Pioneering for You

Wilo-COF-2 Helix

en Installation and operating instructions

4 218 091-Ed.03 / 2024-06-Wilo

Fig. 1:

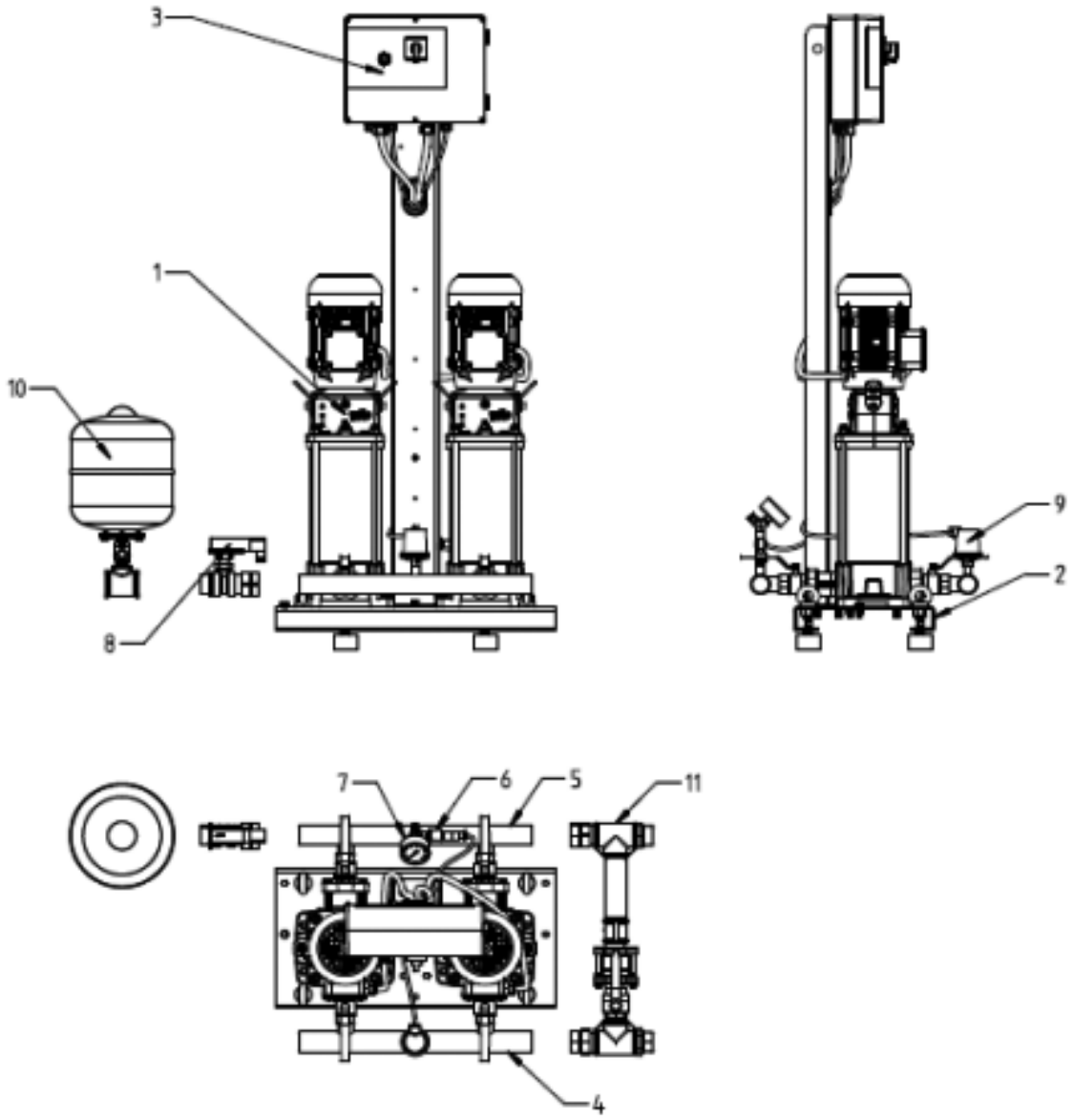
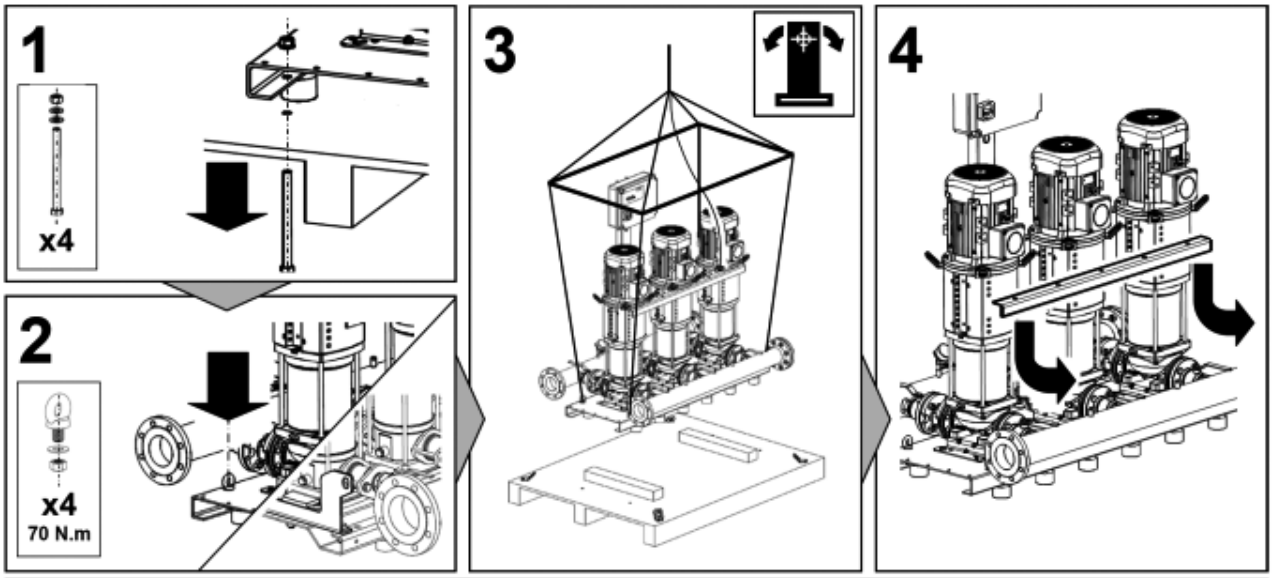


