

Wilo-Control SC-Fire Jockey A2P



en Installation and operating instructions

Fig. 1

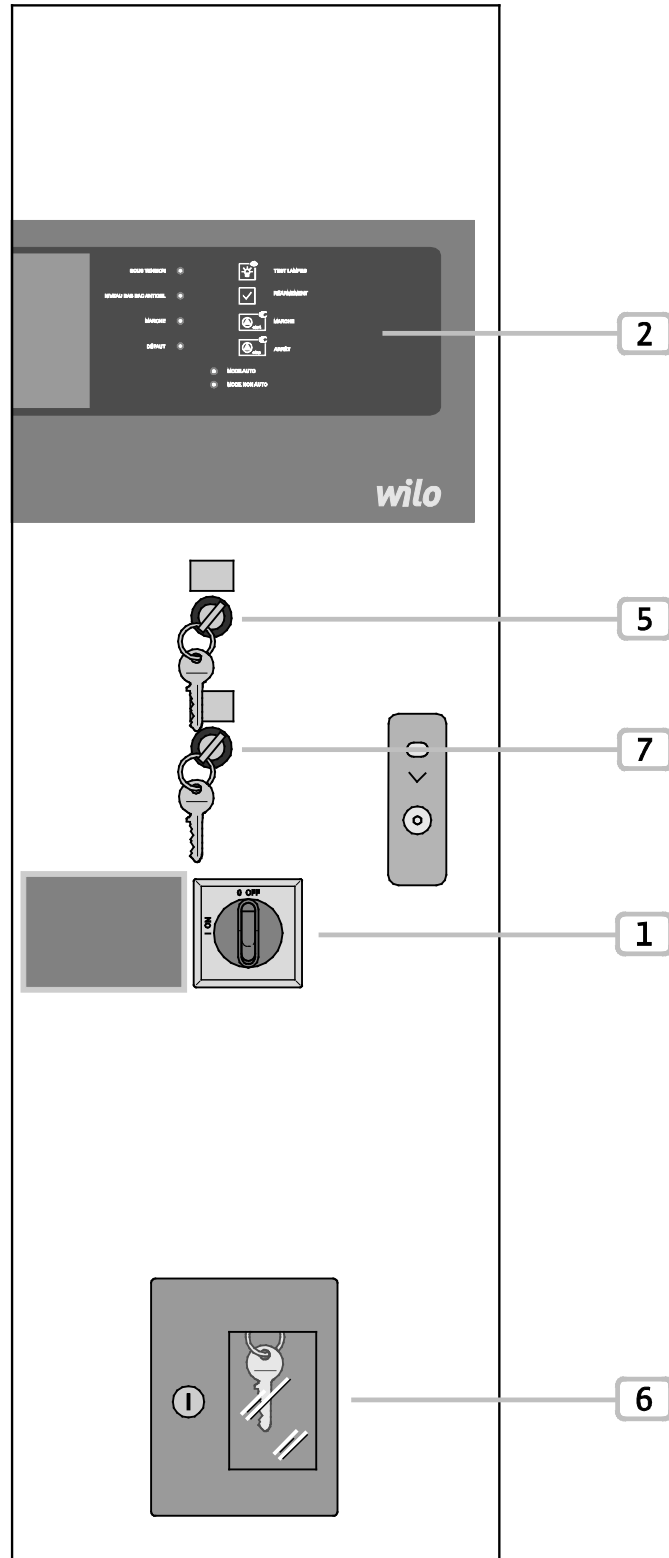


