).
- Install the priming tank in accordance with our recommendations to support automatic suction of the pumps in accordance with NF S62-201 (only applied to COF 2Helix). (Additional pressurisation of the suction pipes to close the foot valves properly)
- Avoid counter-slope, which leads to the formation of air pockets.

6.3 Electrical connection



DANGER

Danger of death due to electrical current!

Improper conduct when carrying out electrical work can lead to death due to electric shock!

- Only have electrical connection established by an electrician approved by the local energy supply company.
- Observe applicable local regulations.
- Before swapping the phases, switch off the main switch of the system and secure it against unauthorised restarting.



NOTICE

When establishing the electrical connection, the corresponding installation and operating instructions and attached electrical wiring diagrams must be observed.

- Technical current type, voltage and frequency of the power supply network must match the details on the rating plate and circuit diagram of the switchgear.
- Electrical connection cables must be adequately dimensioned for the total power of the pressure-boosting system (see rating plate, installation and operating instructions and attached electrical wiring diagrams).
- External fuse protection of the connection cable for the pressure-boosting system must be provided in accordance with the applicable local regulations (e.g. VDE0100, part 430) in compliance with the details in the installation and operating instructions.
- As a protective measure, the pressure-boosting system must be earthed according to regulations (i.e. according to the local regulations and circumstances). Connections intended for this purpose must be identified.



NOTICE

Connect the base frame of the pressure-boosting system to the earth.

Float switch connection (Version "B")

- Install the separately supplied float switch in the tank and connect it to the switchgear using a cable with two conductors.



NOTICE

Observe the corresponding installation and operating instructions and the attached electrical wiring diagrams.

7 Commissioning



DANGER

Danger of death due to electrical current!

Improper conduct when carrying out electrical work can lead to death due to electric shock!

- Only have electrical connection established by an electrician approved by the local energy supply company.
- Observe applicable local regulations.
- Before swapping the phases, switch off the main switch of the system and secure it against unauthorised restarting.



DANGER

Danger of death as supply pressure is too high!

Excessive supply pressure (nitrogen) in the diaphragm expansion tank can lead to damage or destruction of the tank and thus to personal injury.

- Observe the safety measures for handling pressurised vessels and technical gases.
- The pressures in these installation and operating instructions (Fig. 6 and 7) are given in **bar**. If other units of pressure measurement are used, convert the figures correctly.



WARNING

Risk of injury from a lack of protective equipment!

Danger of (serious) injuries during work. Wear the following protective equipment:

- Safety gloves
- Safety shoes

CAUTION

Property damage due to dry run!

Dry running leads to the pump developing leakages and to motor overload.

- Ensure that the pump does not run dry to protect the mechanical seal and the plain bearings.



NOTICE

We recommend that the initial commissioning of the system is performed by the Wilo customer service department.

- Contact your dealer, your nearest Wilo representative or the Wilo customer service department.



NOTICE

Automatic activation after power cut

Depending on the process, the product is activated and deactivated using separate controls. The product may automatically be activated following power cuts.

7.1 General preparations and control measures

- Check that all on-site wiring has been performed correctly, in particular the earthing, prior to initial activation.
- Check that the pipe adaptors are not under stress.
- Fill the system and carry out a visual inspection for leakages.
- Open the shut-off valves at the pumps and in the suction and discharge pipe.
- Open the pump venting screws and fill the pumps slowly with water to allow the air to escape completely. Close the venting screws once the pump has been fully vented.
- Check that the supply pressure is set correctly in the diaphragm expansion tank.
 - The supply pressure must be 0.3 bar lower than the start-up pressure of the pumps (menu 1.01 of the switchgear).
- Switch on briefly (menu 3.02 and 3.03) to check whether the direction of rotation of the pumps matches the arrow on the pump housing. If the direction of rotation is incorrect, swap the two phases.
- Check and set the operating parameters required on the switchgear according to the attached installation and operating instructions.



