Pioneering for You

Wilo-Helix VE 2..., 4..., 6..., 10..., 16...

en Installation and operating instructions

zh 安装及操作说明书

4 222 762-Ed.01 / 2019-09-Wilo

Fig. 1

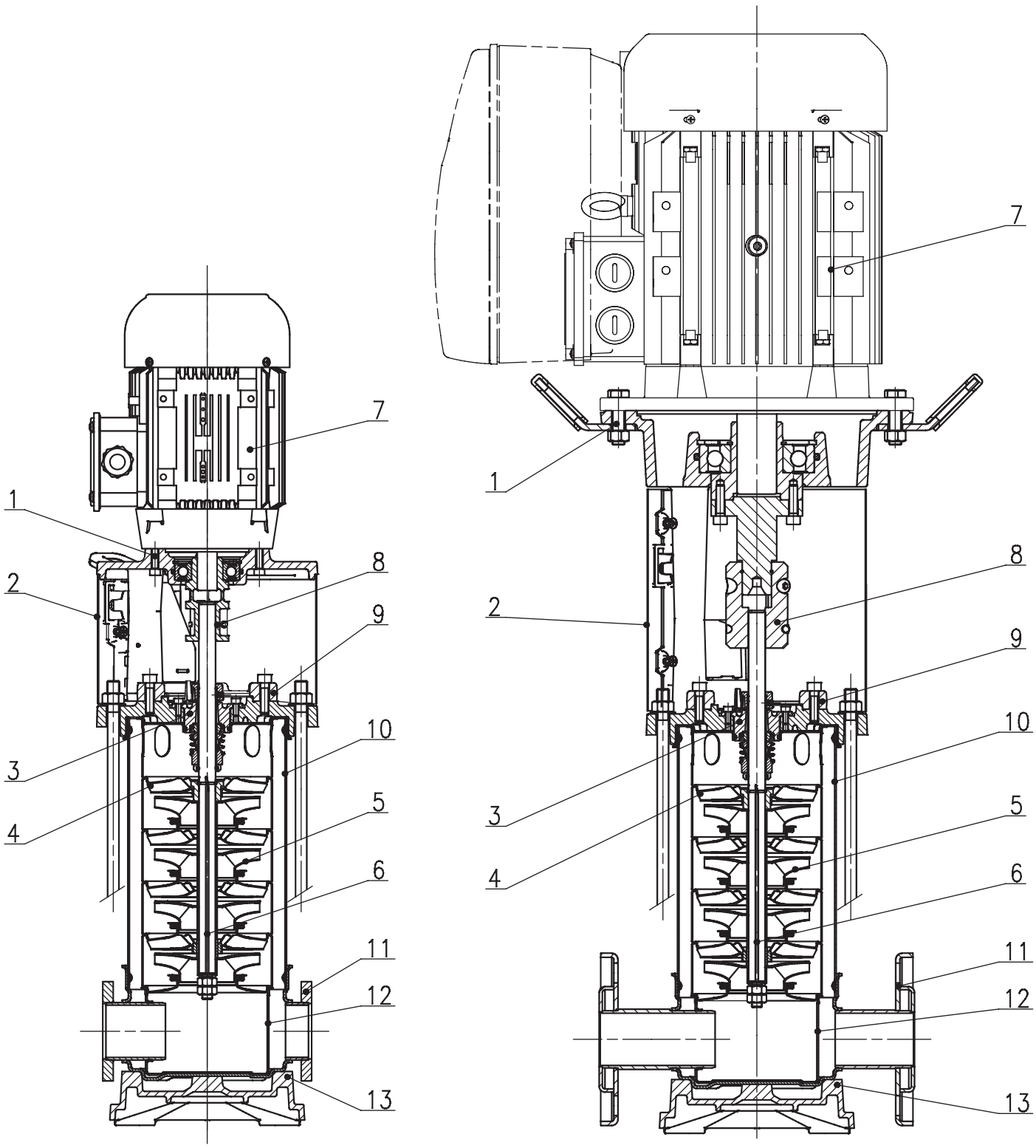


Fig. 2

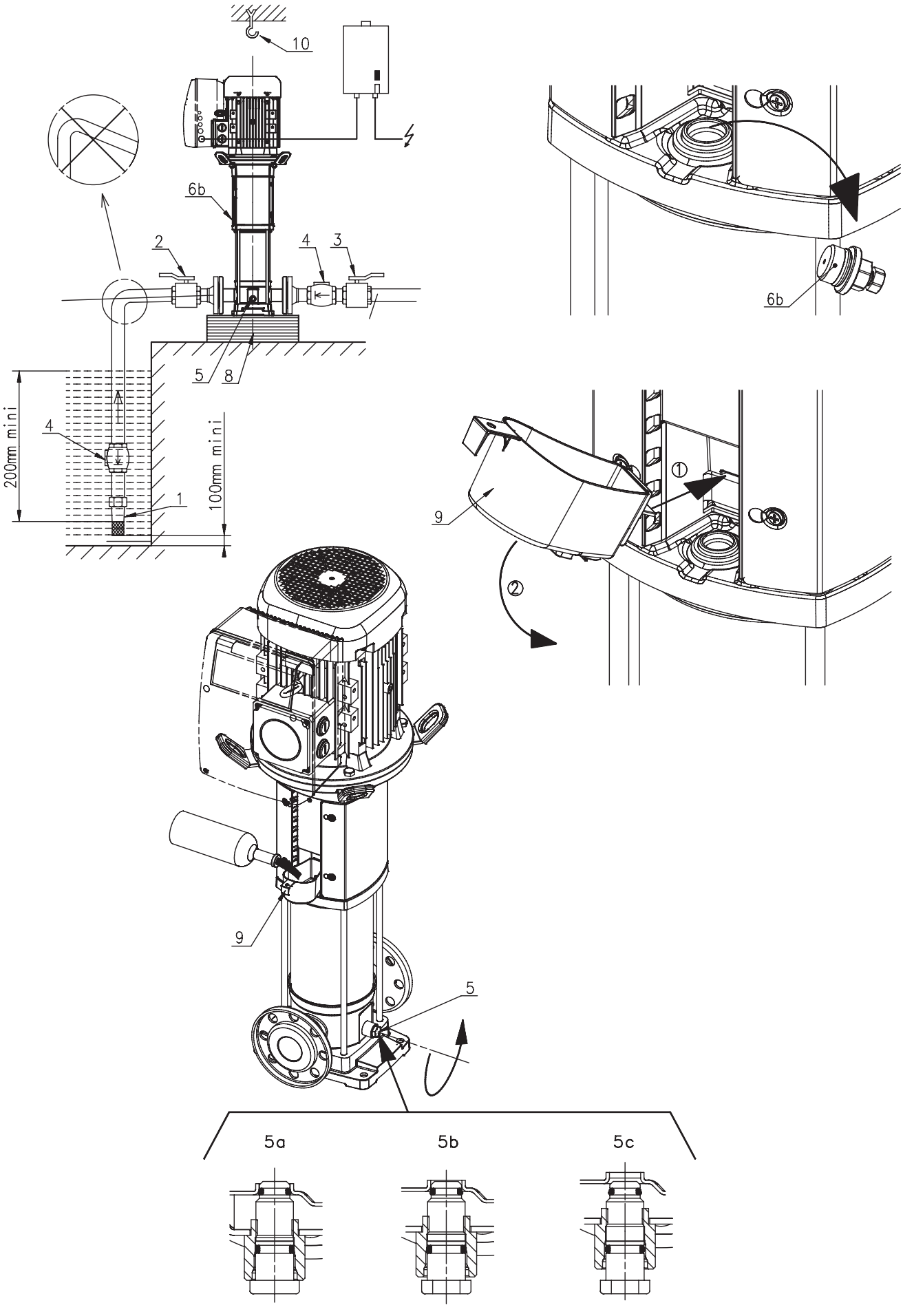


Fig. 3

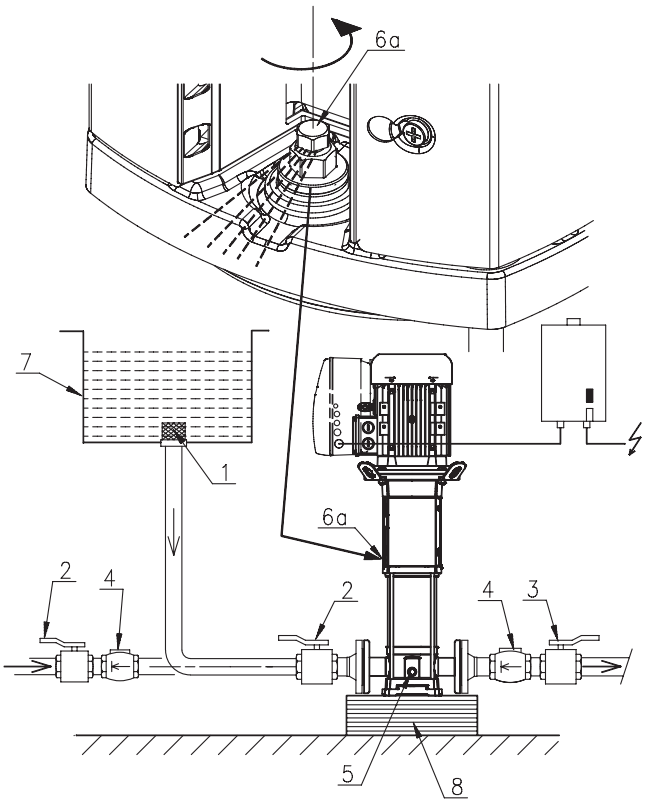


Fig. 6

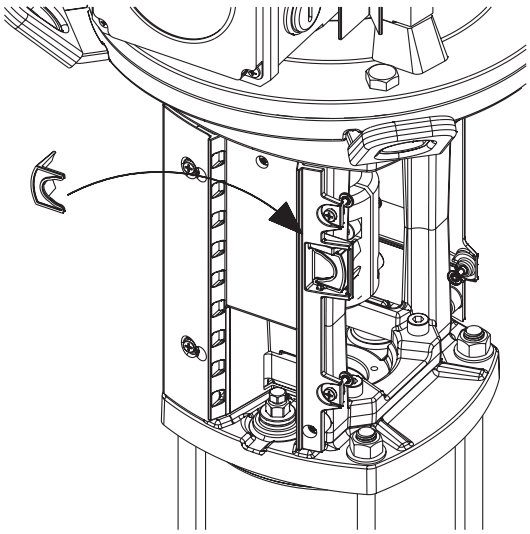
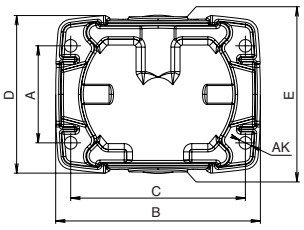
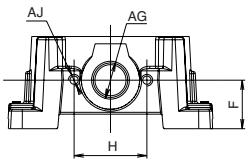
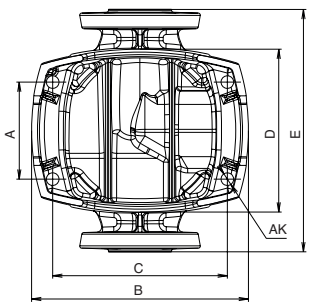


