Pioneering for You

Wilo-Control SC-HVAC (SC, SC-FC, SCe)

de Einbau- und Betriebsanleitung
en Installation and operating instructions
fr Notice de montage et de mise en service
nl Inbouw- en bedieningsvoorschriften

2 542 066-Ed.01 / 2014-02-Wilo

Fig. 1a:

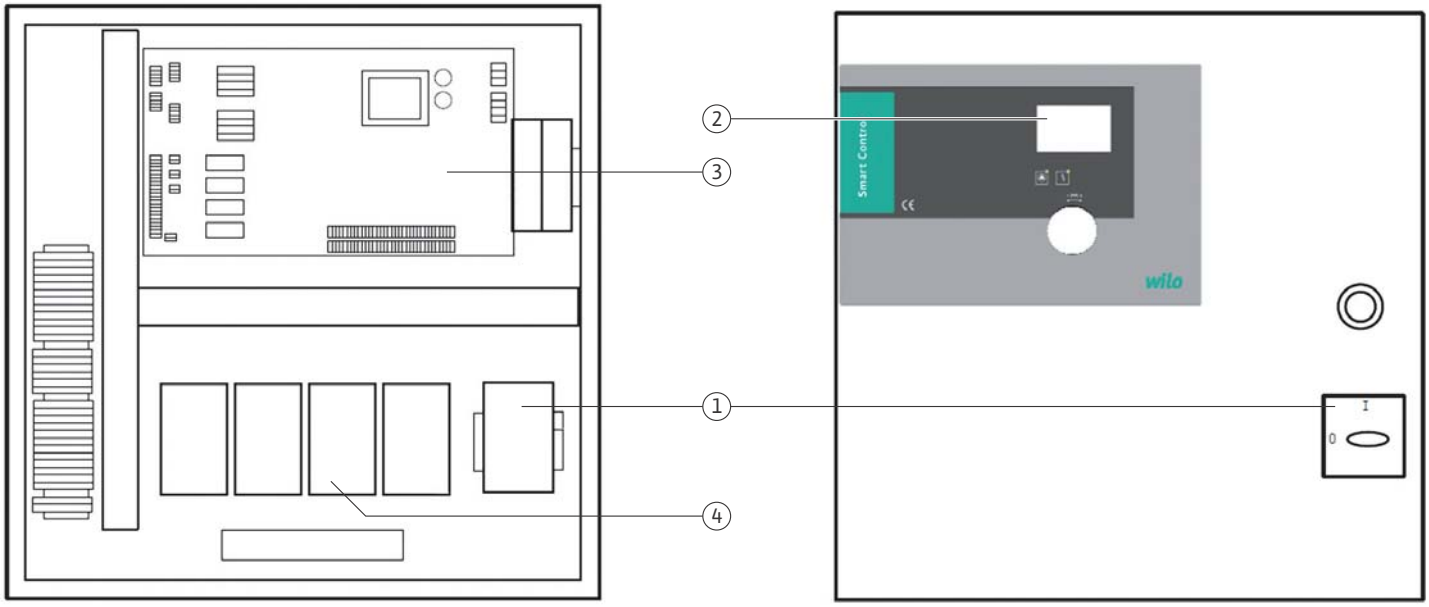


Fig. 1b:

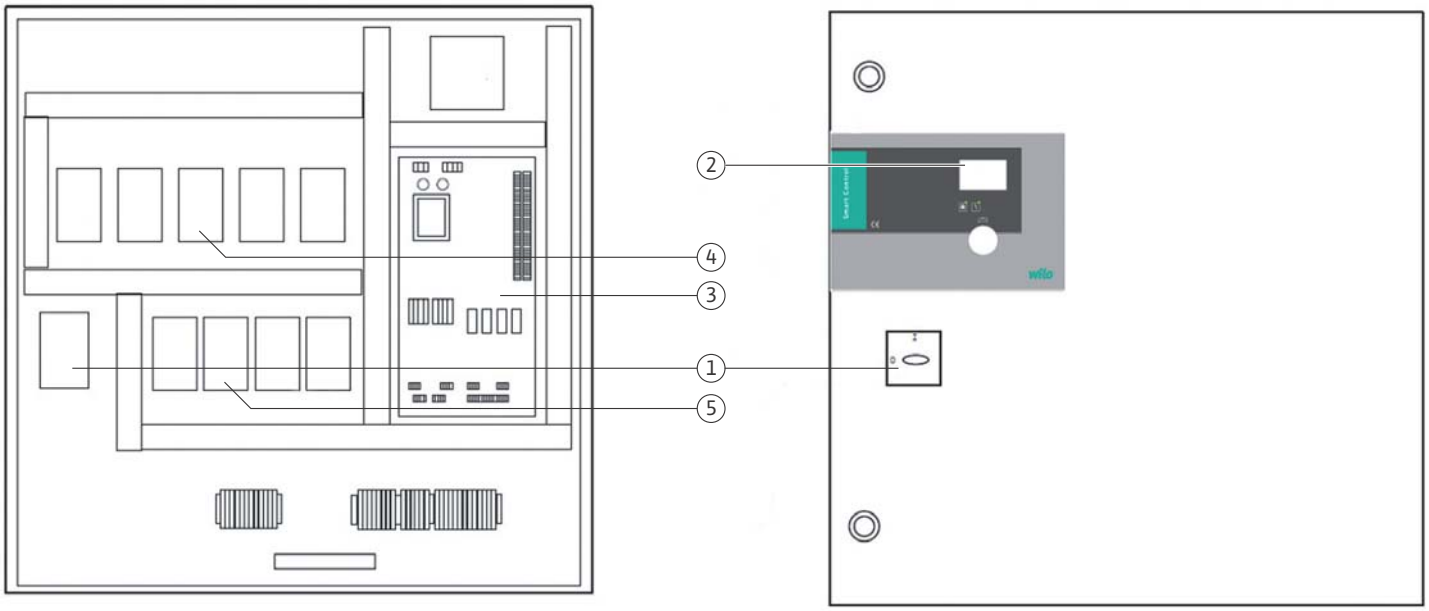
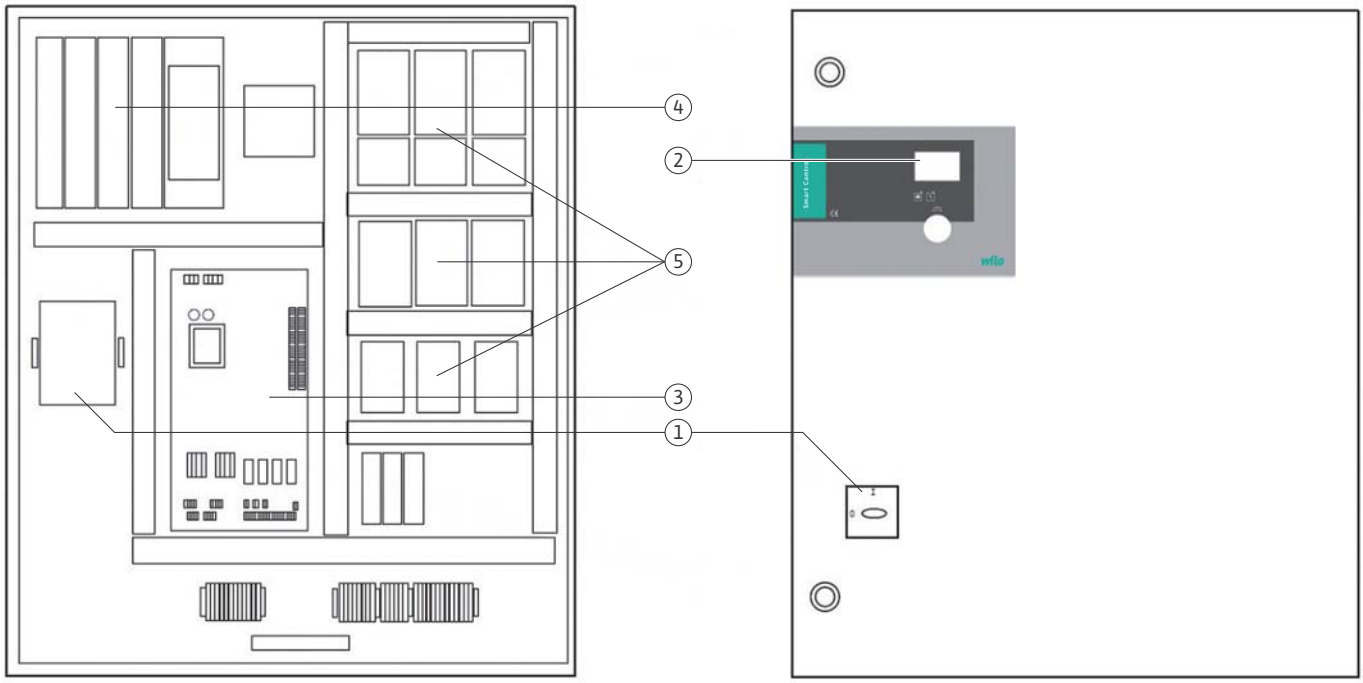


Fig. 1c:



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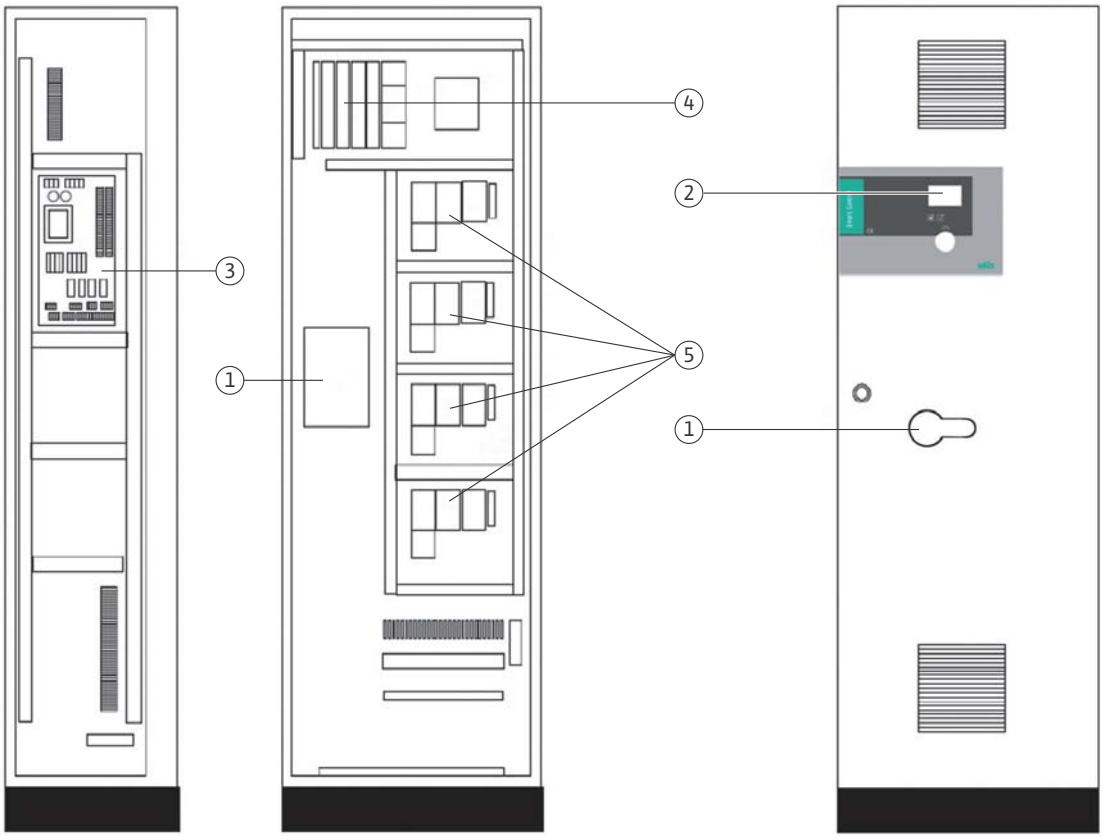

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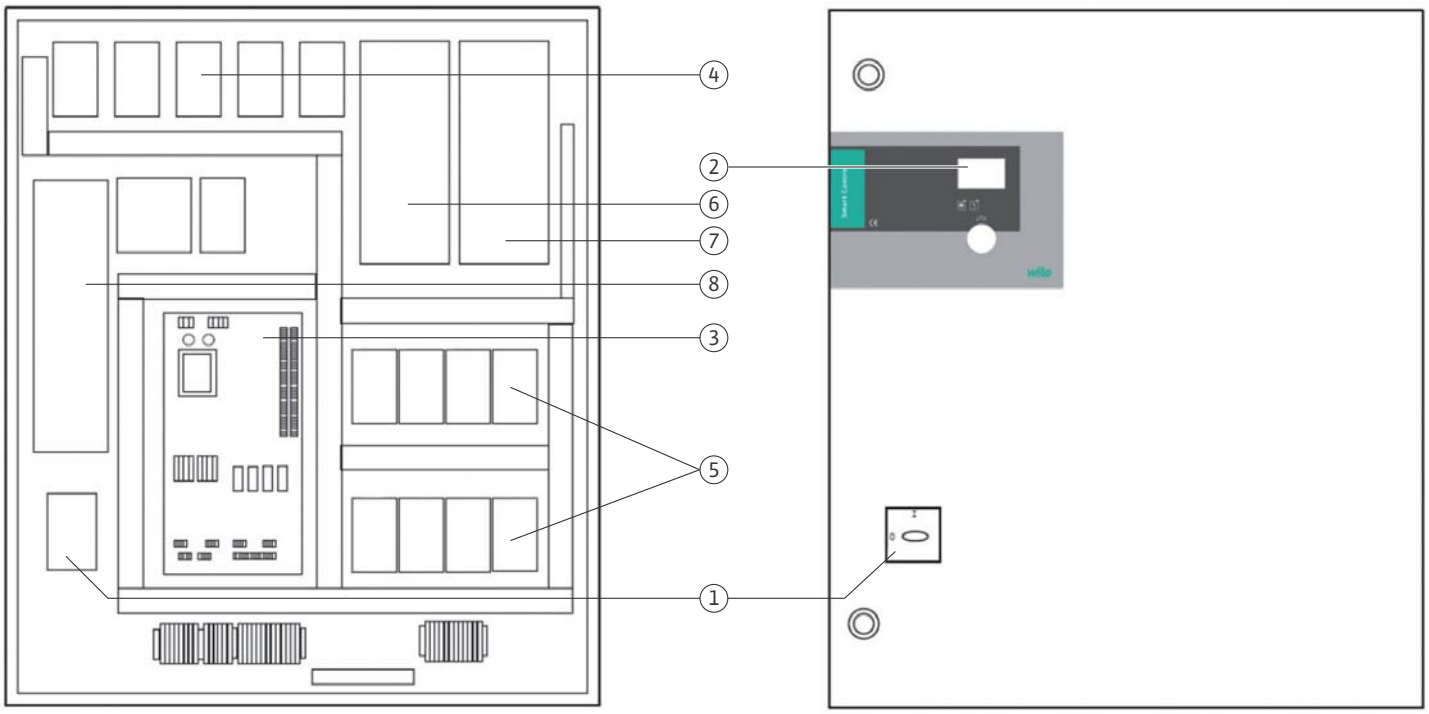