NOTICE

Observe the respective installation and operating instructions for the individual component.

7.2 Commissioning the system

CAUTION

Property damage may occur due to incorrect commissioning!

- Do not allow the pump to operate for more than one minute with the discharge valve fully closed.

- Once all preparations and control measures have been carried out according to the "General preparations and control measures" section, switch on the pressure-boosting system with the main switch and set it to automatic mode.

At the discharge port of the pressure-boosting system, the pressure sensor measures the pressure and the flow controller monitors the volume flow: corresponding signals are transmitted to the switchgear.

When a fire hose reel is used, the pressure at the discharge port drops below the switch-on level set in the switchgear. The main pump starts automatically.

If an open fire hose reel is closed, the pressure-boosting system stops. The flow controller on the discharge port is activated and the pump is stopped.

- See also: General preparations and control measures [► 28].

8 Shutdown/dismantling

In case of maintenance or repair, take the pressure-boosting system out of operation as follows:

1. Switch off the voltage supply and secure it against unauthorised reactivation.
2. Close the shut-off valve upstream and downstream of the system.
3. Shut off the diaphragm pressure vessel at the throughflow fitting and drain it.
4. Drain the system completely if necessary.

9 Maintenance

9.1 Checking the pressure-boosting system



DANGER

Danger of death due to electrical current!

Improper conduct when carrying out electrical work can lead to death due to electric shock!

- Before all electrical work, disconnect the product from the mains and secure it against being switched on again without authorisation.
- Electrical work must be carried out by a qualified electrician!
- Observe local regulations!

- Only a qualified electrician may repair damages to the connection cable.

To guarantee maximum operational reliability at the lowest possible operating costs, we recommend regular inspection and maintenance of the pressure-boosting system (see DIN 1988). It is advisable to enter into a maintenance contract with a specialist company or with the Wilo customer service department.

The following checks must be carried out on a regular basis:

- Inspection of the pressure-boosting system's readiness for operation.
- Inspection of the mechanical seals on the pumps. The mechanical seals need water for lubrication, which can leak out of the gasket slightly. If water leakage is noticeable, the mechanical seal must be replaced.
- Optionally: Check the diaphragm expansion tank (a 3-month cycle is recommended) for correct supply pressure setting and impermeability.

CAUTION

Property damage due to incorrect supply pressure!

Incorrect supply pressure influences the functionality of the diaphragm expansion tank and can lead to increased wear of the diaphragm and to system malfunctions. Excessive supply pressure will damage the diaphragm expansion tank.

- Check supply pressure.

If the system experiences downtime for a prolonged period, see Decommissioning/Removal [► 29] and drain the pump by opening the drain plug at the pump support foot.

10 Faults, causes and remedies



NOTICE

- Have faults, particularly those affecting the pumps or the control unit, remedied exclusively by the Wilo customer service or a specialist company.



NOTICE

- The general safety instructions must be observed during any maintenance or repair work.
- Observe all installation and operating instructions.

Fault	Cause	Remedy
At least one of the two pumps is not running	Air intake on the suction side	Check all suction line connections for impermeability. Check whether the strainer is covered with water.
	Pump improperly vented	Vent pump.
	Strainer for the foot valve leaking or clogged	Check valve for impermeability and replace if necessary.
	Significant friction losses on the suction side	Check friction losses. Ensure that the friction losses are compatible with the NPSH value of the pumps.
	Municipal water supply pressure too low or zero	Set the pressure-boosting system so that it is supplied by a break tank.
One of the two pumps is not running	Negative suction head over the break tank too great	Ensure that the minimum level of the break tank is compatible with the NPSH value of the pump.
	Suction-side pipework clogged or stop valve on the suction manifold closed	Check whether the stop valve is open, clean the pipework if necessary.
	Thermal motor protection has triggered	Pump fault signal light on the switchgear lights up. Check and reset settings for thermal motor protection.
	Magnetic circuit breaker has tripped	Check the motor phases for short-circuits. Replace the motor if necessary. Reset the circuit breaker.
	Pump shaft blocked	Disconnect the switchgear from the electrical connection Check that the pump shaft rotates freely. If the shaft is blocked, dismantle the pump.
	Winding malfunction	Disconnect the terminal from the motor. Check the resistor at the terminals and the stator's earthing. Replace the motor if necessary.
	No pressure on the discharge side	See "One of the two pumps is not running".