Fig. 1

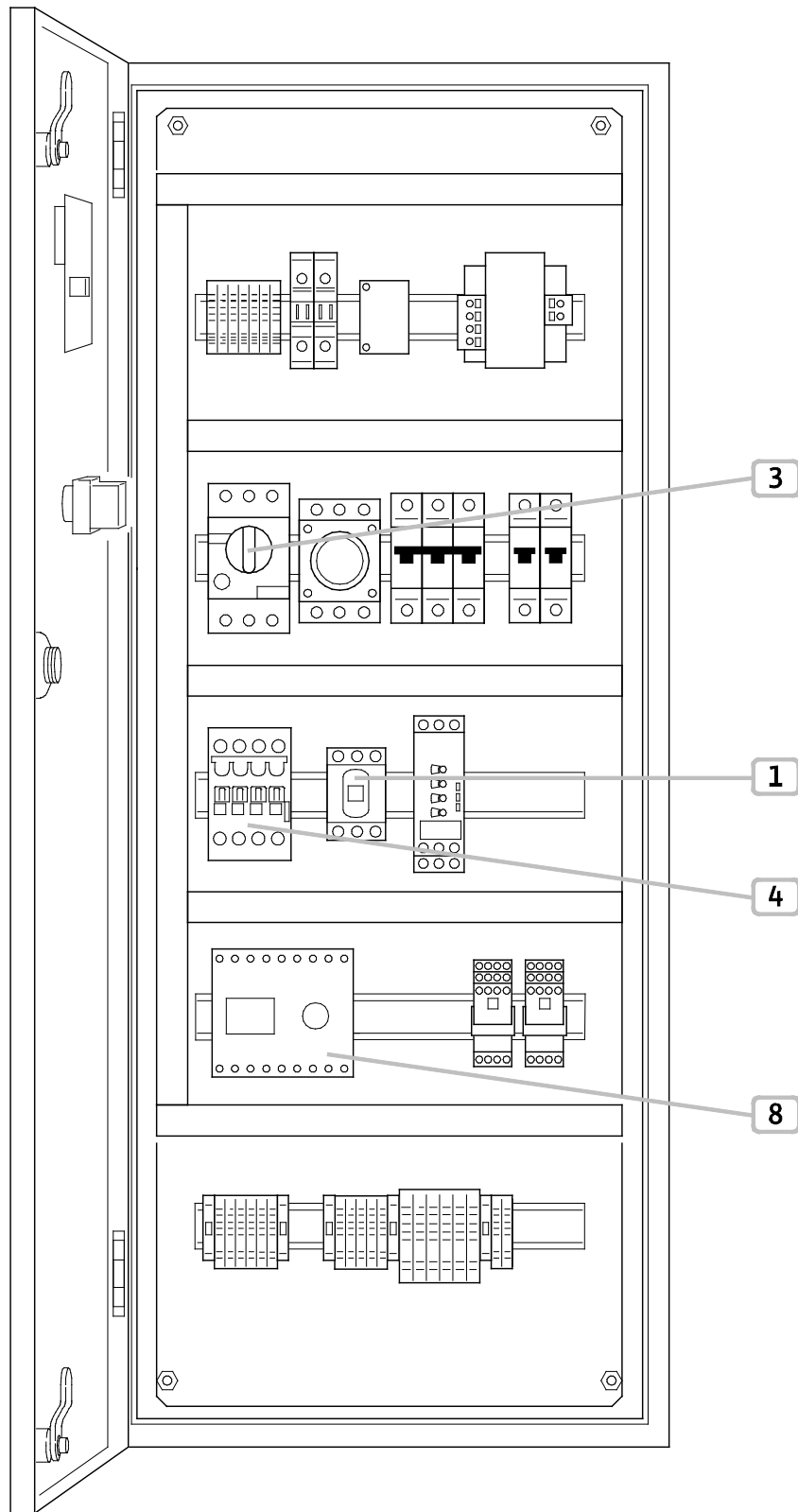
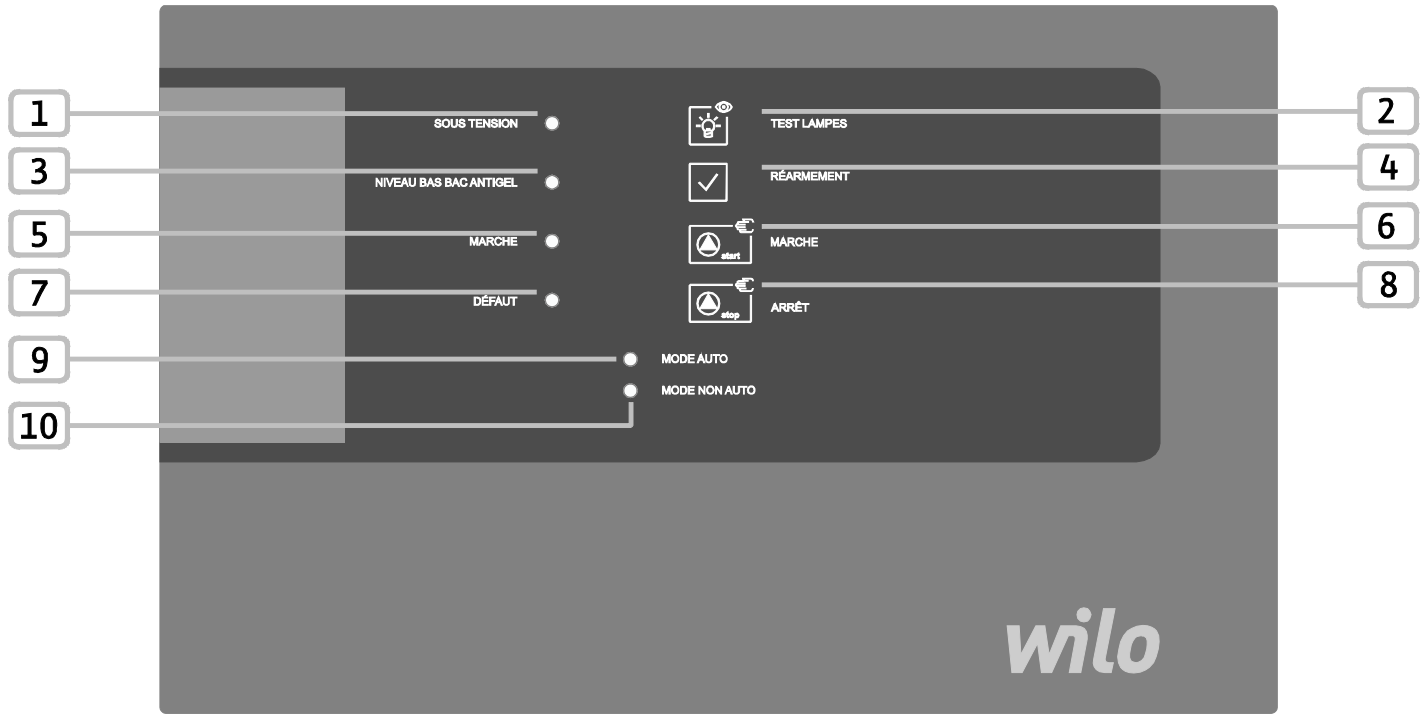