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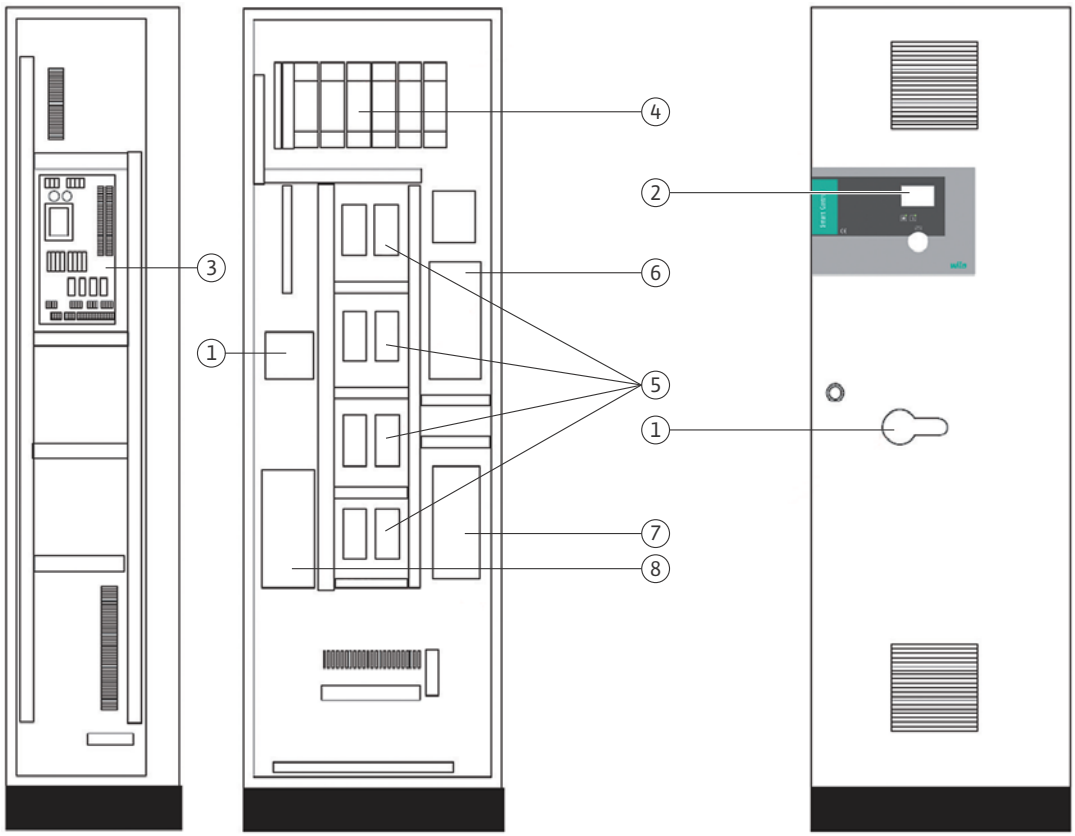

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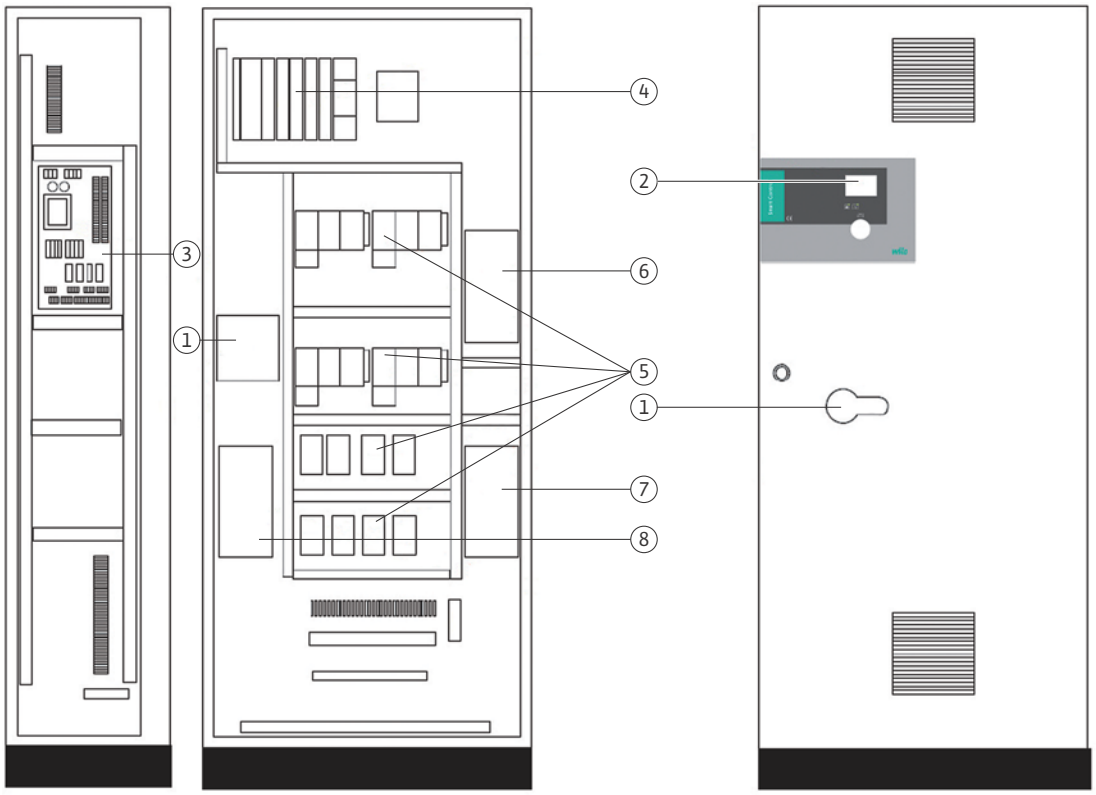
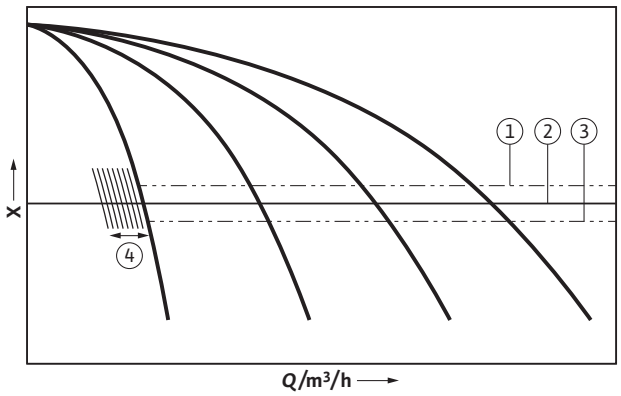


Fig. 2:



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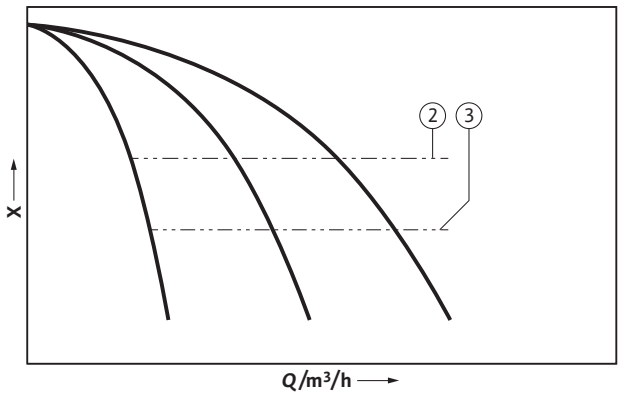

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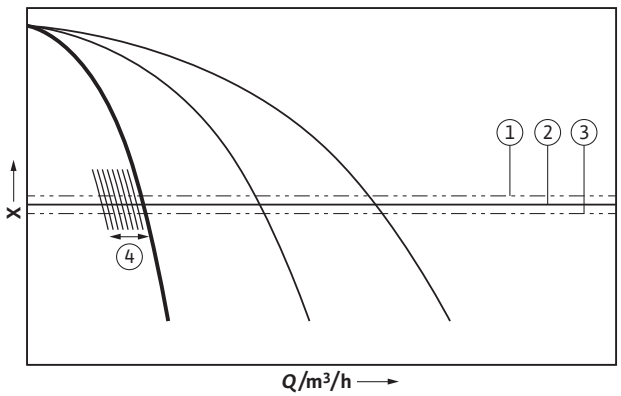

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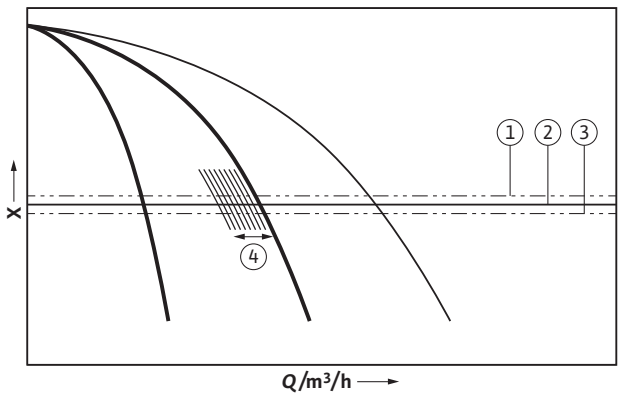

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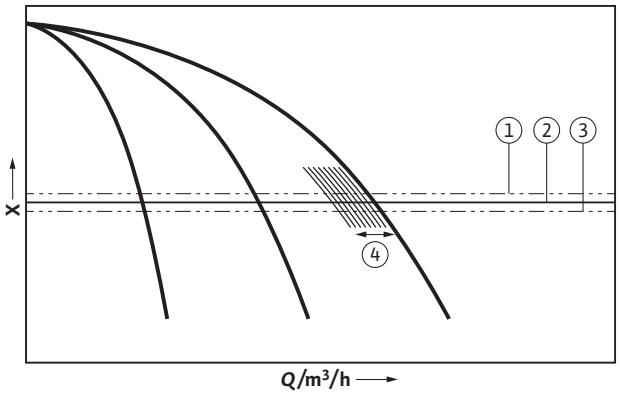

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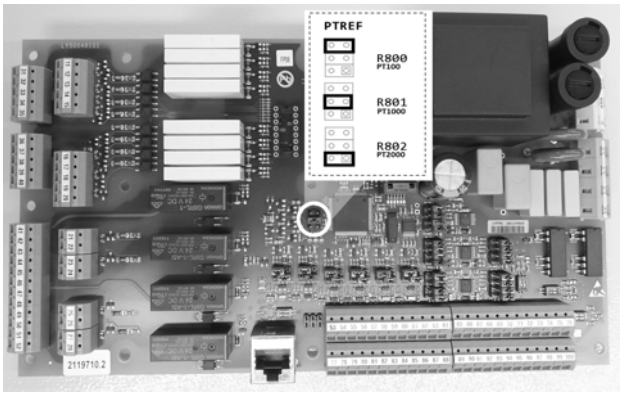

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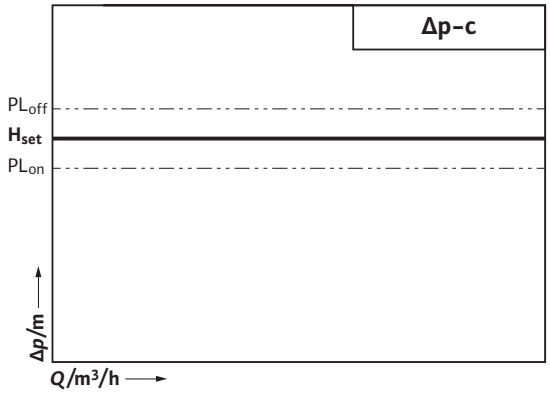

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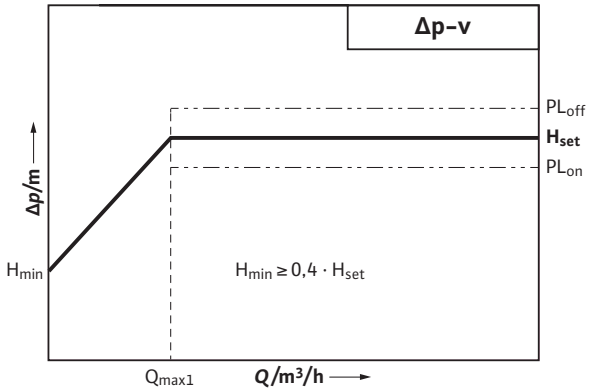

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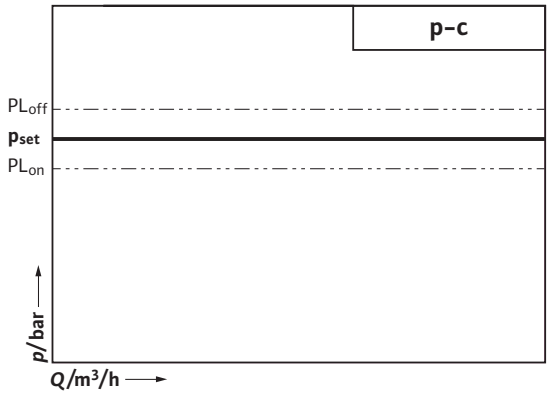

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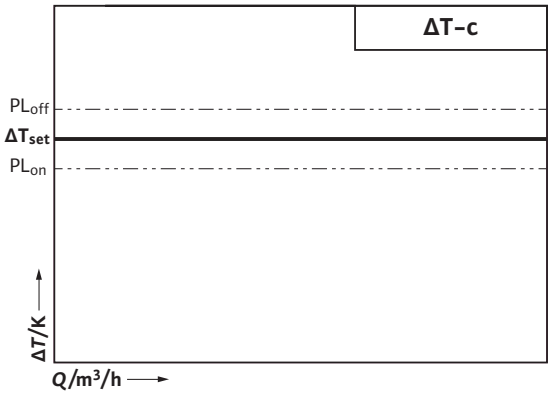

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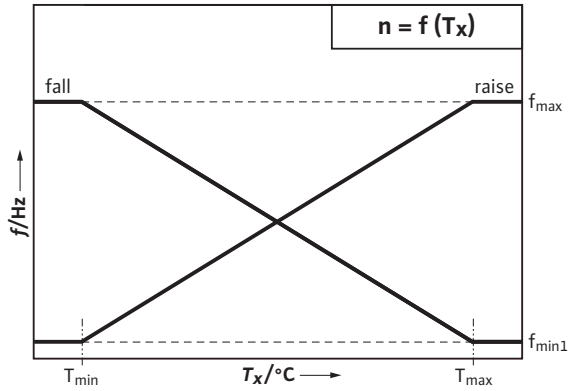
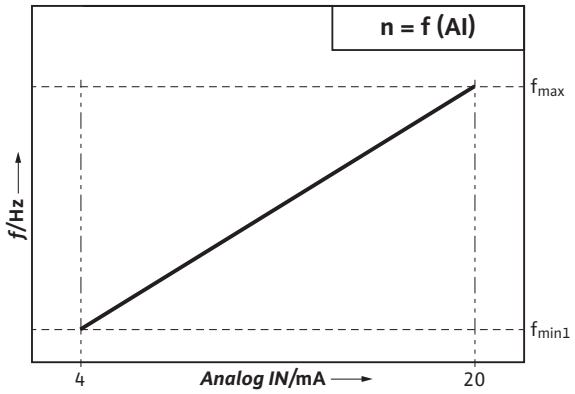

n = f (Tx)
fall
raise
fmax
fmin1
f/Hz
Tmin
Tx/°C
Tmax

Fig. 11:


n = f (AI)
fmax
fmin1
f/Hz
4
Analog IN/mA
20

1 General

About this document

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

These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. 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 component of these operating instructions.