Fault	Cause	Remedy
	Municipal water supply pressure below minimum prescribed pressure	Contact the local water supply company. Replace the pressure-boosting system. Contact Wilo.
	Incorrect direction of rotation of the motor	Check direction of rotation. Exchange the two phases if necessary.
	The pump is obstructed by foreign bodies	Dismantle the pump and clean it.
	Insufficient supply voltage to the motors	Check the voltage and contacts on the motor terminals.
Switching frequency too high or fluttering	Pressure sensor defective	Check settings: If the pressure sensor is not working correctly, replace the pressure sensor.
	Insufficient system capacity (or break tank with insufficient capacity)	Install an additional break tank or replace the break tank with one with a higher capacity.
	Tank supply pressure not compliant with the system	Continue filling the break tank.
	Break tank leaking	Replace break tank.
Dry-running protection is triggered frequently	Low water cut-out switch is set too high	Adjust and correct low water cut-out switch settings.
	When the pumps are switched on, the supply pressure of the municipal water supply drops	Adjust the low water cut-out switch to a minimum. If the dry-running protection continues to be triggered, the pressure of the municipal water supply is insufficient. Check the value on the pressure gauge when the pump starts up and contact the municipal water supply company
Automatic mode is faulty	Switchgear defective	See installation and operating instructions of the switchgear.
	Sensor defective	Check contacts. Replace the sensor if necessary.
	Cable disconnected	Check all connections to the switchgear terminal block.
	Flow controller defective	Check the switch-on and switch-off function of the flow controller. Replace the flow controller if necessary.
Drain valve is leaking	Drain valve diaphragm or gasket damaged	Replace the drain valve.
Pumps do not stop or start	Pressure sensor stop valve is closed	Open the pressure sensor stop valve.
Pumps do not shut down		Check flow controller. Check whether the flow controller is installed in the direction of flow of the fluid.

- If a fault cannot be repaired, contact an installer or Wilo customer service.

11 Spare parts

Spare parts are ordered via customer service. To avoid return queries and incorrect orders, the serial or article number must always be supplied. **Subject to change without prior notice!**

12 Disposal

12.1 Oils and lubricants

Operating fluids must be collected in suitable containers and disposed of in accordance with the locally applicable guidelines. Wipe up drips immediately!

12.2 Water-glycol mixture

The operating fluid complies with Water Hazard Class 1 of the German Administrative Regulation of Substances Hazardous to Water (VwVwS). When disposing of it, the locally applicable guidelines (e.g. DIN 52900 on propanediol and propylene glycol) must be observed.

12.3 Protective clothing

Used protective clothing must be disposed off in accordance with the locally applicable guidelines.

12.4 Information on the collection of used electrical and electronic products

Proper disposal and appropriate recycling of this product avoids environmental damage and risks to personal health.



NOTICE

Disposal in domestic waste is prohibited!

In the European Union this symbol may be included on the product, the packaging or the accompanying documentation. It means that the electrical and electronic products in question must not be disposed of along with domestic waste.

Please note the following points to ensure proper handling, recycling and disposal of the used products in question:

- Hand over these products at designated, certified collection points only.
- Observe the locally applicable regulations!

Please consult your local municipality, the nearest waste disposal site, or the dealer who sold the product to you for information on proper disposal. Further recycling information at <http://www.wilo-recycling.com>.