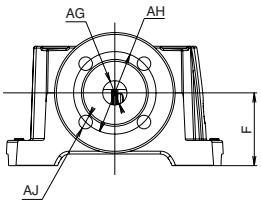
Fig. 4





Typ		(mm)									
		A	B	C	D	E	F	G	H	J	K
HELIX VE2...	PN16	100	212	180	162	160	50	D32	75	2 x M10	4 x Ø 13
HELIX VE4...	PN16	100	212	180	162	160	50	D32	75	2 x M10	4 x Ø 13
HELIX VE6...	PN16	100	212	180	162	160	50	D32	75	2 x M10	4 x Ø 13
HELIX VE10...	PN16	130	251	215	181	200	80	D50	100	2 x M12	4 x Ø 13
HELIX VE16...	PN16	130	251	215	181	200	90	D50	100	2 x M12	4 x Ø 13





Typ		(mm)									
		A	B	C	D	E	F	G	H	J	K
HELIX VE2...	PN16 PN25 PN30	100	212	180	172	250	75	D25	85	4 x M12	4 x Ø 13
HELIX VE4...	PN16 PN25 PN30	100	212	180	172	250	75	D25	85	4 x M12	4 x Ø 13
HELIX VE6...	PN16 PN25 PN30	100	212	180	172	250	75	D32	100	4 x M16	4 x Ø 13
HELIX VE10...	PN16 PN25 PN30	130	252	215	187	280	80	D40	110	4 x M16	4 x Ø 13
HELIX VE16...	PN16 PN25 PN30	130	252	215	187	300	90	D50	125	4 x M16	4 x Ø 13

Fig. 7

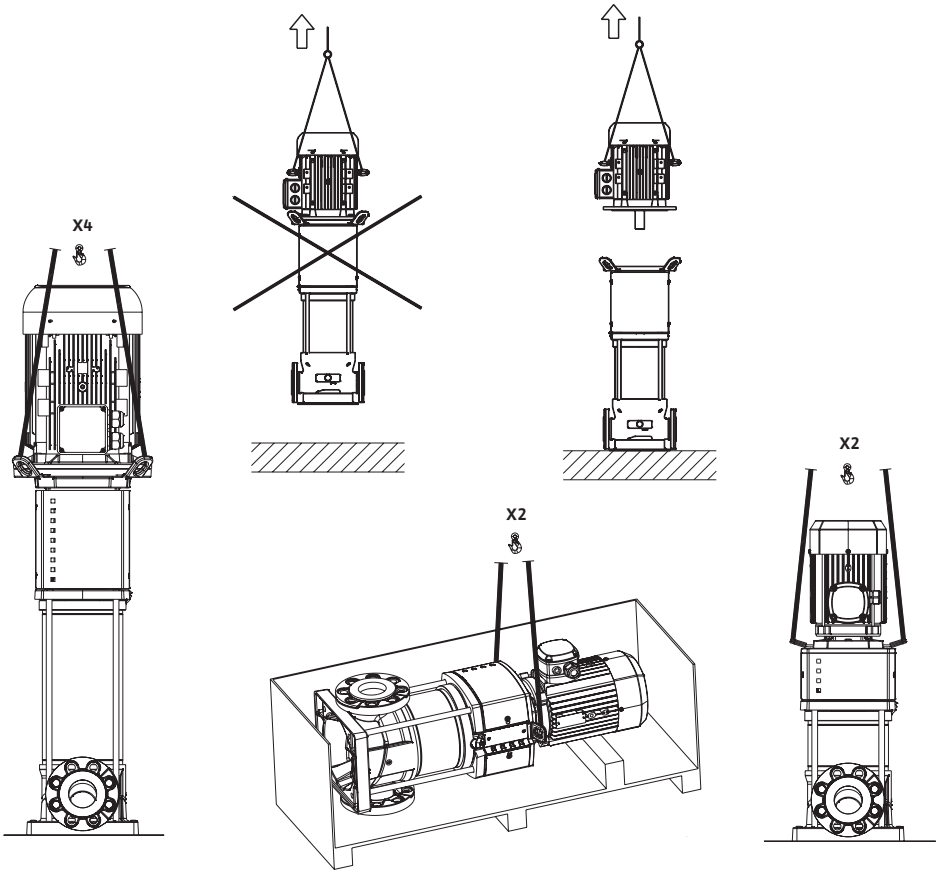
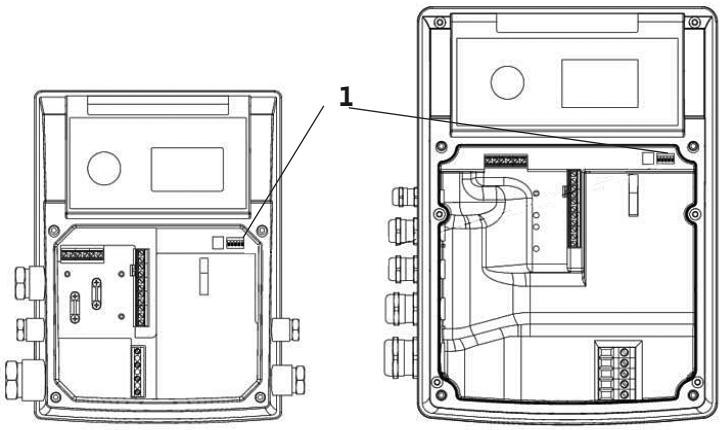