If a technical modification is made on the designs named there without our agreement 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 operating instructions contain basic information which must be adhered to during installation, operation and maintenance. For this reason, these operating 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 in the operating instructions

Symbols

General danger symbol

Danger due to electrical voltage

NOTE

Signal words

DANGER!
Acutely dangerous situation.
Non-observance results in death or the most serious of injuries.

WARNING!
The user can 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 product/unit. 'Caution' implies that damage to the product is likely if this information is disregarded.

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

Information that appears directly on the product, such as:

- Direction of rotation arrow
- Connection marks
- Rating plate
- Warning stickers

must be strictly complied with and kept in legible condition.

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. Non-observance of the safety instructions results in the loss of any claims to damages.

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

- Danger to persons from 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 consciousness on the job

The safety instructions included in these installation and operating instructions, the existing national regulations for accident prevention together with any internal working, operating and safety regulations of the operator are to be complied with.

2.5 Safety instructions for the operator

This appliance 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 appliance.

- If hot or cold components on the product/the unit lead to hazards, local measures must be taken to guard them against touching.
- Guards protecting against touching moving components (such as the coupling) must not be removed whilst the product is in operation.
- Leakages (e.g. from the shaft seals) of hazardous fluids (which are explosive, toxic or hot) must be led away 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 local energy supply companies must be adhered to.

2.6 Safety instructions for installation and maintenance work

The operator must ensure that all installation and maintenance work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the 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.

2.7 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.

Modifications to the product are only permissible after consultation with the manufacturer. Original spare parts and accessories authorised by the manufacturer ensure safety. The use of other parts will absolve us of liability for consequential events.

2.8 Improper use

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

3 Transport and interim storage

Immediately after receiving the product: Check the product for transport damage. If transport damage is detected, the necessary steps involving the carrier must be taken within the specified period.

CAUTION! Risk of property damage!
Incorrect transport and interim storage can cause damage to the product.

- **The switchgear is to be protected against moisture and mechanical damage.**
- **The switchgear must not be exposed to temperatures outside the range between -10°C and +50°C.**

4 Intended use

Purpose

The SC/SCe switchgear is used for automatic, convenient control of single-pump and multi-pump systems.

Fields of application

The field of application includes heating, ventilation and air-conditioning systems in residential buildings, hotels, hospitals and administrative and industrial buildings.
When used in conjunction with suitable signal transmitters, the pumps offer low-noise and energy-saving operation. The performance of the pumps is adapted to the constantly changing requirements in the heating/water-supply system.

CAUTION! Risk of property damage!
Incorrect use/handling can lead to damage to the product.

- **Intended use also includes compliance with these instructions.**
- **Any other use is considered to be outside the intended use.**

5 Product information

5.1 Type key

The type key consists of the following elements:

Example:	SC-HVAC 4x3.0 DOL FC WM
SC SC**e**	Smart Controller for pumps with fixed speed Smart Controller for **electronic** pumps
HVAC	Application in heating, ventilation and air-conditioning systems
4x	Number of pumps
3.0	Max. rated motor power P_2 [kW]
DOL SD	Direct online (direct start) Star-delta starting
FC	With frequency converter
WM BM	Wall mounted Base mounted

Tab. 1 – Type key

5.2 Technical data

Property	Value	Remarks
Mains supply voltage	3~400 V (L1, L2, L3, PE)	
Frequency	50/60 Hz	
Control voltage	24 V DC, 230 V AC	
Max. current consumption	See rating plate	
Protection class	IP 54	
Max. fuse protection on mains side	See wiring diagram	
Max. permissible ambient temperature	0 to +40°C	
Electrical safety	Pollution degree II	

Tab. 2 – Technical data

Please provide all the information on the rating plate when ordering spare parts.

5.3 Scope of delivery

- SC/SCe-HVAC switchgear
- Wiring diagram
- Installation and operating instructions for SC/SCe-HVAC
- Installation and operating instructions for frequency converter (only for SC ... FC version)
- Test report acc. to EN 60204-1

5.4 Accessories

Accessories must be ordered separately:

Accessory	Description
Signal board	Relay output module for outputting individual run signals and fault signals
LON communication module	Bus communication module for “LON” networks
BACnet communication	Connection to BACnet MSTP (RS485)
ModBus RTU communication	Connection to ModBus RTU (RS485)

Tab. 3 – Accessories

6 Description and function

For a description of the product, see also Fig. 1a to Fig. 1g.

6.1 Description of the product

6.1.1 Function description

The Smart control system, controlled by a microcontroller, is used to control pump systems with up to 4 single pumps. The control variable of a system is measured with corresponding signal transmitters and controlled load-sensitively.

In the SC version, all pumps are fixed speed pumps – the control is a 2-point control. Non-controlled peak-load pumps are switched on and off automatically depending on the load requirement.

In the SC-FC version, the controller acts on a frequency converter, which in turn influences the speed of the base-load pump. A modification of the speed changes the volume flow and thus the power output of the pump system. Non-controlled peak-load pumps are switched on and off automatically depending on the load requirement.

In the SCe version, each pump has an (integrated) frequency converter, with only the base-load pump undertaking the speed control.

6.1.2 Set-up of the control device

The set-up of the control device is dependent on the performance of the pumps that are to be connected, and the version (SC, SC-FC, SCe), see
Fig. 1a: SCe WM
Fig. 1b: SC direct starting WM
Fig. 1c: SC star-delta starting WM
Fig. 1d: SC star-delta starting BM
Fig. 1e: SC-FC direct starting WM
Fig. 1f: SC-FC direct starting BM
Fig. 1g: SC-FC star-delta starting BM

It consists of the following main components:

- **Main switch:**
  Switches the switchgear on/off (item 1).
- **Human-machine interface (HMI):**
  LCD for displaying operating data (see menus), LEDs for displaying the operating status (operation/fault), operating knob for menu selection and parameter input (item 2).
- **Base board:**
  Printed circuit board with microcontroller; version corresponding to device version (SC/SC-FC or SCe) (item 3).
- **Fuse protection of drives and the frequency converter:**
  Fuse protection of the pump motors and the frequency converter.
  In DOL version devices: Motor protection switch.
  In the SCe version: Circuit breaker to protect the pump mains power cable (item 4).
- **Contactors/contactor combinations:**
  Contactors for switching on the pumps. In SD version devices, including the thermal tripping devices for excess current protection (set value: 0.58 x I_N) and the time relay for the star-delta switching (item 5).
- **Frequency converter:**
  Frequency converter for load-sensitive speed control of the base-load pump – only in the SC-FC version (item 6).
- **Motor filter:**
  Filter for ensuring a sinusoidal motor voltage and for suppressing voltage peaks – only in the SC-FC version (item 7).
- **EMC filter:**
  Filter for suppressing EMC interference on mains side – only in the SC-FC version up to 7.5 kW (item 8).

6.2 Function and operation

DANGER! Risk of fatal injury!
When working on the open switchgear, there's a danger of electric shock from touching the live components.

- **The work must be carried out only by qualified personnel!**
- **Adhere to regulations for accident prevention!**

NOTE:
After connecting the switchgear to the supply voltage, as well as after every mains interruption, the switchgear returns to the operating mode set before the power interruption.

6.2.1 Operating modes of the switchgear

Normal operation of SC switchgear with frequency converter (FC) (see Fig. 2)

An electronic signal transmitter (measurement range to be set in menu 5.2.1.0) supplies the control variable actual value as a 4...20 mA current signal. Then the controller holds the current control variable constant by comparing the setpoint and the actual value (for setting of the reference setpoint (see Fig. 2, item 1), see menu 1.2.1.1). If there is no "external off" signal and no fault, at least the base-load pump runs at minimum speed. If the power requirement rises, the speed of the base-load pump is first increased. If the power requirement cannot be met by this pump, the control system switches on a peak-load pump and, if the requirement increases further, other peak-load pumps (activation threshold: see Fig. 2, item 2; can be set individually for each pump; menu 1.2.2.3/5/7). The peak-load pumps run at constant speed; the speed of the base-load pump is controlled to the setpoint in each case (see Fig. 2, item 4).

If the requirement drops until the controlling pump is working in its lower performance range and no peak-load pump is required any longer in order to meet the requirement, then the peak-load pump switches off (deactivation threshold: see Fig. 2, item 3; can be set individually for each pump; menu 1.2.2.4/6/8).

Delay times can be set in the menus 1.2.5.2 and 1.2.5.3 for activation and deactivation of the peak-load pump.

If the frequency converter has a fault, the switchgear behaves like switchgear without a frequency converter (see next section).

Normal operation of SC switchgear without frequency converter (see Fig. 3)

An electronic signal transmitter (measurement range to be set in menu 5.2.1.0) supplies the control variable actual value as a 4...20 mA current signal. Because there is no possibility for load-sensitive speed adaptation of the base-load pump, the system works as a two-point controller and keeps the control variable in the range between the activation and deactivation thresholds (menus 1.2.2.3 to 1.2.2.8). These must be set in relation to the reference setpoint (menu 1.2.1.1).

If there is no "external off" signal and no fault, at least the base-load pump runs. If the power requirement cannot be met by this pump, the control system switches on a peak-load pump and, if the requirement increases further, other peak-load pumps (activation threshold: see Fig. 3, item 2; can be set individually for each pump; menu 1.2.2.3/5/7).

If the requirement drops until no peak-load pump is required any longer in order to meet the requirement, then the peak-load pump switches off (deactivation threshold: see Fig. 3, item 3; can be set individually for each pump; menu 1.2.2.4/6/8).

Delay times can be set in the menus 1.2.5.2 and 1.2.5.3 for activation and deactivation of the peak-load pump.

Normal operation of SCe switchgear (see Fig. 3)

An electronic signal transmitter (measurement range to be set in menu 5.2.1.0) supplies the control variable actual value as a 4...20 mA current signal. Then the controller holds the control variable constant by comparing the setpoint and the actual value (for setting of the reference setpoint (see Fig. 3, item 1), see menu 1.2.1.1). If there is no

"external off" signal and no fault, at least the base-load pump runs at minimum speed (Fig. 4a). If the power requirement can no longer be met by this pump at the speed that can be set in menu 1.2.3.1, another pump starts when the reference setpoint is undershot (see Fig. 3, item 1) and takes over the speed control (Fig. 4b). The previous base-load pump continues to run at max. speed as a peak-load pump. This procedure is repeated with increasing load until the maximum number of pumps is reached (here: 3 pumps – see Fig. 4c).

If the requirement drops, then the controlling pump is switched off when the speed that can be set in menu 1.2.3.2 is reached and the reference setpoint is exceeded at the same time; then, a former peak-load pump takes over control.

Delay times can be set in the menus 1.2.5.2 and 1.2.5.3 for activation and deactivation of the peak-load pump.

Pump cycling

Various mechanisms of pump cycling are applied optionally in order to ensure that the loads on all pumps are as uniform as possible and to balance the running times of the pumps.

The base-load pump is cycled on each requirement (after deactivation of all pumps).

Furthermore, a cycling of the base-load pump can also be activated (menu 5.6.1.0). The running time between 2 cycling procedures can be set in menu 5.6.2.0.

Standby pump

One pump can be defined as the standby pump. When this operating mode is activated, this pump is not activated in normal operation. It is switched on only if a pump fails due to a fault. However, the standby pump is subject to standstill monitoring and is included in the test run. Service life optimisation ensures that every pump becomes a standby pump once.

This function is preset at the factory and can be changed only by Wilo customer service.

Pump test run

A cyclic test run of the pumps can be activated in order to avoid lengthy standstill periods (menu 5.7.1.0). The time between two test runs can be defined in menu 5.7.2.0 for this purpose. In the SCe and SC...FC versions, the speed of the pump (during the test run) can be set (menu 5.7.3.0).

A test run only happens when the system is at standstill. A test run does **not** happen when the switchgear is in "external off" status.

Low water (only for control mode Δp-c)

A low-water signal can be fed to the control system via a normally closed contact by means of the signal from a suction-side pressure switch or break tank float switch. The pumps are switched off after a delay time that can be set in menu 1.2.5.4 has expired. If the signal input is closed again within the delay time, this does not lead to deactivation.

The system restart after a deactivation due to low water is performed automatically after the signal input closes (delay time acc. to menu 1.2.5.5).

The fault signal is reset automatically after the restart. However, it can be read out from the history memory.

Monitoring of maximum and minimum pressure (only for control mode Δp-c)

The limit values for safe system operation can be set in menu 5.4.0.0.

Exceeding the maximum pressure (menu 5.4.1.0) leads to delayed (menu 5.4.4.0) deactivation of all pumps. The collective fault signal is activated.

Normal operation is enabled again after the pressure has dropped below the activation threshold.

In menu 5.4.2.0, it is possible to set the pressure threshold of the minimum pressure monitoring, and in menu 5.4.5.0, the delay time. The behaviour of the switchgear when this pressure threshold is undershot can be selected in menu 5.4.3.0 (deactivation of all pumps or continued operation). The collective fault signal is activated in all cases.

External off

It is possible to deactivate the control device externally using a normally closed contact. This function takes priority; all pumps running in automatic mode are switched off.

The pumps can be started in manual mode. The frost protection function is active.

Operation in the event of a sensor fault

In the event of a sensor fault (e.g. wire break), the behaviour of the switchgear can be defined in menu 5.2.3.0. The system is either switched off or continues to run with a pump. In the SCe and SC...FC versions, the speed of this pump can be set in menu 5.2.4.0.

Operating mode of the pumps

The operating mode of the pumps can be selected in menus 3.2.1.1, 3.2.2.1, 3.2.3.1 and 3.2.4.1 (hand, off, auto). In the SCe version, the speed in “hand” operating mode can be set (menus 3.2.1.2, 3.2.2.2, 3.2.3.2 and 3.2.4.2).

Setpoint changeover

The control system can work with two different setpoints. They are set in menus 1.2.1.1 and 1.2.1.2.