12.5 Batteries/rechargeable batteries

Batteries and rechargeable batteries must not be disposed of with domestic waste and they must be removed before product disposal. End consumers are legally obliged to return all used batteries and rechargeable batteries. For this purpose, you can return used batteries and rechargeable batteries free of charge at municipal collection points or specialist retailers.



NOTICE

Disposal in domestic waste is prohibited!

Batteries and rechargeable batteries affected are marked with this symbol. The identifier for the heavy metal they contain is displayed beneath the graphic:

- **Hg** (mercury)
- **Pb** (lead)
- **Cd** (cadmium)

13 Appendix

13.1 Captions

Fig. 1a Example COF-2Helix

Fig. 1b Example COF-1Helix (base frame 300x600)

Fig. 1c Example COF-1Helix (base frame 800x800)

1	Pump(s)
2	Base frame
3	Switchgear
4	Manifold on the suction side
5	Discharge-side manifold
6	Pressure sensor
7	Pressure gauge
8	Flow controller
9	Pressure controller for low water (version municipal water network)
10	Diaphragm expansion tank

Fig. 2a

Fig. 2b

6a	Pressure sensor
6b	Electrical connection, pressure sensor
7	Pressure gauge
11	Stop valve
12	Drain/venting

Fig. 3 Transport instructions COF-2HELIX

13	Transport lugs for the attachment of lifting slings
14	Transport pallet/transport frame (example)
15	Transport equipment - (example - pallet truck)
16	Transport restraints (screws, washer, nuts)
17	Plastic cover/dust protection
18	Wooden supports (example)
19	Approximate position of the centre of gravity of the system

Fig. 4 Transport instructions COF-1HELIX (base frame 300x600)

14	Transport pallet/transport frame (example)
15	Transport equipment - (example - pallet truck)
16	Transport restraints (screws, washer, nuts)
17	Plastic cover/dust protection
18	Wooden supports (example)

Fig. 5 Transport instructions COF-1HELIX (base frame 800x800)

13	Transport lugs for the attachment of lifting slings
14	Transport pallet/transport frame (example)
15	Transport equipment - (example - pallet truck)
16	Transport restraints (screws, washer, nuts)
17	Plastic cover/dust protection
18	Wooden supports (example)

Fig. 6 Operation of flow-through fixture / pressure test diaphragm expansion tank

A	Open/close
B	Drain
C	Check the supply pressure (nitrogen! – N ₂)

Fig. 7 Information table: nitrogen pressure of diaphragm expansion tank (example)

a	Nitrogen pressure according to the table
b	Start-up pressure base-load pump in PE (bar)
c	Nitrogen pressure in bar PN 2 (bar)
d	Notice: Nitrogen measurement without water
e	Notice: Caution! Fill with nitrogen only.

Fig. 8 Installation instructions for flow controller depending on the fluid

8	Flow controller
20	Pressure reducer connection 3/4" → 1/4"
21	Plug 3/4"
22	O-ring ø20-2.65

Fig. 9a Installation example: COF-2Helix with water supply from municipal water network

23	Stop valve on the discharge side
24	Stop valve on the suction side
25	Suction hose
26	Pressure hose
27	Fixation of pipes, e.g. with pipe clamp (provided by the customer)

Fig. 9b Installation example: COF-2Helix with water supply from break tank with positive suction head

23	Stop valve on the discharge side
24	Stop valve on the suction side
25	Suction hose
26	Pressure hose
27	Fixation of pipes, e.g. with pipe clamp (provided by the customer)
28	Float switch (protection against low water level)
29	Strainer

Fig. 9c Installation example: COF-2Helix with water supply from break tank with negative suction head

23	Stop valve on the discharge side
24	Stop valve on the suction side
26	Pressure hose
27	Fixation of pipes, e.g. with pipe clamp (provided by the customer)
28	Float switch (protection against low water level)
29	Strainer





Pioneering for You



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