Fig. 1D



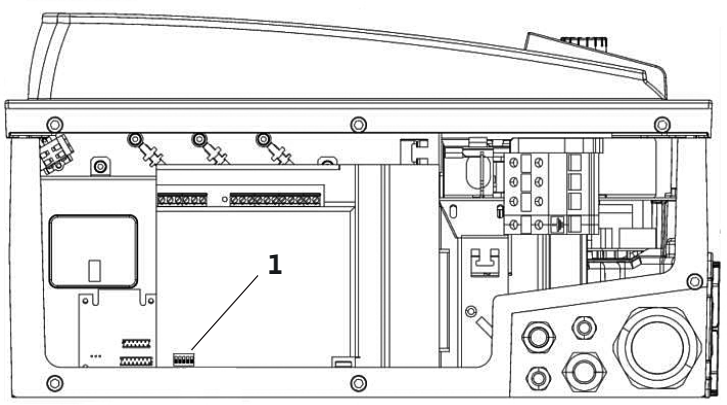


Fig. 2D

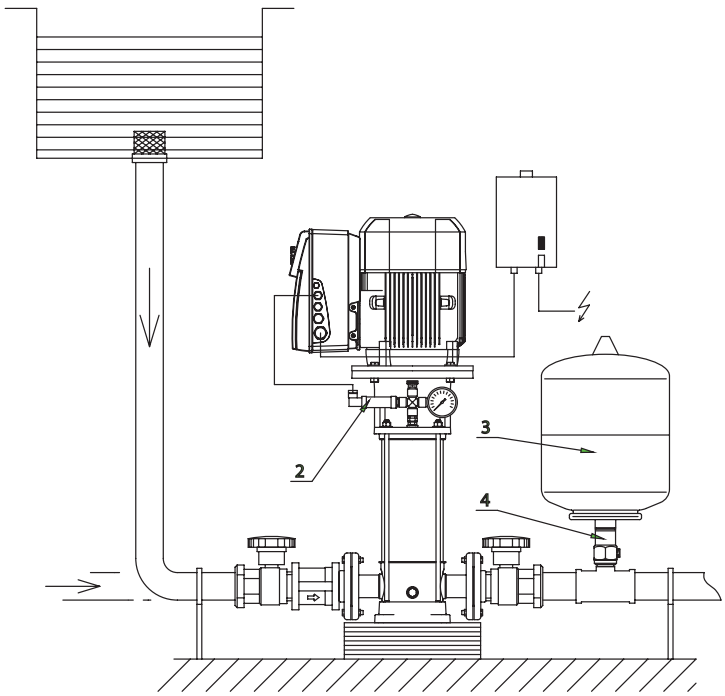


Fig. 4D

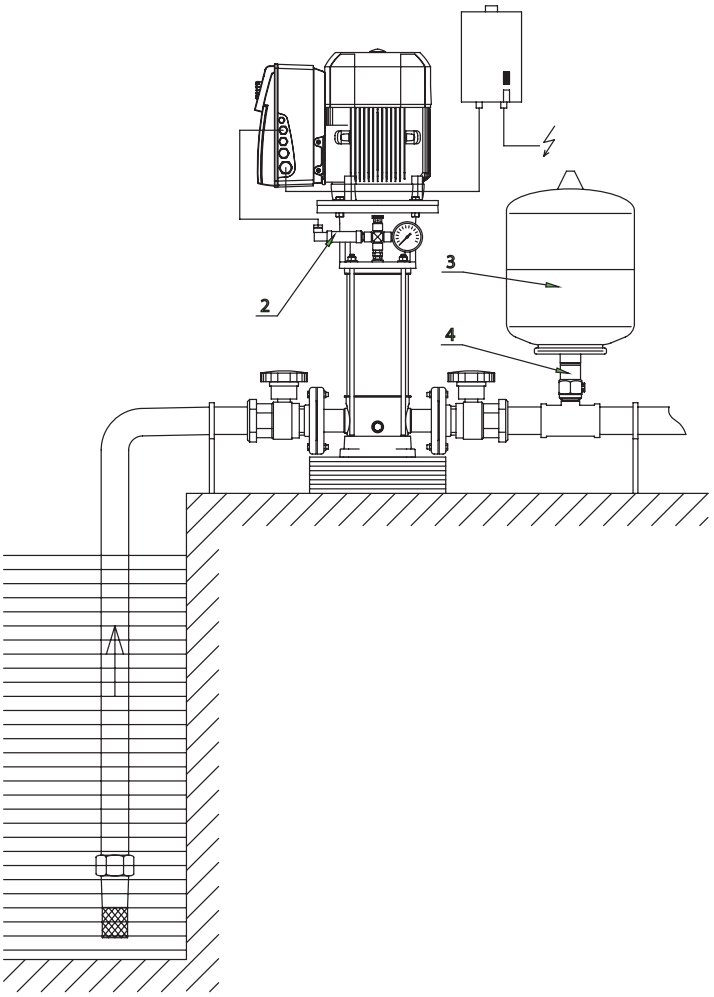
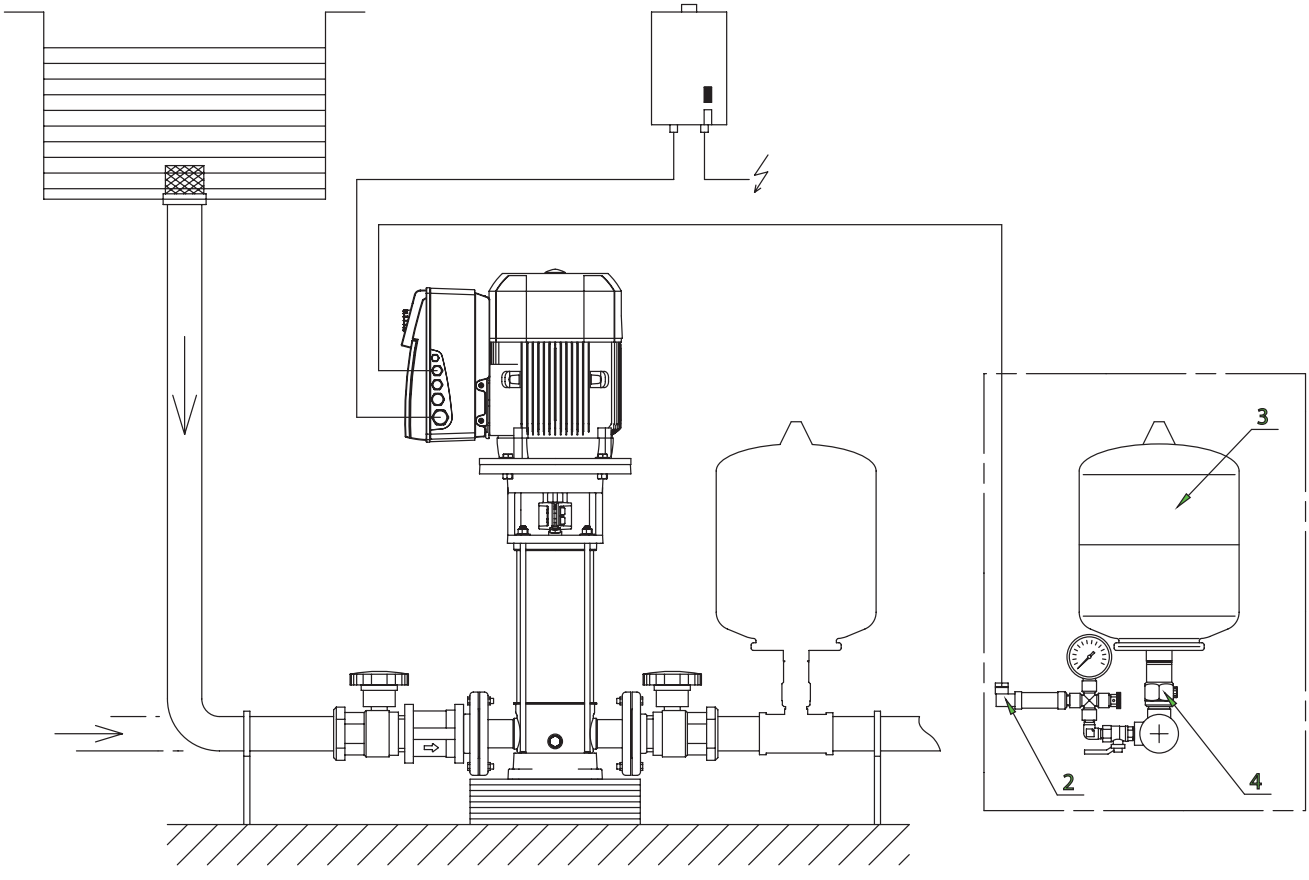


Fig. 3D



1. General

1.1 About this document

The language of the original installation and operating instructions is English. All other languages of these instructions are translations of the original installation and operating instructions.
These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. Strict adherence to these instructions is a necessary condition for the correct installation and 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 an integral part of these installation and operating instructions.
If a technical modification is made on the series named here without our agreement, this declaration loses its validity.

2. Safety

These installation and operating instructions contain important information which must be adhered to during installation, operation and maintenance. For this reason, these instructions must, without fail, be read by the service technician and the responsible specialist/operator before installation and commissioning.
It is not only the general safety instructions listed in this section that must be adhered to but also the special safety instructions with danger symbols included in the following sections.

2.1 Symbols and signal words in the operating instructions

Symbols


General danger symbol


Danger due to electrical voltage


NOTICE: ...

Signal words:

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

WARNING! The user may suffer (serious) injuries. 'Warning' 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 and its operation is likely if this information is disregarded.

NOTICE: Useful information on handling the product. It draws attention to possible problems.
Information that appears directly on the product, such as
- the arrows indicating the direction of rotation,
- identifiers for connections,
- 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 also results in the loss of any claims to damages. In detail, non-observance can, for example, result in the following risks:
- Danger to persons 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 existing directives for accident prevention must be adhered to.
Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be respected.
This device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the device by a person responsible for their safety. Children should be supervised to ensure that they do not play with the device.

2.5 Safety instructions for the operator

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

- 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 must be respected.
- Danger from electrical current must be eliminated. Local directives or general directives [e.g. IEC, VDE etc.] and instructions from local energy supply companies must be respected.

2.6 Safety instructions for installation and maintenance work

The operator must ensure that all maintenance and installation work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the installation and operating instructions. Work on the product/unit must only be carried out when at a standstill. It is mandatory that the procedure described in the installation and operating instructions for shutting down the product/unit be complied with.
Immediately on conclusion of the work, all safety and protective devices must be put back in position and/or recommissioned.

2.7 Unauthorised modification of components and use of unauthorised spare parts

Unauthorised modification of components and use of unauthorised 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 absolves the manufacturing company of any and all liability.

2.8 Improper use

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

3. Transport and temporary storage

When you receive the equipment, check that it has not been damaged during transport. If damage has occurred during shipping, take all necessary action with the carrier within the time allowed.

CAUTION! The storage environment may cause damage to the product.
If the delivered material is to be installed at a later date, store it in a dry place and protect it from impacts and any external influences (humidity, frost etc.).
The pump should be cleaned thoroughly before it is put into temporary storage. New pumps are prepared in such a way that they can be stored for one year.
Handle the pump with care so as not to damage the product before installation.

4. Application

This pump has been designed to pump hot or cold water, water/glycol mixtures or other low-viscosity fluids that are free of mineral oil, solid or abrasive substances, or materials containing long fibres. Pumping corrosive chemicals requires the manufacturer's approval.

DANGER! Risk of explosion!
Do not use this pump to convey flammable or explosive liquids.

4.1 Application areas

- water distribution and overpressure systems,
- industrial circulation systems,
- process fluids,
- cooling water circuits,
- fire-fighting and washing stations,
- sprinkling systems, irrigation, etc.

5. Product information

5.1 Type key

Example: Helix VE1613-1/25/E/K/2G	
Helix V **Helix FIRST V**	High-efficiency multistage in-line pump in vertical design
E	Equipped with a frequency converter
16	Rated flow rate in m^3/h
13	Number of stages
-1	1 = pump housing in stainless steel 304 + hydraulics in stainless steel 304 2 = pump housing in stainless steel 316L + hydraulics in stainless steel 316L 3 = pump housing in cast GJL -250 + hydraulics in stainless steel 304
25	25 = PN 25 flanges 16 = PN 16 flanges P = Victaulic connections
/E	E = EPDM O-rings (WRAS/KTW) V = VITON O-rings
/K	K = cartridge mechanical seal
/2G	2nd generation frequency converter

5.2 Technical data

<table>
<tr><th colspan="2">Maximum utilisation pressure</th></tr>
<tr><td>Pump housing</td><td>16, 25 or 30 bar depending on the model</td></tr>
<tr><td>Maximum suction pressure</td><td>10 bar
Notice: the actual input pressure (P input) + the pressure at zero delivery rate (P zero delivery rate) must always be lower than the maximum authorised operating pressure (P max). If the maximum authorised operating pressure is exceeded, the mechanical seal and the roller bearing can be damaged or their life span reduced.
P input + P zero delivery rate ≤ P max
Refer to the pump plate for the maximum operating pressure: Pmax</td></tr>
<tr><th colspan="2">Temperature range</th></tr>
<tr><td>Fluid temperature</td><td>–30 °C to +120 °C
–15 °C to +90 °C (with FKM gasket)
–20 °C to +120 °C (with cast housing)</td></tr>
<tr><td>Ambient temperature</td><td>–15 °C to +40 °C (other temperatures on request)</td></tr>
<tr><th colspan="2">Electrical data</th></tr>
<tr><td>Motor efficiency</td><td>IE4</td></tr>
<tr><td>Motor protection rating</td><td>IP55</td></tr>
<tr><td>Insulation class</td><td>155 (F)</td></tr>
<tr><td>Frequency</td><td>See motor plate</td></tr>
<tr><td>Power supply voltage</td><td>
<table>
<tr><th colspan="13">Power (kW)</th></tr>
<tr><td>0.55</td><td>0.75</td><td>1.1</td><td>1.5</td><td>2.2</td><td>3</td><td>4</td><td>5.5</td><td>7.5</td><td>11</td><td>15</td><td>18.5</td><td>22</td></tr>
<tr><td colspan="13">400 V (±10 %) 50 Hz
380 V (±10 %) 60 Hz
480 V (±10 %) 60 Hz</td></tr>
</table>
</td></tr>
<tr><td>Types of supported power supplies</td><td>TN, TT</td></tr>
<tr><th colspan="2">Other characteristics</th></tr>
<tr><td>Ambient humidity</td><td>< 90 % without condensation</td></tr>
<tr><td>Altitude</td><td>< 1000 m (> 1000 m on request)</td></tr>
<tr><td>Max. suction height</td><td>Depending on NPSH of the pump</td></tr>
<tr><td>Noise level dB(A)
0/+3 dB(A)</td><td>
<table>
<tr><th colspan="13">Power (kW)</th></tr>
<tr><td>0.55</td><td>0.75</td><td>1.1</td><td>1.5</td><td>2.2</td><td>3</td><td>4</td><td>5.5</td><td>7.5</td><td>11</td><td>15</td><td>18.5</td><td>22</td></tr>
<tr><td colspan="2">61</td><td colspan="2">63</td><td>67</td><td>71</td><td>72</td><td colspan="2">74</td><td colspan="2">78</td><td colspan="2">81</td></tr>
</table>
</td></tr>
<tr><td>Power supply cable cross section diameter (cable equipped with 4 wires) mm²</td><td>
<table>
<tr><th colspan="12">Power (kW)</th></tr>
<tr><td>0.55</td><td>0.75</td><td>1.1</td><td>1.5</td><td>2.2</td><td>3</td><td>4</td><td>5.5</td><td>7.5</td><td>11</td><td>15</td><td>18.5</td><td>22</td></tr>
<tr><td colspan="2">1.2</td><td colspan="2">1.5–2.5</td><td colspan="2">2.5 – 4</td><td colspan="2">2.5 – 6</td><td>4 – 6</td><td colspan="2">6 – 10</td><td colspan="2">10 – 16</td></tr>
</table>
</td></tr>
</table>