Fig. 2



1 General

1.1 About this document

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

The installation and operating instructions are an integral part of the product. They must be kept close to the product and be ready for use if necessary. Strict adherence to these instructions is a precondition for the proper use and correct operation 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 on the designs listed therein without prior approval or the declarations made in the installation and operating instructions on product/personnel safety are not observed, 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. For this reason, these instructions must, without fail, be read by the service technician and the responsible specialist/operator before installation and commissioning.

It is not only the general safety instructions listed under the main point "safety" that must be adhered to but also the special safety instructions with danger symbols included under the following main points.

2.1 Symbols and signal words used in the installation and operating instructions

Symbols:



General danger symbol



Danger due to electrical voltage



HELPFUL NOTE

Signal words:

DANGER!

Acutely dangerous situation.

Non-observance results in death or the most serious of injuries.

WARNING!

The user may suffer (serious) injuries. "Warning" implies that (serious) injury to persons is probable if this information is disregarded.

CAUTION!

There is a risk of damaging the pump/system. "Caution" implies that damage to the product is likely if this information is disregarded.

NOTICE:

Useful information on handling the product. It draws attention to possible problems.

2.2 Personnel qualifications

The installation, operating and maintenance personnel must have the appropriate qualifications for this work. Area of responsibility, terms of reference and monitoring of the personnel are to be ensured by the operator. If the personnel are not in possession of the necessary knowledge, they are to be trained and instructed. This can be accomplished if necessary by the manufacturer of the product at the request of the operator.

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

Non-observance of the safety instructions can result in risk of injury to persons and damage to the environment and the product/unit. It also results in the loss of any claims to damages.

In detail, non-observance can, for example, result in the following risks:

- Danger to persons due to electrical, mechanical and bacteriological influences.
- Damage to the environment due to leakage of hazardous materials.
- Property damage.
- Failure of important product/unit functions.
- Failure of required maintenance and repair procedures.

2.4 Safety instructions for the operator

This device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the device.