Fig. 2



CONSIGNES DE MANUTENTION (F)

- LA MANUTENTION DU SURPRESSEUR DOIT S'EFFECTUER AVEC UN MATERIEL ADAPTE.
- SECURISER LE SYSTEME AFIN D'EVITER TOUT RENVERSEMENT
- PRENEZ EN CONSIDERATION LE CENTRE DE GRAVITE ELEVE.

TRANSPORT ADVICE (GB)

- LIFTING OF THE BOOSTER MUST BE DONE WITH SUITABLE HANDLING EQUIPMENT.
- SECURISE THE SYSTEME AGAINST OVERTURNING.
- TAKE INTO CONSIDERATION THE TOP HEAVINESS.

MANIPOLAZION ISTUZIONI (I)

- LA MANIPOLAZIONE DEL MODULO POMPE DEVE ESSERE EFFETTUATO CON ADEQUATI DISPOSITIVI.
-IL SISTEMA SICURO PER EVITARE l'EVENTUALE INVERSIONE.
- PRENDERE IN CONSIDERAZIONE ALTO CENTRO DI GRAVITA.

TRANSPORT HINWEISE (D)

- DAS ANHEBEN DER DRUCKERHÖHUNGSANLAGE (DEA) MUSS MIT EINEM PASSENDEN TRANSPORTWERKZEUG ERFOLGEN.
- DIE DEA IST GEGEN EIN UMSCHLAGEN ZU SICHERN.
- BEACHTEN SIE DIE KOPFLASTIGKEIT!

INSTRUCTION MANIPULACAO (P)

- MANIPULANDO DETONADORA DEVE SER FEITO COM BOM EQUIPAMENTO.
- SEGURA O SISTEMA PARA EVITAR QUALQUER REVERSAO.
- LEVE EM CONSIDERACAO O ALTO CENTRO DE GRAVIDADE.