- Electromagnetic compatibility (*)
- Residential emission – 1st environment: PN-EN 61800-3
- Industrial interference resistance – 2nd environment: PN-EN 61800-3

(*) In the frequency range between 600 MHz and 1 GHz, the display or the pressure indication in the display might be disturbed in the exceptional case of the direct vicinity (<1 m from the electronic module) of radio transmission installations, transmitters or similar devices working in this frequency range. The operation of the pump is not affected at any time.

- Outline and connection dimensions (Fig. 4).

5.3 Scope of delivery

- High-pressure multistage centrifugal pump.
- Operating manual.
- Counter flanges, screws and O-rings for PN 16 configuration.

5.4 Accessories

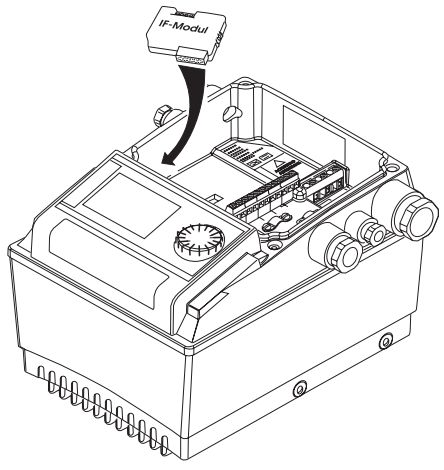
The following original accessories are available for the Helix series:

Type key	Article nº.
2 oval stainless steel 1.4301 counter flanges (screwing) (PN 16 – 1")	4016168
2 round stainless steel 1.4404 counter flanges (screwing) (PN 40 – DN 25)	4016165
2 round steel counter flanges (welding) (PN 40 – DN 25)	4016162
2 oval stainless steel 1.4301 counter flanges (screwing) (PN 16 – 1"1/4)	4016169
2 round stainless steel 1.4404 counter flanges (screwing) (PN 40 – DN 32)	4016166
2 round steel counter flanges (welding) (PN 40 – DN 32)	4016163
2 oval stainless steel counter flanges (screwing) (PN 16 – 1"1/2)	4016170
2 round stainless steel 1.4404 counter flanges (screwing) (PN 40 – DN 40)	4016167
2 round steel counter flanges (welding) (PN 40 – DN 40)	4016164
2 oval stainless steel 1.4301 counter flanges (screwing) (PN 16 – 2")	4055063
2 round stainless steel 1.4404 counter flanges (screwing) (PN 40 – DN 50)	4038589
2 round steel counter flanges (welding) (PN 40 – DN 50)	4038588
By-pass kit 25 bar	4146786
Bypass kit (with air pressure gauge 25 bar)	4146788
Chassis with damping pads for pumps up to 5.5 kW	4157154

- IF module PLR for connecting to PLR/interface converter
- IF module LON for connection to LONWORKS network. These modules plug directly into the connection interfaces of the converter (see Fig. below).
- Non-return valves (with tab or spring ring for operation at constant pressure)
- Protection kit against dry-running
- Pressure sensor kit for control (accuracy: ≤ 1 %; use between 30 % and 100 % of the measurement range).

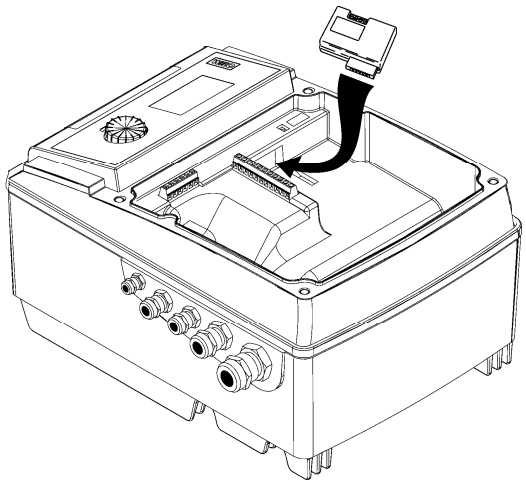
Use only accessories that are new.

Power (kW)						
0.55	0.75	1.1	1.5	2.2	3	4

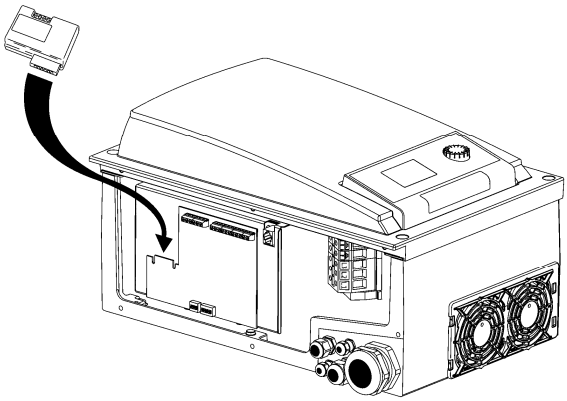


6. Description and function

Power (kW)	
5.5	7.5



Power (kW)			
11	15	18.5	22



6.1 Description of the product

Fig. 1

1 – Motor fixation bolt
2 – Coupling guard
3 – Mechanical seal
4 – Hydraulic stage housing
5 – Impeller
6 – Pump shaft
7 – Motor
8 – Coupling
9 – Lantern
10 – Tube liner
11 – Flange
12 – Pump housing
13 – Base plate

Fig. 2, 3
1 – Strainer
2 – Pump suction valve
3 – Pump discharge valve
4 - Non-return valve
5 – Drain + priming plug
6 – Venting plug and filling plug
8 – Foundation block
10 – Lifting hook

Fig. A1, A2, A3, A4
1 - Block of DIP switches
2 - Pressure sensor
3 - Tank
4 – Insulation valve of the tank

6.2 Product characteristics

- Helix pumps are vertical non-self-priming high-pressure multistage centrifugal pumps for in-line connection.
- Helix pumps combine hydraulics and high-performance motors.
- All metal components in contact with the water are made of stainless steel.
- For models equipped with the heaviest motor (> 40 kg), a specific coupling allows the seal to be replaced without dismantling the motor. A cartridge mechanical seal is then used in order to facilitate maintenance and repair.
- Special handling devices are integrated to facilitate pump installation (Fig. 8).

7. Installation and electrical connection

All installation and electrical work may only be carried out by qualified personnel and in compliance with local codes and regulations!

WARNING! Risk of severe injury!
The applicable regulations for the prevention of accidents must be complied with.

WARNING! Risk of electrical shock!
Danger from electric current must be eliminated.

7.1 Upon receipt of the product

Unpack the pump and recycle or dispose of the packaging in an environmentally responsible manner.

7.2 Installation

The pump must be installed in a dry, well-ventilated location free of frost.

CAUTION! Risk of damage to the pump!
The presence of foreign matter or impurities in the pump housing may affect the functioning of the product.

- It is recommended to perform any welding and soldering work before installing the pump.
- Rinse the circuit completely before installing and commissioning the pump.

- The pump must be installed in a place easy to access for the purposes of inspection or replacement.
- For heavy pumps, install a lifting hook (Fig. 2, pos. 10) above the pump to facilitate its disassembly.

WARNING! Risk of accident due to hot surfaces!
The pump must be installed in such a way that no one can touch the hot surfaces of the product when it is in operation.

- Install the pump in a dry and frost-free place on a flat concrete block using appropriate screws. If possible, use an insulating material under the concrete block (cork or reinforced rubber) to avoid any noise and vibration transmission into the unit.

WARNING! Risk of tipping!
Ensure that the pump is correctly secured to the ground.

- The pump must be installed in an easily accessible location to facilitate inspection and maintenance work. The pump must always be installed perfectly upright on a concrete baseplate.

CAUTION! Risk of foreign matter in the pump!
Ensure that all blanking plugs are removed from the pump housing before installation.

NOTICE: All pumps are factory-tested for their hydraulic properties and may therefore contain a small amount of residual water. For hygiene purposes, it is recommended to rinse the pump before installing it in any potable water supply.

- For installation and connection dimensions see section 5.2.
- Lift the pump only with appropriate lifting devices and suitable hoists and slings in compliance with lifting regulations.

WARNING! Risk of tipping!
There is a high risk of tipping due to the high centre of gravity, especially for larger pumps. Take special care over the safe fixation of the pump when handling.

WARNING! Risk of tipping!
Use integrated lifting hooks only if they are not damaged (e.g. by corrosion). Replace them if required.

WARNING! Risk of tipping!
Never lift the complete pump using the motor hooks as these are designed to lift the motor only.

- Motors are equipped with drain holes for condensed water (under the motor) that are sealed at the factory using plastic plugs to ensure IP55 protection. If used in air-conditioning or cooling systems, remove these plugs to allow condensation water to drain.

7.3 Pipe connection

- Connect the pump to the pipes by using appropriate counter flanges, screws, nuts and gaskets.

CAUTION!
Tightening of screws or bolts must not exceed:

PN 16/PN 25 configuration	
M10 – 20 N.m	M12 – 30 N.m
PN 40 configuration	
M12 – 50 N.m	M16 – 80 N.m

The use of an impact wrench is prohibited.