- If the product/unit poses a threat due to components being too hot or too cold, these components must be protected by the customer against touching.
- Guards which protect personnel from coming into contact with moving components (e.g. the coupling) must not be removed while the product is in operation.
- Hazardous fluids (e.g. from the shaft seals) which have leaked (which are explosive, toxic or hot) must be eliminated so that no danger to persons or to the environment arises. National statutory provisions are to be complied with.
- Highly flammable materials are always to be kept at a safe distance from the product.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from energy supply companies must be adhered to.

2.5 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 based on their own detailed study of the installation and operating instructions.

Work on the product/unit must only be carried out when at a standstill. It is mandatory that the procedure described in the installation and operating instructions for shutting down the product/unit be complied with. Immediately on conclusion of the work, all safety and protective devices must be put back in position and/or recommissioned.

2.6 Unauthorised modification and manufacture of spare parts

Unauthorised modification and manufacture of spare parts will impair the safety of the product/personnel and will make void the manufacturer's declarations regarding safety.

Product modifications are exclusively authorised following the agreement of the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts will absolve the company of liability.

2.7 Improper use

The operating safety of the supplied product is only guaranteed for conventional use in accordance with Section 4 of the installation and operating instructions. The limit values must on no account fall under or exceed those values specified in the catalogue/data sheet.

3 Transport and temporary storage

Upon receipt of the product:

- Check for any damage that may have occurred during transit.
- In the event of damage in transit take the necessary steps within the period defined by the transport company within the time constraints.



CAUTION! Risk of property damage!

Non-compliant transport and temporary storage may cause material damage to the product.

- **The switchgear must be protected against humidity and any mechanical damage.**
- **The product must not be exposed to temperatures lower than -10 °C and higher than +50 °C.**

4 Intended use

The switchgear Fire A2P controls a single electric pump in automatic sprinkler systems in accordance with APSAD R1.

The relevant fields of application are habitable buildings, offices, hospitals, hotels, administrative and industrial buildings.

The pump is switched according to the pressure or level when it is used with the right signal sensors. Compliance with this manual is also part of correct use.

Any use which does not meet this criteria is considered to be non-compliant.

5 Product information

5.1 Type key

Example: W-CTRL-F-1x(2)A-T4-DOL-FM-ND-J-FR	
W	<u>Brand:</u> W: Wilo
CTRL	Operation
F	F = application of protection against fire
1x	Number of pumps
(2)	<u>Max. rated current of the motor [A]:</u> 2.5 A 4 A
T4	T = three-phase ; 4 = 400 V
DOL	Direct online (direct starting)
FM	Frame mounted (mounted on a base frame)
ND	Switchgear new design
J	Switchgear for jockey pump
FR	France – box conforms to A2P

Table 1 – Type key

5.2 Technical data (standard model)

Technical data	
Mains connection voltage [V]:	3~ 400 V (L1, L2, L3, PE)
Frequency [Hz]:	50/60 Hz
Control voltage [V]:	24 VAC
Max. absorbed current [A]:	See the rating plate
Protection class:	IP44
Max. fuse protection on mains side [A]:	See circuit diagram
Room temperature [°C]:	0 °C to +50 °C
Electrical safety:	Pollution degree II
Alarm/signal contact	250 V AC, 1 A

Table 2 – Technical data

5.3 Scope of delivery

- Switchgear
- Circuit diagram
- Installation and operating instructions
- Check log in accordance with EN 60204-1

5.4 Accessories

6 Description and function

6.1 Product description

6.1.1 Function description

The switchgear is used to control a single electric pump in “sprinkler systems” in accordance with APSAD R1. The pump is switched on according to the pressure by means of the control. States of system operation such as availability, pump operation, faults, etc. are visually indicated by LEDs on the front of the cabinet door, a buzzer and operating parameters such as current or voltage values are displayed on the screen. The operation is performed by means of the rotary knob, key switches and push buttons accessible on the door.

Potential-free contacts are available for transmitting the collective run or malfunction signals to the building management system.