CONSIGNAS DE MANUTENCION (E)

- LA MANUTENCION DE SOBREALIMENTADOR DEBE EFECTUARSE CON EL MATERIAL ADECUADO.
- ASEGURAR EL SISTEMA CON EL FIN DE EVITAR TODA CAIDA.
- TENGA EN CUENTA EL CENTRO DE GRAVEDAD ELEVADO.

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Fig. 3

1 General

1.1 About this document

The language of the original Installation and operating instructions is French. All other languages of these instructions are translations of the original Installation and operating instructions.
These Installation and operating instructions are an integral part of the product. They must be kept readily available close by the product. Strict adherence to these instructions is a precondition for the correct installation and application of the product.
These Installation and operating instructions correspond to the relevant version of the product and the underlying safety standards valid at the time of going to print.
EC-Declaration of conformity:
A copy of the EC-Declaration of conformity is a key component of these Installation and operating instructions.
If a technical modification is made to the designs named herein without our agreement, this declaration loses its validity.

2 Safety

These Installation and operating instructions contain important information which must be adhered to during installation, operation and maintenance. These instructions must therefore, without fail, be read by the service technician and the qualified personnel/operator before installation and commissioning.
It is not only the chapter on general safety instructions that must be adhered to, but also the special safety instructions from the following chapters with an accompanying danger symbol.

2.1 Symbols and signal words in the operating instructions

Symbols:
General danger symbol

Instructions relating to electrical voltage

NOTICE: ...

Signal words:
DANGER!
Acutely dangerous situation.
Non-observance will result in death or the most serious of injuries.

WARNING!
The user may suffer (serious) injuries. "Warning" signifies that (serious) personal injury is probable if this instruction is not observed.

CAUTION!
There is a risk of damaging the product/unit. "Caution" signifies that damage to the product and its functioning is likely if this instruction is not observed.
NOTICE:
Useful information on handling the product. It draws attention to possible problems.

Information that appears directly on the product, such as
- the arrows indicating the direction of rotation,
- identification for connections,
- the rating plate, and
- warning stickers

must be strictly complied with and kept in legible condition.

2.2 Personnel qualifications

The installation, application and maintenance personnel must have the appropriate qualifications to complete this work. The operator must ensure the personnel's areas of responsibility, terms of reference and their supervision. If the personnel do not possess the necessary knowledge, they must be trained and instructed accordingly. If necessary, this training can be carried out by the product's manufacturer on the operator's behalf.

2.3 Danger in the event of non-observance of the safety instructions

Non-observance of the safety instructions constitutes a danger to persons and damage to the environment and the product/unit. It also results in the invalidation of any warranty claims. In detail, non-observance can, for example, result in the following risks:
- danger to persons due to electrical, mechanical and bacteriological factors,
- damage to the environment due to leakage of hazardous materials,
- damage to property,
- failure of important product/unit functions, and
- failure of required maintenance and repair procedures.

2.4 Safety consciousness on the job

The existing directives for accident prevention must be adhered to.
Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be respected.

2.5 Safety instructions for the operator

Adhere to existing directives for accident prevention. This device may be used by children aged 8 and over, by persons with reduced physical, sensory or mental capacity or by people lacking in specialist knowledge or experience, provided that they are properly supervised or are given instructions regarding careful use of the device and that

the risks involved have been assessed. Children must not be allowed to play with the device. Cleaning and maintenance work performed by the user must not be carried out by unsupervised children.

- If hot or cold components of the product/system pose a danger, it is the customer's responsibility to guard them against being touched.
- Guards which protect personnel from coming into contact with moving components (e.g. couplings) must not be removed while the product is in operation.
- Hazardous fluids (i.e. which are explosive, toxic or hot) which have leaked (e.g. from the shaft seals) must be disposed of so that they pose no danger to persons or to the environment. National statutory provisions must be respected.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be respected.

2.6 Safety instructions for installation and maintenance work

The operator must ensure that all maintenance and installation work is carried out by authorised and qualified personnel, who are sufficiently informed having studied the Installation and operating instructions in detail. Work on the product/unit must only be carried out when it is at a standstill. Compliance with the procedures described in the Installation and operating instructions for shutting down the product/system is mandatory. Immediately on conclusion of the work, all safety and protective devices must be put back in position and recommissioned.