Setpoint 1 is the reference setpoint. A changeover to setpoint 2 is performed by closing the external digital input (acc. to wiring diagram).

If setpoint 2 is set to 0, all pumps are switched off and the frost protection function is activated.

Remote setpoint adjustment

Using the corresponding terminals (in accordance with the wiring diagram), remote adjustment of the setpoint is possible using an analogue current signal (4–20 mA). This function can be activated in menu 5.3.1.0.

The input signal is always in relation to the sensor measuring range (e.g. DDG 40: 20 mA corresponds to 40 m (water column)).
In control mode ΔT-c, 4–10 mA corresponds to 0–150 K.

If the external setpoint is 0, all pumps are switched off and the frost protection function is activated.

Function of the collective run signal (SBM)

The desired function of the SBM can be set in menu 5.5.1.0. In this case, it is possible to select between “Ready” (switchgear is ready for operation) and “Run” (at least one pump is running).

Logic reversal of the collective fault signal (SSM)

The desired logic of the SSM can be set in menu 5.5.2.0. In this case, it is possible to select between negative logic (falling edge in case of a fault = “fall”) or positive logic (rising edge in case of a fault = “raise”).

Frost protection (not for control mode Δp-c)

A frost protection signal can be fed to the control system via a normally closed contact by means of the signal from a frost protection thermostat. If the signal input is opened, a pump is activated at minimum speed with a delay, and the collective fault signal is activated.

After the normally closed contact closes, the system returns to the specified automatic mode. The fault signal is reset automatically, but can be read out from the history memory.

Frost protection operation is possible only if the system is switched off by setpoint 2, analogue external setpoint or external OFF.

Fault-actuated switchover of multi-pump system

SC switchgear with frequency converter (FC):

If the base-load pump has a fault, it is switched off and another pump is switched onto the frequency converter. If the frequency converter has a fault, the switchgear works like an SC switchgear without frequency converter.

SC switchgear without frequency converter:

If the base-load pump has a fault, it is switched off and one of the peak-load pumps is managed by the control system as a base-load pump.

SCe switchgear:

If the base-load pump has a fault, it is switched off and another pump takes over the control function.

A fault of a peak-load pump always leads to its deactivation and to the activation of another peak-load pump (possibly also the standby pump).

6.2.2 Control modes

The basic control mode of the system can be preselected in menus 1.1.1.0 to 1.1.1.8.

An electronic signal transmitter (measurement range to be set in menu 5.2.1.0) supplies the control variable actual value, e.g. as a 4...20 mA current signal. For the devices with temperature sensor inputs, the resistance change of Pt100 or Pt1000 sensors is detected (depending on the jumper setting; see Fig. 5).

The following control modes can be selected:

Δp-c (constant differential pressure – see Fig. 6)

The differential pressure (between two system points) is held constant in accordance with the setpoint under changing load conditions (volume flow).

Multi-pump operation is possible.

Δp-v (variable differential pressure – see Fig. 7) (only SCe/SC...FC)

The control setpoint of the exclusively running base-load pump is adjusted and corrected as a function of the volume flow between Hmin (menu 1.2.1.3) and setpoint (setpoint ≥ Hmin ≥ 0.4 x setpoint). Furthermore, the zero-delivery head (H0) of the pump must be input (menu 1.2.1.1).

After load-sensitive cut-in of one or more peak-load pumps, the system operates in the Δp-c mode.

Multi-pump operation is possible. External analogue setpoint specification is possible.

Δp-c (constant absolute pressure – see Fig. 8)

The output pressure of the system is held constant in accordance with the setpoint under changing load conditions (volume flow).

Multi-pump operation is possible.

ΔT-c (constant differential temperature – see Fig. 9)

The differential temperature (between two system points; feed/return) is held constant in accordance with the setpoint under changing load conditions (volume flow).

Multi-pump operation is possible.

n=f(xT) (speed-controller – dependent on temperature – see Fig. 10)

The speed of the base-load pump is set in dependence on the input temperature (select the control mode in accordance with the desired temperature input). You can choose between rising and falling dependence on the control input (menu 1.2.4.4).

The speed of the base-load pump is set between f_{min} and f_{max} (1.2.6.1 and 1.2.6.2) and T_{min} and T_{max} (1.2.1.1 and 1.2.1.2).

Multi-pump operation is not possible.

n=f(AI) (manual control mode – see Fig. 11)

Using the corresponding terminals (in accordance with the wiring diagram), remote adjustment of the speed of the base-load pump is possible using an analogue current signal (4-20 mA).

The speed of the base-load pump is set between f_{min} and f_{max} (1.2.6.1 and 1.2.6.2) (4 mA corresponds to f_{min}; 20 mA corresponds to f_{max}).

Multi-pump operation is not possible.

6.2.3 Motor protection

Excess temperature protection

Motors with WSK (thermal winding contact) signal an excess winding temperature to the control device by opening a bimetal strip contact. The WSK is connected according to the wiring diagram.

Faults of motors that are equipped with a temperature-dependent resistor (PTC) for excess temperature protection can be detected using optional evaluation relays.

Excess current protection

Direct-starting motors are protected by motor protection switches with thermal and electromagnetic tripping devices. The trigger current (I_{nom}) must be set directly at the motor protection switch.

Motors with Y-Δ starting are protected by thermal overload relays. These are installed directly on the motor contactors. The trigger current must be set and is 0.58 x I_{nom} with the Y-Δ starting of the pumps used.

All motor protection devices protect the motor during operation with the frequency converter or in mains operation. Pump faults which reach the switchgear result in deactivation of the corresponding pump and activation of the SSM. After the cause of the fault has been rectified, it is necessary to acknowledge the fault.

The motor protection is also active in manual mode and leads to deactivation of the corresponding pump.

In the SCe version, the pump motors protect themselves by mechanisms integrated in the frequency converters. The error messages from the frequency converters are handled in the switchgear as described above. Acknowledgement is not required after the errors have been corrected.

6.2.4 Operation of the switchgear

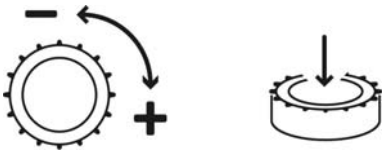


Fig. 11:Operation of the operating knob

Operating elements

- **Main switch** on/off (lockable in “Off” position)
- The **LCD** shows the operating statuses of the pumps, the controller and the frequency converter. The menu selection and parameter input are performed using the operating knob. Turn the knob to change values or to scroll through a menu level; press it in order to select and confirm (Fig. 11).

Information appears on the display as shown in the sample illustration below (see Fig. 12):

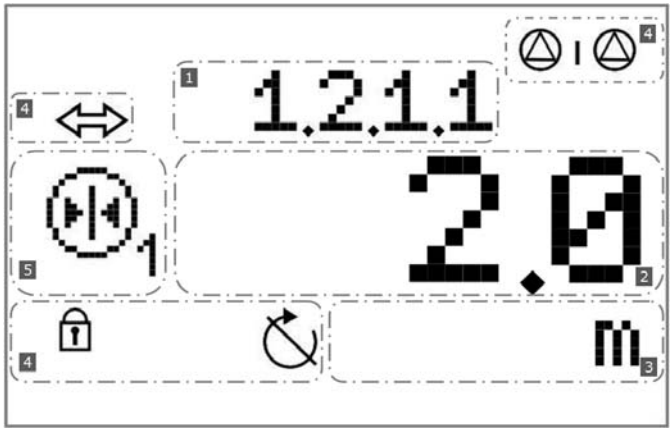


Fig. 12: Display structure

Elements of the display:

item	Description
1	Menu number
2	Value display
3	Units display
4	Standard symbols
5	Graphic symbols

The following graphic symbols are used:

Symbol	Function/description	Availability
	Go back (brief press: one menu level; long press: main screen)	All device versions
	EASY menu	All device versions
	EXPERT menu	All device versions
	Service	All device versions
	Service logged in	All device versions
	1st meaning: Service not logged in 2nd meaning: Display value – no entry possible	All device versions
	Pump status symbol: Pump available but switched off	All device versions
	Pump status symbol: Pump running with speed control (bar varies according to the speed of the pump)	SCe, SC... FC
	Pump status symbol: Pump running at max. speed or fixed on mains	All device versions
	Parameter	All device versions
	Information	All device versions
	Fault	All device versions
	Fault acknowledgement	All device versions
	Acknowledge fault	All device versions
	Alarm settings	All device versions
	Pump	All device versions
	Pump 1	All device versions
	Pump 2	All device versions
	Pump 3	All device versions
	Pump 4	All device versions

Symbol	Function/description	Availability
	Pump cycling	All device versions
	Pump test run	All device versions
	Setpoint	All device versions
	Minimum delivery head for setpoint 1 (only Δp-v)	SCe, SC... FC
	Setpoint 1	All device versions
	Minimum delivery head for setpoint 2 (only Δp-v)	SCe, SC... FC
	Setpoint 2	All device versions
	Zero-delivery head (only Δp-v)	SCe, SC... FC
	External setpoint	All device versions
	Switching thresholds	All device versions
	Activation threshold	All device versions
	Deactivation threshold	All device versions
	Actual value	All device versions
	Sensor: Signal type	All device versions
	Sensor: Measurement range	All device versions
	Sensor: Fault	All device versions
	Speed	SCe, SC... FC
	Pump speed	SCe, SC... FC
	Speed of pump 1	SCe, SC... FC
	Speed of pump 2	SCe, SC... FC

Symbol	Function/description	Availability
	Speed of pump 3	SCe, SC... FC
	Speed of pump 4	SCe, SC... FC
	Speed in manual mode	SCe
	Maximum speed	SCe, SC... FC
	Minimum speed	SCe, SC... FC
	Frequency converter	SCe, SC... FC
	Positive ramp	SCe, SC... FC
	Negative ramp	SCe, SC... FC
	Pump activation and deactivation delay times	All device versions
	Set time	All device versions
	Follow-up time	All device versions
	Setting of PID parameters	SCe, SC... FC
	Proportional component setting	SCe, SC... FC
	Integral component setting	SCe, SC... FC
	Differential component setting	SCe, SC... FC
	Control mode	All device versions
	Operating mode of the switchgear	All device versions
	Operating mode of the pump	All device versions
	Stand-by	All device versions
	Limit values (only p-c)	All device versions

Symbol	Function/description	Availability
	Maximum pressure (only p-c)	All device versions
	Minimum pressure (only p-c)	All device versions
	Maximum pressure: Delay time (only p-c)	All device versions
	Minimum pressure: Delay time (only p-c)	All device versions
	Maximum pressure threshold (only p-c)	All device versions
	Minimum pressure threshold (only p-c)	All device versions
	Behaviour in the event of minimum pressure (only p-c)	All device versions
	Switchgear data, controller type, ID number, software/firmware	All device versions
	Operating data	All device versions
	Operating hours	All device versions
	Operating hours of pump 1	All device versions
	Operating hours of pump 2	All device versions
	Operating hours of pump 3	All device versions
	Operating hours of pump 4	All device versions
	Switching cycles	All device versions
	Switching cycles of pump 1	All device versions
	Switching cycles of pump 2	All device versions
	Switching cycles of pump 3	All device versions
	Switching cycles of pump 4	All device versions
	Communication	All device versions

Symbol	Function/description	Availability
	Communication parameters	All device versions
	ModBus	All device versions
	BACnet	All device versions
	Collective fault signal (SSM) parameter	All device versions
	Collective run signal (SBM) parameter	All device versions
	Frost protection function triggered	All device versions
	Low water (only p-c)	All device versions
	Delay time, restart after low water (only p-c)	All device versions
	Follow-up time for low water (only p-c)	All device versions
	Peak-load pump: Activation threshold	All device versions
	Peak-load pump 1: Activation threshold	SC, SC... FC
	Peak-load pump 2: Activation threshold	SC, SC... FC
	Peak-load pump 3: Activation threshold	SC, SC... FC
	Peak-load pump: Delay time for activation	All device versions
	Peak-load pump: Deactivation threshold	All device versions
	Peak-load pump 1: Deactivation threshold	SC, SC... FC
	Peak-load pump 2: Deactivation threshold	SC, SC... FC
	Peak-load pump 3: Deactivation threshold	SC, SC... FC
	Peak-load pump: Delay time for deactivation	All device versions

Tab. 4 – Symbols

6.2.5 Menu structure

The menu structure of the control system has 4 levels. Navigation in the individual menus and the parameter input are described in the following example (change of control mode from Δp-c to ΔT-c; see Fig. 13):

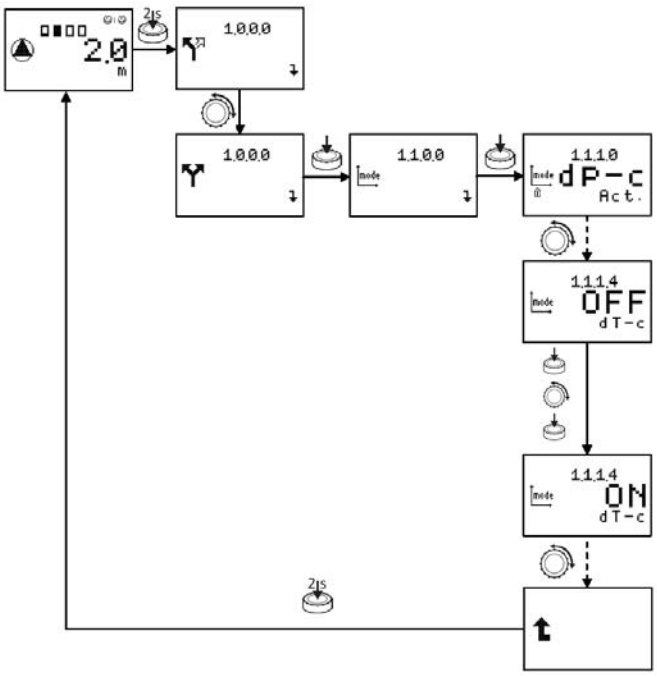
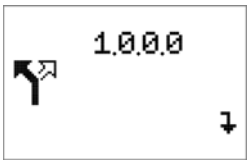
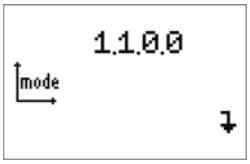
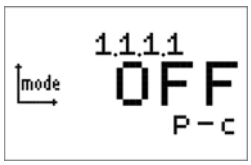
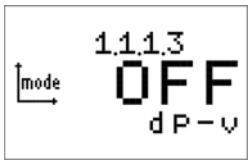
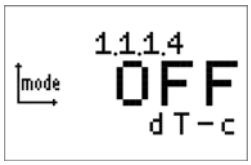
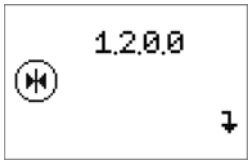
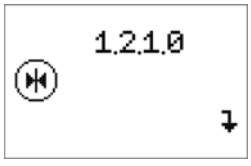
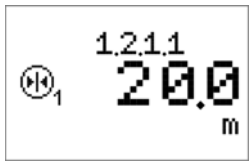
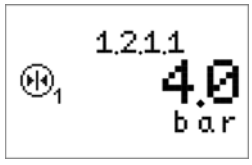
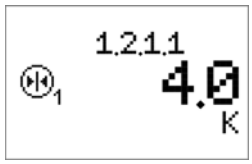
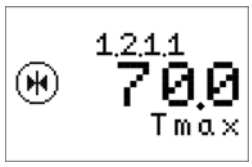
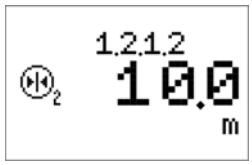
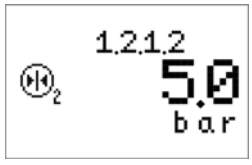
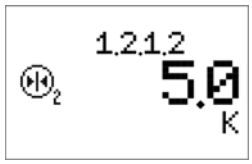
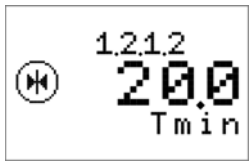
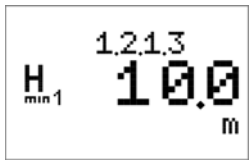