6.1.2 Structure of the switchgear

The structure of the switchgear depends on the performance of the pump to be connected. It includes the following main components:

- Main on/off switch: activation/deactivation of the switchgear (Fig. 1 Pos. 1)
- Human-machine interface (HMI): signal lamps for displaying the state of operation (for example availability, malfunction and rated current of the pump), user test of the pump and function allowing error messages to be acknowledged (Fig. 1, Pos. 2)
- Circuit breaker motor: protection of the pump motor (Fig. 1 Pos. 3)
- Contactor motor (Fig. 1 Pos. 4)
- Programmable automation: function programmed allowing inputs and outputs to be processed (Fig. 1, Pos. 8)
- Key switch: operating mode selection (manual, deactivation, automatic) of the pressure switch (Fig. 1, Pos. 5)
- Key switch: access to level 2 (Fig. 1, Pos. 7)
- Key box: enables the storage of the keys from the key switches (Fig. 1, Pos. 6)

6.2 Function and operation



DANGER! Risk of death!

When working on an open switchgear, there is a risk of electrocution in the event of contact with conductor components.

This work must only be carried out by qualified personnel!



After connecting the switchgear to the connection voltage as well as after each network cut-off, the switchgear reverts to the operating mode set before the voltage cut-off.

6.2.1 Operating modes of the switchgear

Activation/deactivation of the switchgear

After connection to the power supply, the switchgear can be switched on or off using the main switch. Once the main switch has been activated, the system is ready for operation after a few seconds. The availability of the box is signalled by the green LED on the front of the cabinet (Fig. 2, Pos. 1).

Operating mode

You can define the operating mode of the switchgear by selecting one of the three positions of the key switch “Auto”, “0” or “Manual”.

Automatic mode

The key switch (Fig. 1, Pos. 5) placed in the “Auto” position is displayed on the corresponding green LED (Fig. 2, Pos. 9). The unit starts up automatically once the pressure switch opens.

Non-automatic mode

The key switch is not in the “Auto” position (Fig. 1, Pos. 5). This operating mode is signalled by the red LED (Fig. 2, Pos. 10).

Manual mode

To perform a manual start-up, place one of the key switches in the “Man” position (Fig. 1, Pos. 5). By pressing the manual start button “ON” (Fig. 2, Pos. 6) start-up of the pump is enabled.

Deactivation mode

To switch off the pump, the key switch must be in the “0” position (Fig. 1, Pos. 5). As soon as the pressure switch is no longer activated, the pump can be switched off by means of the “OFF” button (Fig. 2, Pos. 8).

Pump demand

If the set pressure configured is not reached, the connected pump automatically starts up if the key switch (Fig. 1, Pos. 5) is in the “Auto” position. The indicator light (Fig. 2, Pos. 5) indicates pump operation. Once the pressure is reached or exceeded, the pump switches off immediately. The indicator light “ON” (Fig. 2, Pos. 5) then turns off.

6.2.2 Motor protection

Protection against excess currents

The direct starting motor is protected by a magnetothermal circuit breaker. The trigger current is configured directly on the circuit breaker.

The motor protection is also active in manual mode and triggers, in case of malfunction, the deactivation of the pump.

6.2.3 Application of the switchgear

Levels of access

- **The level of access 1** allows access to the function test of the lamp (Fig. 2, Pos. 2).
- **The level of access 2** is accessible by means of a key switch (Fig. 1, Pos. 7) and enables access to the reset function in the event of error messages (Fig. 2, Pos. 4).

Functions and application elements

- **Main switch (Fig. 1, Pos. 1)**
On/Off (lockable in "OFF" position)
- **Key switch (Fig. 1, Pos. 5)**
The key switch can be locked in the "Auto" position. The key can only be removed if the corresponding key switch is in the "Auto" position. Once the "0" or "Manual" position has been selected (Fig. 2 Pos. 9), no automatic start-up of the pump with the pressure switch can take place. The status corresponding to the "Auto" position is signalled by the green LED and that which corresponds to the "0" or "Manual" position by the red LEDs (Fig. 2, Pos. 10).
- **Key switch (Fig. 1, Pos. 7)**
By turning the key switch, you will access the level 2 functions.
- **Manual start-up "ON" (Fig. 2, Pos. 6)**
By pressing this button, the pump starts manually. To do this, at least one of the two key switches must be in the "Manual" position. Pump operation is signalled by the green control lamp (Fig. 2, Pos. 5).
- **Manual deactivation "OFF" (Fig. 2, Pos. 8)**
By pressing this button, the pump switches off manually. To do this, the key switch must be in the "0" position.
- **Lamp test "LAMP TEST" (Fig. 2, Pos. 2)**
By pressing this button (level of access 1), all the control lamps (Fig. 2, Pos. 1, 3, 5, 7, 9, 10) turn on and remain turned on while the button is held down, which allows the control of their proper functioning. Once the button is released, the control lamps and the alarm buzzer turn off or remain turned on only if the functioning demands it.
- **"RESET" (Fig. 2, Pos. 4)**
By pressing this button (level 2 required), all the error messages/control lamps are reset insofar as the cause of the error has been eliminated beforehand.