2.7 Unauthorised modification and manufacture of spare parts

Unauthorised modification of components and use of unauthorised spare parts will impair the safety of the product/personnel, and will render the manufacturer's declarations regarding safety void. Modifications to the product are only permissible following consultation with the manufacturer.

Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts absolves the manufacturing company of any and all liability.

2.8 Improper use

The operational reliability of the supplied product is only guaranteed for conventional use in accordance with Chapter 4 of the Installation and operating instructions.

The limit values must on no account fall below or exceed the values specified in the catalogue/data sheet.

3 Transport and temporary storage

When you receive the device, check that it has not been damaged during transport. If you notice a fault, take all necessary action with the carrier within the time allowed.

The pressure-boosting system is delivered on a pallet. It is protected from moisture and dust by transparent plastic shrink-wrap.

The transportation and storage instructions located on the packaging must be observed.

- The system must be transported using a lifting device suitable for carrying the load.

WARNING!

The static stability of the device must be taken into account because, due the pumps' design, the system's centre of gravity shifts towards its upper part.

Maintenance must be performed by qualified personnel using suitable and authorised equipment. Lifting straps must be fastened to the transport lugs designed for this purpose or placed around the steel baseplate. A sticker on the plastic shrink-wrap contains the safety instructions (Fig. 2).

The collector tanks are not suitable for handling the pressure-boosting system and must not be used to fix loads.

The stickers attached to the collector tanks provide a reminder of these instructions (Fig. 3).

CAUTION! Risk of damage to the installation

If the equipment delivered must be installed at a subsequent date, store it in a dry place and protect it from shocks and any other external effects (humidity, frost, etc.).

Temperature range for transport and storage: –30 °C to +60 °C.

Handle the product with care so as not to damage it prior to installation.

4 Intended use

Intended use of the pressure-boosting system is to keep a fire hose cabinet pressurised and supply it with water in order to protect buildings (hospitals, apartment buildings, schools, industrial premises, commercial centres, etc.).

The water supply to the pressure-boosting system may be taken from the municipal water supply or from a replenishment reservoir.

5 Technical information

5.1 Type key

COF-2HELIX606-T-V-CPI		
COF	COF =	Version
2	2 =	Number of pumps
HELIX606	HELIX606 =	Pump types
T	T =	Power supply voltage Tri 400 V
V	V =	Protection against low water level in municipal supply
	B =	Protection against low water level in replenishment reservoir
CPI	CPI =	With insulation monitoring device built into the switchgear
	Nothing =	No CPI

5.2 Technical data

- Maximum operating pressure: 16 bar
- Permitted water temperature: 3 °C to 50 °C
- Permitted ambient temperature: 5 °C to 40 °C
- Supply voltage: TRI 400V ±10 %
- Frequency: 50 Hz

Ensure that general installation corresponds to safety standard NF-C 15-100.

5.3 Scope of delivery

It is crucial that, prior to delivery, you are aware of all main components that make up the pressure-boosting system.

See the pressure-boosting system illustration in Fig. 1:

1. High-pressure vertical multistage centrifugal pump
2. Baseplate for support and fixation
3. Switchgear and automation control
4. Suction manifold
5. Discharge manifold
6. Pressure sensor
7. Pressure gauge
8. Flow switch
9. Low-water cut-out switch (version using municipal water supply)
10. Pressure tank (accessory, not supplied as standard)
11. Bypass pipe (option): Ensures direct water supply without using pumps when the municipal water supply pressure is sufficient

NOTICE:
Each pump is equipped with suction-side gate valves, non-return valves and discharge valves. Each collector tank is also fitted with a plug.

5.4 Variants

Depending on the installation type, the pressure-boosting system comes in 2 variants as specified in the product definition.

Variant 1: Low-water cut-out switch

- Version V: The pressure-boosting system is supplied with a pressure switch connected to the suction manifold.

NOTICE:
MINIMUM PERMISSIBLE PRESSURE: 1 BAR

- Version B: The pressure-boosting system is supplied with a float switch to install in the replenishment reservoir.

Variant 2: Insulation monitoring device

- With CPI: The switchgear contains CPI for the pump and monitors the motor insulation and earthing. Mandatory equipment for energy-related products (ErP).
- Without CPI

5.5 Switchgear

The switchgear (Fig. 1, No. 3) protects and controls the pressure-boosting system.

- Refer to the switchgear manual for more detailed information.