- The flow direction of the fluid is indicated on the identification sticker of the pump.
- The suction and discharge pipe sockets must be installed so that they do not induce any stress into the pump. The pipes must be attached so that the pump does not bear their weight.
- We recommend installing gate valves on the suction and pressure sides of the pump.
- Use expansion joints to mitigate noise and vibration from the pump if required.
- The pipe cross-section must be at least equal to the diameter of the suction port on the pump housing.
- The installation of a non-return valve in the discharge pipe is recommended to protect the pump against pressure surges.
- If connected directly to the public potable water mains, the suction pipe socket must also be fitted with a non-return valve and a stop valve.
- If connected indirectly via a tank, the suction pipe socket must be fitted with a suction strainer to stop impurities from entering the pump, and a non-return valve.

7.4 Electrical connections

DANGER! Risk of fatal injury!

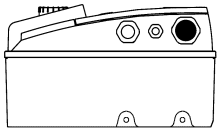
Hazardous voltage due to the discharge of the converter capacitors.

- Before any work on the converter, wait for 5 minutes after disconnecting the power supply.
- Check that all electrical connections and contacts are not live.
- Check that the pressure connection terminals have been allocated correctly.

- The power supply cable (3 phases + earth) must be inserted into the gland indicated below in black.
- The glands that aren't used must remain sealed using plugs provided by the manufacturer.

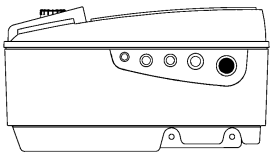
Power (kW)						
0.55	0.75	1.1	1.5	2.2	3	4

M25



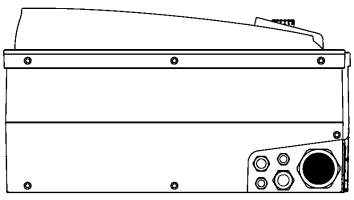
Power (kW)	
5.5	7.5

M25



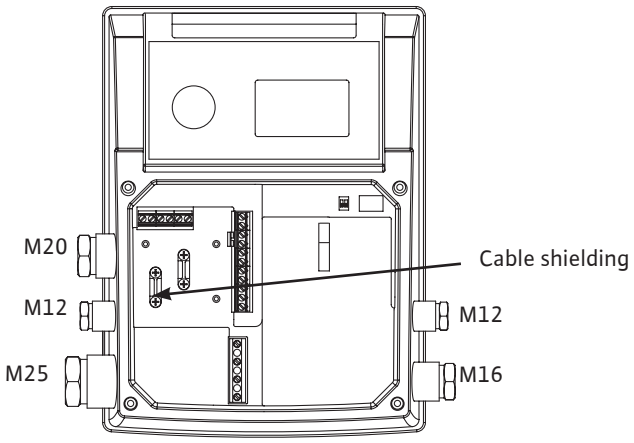
Power (kW)			
11	15	18.5	22

M32/M40

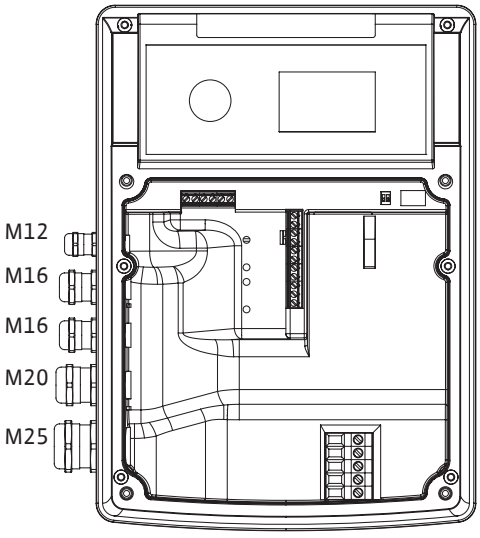


– The cables for the sensor, the external instruction, the inputs [Ext. Off] and [Aux] must be shielded.

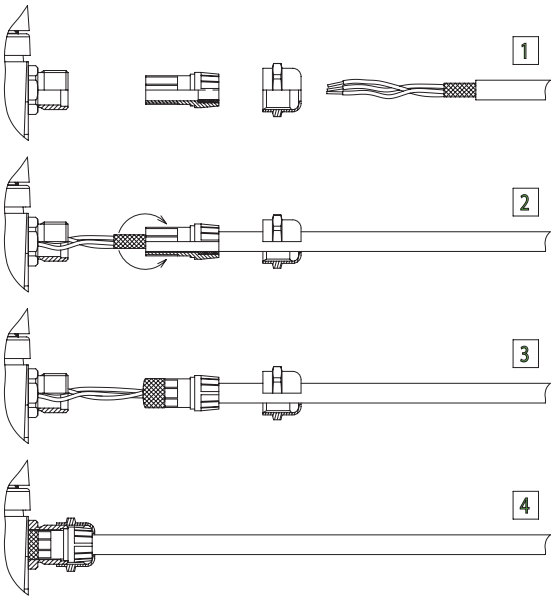
Power (kW)						
0.55	0.75	1.1	1.5	2.2	3	4



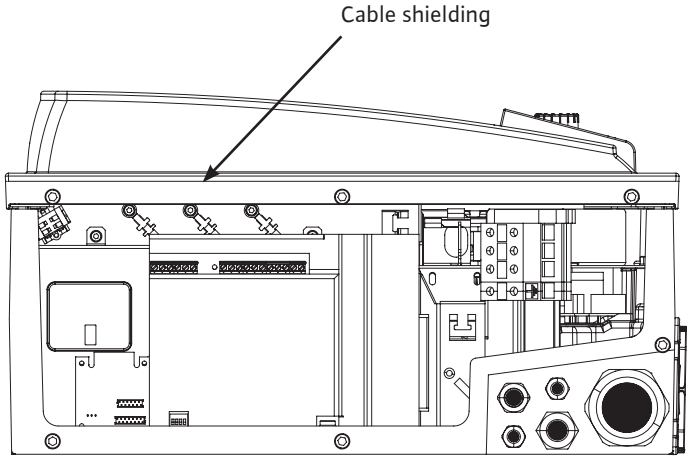
Power (kW)	
5.5	7.5



The metal glands of the converter are adapted to installation with protective braiding.



Power (kW)			
11	15	18.5	22



1xM32/40
1xM20
1xM16
2xM12

- The electric characteristics (frequency, voltage, nominal current) of the frequency converter are specified on the pump identification label. Ensure that the frequency converter complies with the power supply it will be used with.
- The electric protection of the motor is integrated into the converter. It is set up to take into account the pump characteristics and ensure the protection of pump and motor.
- In all cases, install a fused isolator (type gF) to protect the unit.

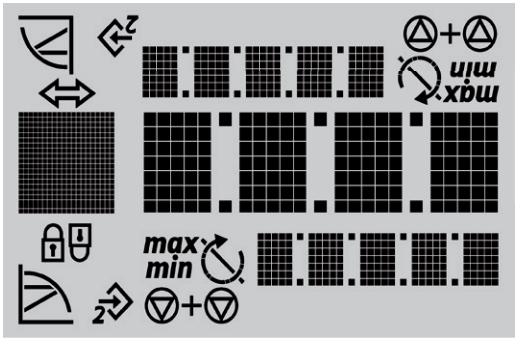
NOTICE: If a residual-current device needs to be installed for the user's protection, it must have a delay effect. Adjust the circuit breaker rating according to the current provided on the pump identification sticker.

NOTICE: This pump is equipped with a frequency converter and does not require protection from a residual-current device. Frequency converters can impair the function of residual-current devices.
Exception: Residual-current devices that have a selective universal-current-sensitive design are permitted.

- Labelling: FI 
- Trigger current: > 30 mA.

- Use only power cables complying with applicable regulations.
- Protection on mains side: max. admissible 25 A. Trigger characteristic of the fuses: B.

As soon as the power supply to the converter is activated, a 2-second display test is carried out during which all characters on the display are shown.



NOTICE: Requirements and limit values for harmonic currents.

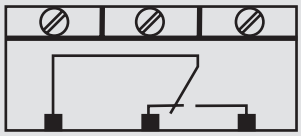
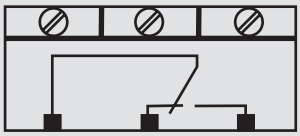
Pumps with the engine-power classes of 11 kW, 15 kW, 18.5 kW and 22 kW are equipment for professional usage. These devices are subject to special connectivity conditions since a short-circuit ratio Rsce of 33 at the connecting point is not sufficient for your type of operation. The connection to the public low-voltage mains is regulated by the standard IEC 61000-3-12 – the basis for these pumps' rating is table 4 for three-phase devices under specified conditions. For all public connection points, the short-circuit power Ssc at the interface between the user's electrical installation and the public power supply must be greater than or equal to the values in the table below. It is the responsibility of the installer or of the user, and if applicable the distribution system operator too, to ensure that these pumps are operated properly. If the pump is used within an industrial middle-voltage system, the connectivity conditions are the sole responsibility of the operator.

Motor power [kW]	Short-circuit Ssc power [kVA]
11	1800
15	2400
18.5	3000
22	3500

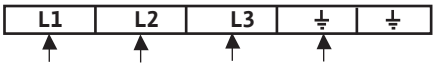
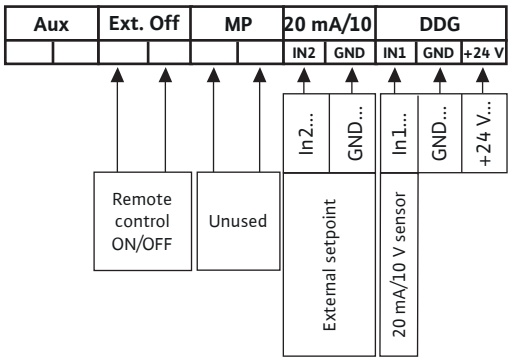
By installing an appropriate harmonic filter between the pump and the power supply, the harmonic current content will be reduced.

Connection terminal assignment

- Remove the screws and take off the converter cover.