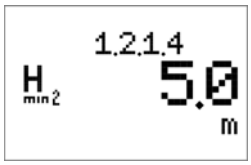
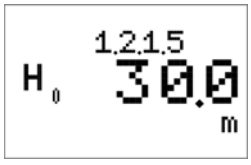
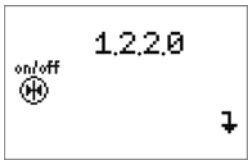
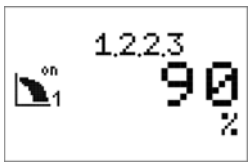
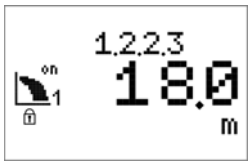
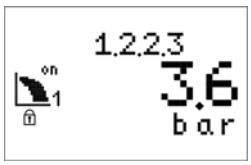
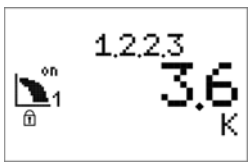
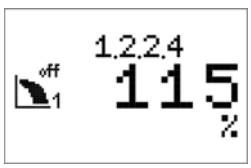
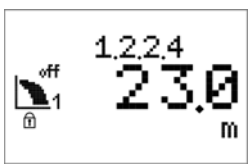
Fig. 13: Navigation and parameter input (example)

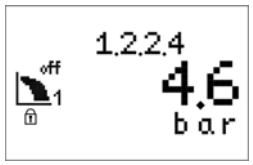
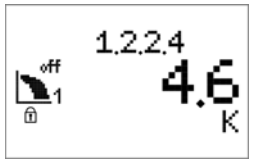
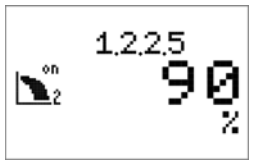
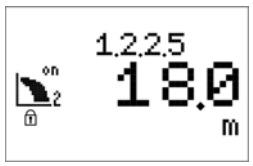
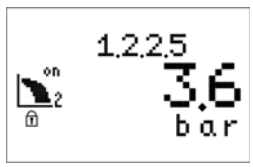
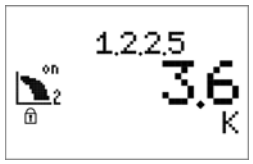
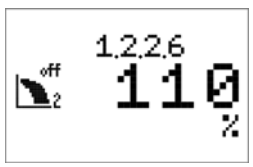
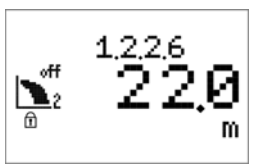
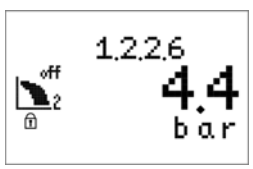
Refer to the following table for a description of the individual menu items.

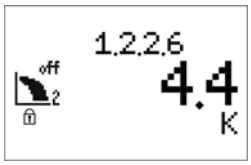
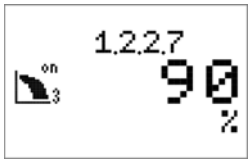
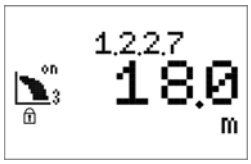
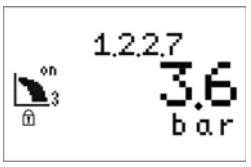
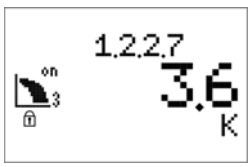
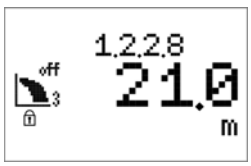
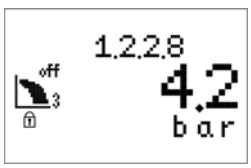
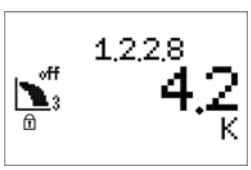
Menu no./ notes	Display	Description	Parameter range	Factory setting
0		The main screen shows the status of the system.	–	–
1.0.0.0		The EASY menu only makes it possible to set the control mode and the 1st setpoint.	–	–
1.0.0.0		The EXPERT menu contains other settings that can be used for detailed adjustment of the switchgear.	–	–
1.1.0.0		Menu for selecting the desired control modes.	–	–

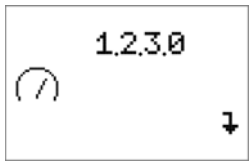
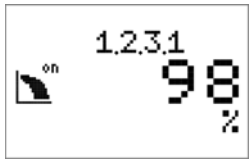
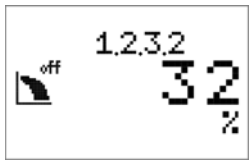
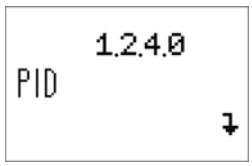
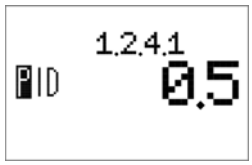
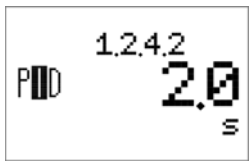
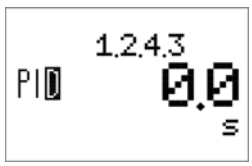
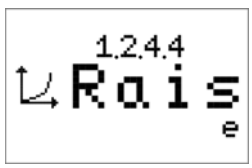
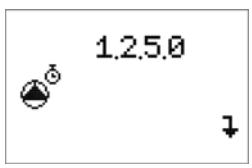
Menu no./ notes	Display	Description	Parameter range	Factory setting
1.1.1.0		The control mode currently enabled for operation is displayed. Currently, the constant differential pressure control mode is selected.	p–c Δp–c Δp–v ΔT–c n(f)=FT n(f)=RT n(f)=AI	Δp–c
1.1.1.1		Option of constant pressure control mode (currently not selected for operation).	–	–
1.1.1.3 Only SCe, SC... FC		Option of variable differential pressure control mode (currently not selected for operation).	–	–
1.1.1.4		Option of constant differential temperature control mode (currently not selected for operation).	–	–
1.1.1.5 Only SCe, SC... FC		Option of “speed controller – dependent on feed temperature” control mode (currently not selected for operation).	–	–
1.1.1.6 Only SCe, SC... FC		Option of “speed controller – dependent on return temperature” control mode (currently not selected for operation).	–	–
1.1.1.7 Only SCe, SC... FC		Option of manual control mode (currently not selected for operation).	–	–
1.2.0.0		Setpoints	–	–
1.2.1.0 Not for n=f(AI)		Setpoints 1 and 2 (only in EXPERT menu).	–	–

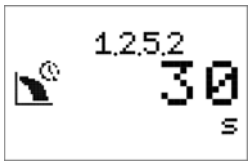
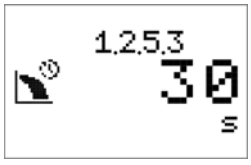
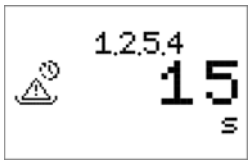
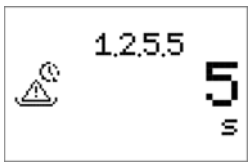
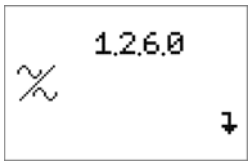
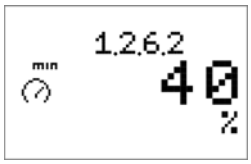
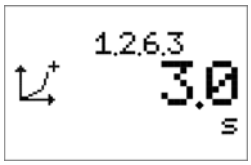
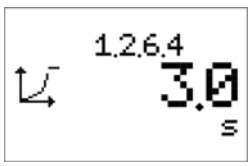
Menu no./ notes	Display	Description	Parameter range	Factory setting
1.2.1.1 Only Δp-c, Δp-v		Setting of the first setpoint	0.0 ... 20.0 ... Sensor measurement range [m]	20.0 m
1.2.1.1 Only p-c		Setting of the first setpoint	0.0 ... 4.0 ... Sensor measurement range [bar]	4.0 bar
1.2.1.1 Only ΔT-c		Setting of the first setpoint	0.0 ... 4.0 ... 150 [K]	4.0 K
1.2.1.1 Only n= f(RT) n= f(FT)		Setting of the maximum temperature	0.0 ... 70.0 ... 170 [°C]	70.0 °C
1.2.1.2 Only Δp-c, Δp-v		Setting of the second setpoint	0.0 ... 10.0 ... Sensor measurement range [m]	10.0 m
1.2.1.2 Only p-c		Setting of the second setpoint	0.0 ... 5.0 ... Sensor measurement range [bar]	5.0 bar
1.2.1.2 Only ΔT-c		Setting of the second setpoint	0.0 ... 5.0 ... 150 [K]	5.0 K
1.2.1.2 Only n = f(RT) n = f(FT)		Setting of the minimum temperature	–40.0... 20.0... 70.0 [°C]	20.0 °C
1.2.1.3 Only Δp-v		Setting of the minimum permissible delivery head for the first setpoint	0.0 ... 10.0 ... Sensor measurement range [m]	10.0 m

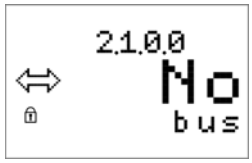
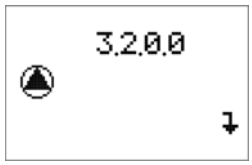
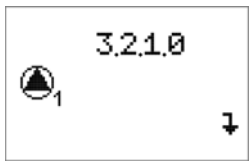
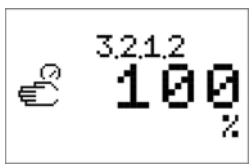
Menu no./ notes	Display	Description	Parameter range	Factory setting
1.2.1.4 Only Δp-v		Setting of the minimum permissible delivery head for the second setpoint	0.0 ... 5.0 ... Sensor measure-ment range [m]	5.0 m
1.2.1.5 Only Δp-v		Setting of the zero-delivery head of the pump	0.0 ... 30.0 ... Sensor measure-ment range [m]	30.0 m
1.2.2.0 Only SC, SCe... FC		Thresholds	–	–
1.2.2.3		Setting of the activation threshold of the 1st peak-load pump (in % of the active setpoint)	75 ... 90 ...100 [%]	90%
1.2.2.3 Only Δp-c, Δp-v		Activation threshold 1st peak-load pump	–	–
1.2.2.3 Only p-c		Activation threshold 1st peak-load pump	–	–
1.2.2.3 Only ΔT-c		Activation threshold 1st peak-load pump	–	–
1.2.2.4		Setting of the deactivation threshold of the 1st peak-load pump (in % of the active setpoint)	100 ... 115 ... 125 [%]	115%
1.2.2.4 Only Δp-c, Δp-v		Deactivation threshold 1st peak-load pump	–	–

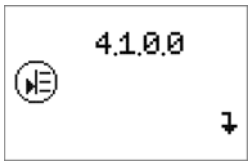
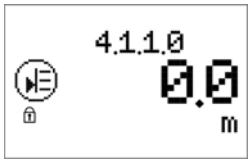
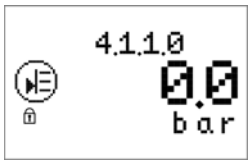
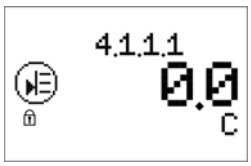
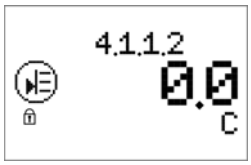
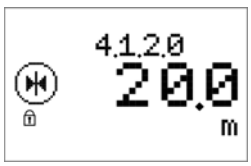
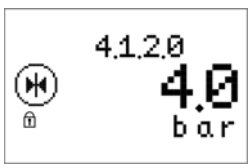
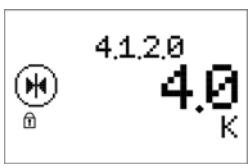
Menu no./ notes	Display	Description	Parameter range	Factory setting
1.2.2.4 Only p-c		Deactivation threshold 1st peak-load pump	–	–
1.2.2.4 Only ΔT-c		Deactivation threshold 1st peak-load pump	–	–
1.2.2.5		Setting of the activation threshold of the 2nd peak-load pump (in % of the active setpoint)	75 ... 90 ...100 [%]	90%
1.2.2.5 Only Δp-c, Δp-v		Activation threshold 2nd peak-load pump	–	–
1.2.2.5 Only p-c		Activation threshold 2nd peak-load pump	–	–
1.2.2.5 Only ΔT-c		Activation threshold 2nd peak-load pump	–	–
1.2.2.6		Setting of the deactivation threshold of the 2nd peak-load pump (in % of the active setpoint)	100 ... 110 ... 125 [%]	110%
1.2.2.6 Only Δp-c, Δp-v		Deactivation threshold 2nd peak-load pump	–	–
1.2.2.6 Only p-c		Deactivation threshold 2nd peak-load pump	–	–