5.6 Accessories

The following accessories are available for purchase:

- Gate valves
- Vibration damping bushings
- Pressure reducer
- Pressure tank
- Foot valve strainer
- Warning light
- Start-up tank

Accessories must be ordered separately and must be installed on the system.

6 Description and function

6.1 Description

The pressure-boosting system is supplied with its pipework ready for connection. The customer must connect the suction and discharge manifolds correctly.

The customer must also connect the switchgear to the mains power supply.

When making the connection to the municipal water supply, regulations and currently valid standards must be observed and, as necessary, fulfilled pursuant to the regulations of water distribution companies.

In addition, local specificities must be taken into account: for example, if the suction pressure is too high or variable, a pressure reducer must be installed.

6.2 Operation

The pressure-boosting system is equipped with non self-priming high-pressure multistage centrifugal pumps.

The pumps are activated when low pressure is detected (Fig. 1, No. 6) and deactivated when the flow rate is detected as zero (Fig. 1, No. 8).

Consult the operating and maintenance manual for the switchgear for more detailed information regarding the control process.
The pumps alternate on each activation so as to balance their operating time.

7 Installation and connections

7.1 Delivery and installation

Unwrap the product and remove the packaging while ensuring respect for the environment.
Install the pressure-boosting system in an easily accessible room which is well ventilated and is insulated against frost. Access routes to the room must be kept clear of obstructions.
The pressure-boosting system's design enables floor-mounted installation on a flat concrete surface. As the baseplate is placed on height-adjustable vibration absorbers, the installation is already equipped with insulation against sound transmission.
If the system is to be further fixed to the ground on-site, appropriate measures must be taken to prevent the transmission of sound through such structures.

7.2 Electrical connection

WARNING! Risk of electric shock!
Electrical connection must be performed by an electrician approved by the local energy supplier and in accordance with the valid local regulations.
When making the electrical connection, it is crucial that the corresponding Installation and operating instructions and the circuit diagram supplied with the switchgear are referred to accordingly.
In general, the following aspects must be observed:

- the mains connection voltage must correspond to the characteristics detailed on the rating plate and the wiring diagram for the control device,
- the electrical connecting cable for the switchgear must be correctly dimensioned in terms of the total power of the pressure-boosting system (see the rating plate and the technical data),
- the pressure-boosting system must be earthed in according with regulations (i.e. in accordance with local regulations and conditions); the connections for this purpose are marked accordingly (see also the wiring diagram).

NOTICE:
Do not forget to connect the baseplate of the pressure-boosting system to the ground where the system is installed.

Connection for the float switch (Version "B")
The float switch, supplied separately, must be installed in the replenishment reservoir and must be connected to the switchgear by a cable with two conductors.

7.3 Hydraulic connection

The water supply to the pressure-boosting system may be taken from the municipal water supply (version "V") or from a replenishment reservoir (version "B").
The connection diameter of the collecting spaces is 1"1/4.
The suction and discharge manifolds can be connected either to the left or the right. The openings that are not used are then blocked using the plugs supplied.
Before connecting the pressure-boosting system, fit valves to the two manifolds to isolate them when performing work on the system.
When connecting the flow switch, on the flow switch side, the following criteria must be observed:

- Pipework must run horizontally
- The flow switch must be oriented in the direction of fluid flow
- The flow switch sensor must be positioned vertically

CAUTION!

- **If the pressure-boosting system is connected to a pressurised municipal water supply, ensure that the system can withstand the maximum pump pressure at zero flow rate plus the pressure of the municipal water supply. If this is not the case, a pressure reducer must be fitted to the output of the pressure-boosting system.**
- **We strongly recommend installation of a differential pressure control device on the water inlet pipe to avoid pressure fluctuations at the input to the pressure-boosting system.**

If the pressure-boosting system is in suction mode in a replenishment reservoir, the friction losses must not exceed the pumps' maximum suction capacity.
It is advisable to use a foot valve with piping of equal or greater dimensions than the nominal diameter of piping on the suction side.
The system must always be equipped with a pressure tank.

8 Commissioning/decommissioning

We recommend that you arrange for initial commissioning of your pressure-boosting system to be conducted by your closest Wilo customer service agent or simply contact our central customer service.