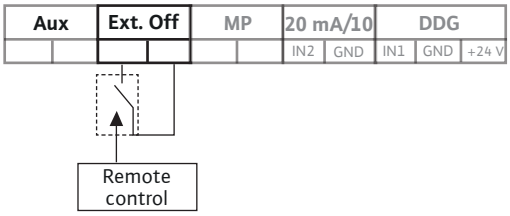
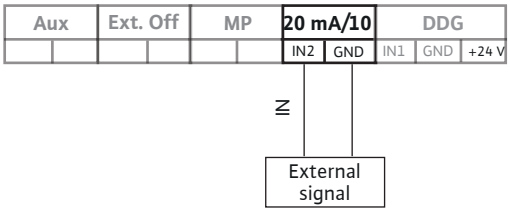
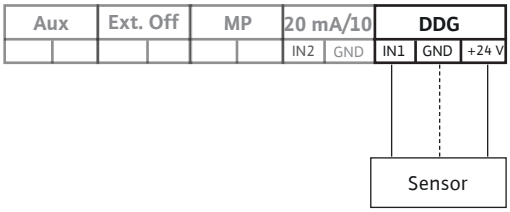
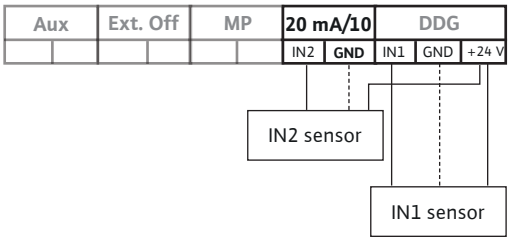
Type key	Assignment	Remarks
L1, L2, L3	Mains connection voltage	Three-phase current 3 ~ IEC38
PE	Earth terminal	0.55 0.75 1.1 1.5 2.2 3 4 | 5.5 7.5 11 15 18.5 22 x1 | x2
IN1	Sensor input	Signal nature: voltage (0–10 V, 2–10 V) Input resistor: Ri ≥ 10 kΩ Signal nature: current (0–20 mA, 4–20 mA) Input resistor: R_B = 500 Ω Can be configured in the “Service” menu <5.3.0.0>
IN2	External setpoint input	Signal nature: voltage (0–10 V, 2–10 V) Input resistor: Ri ≥ 10 kΩ Signal nature: current (0–20 mA, 4–20 mA) Input resistor: Rb = 500 Ω Can be configured in the “Service” menu <5.4.0.0>
GND (x2)	Ground terminals	For each IN1 and IN2 input
+24 V	Continuous power supply for sensor	Max. current: 60 mA. The power supply is protected from short-circuits.
Ext. Off	ON/OFF control input “DEACTIVATION priority” for a potential-free external switch	The potential-free external switch is used to activate and deactivate the pump. On installations with high numbers of starts (> 20 per day), activation and deactivations should be performed via “Ext. Off”.
SBM	“Available transfer” relay 	In normal operation, the relay is activated when the pump is running or in standby. The relay is deactivated if an initial malfunction occurs or if the main power supply is disconnected (pump switches off). Pump availability, even temporarily, can thus be signalled to the switchgear. Can be configured in the “Service” menu <5.7.6.0> Potential-free contact: minimum: 12 V DC, 10 mA maximum: 250 V AC, 1 A
SSM	“Failures transfer” relay 	If consecutive malfunctions of the same type are detected (from 1 to 6 according to significance), the pump switches off, and this relay is activated (until manual intervention). Potential-free contact: minimum: 12 V DC, 10 mA maximum: 250 V AC, 1 A
PLR	Connection terminals of the PLR communication interface	The optional IF module PLR can be inserted into the multiple connector placed in the converter connector area. The module is protected from polarity reversal.
LON	Connection terminals of the LON communication interface	The optional IF module LON can be inserted into the multiple connector placed in the converter connector area. The module is protected from polarity reversal.

NOTICE: Terminals IN1, IN2, GND and Ext. Off meet the requirements for “safe isolation” (in acc. with EN 61800-5-1) at the mains terminals as well as at SBM and SSM terminals (and vice versa).

Mains connection	Power terminal block
Plug the 4-conductor cable into the power terminal block (phases + earth).	
Input/output connection	**Input/output terminal block**
• The cables of the sensors, the external setpoint and the remote control (Ext. Off) must be shielded.	
• Remote control enables the starting or deactivation of the pump (potential-free), this function has priority over the other functions. • This remote control can be removed by shunting the terminals of the remote control (Ext. Off).	Example: float switch, low-water pressure regulator, etc.

Connections and control rules of each operating mode:

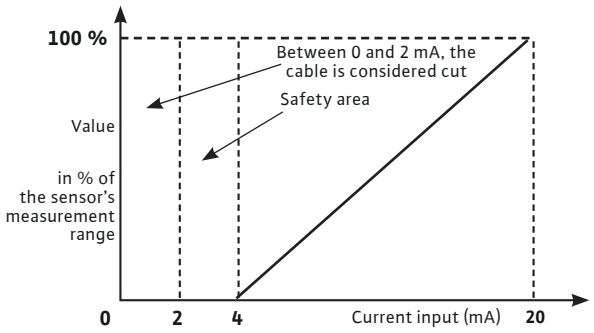
Signal connections and control rules		Connection		Signal	
				Current	Voltage
Operating modes	**Setting**	see the diagrams below			
• In “Speed stage control” mode 	... speed, manual	C1	/	/	/
	... speed, external control	C1	C2	S3	S4
• In “Constant pressure: p-c” mode • Control with a relative pressure sensor • In “Δp-c” mode • Control with a differential pressure sensor 	... of the setpoint with the rotary knob	C1	C3	S1	S2
	... by an external setpoint	C1	C2	S5	S6
			C3	S1	S2
• In the mode “Variable pressure: Δp-v” • Control with a differential pressure sensor 	... of the setpoint with the rotary knob	C1	C3	S1	S2
	... by an external setpoint	C1	C2	S5	S6
			C3	S1	S2
• In “PID control” mode • Control with a temperature sensor or delivery rate sensor... 	... of the setpoint with the rotary knob	C1	C3	S1	S2
	... by an external setpoint	C1	C2	S5	S6
			C3	S1	S2

Input/output connections	
Remote control: Position [C1] • Converter delivered with a jumper. • Use of the remote control is optional	
External signal IN2: Position [C2] • 2 wires ([20 mA/10 V] / 0 V)	
IN1 sensor: Position [C3] • 2 wires ([20 mA/10 V] / +24 V) • 3 wires ([20 mA/10 V] / 0 V / +24 V)	
IN1 and IN2 sensors: Position [C4] • 2 wires ([20 mA/10 V] / +24 V) • 3 wires ([20 mA/10 V] / 0 V / +24 V)	

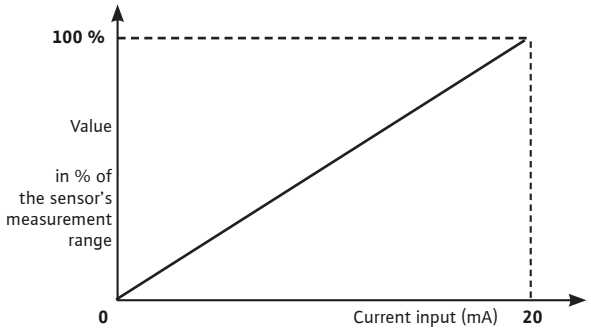
Control rules of input signals

Sensor input – Current signal: Position [S1]

Sensor signal 4–20 mA

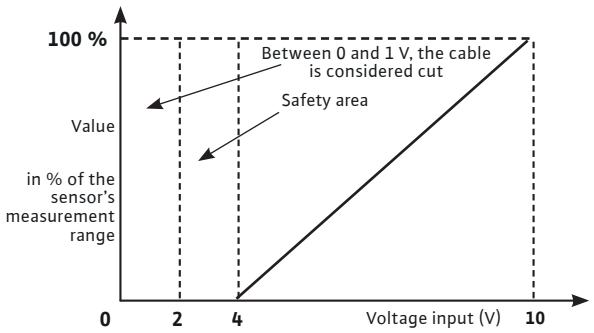


Sensor signal 0–20 V

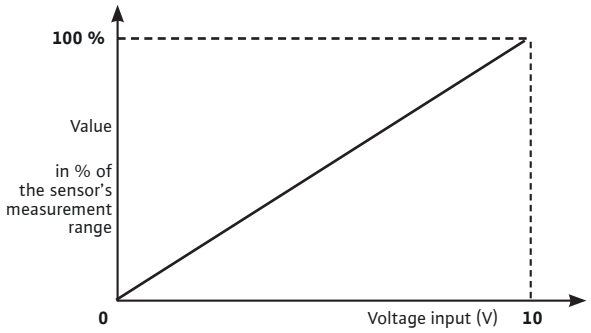


Sensor input – Voltage signal: Position [S2]

Sensor signal 2–10 V

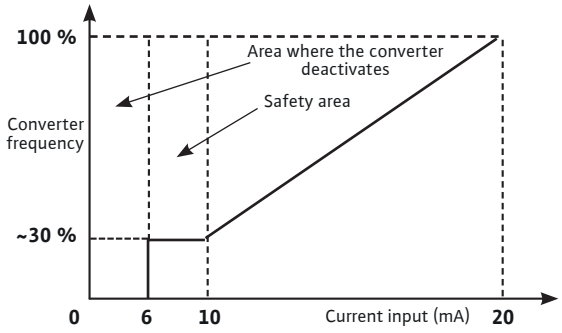


Sensor signal 0–10 V

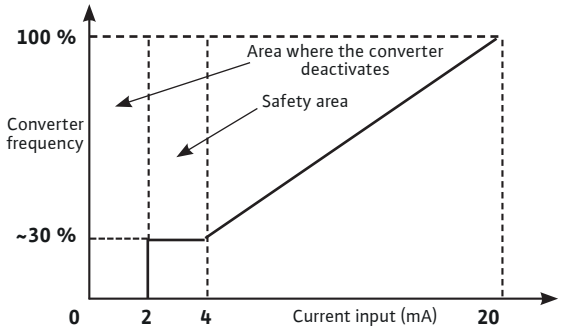


External control input of the speed stage – Current signal: Position [S3]

External signal 4–20 mA

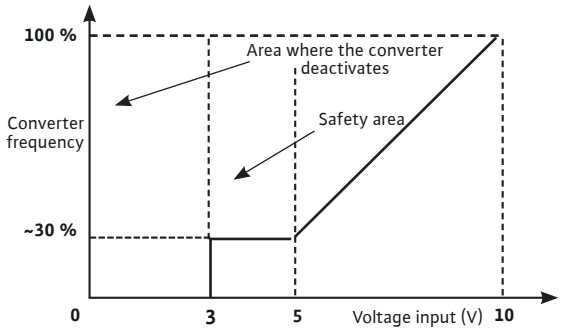


External signal 0–20 mA

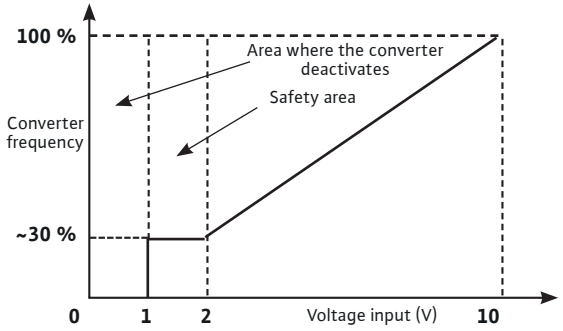


External control input of the speed stage – Voltage signal: Position [S4]