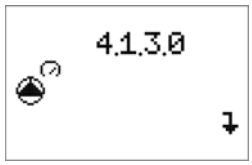
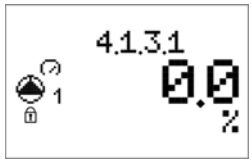
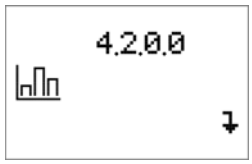
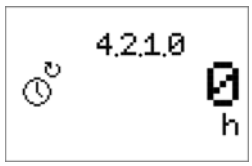
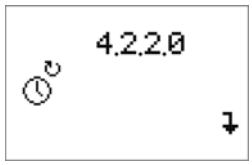
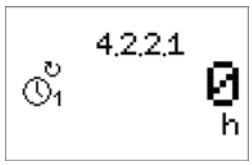
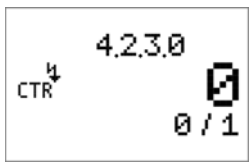
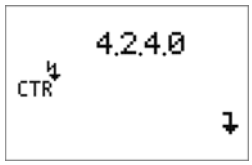
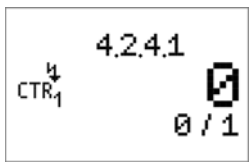
Menu no./ notes	Display	Description	Parameter range	Factory setting
1.2.2.6 Only ΔT-c		Deactivation threshold 2nd peak-load pump	–	–
1.2.2.7		Setting of the activation threshold of the 3rd peak-load pump (in % of the active setpoint)	75 ... 90... 100 [%]	90%
1.2.2.7 Only Δp-c, Δp-v		Activation threshold 3rd peak-load pump	–	–
1.2.2.7 Only p-c		Activation threshold 3rd peak-load pump	–	–
1.2.2.7 Only ΔT-c		Activation threshold 3rd peak-load pump	–	–
1.2.2.8		Setting of the deactivation threshold of the 3rd peak-load pump (in % of the active setpoint)	100 ... 105... 125 [%]	105%
1.2.2.8 Only Δp-c, Δp-v		Deactivation threshold 3rd peak-load pump	–	–
1.2.2.8 Only p-c		Deactivation threshold 3rd peak-load pump	–	–
1.2.2.8 Only ΔT-c		Deactivation threshold 3rd peak-load pump	–	–

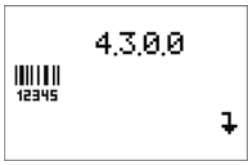
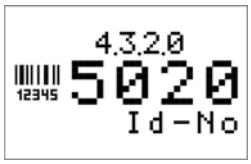
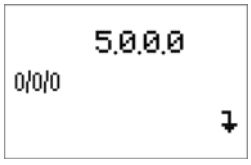
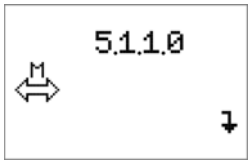
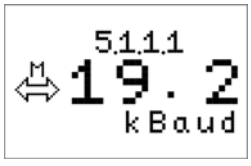
Menu no./ notes	Display	Description	Parameter range	Factory setting
1.2.3.0 Only SCe, SC... FC		Speeds	–	–
1.2.3.1		Setting of the peak-load pump activation threshold in relation to the speed of the base-load pump	78... 98... f_{max}–2 [%]	98%
1.2.3.2		Setting of the peak-load pump deactivation threshold in relation to the speed of the base-load pump	SCe: f_{min}+2 ... 32 ... 52 [%] SC... FC: f_{min}+2 ... 42 ... 92 [%]	32% 42%
1.2.4.0 Only SCe, SC... FC		PID controller parameter menu	–	–
1.2.4.1		Setting of the proportional factor	0 ... 0.5... 100.0	0.5
1.2.4.2		Setting of the integral factor	0.0 ... 2.0... 300.0 [s]	2.0 s
1.2.4.3		Setting of the differential factor	0.0 ... 300.0 [s]	0.0 s
1.2.4.4 Only n= f(RT) n= f(FT)		Setting of the controller curve (rising or falling)	Raise Fall	Raise
1.2.5.0		Delay times	–	–

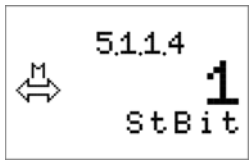
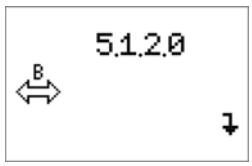
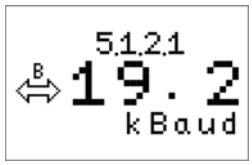
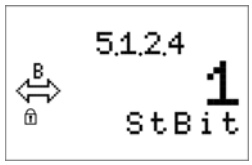
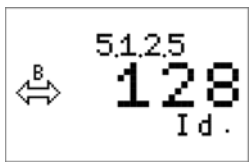
Menu no./ notes	Display	Description	Parameter range	Factory setting
1.2.5.2		Setting of the activation delay of the peak-load pump	0 ... 30 ... 120 [s] Only p–c: 0 ... 3 ... 120 [s]	30 s 3 s
1.2.5.3		Setting of the deactivation delay of the peak-load pump	0 ... 30 ... 120 [s] Only p–c: 0 ... 3 ... 120 [s]	120 s 3 s
1.2.5.4 Only p-c		Setting of the follow-up time for dry-running protection	0 ... 15 ... 180 [s]	15 s
1.2.5.5 Only p-c		Setting of the restart delay after dry run	0 ... 5 ... 10 [s]	5 s
1.2.6.0 Only SCe, SC... FC		Frequency converter parameters	–	–
1.2.6.1		Setting of the maximum speed	80 ... 100 [%]	100%
1.2.6.2		Setting of the minimum speed	SCe: 15 ... 30 ... 50 [%] SC... FC: 40 ... 90 [%]	30% 40%
1.2.6.3		Setting of the acceleration ramp time	0.0 ... 3.0 ... 10.0 [s]	3.0 s
1.2.6.4		Setting of the deceleration ramp time	0.0 ... 3.0 ... 10.0 [s]	3.0 s

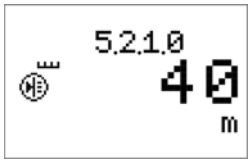
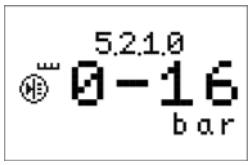
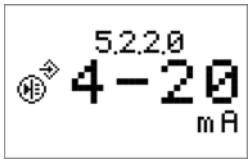
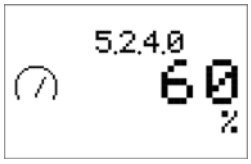
Menu no./ notes	Display	Description	Parameter range	Factory setting
2.0.0.0		Communication	–	–
2.1.0.0		Display of currently activated field bus	No Modbus BACnet	No
3.0.0.0		Pump menu	–	–
3.1.0.0		Release/stop of all pumps	OFF ON	OFF
3.2.0.0		Single pumps	–	–
3.2.**1**.0 to 3.2.**4**.0		Menu for pump 1, 2, 3, 4	–	–
3.2.**1**.1 to 3.2.**4**.1		Selection of the operating mode of pump 1, 2, 3, 4	OFF HAND AUTO	AUTO
3.2.**1**.2 to 3.2.**4**.2 Only SCe		Setting of the speed for manual mode of pump 1, 2, 3, 4	0 ... 100 [%]	100%
4.0.0.0		Information	–	–

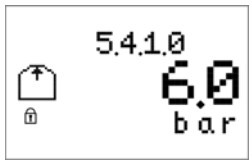
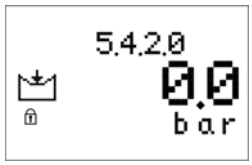
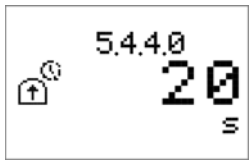
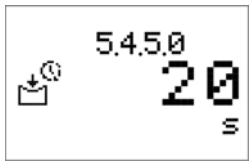
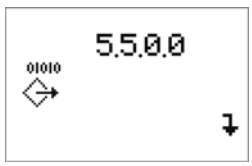
Menu no./ notes	Display	Description	Parameter range	Factory setting
4.1.0.0		Operating value	–	–
4.1.1.0 Only Δp-c, Δp-v		Actual value	–	–
4.1.1.0 Only p-c		Actual value	–	–
4.1.1.1 Only ΔT-c, n = f(FT)		Actual value of feed temperature	–	–
4.1.1.2 Only ΔT-c, n = f(RT)		Actual value of return temperature	–	–
4.1.1.0 Only n = f(AI)		Actual value	–	–
4.1.2.0 Only Δp-c, Δp-v		Active setpoint	–	–
4.1.2.0 Only p-c		Active setpoint	–	–
4.1.2.0 Only ΔT-c		Active setpoint	–	–

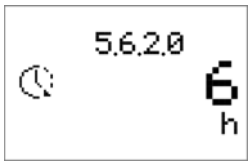
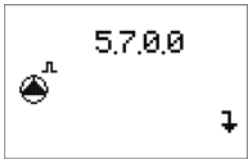
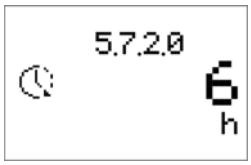
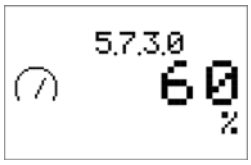
Menu no./ notes	Display	Description	Parameter range	Factory setting
4.1.3.0 Only SCe, SC... FC		Pump speeds	–	–
4.1.3.**1** to 4.1.3.**4**		Speed Pump 1, 2, 3, and 4	–	–
4.2.0.0		Operating data	–	–
4.2.1.0		Total running time of the system	–	–
4.2.2.0		Running time of the pumps	–	–
4.2.2.**1** to 4.2.2.**4**		Total running time of pumps 1, 2, 3, and 4	–	–
4.2.3.0		System's switching cycles	–	–
4.2.4.0		Menu for switching cycles of the individual pumps	–	–
4.2.4.**1** to 4.2.4.**4**		Number of switching cycles Pump 1, 2, 3, and 4	–	–

Menu no./ notes	Display	Description	Parameter range	Factory setting
4.3.0.0		System data	–	–
4.3.1.0		System type	–	SC SC... FC SCe
4.3.2.0		Serial number in ticker format	–	–
4.3.3.0		Software version	–	–
4.3.4.0		Firmware version	–	–
5.0.0.0		Operating parameter settings	–	–
5.1.0.0		Communication	–	–
5.1.1.0		Modbus	–	–
5.1.1.1		Selection of the baud rate	9.6 19.2 38.4 76.8	19.2

Menu no./ notes	Display	Description	Parameter range	Factory setting
5.1.1.2		Setting of the slave address	1 ... 10 ... 247	10
5.1.1.3		Selection of the parity	even none odd	even
5.1.1.4		Selection of the number of stop bits	1 2	1
5.1.2.0		BACnet	–	–
5.1.2.1		Selection of the baud rate	9.6 19.2 38.4 76.8	19.2
5.1.2.2		Setting of the slave address	1 ... 128 ... 255	128
5.1.2.3		Selection of the parity	none	none
5.1.2.4		Selection of the number of stop bits	1	1
5.1.2.5		Setting of the BACnet device instance ID	0 ... 128 ... 9999	128

Menu no./ notes	Display	Description	Parameter range	Factory setting
5.2.0.0		Sensor settings	–	–
5.2.1.0 Only Δp-c, Δp-v		Selection of the measurement range	2 10 20 40 60 100 160 250 [m]	40 m
5.2.1.0 Only p-c		Selection of the measurement range	0–6 0–10 0–16 0–25 [bar]	0–16 bar
5.2.2.0		Selection of the electrical signal type **Attention!** For a voltage signal, the corresponding jumper setting must be selected on the printed circuit board.	0–10 V 2–10 V 0–20 mA 4–20 mA	4–20 mA
5.2.3.0		Selection of the system reaction in the event of a sensor fault	Stop Var	Stop
5.2.4.0 Only SCe, SC... FC		Setting of the speed in the event of a sensor fault	f_{min} ... 60 ... f_{max} [%]	60%
5.3.0.0 Only Δp-c, Δp-v, p-c, ΔT-c		External setpoint	–	–
5.3.1.0		Activation of the external setpoint **Attention!** Only a 4-20 mA signal is possible.	OFF ON	OFF

Menu no./ notes	Display	Description	Parameter range	Factory setting
5.4.0.0 Only p-c		Limit values	–	–
5.4.1.0		Setting of the switching threshold for maximum pressure	100.0 ... 150.0 ... 300.0	150.0
5.4.1.0		Maximum pressure	–	–
5.4.2.0		Setting of the switching threshold for minimum pressure	0.0 ... 100.0 [%]	0.0%
5.4.2.0		Minimum pressure	–	–
5.4.3.0		Selection of the behaviour in the event of minimum pressure	OFF (stop) ON (cont)	OFF (stop)
5.4.4.0		Setting of the delay for the maximum pressure signal	0 ... 20 ... 60 [s]	20 s
5.4.5.0		Setting of the delay for the minimum pressure signal	0 ... 20 ... 60 [s]	20 s
5.5.0.0		Signal output parameters	–	–

Menu no./ notes	Display	Description	Parameter range	Factory setting
5.5.1.0		Selection of the behaviour of the collective run signal (SBM) relay	Ready Run	Run
5.5.2.0		Selection of the behaviour of the collective fault signal (SSM) relay	Fall Raise	Raise
5.6.0.0		Pump cycling	–	–
5.6.1.0		Activation of pump cycling	ON OFF	ON
5.6.2.0		Setting of the interval between two pump cycling processes	1 ... 6 ... 24 [h]	6 h
5.7.0.0		Pump test run	–	–
5.7.1.0		Activation of the pump test run	OFF ON	OFF
5.7.2.0		Setting of the interval between two pump test runs	1 ... 6 ... 24 [h]	6 h
5.7.3.0 Only SCe, SC... FC		Setting of the speed for the pump test run	f_{min} ... 60 ... f_{max} [%]	60%

Menu no./ notes	Display	Description	Parameter range	Factory setting
6.0.0.0		Fault signals	–	–
6.1.0.0		Reset of the fault signals	–	–
6.1.0.**1** to 6.1.**1.6**		Fault signal of the last 16 fault signals (FIFO principle)	–	–

Tab. 5 – Menu items

6.2.6 Operation levels

The parameterisation of the switchgear is divided into the menu areas EASY and EXPERT.

For rapid commissioning using the factory presets, it is enough to set the control mode and setpoint 1 in the EASY area.

The EXPERT area is provided for changing other parameters and for reading out data from the device.

Menu level 7.0.0.0 is reserved for Wilo customer service.

7 Installation and electrical connection

Safety

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

- **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 adhered to.**

DANGER! Risk of fatal injury!
Incorrect installation and improper electrical connections can be life-threatening.

- **Have the electrical connections established by licensed electricians only, in compliance with the applicable regulations!**
- **Adhere to regulations for accident prevention!**

7.1 Installation

Wall-mounted installation (WM):

- Fasten the wall model by means of four 8 mm screws. While doing so, the protection class is to be ensured using suitable measures.

Floor model, base-mounted (BM):

- The floor model is set up free-standing on a level surface (with sufficient bearing capacity). An up-right panel support with a height of 100 mm is available for the cable inlet as standard. Other supports are available on request.

7.2 Electrical connection

Safety

DANGER! Risk of fatal injury!
An improper electrical connection can result in a fatal electrical shock.

- **Have the electrical connection established by an electrician approved by the local electricity supplier only and in accordance with local regulations.**
- **Observe the installation and operating instructions for the accessories!**

7.2.1 Mains connection

DANGER! Risk of fatal injury!
There is a potentially fatal voltage on the supply side, even when the main switch is switched off.