8.1 General preparations and control measures

- Prior to initial commissioning, check the wiring installed by the customer, in particular the earth connection.
- Check the source of the water supply (sufficiently full replenishment reservoir or appropriate municipal water supply).
- Fill the system and ensure its impermeability by conducting a visual inspection;
- Open the gate valves on the pumps and in the suction and discharge pipes.

- Open the stoppers in the pumps' ventilation system and slowly fill the pumps with water so as to allow the air to escape entirely.

CAUTION! Risk of damage to the installation! Never let the pump run dry. Dry running destroys the mechanical seal and causes the motor to overload

- Pressurise the diaphragm pressure vessel. The tank's inflating pressure must be 0.3 bar below the pressure that activates the pumps (Menu 1.01 of the switchgear).

DANGER!
Do not exceed the vessel's maximum pre-inflation value.

- Check the pumps' direction of rotation: on a short start-up (Menu 3.02 and 3.03), check whether the pumps' direction of rotation corresponds to the arrow situated on the pump housing. If the direction of rotation is incorrect, swap two phases.

DANGER! Risk of electric shock!
To swap the phases, cut the power supply using the system's main on/off switch.

- On the switchgear, check and adjust the required service parameters in accordance with the Installation and operating instructions supplied.

8.2 Commissioning the system

After completing all preparatory work and performing all checks detailed in Section 8.1, you can engage the main on/off switch and place the controls in automatic mode.
At the pressure connection of the pressure-boosting system, the pressure sensor immediately measures the pressure and the flow switch monitors the flow: corresponding signals are transmitted to the switchgear.
When a fire hose cabinet is opened, the pressure at the pressure connection drops and falls below the activation level set in the switchgear, and the main pump activates automatically.
When a fire hose cabinet that was previously open is closed, the pressure-boosting system stops discharge. The flow switch at the pressure connection activates and the pump stops automatically.

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

8.3 Decommissioning the system

If the pressure-boosting system must be decommissioned to allow maintenance work, repairs or the like to be completed, proceed as follows:

- Switch off the main on/off switch and ensure that the system cannot be reactivated by unauthorised persons.
- Close the gate valves before and after installation.
- Isolate and drain the pressurised diaphragm pressure vessel.
- If necessary, drain the system entirely.

9 Maintenance

Maintenance and repair work must only be carried out by qualified personnel!

DANGER! Risk of death!
In case of work on electrical devices, there is a danger of death by electrocution.
Before performing any maintenance or repair work, disconnect the device from the power supply and make sure it cannot be reactivated by unauthorised persons. In general, only a qualified electrician/engineer should be allowed to repair damaged connecting cables.
To ensure optimal operational reliability and to keep operating costs at a minimum, it is advisable to conduct inspections and maintenance of the pressure-boosting system on a regular basis (refer to standard DIN 1988). To do so, the best solution is to subcontract maintenance work to a specialist firm or our customer service.
The following inspections must be conducted on a regular basis:

- Check that the pressure-boosting system is in good working order.
- Check the pumps' mechanical seals. The mechanical seals use water for lubrication, therefore small quantities of which may leak from the gasket. In case of more substantial leakage, the mechanical seal must be replaced.
- Check (ideally every 3 months) that the diaphragm pressure vessel (option or accessory) is kept at the correct pressure for initial compressing and that it is impermeable.

Caution! Risk of damage to the installation!
If the initial compressing pressure is poor, the functioning of the diaphragm pressure vessel cannot be ensured. This may lead to excessive wear of the membrane and technical failures.
When decommissioning the system for a long period, proceed as described in Section 8.3 and drain all pumps by opening the drainage plugs at the foot of the pump.

10 Faults, causes and remedies

Troubleshooting, particularly of problems relating to the pumps and switchgear, must be performed exclusively by a Wilo customer service agent or a specialist firm.

NOTICE:
When carrying out all maintenance and repair work, it is crucial that the general safety instructions are observed! It is also important to follow the Installation and operating instructions for the pumps and switchgear.

Danger! Risk of death!
Only specialist and appropriately qualified personnel may perform troubleshooting!
Observe the safety instructions in Chapter 9.