External signal 2–10 V

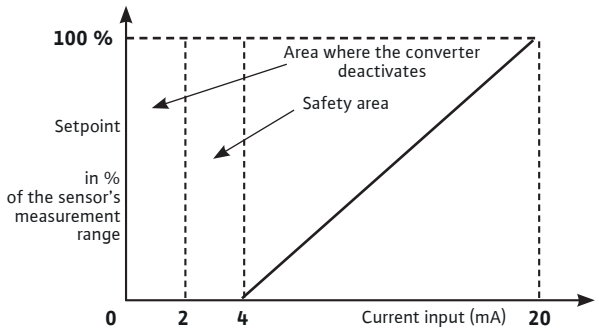


External signal 0–10 V

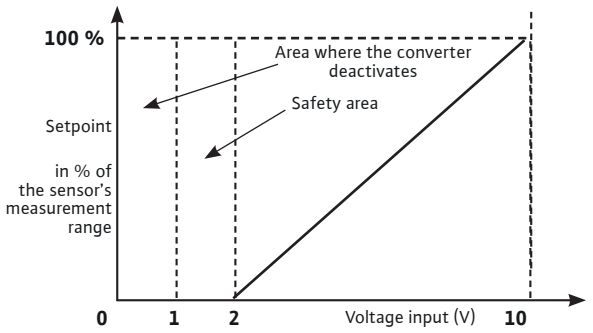


External setpoint input of control with a sensor (pressure, temperature, delivery rate, etc.)

Setpoint signal 4–20 mA: Position [S5]



Setpoint signal 2–10 V: Position [S6]



8. Commissioning

8.1 Filling and degassing the system

CAUTION! Risk of damage to the pump!
Never operate the pump dry.
The system must be filled before starting the pump.

8.1.1 Venting – Pump in inlet mode (Fig. 3)

- Close the two guard valves (2 + 3).
- Open the drain cock of the venting plug (6a).
- Slowly open the valve on the suction side (2).
- Close the drain cock once the air has escaped and the liquid is flowing in the pump (6a).

WARNING! Risk of burns!
If the pumped fluid is hot and under high pressure, the fluid escaping at the drain cock may cause burns or other injuries.

- Open the guard valve on the suction side completely (2).
- Start the pump.

8.1.2 Venting process – Pump in suction mode (Fig. 2)

- Close the guard valve on the discharge side (3). Open the guard valve on the suction side (2).
- Remove the filling plug (6b).
- Partially open the priming/drain plug (5b).
- Fill the pump and the suction pipe with water.
- Ensure that there is no air trapped in the pump and suction pipe. Fill the system until all air is removed.
- Close the filling plug (6b).
- Start the pump and verify that the direction of rotation complies with the specification printed on the pump sticker. If this is not the case, interchange two phases in the motor terminal.

CAUTION!
An incorrect direction of rotation will cause poor pump performance and may damage the coupling.

- Slightly open the guard valve on the discharge side (3).
- Unscrew the drain cock to remove the air (6a).
- Close the drain cock once the air has escaped and the liquid is flowing in the pump.

WARNING!
If the pumped fluid is hot and under high pressure, the fluid escaping at the drain cock may cause burns or other injuries.

- Open the guard valve on the discharge side fully (3).
- Close the priming/drain plug (5a).

8.2 Starting

CAUTION! Risk of property damage!
The pump must not operate at zero flow (discharge valve closed).

WARNING! Risk of injury!
Coupling guards must be in place and secured by all required screws when the pump is running.

WARNING! High noise levels!
High-power pumps may emit a high noise level. Use appropriate protection when working close to the pump for any extended period.

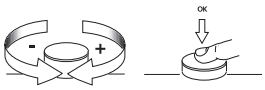
WARNING!
The installation must be laid out in such a way that there is no risk of injury in case of fluid leakage (e.g. caused by mechanical seal failure).

8.3 Operation of the converter

8.3.1 Control elements

The converter is controlled using the following control elements:

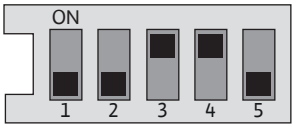
Rotary knob



- Selecting a new parameter only requires rotating the knob in direction "+" to the right or "–" to the left.
- A short impulse on the rotary knob confirms this new setting.

DIP switches

This converter has a block of five DIP switches (Fig. 1D, pos. 1) each with two positions.

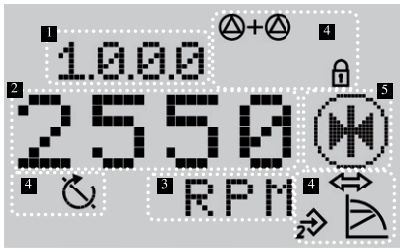


- DIP switch 1 switches from "OPERATION" mode [DIP switch 1 OFF] to "SERVICE" mode [DIP switch 1 ON] and back again. The "OPERATION" position authorises the operation of the chosen mode and stops access to the parameterisation (normal operation). The "SERVICE" position allows the user to carry out parameterisation of the different operations.
- DIP switch 2 is used to activate or deactivate the "Access lock" (see section 8.3.6.5).
- DIP switches 3 and 4 must be kept in the ON position.
- DIP switch 5 is not used and must be kept in the OFF position.

Relay

(see section 10)

8.3.2 Display structure



Pos.	Description
1	Menu number
2	Value display
3	Unit display
4	Standard symbols
5	Icon display

8.3.3 Description of standard symbols

Symbol	Description
	Operation in “Speed stage control” mode
	Operation in “Constant pressure” or “PID control” mode
	Operation in “Variable pressure” or “PID control” mode
	IN2 input activated (external setpoint)
	Access lock When this symbol appears, the settings or current measurement values cannot be modified. The information is displayed in read-only form
	BMS (Building Management System) PLR or LON is activated
	Pump in operation (if flashing, zero delivery rate detection detected)
	Pump switched off

8.3.4 Display

Display status page

- The status page appears as the default page of the display.
  The currently set setpoint is displayed. Basic settings are displayed by symbols.

Example of display status page

NOTICE: In all menus, if the rotary knob is not operated within 30 seconds, the display will reappear and no change will be registered.

Navigation element

- The menu structure makes it possible to call up the functions of the converter. A number is attributed to every menu and submenu.
- Turn the rotary knob to scroll through any menu level (e.g. 4000 –> 5000).
- Blinking elements (value, menu number, symbol or icon) allow the selection of a new value, a new menu number or a new function.

Symbol	Description
	When the arrow appears: • An impulse on the rotary knob provides access to a sub-menu (e.g. 4000 –> 4100).
	When the “return” arrow appears: • An impulse on the rotary knob provides access to the higher menu (e.g. 4130 –> 4100).

8.3.5 Defining the application of an open or closed hydraulic loop

The product has two types of application. The type of application chosen defines the operating modes that can be accessed.

Hydraulic application	Operating mode	
Open loop	“p-c” mode	Speed stage control mode
Closed loop	“Δp-c” mode “Δp-v” mode	PID mode

Menu 5.7.8.0 of the EXPERT menu can be used to select the type of application required.

NOTICE: The product must be reinitialised when the application is changed. All the user parameters will revert to the factory settings.

8.3.6 Defining operating modes

Defining pressure sensors

- The relative pressure sensor measures the pressure in relation to atmospheric pressure.
- The absolute pressure sensor measures the pressure in relation to the zero pressure in a vacuum.
- The differential pressure sensor measures the pressure between two points.

NOTICE: All the pressures indicated by the pump are measured in relation to the atmospheric pressure, except when a differential pressure sensor is used.

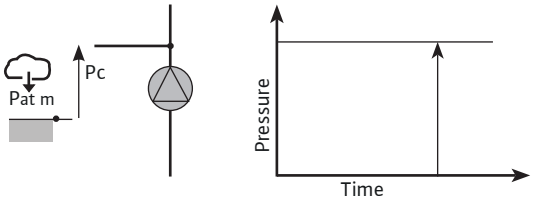
NOTICE: If the pump is provided alone, and not integrated into a system installed by us, the configuration mode upon delivery is the “speed stage control” mode.

“Speed stage control” mode (Fig. 2, 3)

- The duty point is obtained by manually adjusting the speed stage via the menus or using an external command signal for the speed stage expressed in %.
- For entry into service, the motor speed stage should be set at 2400 rpm.

“Constant pressure: pc” mode (Fig. 2D, 3D, 4D)

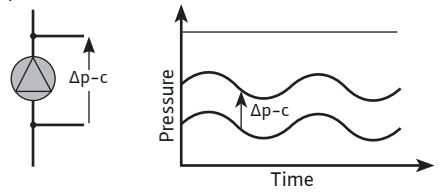
- In “p-c” mode, the converter maintains a constant pressure at the pump discharge irrespective of the delivery rate required by the installation.



- The duty point is defined manually via the menus or an external signal.
- This mode can be accessed when the open hydraulic loop parameter is selected in menu 5.7.8.0.
- A relative pressure sensor is used for control (sensor: accuracy: ≤ 1 %; using between 30 % and 100 % of the measuring range).
- For entry into service, the set pressure should be set at 60 % of the pump’s maximum pressure.

“Δp-c” mode (Fig. 2D, 3D, 4D)

- In “Δp-c” mode, the converter maintains a constant differential pressure (generated by the pump) irrespective of the delivery rate required by the installation.



- The differential pressure is defined manually via the menus or via an external signal.
- This mode can be accessed when the closed hydraulic loop parameter is selected in menu 5.7.8.0.
- A differential pressure sensor is used for control (sensor: accuracy: ≤ 1 %; using between 30 % and 100 % of the measuring range).
- For entry into service, the set pressure should be set at 60 % of the pump’s maximum pressure.