- **Observe general safety instructions!**

The mains type, current type and voltage of the mains connection must match the details on the rating plate of the control device.

Mains requirements

NOTE:
In accordance with EN / IEC 61000-3-11, the switchgear and pump with a power of ... kW (column 1) are intended for operation on a mains power supply with a system impedance Zmax at the building connection of max. ... Ω (column 2) with a maximum number of switching operations per hour of ... (column 3) (see Table 6 below).

If the mains impedance and the number of switching operations per hour are greater than the values given in the table, the switchgear with the pump may lead to temporary voltage drops and also to disturbing voltage fluctuations (flickering) due to the unfavourable mains conditions.

Therefore, measures may be necessary before the switchgear with pump can be operated as intended on this connection. The necessary information must be obtained from the local energy supply company and the manufacturer.

	Column 1: Power [kW]	Column 2: System impedance [Ω]	Column 3: Switching operations per hour
3~400 V 2-pole Direct starting	2.2	0.257	12
	2.2	0.212	18
	2.2	0.186	24
	2.2	0.167	30
	3.0	0.204	6
	3.0	0.148	12
	3.0	0.122	18
	3.0	0.107	24
	4.0	0.130	6
	4.0	0.094	12
	4.0	0.077	18
	5.5	0.115	6
	5.5	0.083	12
	5.5	0.069	18
	7.5	0.059	6
	7.5	0.042	12
	9.0 – 11.0	0.037	6
	9.0 – 11.0	0.027	12
	15.0	0.024	6
	15.0	0.017	12

	Column 1: Power [kW]	Column 2: System impedance [Ω]	Column 3: Switching operations per hour
3~400 V 2-pole S-D starting	5.5	0.252	18
	5.5	0.220	24
	5.5	0.198	30
	7.5	0.217	6
	7.5	0.157	12
	7.5	0.130	18
	7.5	0.113	24
	9.0 – 11.0	0.136	6
	9.0 – 11.0	0.098	12
	9.0 – 11.0	0.081	18
	9.0 – 11.0	0.071	24
	15.0	0.087	6
	15.0	0.063	12
	15.0	0.052	18
	15.0	0.045	24
	18.5	0.059	6
	18.5	0.043	12
	18.5	0.035	18
	22	0.046	6
	22	0.033	12
	22	0.027	18

Tab. 6 – System impedances and switching cycles

NOTE:
The maximum number of switching operations per hour specified in the table for each power is determined by the pump motor and must not be exceeded (adapt the parameterisation of the controller accordingly; see follow-up times, for example).

- Provide fuse protection on mains side in accordance with the information in the wiring diagram.
- Feed the ends of the mains cable through the threaded cable connections and cable inlets. Wire the cable ends according to the markings on the terminal strips.
- The 4-wire cable (L1, L2, L3, PE) is to be provided on-site. The connection is established at the main switch (Fig. 1a-e, item 1) or, for systems of higher power, at the terminal strips in accordance with the wiring diagram, and the PE is connected to the earth rail.

Pump mains connections

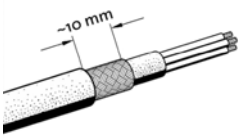
CAUTION! Risk of property damage!
Danger of damage due to incorrect handling.

- **Observe the installation and operating instructions for the pumps.**

Power connection

The pumps must be connected to the terminal strips in accordance with the wiring diagram (SCe: directly to circuit breakers; see Fig. 1a, item 4), and the protective earth conductor must be connected to the earth rail. Use shielded motor cables.

Connecting cable shields to the EMC threaded cable connections (SC...FC WM): see Fig. 14 – 16.



or

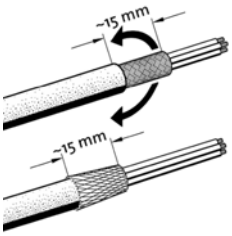


Fig. 14: Connecting cable shields to the EMC threaded cable connections (SC...FC WM)

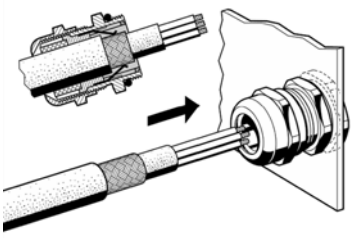


Fig. 15:

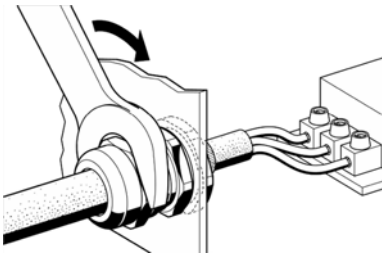


Fig. 16:

Connecting cable shields to the shield clamps (SC...FC ... BM), see Fig. 17 – 20.

NOTE:
The length of the cut (see Fig. 19) must be matched exactly to the width of the clamp used!

(1)

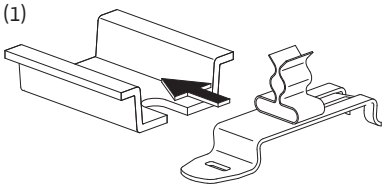


Fig. 17:

NOTE:
If the pump connection cables are extended beyond the dimension supplied ex-works, it is necessary to comply with the EMC notes in the operating manual of the frequency converter (only SC...FC version). The maximum cable length must not exceed 30 m.

(2)

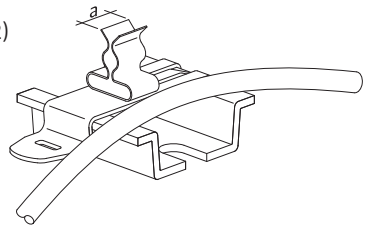


Fig. 18:

(3)

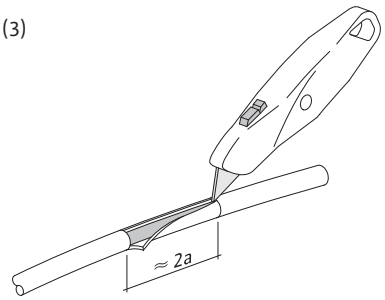


Fig. 19:

(4)

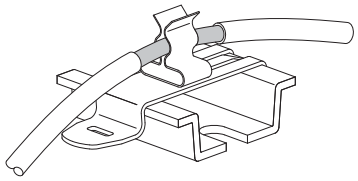


Fig. 20:

Connection of excess temperature protection/pump fault

The thermal winding contacts (WSK) or fault signal contacts (SCe version) of the pumps can be connected to the terminals in accordance with the wiring diagram.

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.

- **Do not connect any external voltage to the terminals!**

Connection of pump control signal (SCe version only)

The analogue control signals of the pumps (0–10 V) can be connected to the terminals in accordance with the wiring diagram. Use shielded cables – connect the shield at both ends.

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.

- **Do not connect any external voltage to the terminals!**

Differential pressure sensor/ pressure sensor

Connect the sensor to the terminals in accordance with the wiring diagram.

Use a shielded cable, connect the shield at one end in the switchbox.

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.

- **Do not connect any external voltage to the terminals!**

Temperature sensors

Connect the sensors to the terminals in accordance with the wiring diagram.

Select the jumper position in accordance with the sensor type (see Fig. 5).

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.
- **Do not connect any external voltage to the terminals!**

Analogue input for remote setpoint adjustment/manual control mode

Using the corresponding terminals in accordance with the wiring diagram, remote adjustment of the setpoint or manual control mode is possible by means of an analogue signal (4...20 mA).
- Use a shielded cable, connect the shield at one end in the switchbox.

Setpoint changeover

Using the corresponding terminals in accordance with the wiring diagram, it is possible to force a changeover from setpoint 1 to setpoint 2 by means of a potential-free contact (normally open contact).

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.
- **Do not connect any external voltage to the terminals!**

External activation/deactivation

Using the corresponding terminals in accordance with the wiring diagram, it is possible to connect a remote activation/deactivation by means of a potential-free contact (normally closed contact) after removing the jumper (factory-fitted).

External activation/deactivation	
Closed contact:	Automatic ON
Open contact:	Automatic OFF Signal by symbol on the display

Tab. 7 – External on/off logic plan

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.
- **Do not connect any external voltage to the terminals!**

Frost protection (not for Δp-c)

Using the corresponding terminals (in accordance with the wiring diagram), it is possible to connect a frost monitor by means of a potential-free contact (normally closed contact).

Frost protection	
Closed contact:	No frost protection
Open contact:	Frost alarm Frost protection function is activated

Tab. 8 – Frost protection logic plan

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.
- **Do not connect any external voltage to the terminals!**

Protection against low water level (only for Δp-c)

Using the corresponding terminals (in accordance with the wiring diagram), it is possible to connect a function for protection against low water level by means of a potential-free contact (normally closed contact) after removing the jumper (factory-fitted).

Protection against low water level	
Closed contact:	No low water
Open contact:	Low water

Tab. 9 – Logic plan for protection against low water level

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.
- **Do not connect any external voltage to the terminals!**

Collective run/collective fault signals (SBM/SSM)

Potential-free contacts (changeover contacts) for external signals are available via the corresponding terminals in accordance with the wiring diagram.

Potential-free contacts, max. contact load 250 V~/1 A

DANGER! Risk of fatal injury!
There can be a potentially fatal voltage on these terminals, even when the main switch is switched off.
- **Observe general safety instructions!**

Display of control variable actual value

Using the corresponding terminals in accordance with the wiring diagram, a 0...10 V signal for an external measurement/display option of the current control variable actual value is available. 0...10 V corresponds to the sensor signal 0 ... sensor limit value. For example:

Sensor	Display range	Voltage/differential pressure
DDG 40	0 ... 40 m (water column)	1 V = 4 m

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.
- **Do not connect any external voltage to the terminals!**

Field bus connection

Optionally, a connection to a field bus (ModBus RTU, BACnet MSTP, LON) can be established using the corresponding terminals in accordance with the wiring diagram (shielded cables are to be used).

CAUTION! Risk of property damage!
Risk of damage due to incorrect connection.
- **Do not connect any external voltage to the terminals!**

8 Commissioning

DANGER! Risk of fatal injury!
Improper commissioning poses a risk of fatal injury.
- **Have commissioning performed by qualified personnel only.**

DANGER! Risk of fatal injury!
When working on the open switchgear, there's a danger of electric shock from touching the live components.
- **The work must be carried out only by qualified personnel!**

It is recommended that you have the switchgear commissioned by Wilo customer service.

- It must be checked that all on-site wiring has been performed correctly, in particular the earthing, before switching the switchgear on for the first time.

NOTE:
Tighten all connection terminals before the commissioning!

8.1 Factory setting

The control system is preset in the factory.

The factory settings can be restored by Wilo customer service.

8.2 Checking the motor direction of rotation

- By briefly switching on each pump in the "manual mode" operating mode (menu 3.2.1.1, 3.2.2.1, 3.2.3.1 and 3.2.4.1), check whether the direction of rotation of the pump in mains operation corresponds to the arrow on the pump housing.
- If the direction of rotation of all pumps in mains operation is wrong, swap over any 2 phases of the main mains cable.

SC switchgear without frequency converter:

- If the direction of rotation of only one pump in mains operation is wrong, swap over any 2 phases on motors in direct starting (DOL) in the motor terminal box.
- If the direction of rotation of only one pump in mains operation is wrong, swap over 4 connections on motors in star–delta starting (SD) in the motor terminal box: Swap the winding start and winding end of 2 phases (e.g. V1 for V2 and W1 for W2).

SC switchgear with frequency converter (FC):

- Mains operation: see above (SC switchgear without frequency converter)
- Frequency converter operation: set all pumps to the “Off” operating mode (menu 3.2.1.1, 3.2.2.1, 3.2.3.1 and 3.2.4.1) and then set each pump individually to “Automatic”. Briefly switch on the individual pump to check the direction of rotation in frequency converter operation. If the direction of rotation of all pumps is wrong, swap over any 2 phases on the frequency converter output.

8.3 Adjusting the motor protection

- **Thermal winding contact/PTC:** No setting is required for the excess temperature protection.
- **Excess current:** see chapter 6.2.3 “Motor protection” on page 55.

8.4 Signal transmitters and optional modules

Comply with the installation and operating instructions of signal transmitters and optional additional modules.

9 Maintenance

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

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

- **The switchgear must be isolated from the voltage and secured to prevent it from being switched back on before any maintenance or repair work.**
- **Any damage to the connection cable should always be rectified by a qualified electrician only.**
- Keep the switch cabinet clean.
- Clean the switch cabinet and fans if they are dirty. Check the filter mats in the fans, clean them and replace them if they are excessively dirty.
- If the motor power is 5.5 kW or more, check the contactor contacts for burn–up as part of the service intervals. If there is severe burn–up, replace the contactor contacts.

10 Faults, causes and remedies

Have faults remedied by qualified personnel only! Observe the safety instructions in chapter 2 “Safety” on page 46.

- **If the fault cannot be remedied, contact your nearest Wilo customer service point or representative.**

10.1 Fault display and acknowledgement

If a fault occurs, the red fault signal LED lights up, the collective fault signal is activated and the fault is displayed on the LCD (fault code number).

A faulty pump is indicated on the main screen by a flashing status symbol for the corresponding pump.

The fault can be acknowledged in menu 6.1.0.0 by the following operation (see Fig. 21):

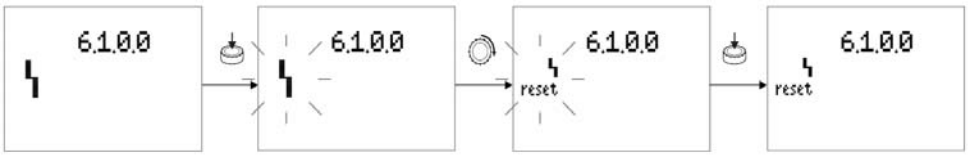


Fig. 21: Fault acknowledgement sequence

10.2 History memory for the faults

A history memory has been set up for the switchgear and operates according to the FIFO principle (first IN, first OUT). The memory is configured for 16 faults.

The fault memory can be called up using menus 6.1.0.1 – 6.1.1.6.

Code	Fault description	Cause	Remedy
E40	Sensor faulty	Sensor defective	Replace sensor.
		No electrical connection to the sensor	Repair the electrical connection.
E60	Maximum pressure exceeded	The output pressure of the system has risen above the value set in menu 5.4.1.0 (e.g. due to a controller fault).	Check controller function. Check installation.
E61	Pressure below minimum value	The output pressure of the system has dropped below the value set in menu 5.4.2.0 (e.g. due to a pipe burst).	Check whether the set value corresponds to local conditions. Check the pipe and repair it if necessary.
E62	Low water	Protection against low water level has tripped.	Check inlet/break tank; pumps restart automatically.
E64	Frost protection	Frost protection thermostat has responded.	Check the outdoor temperature.
E80.1 – E80.4	Fault of pump 1...4	Excess winding temperature (thermal winding contact/PTC)	Clean the cooling fins; motors are designed for an ambient temperature of +40°C (see also installation and operating instructions of the pump).
		Motor protection has tripped (excess current or short-circuit in the supply line).	Check the pump (in accordance with the installation and operating instructions of the pump) and the supply line.
		Collective fault signal of the pump frequency converter has been activated (only SCe version).	Check the pump (in accordance with the installation and operating instructions of the pump) and the supply line.
E82	Frequency converter fault	Frequency converter has signalled a fault.	Read off the fault on the frequency converter and act in accordance with the FC operating instructions.
		Motor protection of the frequency converter has tripped (e.g. short-circuit of the FC mains power cable; overload of the connected pump).	Check the mains power cable and repair it if necessary. Check the pump (in accordance with the installation and operating instructions of the pump).