6.2.4 Display elements of the switchgear

“LIVE” (Fig. 2, Pos. 1)

The control lamp turns on green if the power supply is established and if it has been activated with the main on/off switch.

“ON” (Fig. 2, Pos. 5)

The control lamp turns on green if the pump is switched on and no error is detected.

Lack of glycol “LOW LEVEL ANTIFREEZE TANK” (Fig. 2, Pos. 3)

The indicator light turns red as soon as the float switch indicates a low level in the glycol tank. Upon detection of a lack of glycol, the pump in operation is deactivated.

If there is no longer a lack of glycol, it is possible to acknowledge the error (level of access 2 required) and to restart the pump.

“MALFUNCTION” (Fig. 2, Pos. 7)

A control lamp turns on red if the motor protection activates due to overvoltage, if a malfunction of the live wire sequence is detected, if the control voltage is defective or if the key switch is not in the “Auto” position. Once the cause of the problem is identified and resolved, you can acknowledge the error message (level of access 2 required).

“AUTO MODE” (Fig. 2, Pos. 9)

The control lamp is turned on green if the matching key switch is in the “Auto” position. The key switch must also be in the “AUTO” mode.

“NON-AUTO MODE” (Fig. 2, Pos. 10)

The control lamp is turned on red if the matching key switch is not in the “Auto” position or in case of a control voltage failure. The key switch must also be in the “0” or “Manual” mode.

7 Installation and electrical connection

Installation and electrical connection must be carried out in accordance with local regulations and only by qualified personnel!



WARNING! Risk of personal injury!
Comply with applicable accident prevention regulations.



WARNING! Risk of electric shock!
Danger from electrical current must be eliminated.
Local directives or general directives [e.g. IEC] and instructions from local energy supply companies must be adhered to.

7.1 Installation

Install the switchgear/unit in a dry location. Protect the place of installation from direct exposure to sunlight.

7.2 Electrical connection



DANGER! Risk of death!

In case of non-compliant electrical connection, there is a danger of death by electrocution.

- Have the electrical connection established by an electrician approved by the local energy supply company only and in accordance with local regulations.
- Observe the installation and operating instructions for the pumps and accessories.
- Disconnect the power supply before any work!



WARNING! Risk of electric shock!

There is a potentially fatal voltage on the supply side, even when the main switch is turned off.

- The shape of the current, the current type and the network voltage must correspond with the indications on the rating plate of the control system.



NOTICE:

- Provide for the network protections according to the electrical plan.
- The cable ends must be fed through the cable glands and cable inputs as indicated on the terminal block.
- Earth the pump/unit with care.

7.2.1 Power supply connection

The power supply cable with 4 conductors integrated (L1, L2, L3, PE) for the network to be supplied must be connected to the power supply terminal block according to the electrical plan.

7.2.2 Pump connection



Observe the installation and operating instructions of the pump!

The pump is connected to the terminal blocks as indicated in the plan.

7.2.3 Connection of pressure switch

The pressure switch is connected to the terminal blocks according to the electrical plan. The contact closes in case of a drop in pressure to activate the pump.

7.2.4 Lack of glycol

The float switch is connected to the terminal blocks according to the electrical plan. The floater contact closes in case of a lack of glycol to deactivate the pump.

7.2.5 Error message “MALFUNCTION”

On top of the terminal block, the information “MALFUNCTION” is available on the potential-free contacts. The message appears in case of:

- excess current of the pump,
- power supply malfunction, inversion or lack of live wire,
- malfunction of the control voltage,
- absence of “Auto” position of the key switch.

7.2.6 Error message “LOW LEVEL ANTIFREEZE TANK”

On top of the terminal block, the information “LOW LEVEL ANTIFREEZE” is available on the potential-free contacts.