Fault	Cause	Remedy
At least one of the two pumps does not start	Air intake on suction side	Check the impermeability of all connections in the suction pipework. Check that the suction strainer is properly submerged in water.
	Foot valve strainer is permeable or obstructed	Check the impermeability of the valve and replace it if necessary.
	Significant friction losses on the suction side	Check the friction losses and make sure that they are compatible with the NPSH of the pumps.
	Municipal water supply pressure too low or zero	Adjust the system to supply the pressure-boosting system from a replenishment reservoir.
	Negative suction head over reservoir too great	Ensure that the minimum level of the reservoir is compatible with the pumps' NPSH.
	Suction pipework obstructed or valve on suction manifold closed	Check that the valve is open and clean pipework if necessary.
One pump does not start	Thermal motor protection activated	The pump "malfunction" warning light on the switchgear is illuminated. Check the thermal motor protection settings and reset.
	Magnetic circuit breaker activated	Check that the motor phases have not short-circuited. Replace the motor if necessary. Reset the circuit breaker.
	Pump shaft blocked	Disconnect the switchgear power supply, then check that the pump shaft turns freely. If it is blocked, proceed to dismantle the pump.
	Winding malfunction	Disconnect the terminal of the motor concerned and check the resistor at the terminals and the stator's insulation to earth. Replace the motor if necessary.
No pressure on the discharge side	At least one of the pumps is deactivated	See the preceding chapter, fault "At least one of the two pumps does not start".
	Municipal water supply pressure below minimum prescribed pressure	Contact the local water supplier or replace the pressure-boosting system. Contact us.
	One pump is obstructed by foreign bodies	Dismantle and clean the pump.
	The motors are supplied by insufficient power supply voltage	Check the voltage and the connection to motor terminals.
Random operation, pumps start frequently	Pressure sensor is defective	Check settings: if sensor is unstable, it must be replaced.
	Insufficient installation capacity (or reservoir of insufficient capacity)	Install an additional storage tank or replace with a reservoir that has greater capacity.
	Vessel pre-inflation level does not conform	Proceed to inflate the vessel.
	Water storage vessel pierced	Replace the vessel.
The low-water protection activates frequently	Low-water cut-out switch is set too high	Adjust and correct the cut-out switch settings.
	Municipal water supply pressure drops when pumps activate	Adjust the low-water cut-out switch to a minimum. If the issue persists, the municipal water supply is insufficient; check the pressure gauge reading when the pumps start up, or consult the municipal water supplier.

Fault	Cause	Remedy
Automated operation defective	Switchgear defective	Consult the switchgear manual.
	Sensor defective	Check the contacts, replace the sensor in question if necessary.
	Wires disconnected	Check all connections to the switchgear terminal block.
	Flow switch defective	Check the activation and deactivation of the flow switch. Replace if necessary.
Discharge valve not sealed	Valve diaphragm or gasket is destroyed	Replace the valves.
The pressure-boosting system does not stop or does not start	Pressure sensor gate valve is closed	Open the pressure sensor gate valve.
The pumps do not stop	Check the flow switch	Ensure that the flow switch is installed in the direction of fluid flow.

If you cannot correct the fault, contact a specialist or your closest Wilo customer service agent.

11 Spare parts

Spare parts may be ordered or repair work arranged via a specialist retailer and/or Wilo customer service.
To avoid queries and incorrect orders, all data on the rating plate should be submitted with each order.

12 Disposal

Lawful disposal and appropriate recycling of this product prevents damage to the environment and risks to health. Disposal in accordance with regulations requires draining, cleaning and dismantling of the motor pump unit. Lubricants must be collected. The components of the pressure-boosting system must be sorted according to materials (metal, plastic, electronics).
1. To dispose of the product and its components, you should contact public or private waste disposal companies.
2. For further information regarding proper disposal of the product, contact your local authority, waste collection and treatment service or the product's original point of sale.

12.1 Information on the collection of used electrical and electronic products

Proper disposal and appropriate recycling of this product prevents damage to the environment and dangers to your personal health.

NOTICE
Disposal in domestic waste is forbidden!
In the European Union, this symbol can appear 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.
To ensure proper handling, recycling and disposal of the used products in question, please note the following points:

- Only hand over these products at designated, certified collecting points.
- 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. For further information on recycling, go to www.wilo-recycling.com.

For more information, visit www.wilo.com.

Subject to change without prior notice.

wilo

Pioneering for You

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