Tab. 10 – Fault codes, fault causes and fault remedies

11 Spare parts

Spare parts may be ordered via a local specialist and/or Wilo customer service.

To avoid queries and incorrect orders, all data of the rating plate should be provided every time an order is placed.

CAUTION! Risk of property damage!
Trouble-free product operation can be guaranteed only if original spare parts are used.

- **Use only original Wilo spare parts.**
- **Information to be provided when ordering spare parts:**
  - **Spare part number**
  - **Name/description of the spare part**
  - **All data of the rating plate**

NOTE:

For a list of original spare parts, see the Wilo spare parts documentation (www.wilo.com).

12 Disposal

Proper disposal and recycling of this product prevents damage to the environment and risks to personal health.

Disposal in accordance with the regulations requires the product to be drained and cleaned.

Lubricants must be collected. The components are to be separated according to material (metal, plastic, electronics).

1. Use public or private disposal organisations when disposing of all or part of the product.
2. For more information on proper disposal, please contact your local council or waste disposal office or the supplier from whom you obtained the product.

Subject to change without prior notice!

D EG – Konformitätserklärung

GB EC – Declaration of conformity

F Déclaration de conformité CE

(gemäß 2006/95/EG Anhang III,B und 2004/108/EG Anhang IV,2,
according 2006/95/EC annex III,B and 2004/108/EC annex IV,2,
conforme 2006/95/CE appendice III B et 2004/108/CE appendice IV,2)

Hiermit erklären wir, dass die folgenden elektronischen Schaltgeräte der Baureihen:
Herewith, we declare that the types of electronic switch boxes of the series:
Par le présent, nous déclarons que les types de coffrets électroniques des séries :

W-CTRL-SC-X
W-CTRL-SC-X...FC
W-CTRL-SCE-X

(Die Seriennummer ist auf dem Typenschild des Produktes angegeben.
The serial number is marked on the product site plate.
Le numéro de série est inscrit sur la plaque signalétique du produit.)

(with X : B for Booster ; H for HVAC ; L for Lift)

in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entspricht:
in its delivered state complies with the following relevant provisions:
est conforme aux dispositions suivants dont il relève:

Niederspannungsrichtlinie **Low voltage directive** **Directive basse-tension**	**2006/95/EG**
Elektromagnetische Verträglichkeit – Richtlinie **Electromagnetic compatibility – directive** **Compatibilité électromagnétique- directive**	**2004/108/EG**

und entsprechender nationaler Gesetzgebung.
and with the relevant national legislation.
et aux législations nationales les transposant.

angewendete harmonisierte europäische Normen, insbesondere:
as well as following relevant harmonized European standards:
ainsi qu'aux normes européennes harmonisées suivantes:

EN 61439-1, EN 61439-2,
EN 60204-1,
EN 61000-6-1:2007,
EN 61000-6-2:2005,
EN 61000-6-3+A1:2011*,
EN 61000-6-4+A1:2011

* Außer für die Ausführung **W-CTRL_SC-X...FC** entspricht **EN 61000-6-3+A1:2011** bis **7,5 kW**
Except for the version *complies with* *until*
Excepté pour la version *conforme à* *jusque' à*

Dortmund, 25. Februar 2013

i.A. H. Herchenhein

Holger Herchenhein
Quality Manager

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Document: 2117792.2
CE-AS-Sh. Nr. 2533605

NL

EG-verklaring van overeenstemming

Hiermede verklaren wij dat dit aggregaat in de geleverde uitvoering voldoet aan de volgende bepalingen:

EG-richtlijnen betreffende machines 2006/42/EG

De veiligheidsdoelstellingen van de laagspanningsrichtlijn worden overeenkomstig bijlage I, nr. 1.5.1 van de machinerichtlijn 2006/42/EG aangehouden.

Elektromagnetische compatibiliteit 2004/108/EG

gebruikte geharmoniseerde normen, in het bijzonder:

zie vorige pagina

I

Dichiarazione di conformità CE

Con la presente si dichiara che i presenti prodotti sono conformi alle seguenti disposizioni e direttive rilevanti:

Direttiva macchine 2006/42/EG

Gli obiettivi di protezione della direttiva macchine vengono rispettati secondo allegato I, n. 1.5.1 dalla direttiva macchine 2006/42/CE.

Compatibilità elettromagnetica 2004/108/EG

norme armonizzate applicate, in particolare:

vedi pagina precedente

E

Declaración de conformidad CE

Por la presente declaramos la conformidad del producto en su estado de suministro con las disposiciones pertinentes siguientes:

Directiva sobre máquinas 2006/42/EG

Se cumplen los objetivos en materia de seguridad establecidos en la Directiva de Baja tensión según lo especificado en el Anexo I, punto 1.5.1 de la Directiva de Máquinas 2006/42/CE.

Directiva sobre compatibilidad electromagnética 2004/108/EG

normas armonizadas adoptadas, especialmente:

véase página anterior

P

Declaração de Conformidade CE

Pela presente, declaramos que esta unidade no seu estado original, está conforme os seguintes requisitos:

Directivas CEE relativas a máquinas 2006/42/EG

Os objectivos de protecção da directiva de baixa tensão são cumpridos de acordo com o anexo I, nº 1.5.1 da directiva de máquinas 2006/42/CE.

Compatibilidade electromagnética 2004/108/EG

normas harmonizadas aplicadas, especialmente:

ver página anterior

S

CE- försäkran

Härmed förklarar vi att denna maskin i levererat utförande motsvarar följande tillämpliga bestämmelser:

EG–Maskindirektiv 2006/42/EG

Produkten uppfyller säkerhetsmålen i lågspänningsdirektivet enligt bilaga I, nr 1.5.1 i maskindirektiv 2006/42/EG.

EG–Elektromagnetisk kompatibilitet – riktlinje 2004/108/EG

tillämpade harmoniserade normer, i synnerhet:

se föregående sida

N

EU-Overensstemmelseserklæring

Vi erklærer hermed at denne enheten i utførelse som levert er i overensstemmelse med følgende relevante bestemmelser:

EG–Maskindirektiv 2006/42/EG

Lavspenningsdirektivets vernemål overholdes i samsvar med vedlegg I, nr. 1.5.1 i maskindirektivet 2006/42/EF.

EG–EMV–Elektromagnetisk kompatibilitet 2004/108/EG

anvendte harmoniserte standarder, særlig:

se forrige side

FIN

CE-standardinmukaisuusseloste

Ilmoitamme täten, että tämä laite vastaa seuraavia asiaankuuluvia määräyksiä:

EU–konedirektiivit: 2006/42/EG

Pienjännitedirektiivin suojatavoitteita noudatetaan konedirektiivin 2006/42/EY liitteen I, nro 1.5.1 mukaisesti.

Sähkömagneettinen soveltuvuus 2004/108/EG

käytetyt yhteensovitetut standardit, erityisesti:

katso edellinen sivu.

DK

EF-overensstemmelseserklæring

Vi erklærer hermed, at denne enhed ved levering overholder følgende relevante bestemmelser:

EU–maskindirektiver 2006/42/EG

Lavspændingsdirektivets mål om beskyttelse overholdes i henhold til bilag I, nr. 1.5.1 i maskindirektivet 2006/42/EF.

Elektromagnetisk kompatibilitet: 2004/108/EG

anvendte harmoniserede standarder, særligt:

se forrige side

H

EK-megfelelőségi nyilatkozat

Ezennel kijelentjük, hogy az berendezés megfelel az alábbi irányelveknek:

Gépek irányelv: 2006/42/EK

A kisfeszültségű irányelv védelmi előírásait a 2006/42/EK gépekre vonatkozó irányelv I. függelékének 1.5.1. sz. pontja szerint teljesíti.

Elektromágneses összeférhetőség irányelv: 2004/108/EK

alkalmazott harmonizált szabványoknak, különösen:

lásd az előző oldalt

CZ

Prohlášení o shodě ES

Prohlašujeme tímto, že tento agregát v dodaném provedení odpovídá následujícím příslušným ustanovením:

Směrnice ES pro strojní zařízení 2006/42/ES

Cíle týkající se bezpečnosti stanovené ve směrnici o elektrických zařízeních nízkého napětí jsou dodrženy podle přílohy I, č. 1.5.1 směrnice o strojních zařízeních 2006/42/ES.

Směrnice o elektromagnetické kompatibilitě 2004/108/ES

použité harmonizační normy, zejména:

viz předchozí strana

PL

Deklaracja Zgodności WE

Niniejszym deklarujemy z pełną odpowiedzialnością, że dostarczony wyrób jest zgodny z następującymi dokumentami:

dyrektywą maszynową WE 2006/42/WE

Przestrzegane są cele ochrony dyrektywy niskonapięciowej zgodnie z załącznikiem I, nr 1.5.1 dyrektywy maszynowej 2006/42/WE.

dyrektywą dot. kompatybilności elektromagnetycznej 2004/108/WE

stosowanymi normami zharmonizowanymi, a w szczególności:

patrz poprzednia strona

RUS

Декларация о соответствии Европейским нормам

Настоящим документом заявляем, что данный агрегат в его объеме поставки соответствует следующим нормативным документам:

Директивы ЕС в отношении машин 2006/42/EG

Требования по безопасности, изложенные в директиве по низковольтному напряжению, соблюдаются согласно приложению I, № 1.5.1 директивы в отношении машин 2006/42/EG.

Электромагнитная устойчивость 2004/108/EG

Используемые согласованные стандарты и нормы, в частности:

см. предыдущую страницу

GR

Δήλωση συμμόρφωσης της ΕΕ

Δηλώνουμε ότι το προϊόν αυτό σ' αυτή την κατάσταση παράδοσης ικανοποιεί τις ακόλουθες διατάξεις :

Οδηγίες ΕΚ για μηχανήματα 2006/42/ΕΚ

Οι απαιτήσεις προστασίας της οδηγίας χαμηλής τάσης τηρούνται σύμφωνα με το παράρτημα I, αρ. 1.5.1 της οδηγίας σχετικά με τα μηχανήματα 2006/42/ΕG.

Ηλεκτρομαγνητική συμβατότητα ΕΚ-2004/108/ΕΚ

Εναρμονισμένα χρησιμοποιούμενα πρότυπα, ιδιαίτερα:

Βλέπε προηγούμενη σελίδα

TR

CE Uygunluk Teyid Belgesi

Bu cihazın teslim edildiği şekliyle aşağıdaki standartlara uygun olduğunu teyid ederiz:

AB-Makina Standartları 2006/42/EG

Alçak gerilim yönergesinin koruma hedefleri, 2006/42/AT makine yönergesi Ek I, no. 1.5.1'e uygundur.

Elektromanyetik Uyumluluk 2004/108/EG

kısmen kullanılan standartlar için:

bkz. bir önceki sayfa

RO

EC-Declarație de conformitate

Prin prezenta declarăm că acest produs aşa cum este livrat, corespunde cu următoarele prevederi aplicabile:

Directiva CE pentru maşini 2006/42/EG

Sunt respectate obiectivele de protecţie din directiva privind joasa tensiune conform Anexei I, Nr. 1.5.1 din directiva privind maşinile 2006/42/CE.

Compatibilitatea electromagnetică – directiva 2004/108/EG

standarde armonizate aplicate, îndeosebi:

vezi pagina precedentă

EST

EÜ vastavusdeklaratsioon

Käesolevaga tõendame, et see toode vastab järgmistele asjakohastele direktiividele:

Masinadirektiiv 2006/42/EÜ

Madalpingedirektiivi kaitse-eesmärgid on täidetud vastavalt masinate direktiivi 2006/42/EÜ I lisa punktile 1.5.1.

Elektromagnetilise ühilduvuse direktiiv 2004/108/EÜ

kohaldatud harmoneeritud standardid, eriti:

vt eelmist lk

LV

EC – atbilstības deklarācija

Ar šo mēs apliecinām, ka šis izstrādājums atbilst sekojošiem noteikumiem:

Mašīnu direktīva 2006/42/EK

Zemsprieguma direktīvas drošības mērķi tiek ievēroti atbilstoši Mašīnu direktīvas 2006/42/EK pielikumam I, Nr. 1.5.1.

Elektromagnētiskās savietojamības direktīva 2004/108/EK

piemēroti harmonizēti standarti, tai skaitā:

skatīt iepriekšējo lappusi

LT

EB atitikties deklaracija

Šiuo pažymima, kad šis gaminys atitinka šias normas ir direktyvas:

Mašinų direktyvą 2006/42/EB

Laikomasi Žemos įtampos direktyvos keliamų saugos reikalavimų pagal Mašinų direktyvos 2006/42/EB I priedo 1.5.1 punktą.

Elektromagnetinio suderinamumo direktyvą 2004/108/EB

pritaikytus vieningus standartus, o būtent:

žr. ankstesniame puslapyje

SK

ES vyhlásenie o zhode

Týmto vyhlasujeme, že konštrukcie tejto konštrukčnej série v dodanom vyhotovení vyhovujú nasledujúcim príslušným ustanoveniam:

Stroje – smernica 2006/42/ES

Bezpečnostné ciele smernice o nízkom napätí sú dodržiavané v zmysle prílohy I, č. 1.5.1 smernice o strojových zariadeniach 2006/42/ES.

Elektromagnetická zhoda – smernica 2004/108/ES

používané harmonizované normy, najmä:

pozri predchádzajúcu stranu

SLO

ES – izjava o skladnosti

Izjavljamo, da dobavljene vrste izvedbe te serije ustrezajo sledečim zadevnim določilom:

Direktiva o strojih 2006/42/ES

Cilji Direktive o nizkonapetostni opremi so v skladu s prilogo I, št. 1.5.1 Direktive o strojih 2006/42/EG doseženi.

Direktiva o elektromagnetni združljivosti 2004/108/ES

uporabljeni harmonizirani standardi, predvsem:

glejte prejšnjo stran

BG

ЕО-Декларация за съответствие

Декларираме, че продуктът отговаря на следните изисквания:

Машинна директива 2006/42/ЕО

Целите за защита на разпоредбата за ниско напрежение са съставени съгласно. Приложение I, № 1.5.1 от Директивата за машини 2006/42/ЕС.

Електромагнитна съвместимост – директива 2004/108/ЕО

Хармонизирани стандарти:

вж. предната страница

M

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