The message appears in case of lack of glycol.

7.2.7 Error message “ALARM LACKS VOLTAGE”

On top of the terminal block, the information “ALARM LACKS VOLTAGE” is available on the potential-free contacts.

The message is emitted 20 seconds after the onset of a live wire inversion or a lack of voltage.

8 Commissioning



WARNING! Risk of death!
Commissioning by qualified personnel only!
Improper commissioning poses a risk of fatal injury.
Have commissioning performed by qualified personnel only.



DANGER! Risk of death!
When working on an open switchgear, there is a risk of electrocution in the event of contact with conductor components.
This work must only be carried out by qualified personnel!

We recommend that you have the switchgear commissioned by Wilo customer service.

Before switching on for the first time, the wiring provided by the customer, especially the earth, must be subjected to a detailed control.



Tighten all connection terminals prior to commissioning!

8.1 Checking the motor direction of rotation

Briefly activate the pump in manual mode (see 6.2.3) to verify whether the direction of rotation of the pump is correct. When switching off the pump motor, compare the direction of rotation of the fan wheel and the direction specified on the pump housing.

If the direction of rotation of the pump is wrong, swap over any two live wires of the mains connection.

8.2 Adjustments to the switchgear

The motor circuit breaker must be set to the rated current I_N of the pump. The rated current I_N of the pump is indicated on the rating plate of the pump motor.

9 Maintenance

Have maintenance and repair work carried out by qualified skilled personnel only!



DANGER! Risk of death!
There is a risk of fatal injury from electric shock when working on electrical devices.

- **The switchgear should be electrically isolated and secured against unauthorised switch-on during any maintenance or repair work.**
- **Any damage to the connection cable should only ever be eradicated by a qualified electrician.**

- The switchgear must remain clean.
- Visual inspection of the electrical components of the system in the switchgear.

10 Faults, causes and remedies



DANGER! Risk of death!

There is a risk of fatal injury from electric shock when working on electrical devices. Have faults remedied by qualified skilled personnel only! Observe the safety instructions. Before performing any work to remedy malfunctions, disconnect the device from the power supply, and make sure it cannot be switched back on by unauthorised persons.

10.1 Fault indication

When a fault is observed, the corresponding LED fault indicator turns on.

Faults	Causes	Remedies
Indicator light "MALFUNCTION" (Fig. 2, Pos. 7)	Circuit breaker activation Live wire error Control voltage malfunction Non-auto mode	Check the motor and reactivate the circuit breaker Check the general power supply Recommission the fuse Operate the auto mode
Indicator light "LOW LEVEL ANTIFREEZE TANK" (Fig. 2, Pos. 3)	Minimum level reached Leakage	Filling the glycol tank Check the impermeability of the tank and the connections
Indicator light "NON-AUTO MODE" (Fig. 2, Pos. 10)	Non-auto mode	Put the key switch in "Auto" position
Fault signal voltage (all the indicator lights except "LIVE" (Fig. 2, Pos. 1)	Activation of the signal voltage protection	Check the signal voltage circuit, reactivate the protection switch and acknowledge the error
Control voltage fault (Indicator light "MALFUNCTION" (Fig. 2, Pos. 7), "NON-AUTO MODE" (Fig. 2, Pos. 10) and pump (does not start))	Activation of the control voltage protection	Check the control voltage circuit, reactivate the protection switch and acknowledge the error

If you cannot manage to eliminate a fault, please contact Wilo customer service or its nearest representative.

11 Spare parts

Spare parts may be ordered via a local 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.

Subject to change without prior notice

12 Annexes (wiring diagrams/figures)

External connection of the jockey cabinet

	Function	Number of wires per shroud and cross-section of the wires N07VK	Max. length	
Digital inputs	Pressure switch	2 x 1 mm ²	10 m	Jockey switchgear
	Lack of glycol	2 x 1 mm ²	10 m	
Potential-free (no/nc)	Lack of glycol	2 x 1 mm ²	10 m	
	General malfunction	2 x 1 mm ²	10 m	
	Undervoltage	2 x 1 mm ²	10 m	
Performance input	Supply voltage 400 V AC	3 x 2.5 mm ²	20 m	
Performance output	Pump motor	3 x 1.5 mm ²	10 m	
Mass	GND	1 x 6 mm ²	10 m	

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