Mode “variable pressure: Δp-v” (Fig. 2D-3D-4D)

- In “Δp-v” mode, the converter changes the differential pressure of the pump in a linear manner, in line with the delivery rate required by the installation.
- The duty point (P set) is defined manually via the menus or an external signal.
- The duty point at a zero delivery rate (%P set) is defined manually via the menus.
- This mode includes zero delivery rate detection that switches off the pump.
- A differential pressure sensor is used for control (sensor: accuracy: ≤ 1 %; using between 30 % and 100 % of the measuring range).
- For entry into service, the set pressure should be set at 60 % of the pump’s maximum pressure.
- This mode can be accessed when the closed hydraulic loop parameter is selected in menu 5.7.8.0.

“PID control” mode

- The converter enables control with another type of sensor (temperature, delivery rate, etc.) via control of the PID (proportional integral differential control).
- The duty point is expressed as a percentage of the measurement range of the sensor used. This point is defined manually via the menus or via an external control signal.

8.3.7 Menu description

List of menus (Fig. A5)

<1.0.0.0> Setpoint setting

<2.0.0.0> Operating mode setting

<3.0.0.0> On/Off pump setting

<4.0.0.0> “Information” menu
Reading the pump parameters

<5.0.0.0> “Service” menu
Access to the pump parameter settings

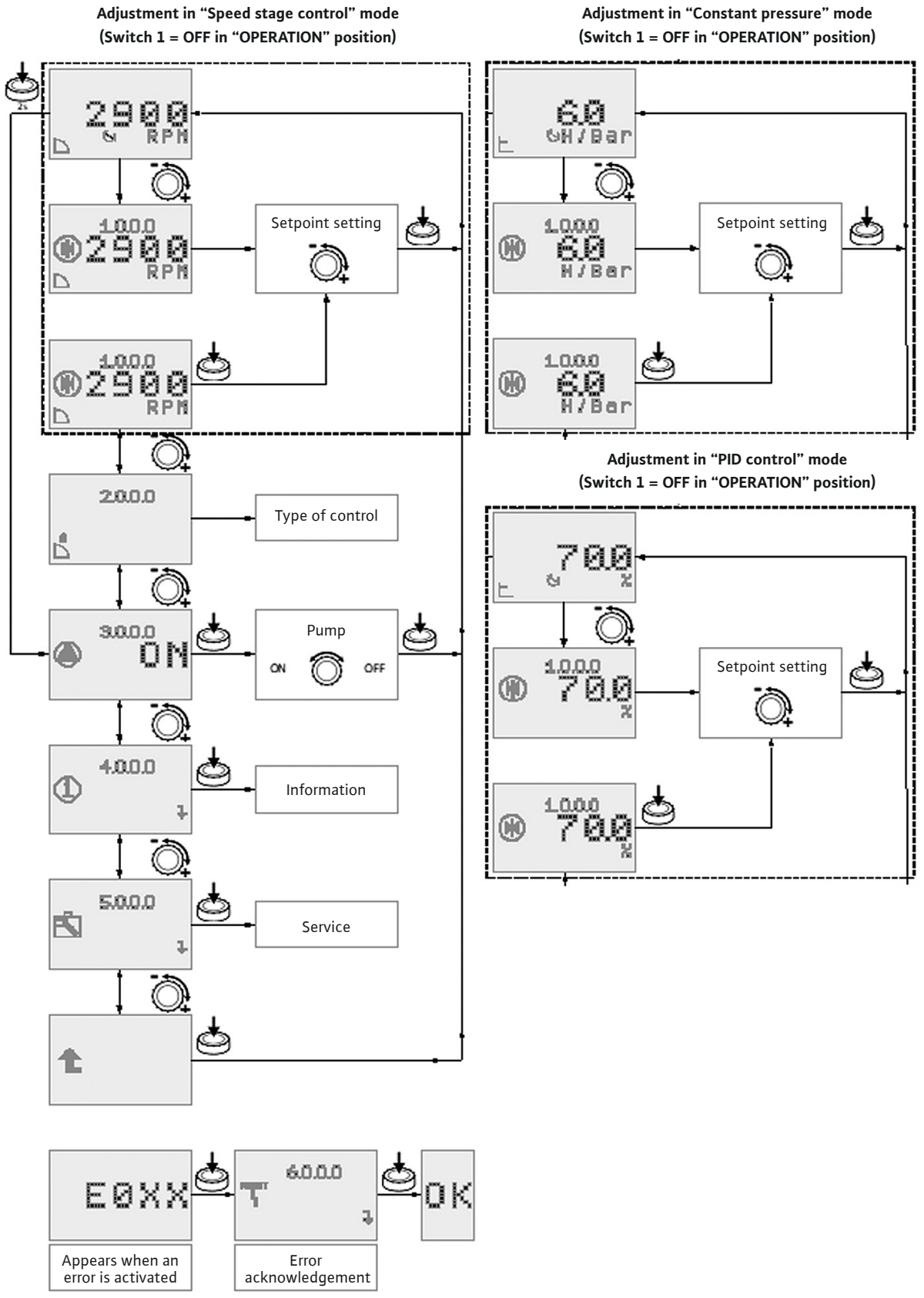
<6.0.0.0> Error acknowledgement
If one or more malfunctions occur, the malfunction page will appear. The letter “E” followed by a three-figure code will appear (see section 10).

<7.0.0.0> Access lock
The “Access lock” can be accessed if DIP switch 2 is in the ON position.

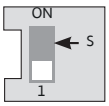
CAUTION! Risk of property damage!
Incorrect setting changes may cause pump operation faults which may lead to damage of the pump or installation.

Menu navigation

Fig. A1



- Only perform adjustments in “SERVICE” mode when commissioning, which should only be performed by specialist technicians.



Navigating the “Easy” and “Expert” menus

Place DIP switch 1 in the ON position (Fig. A1, pos. 1). The “SERVICE” mode is activated.
On the display, the symbol here will flash (Fig. A7).
In the “SERVICE” mode, the parameter of menus <2.0.0.0> and <5.0.0.0> can be changed.

There are 2 adjustment modes:

Easy menu

A simplified menu that provides access to the main parameters of the operating modes.

- Press the rotary knob for two seconds. The “Easy” menu symbol is displayed (Fig. A7).
- Press the rotary knob to validate this choice. The display will switch to menu number <2.0.0.0> (Fig. A8).
- After performing the adjustments, put DIP switch 1 in the OFF position (Fig. A1, pos. 1).

Expert menu

The menu for accessing all the parameters.

- Press the rotary knob for two seconds and turn it in order to select the expert menu.
  The “Expert” menu symbol is displayed (Fig. A7).
- Press the rotary knob to validate this choice. The display will switch to menu <2.0.0.0> (Fig. A8).
- Select the operating mode in menu <2.0.0.0> and validate.
- Select menu <5.0.0.0> to access all the converter’s parameters (Fig. A9).
- After performing the adjustments, put DIP switch 1 in the OFF position (Fig. A1, pos. 1).

Fig. A2

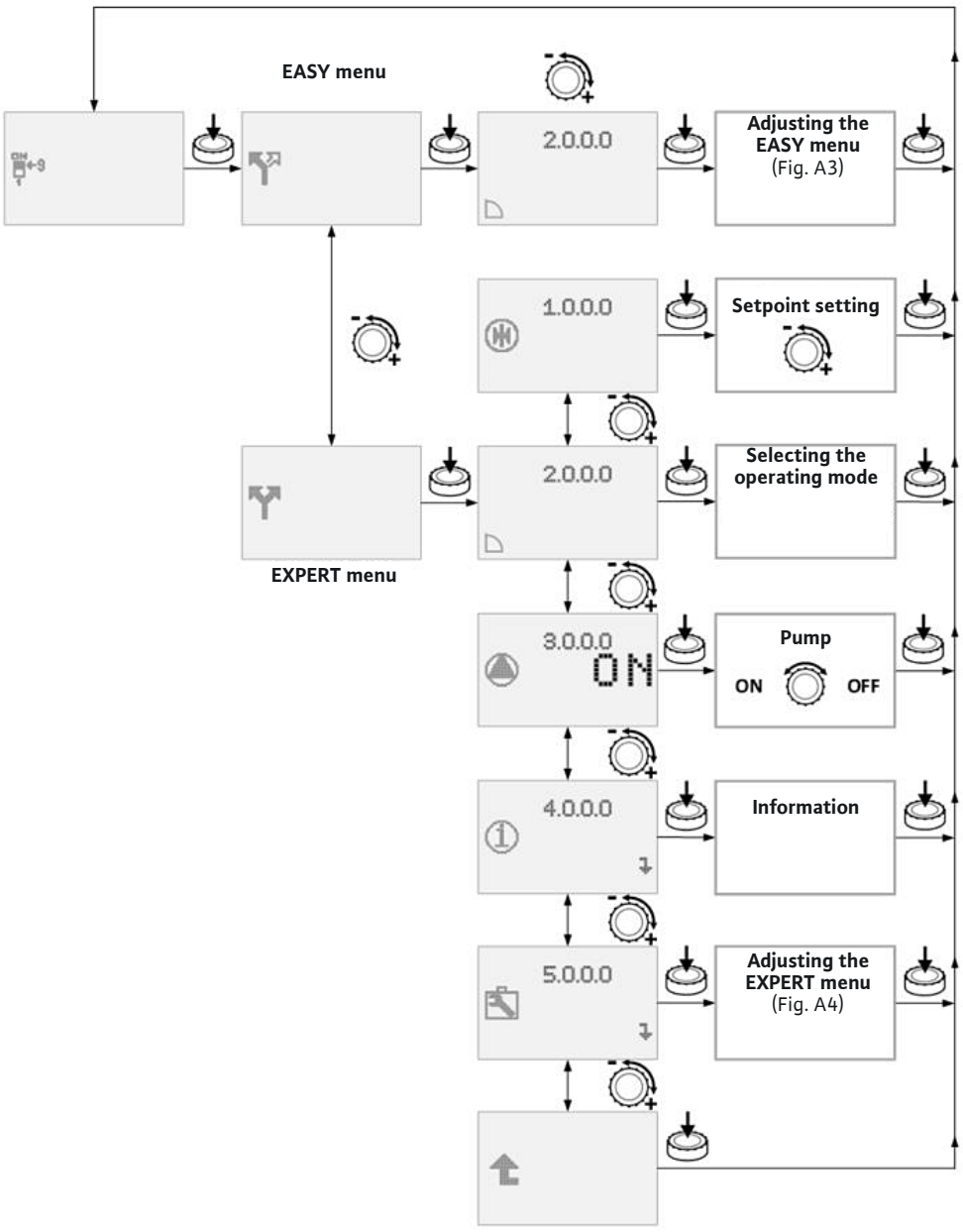

EASY menu
2.0.0.0
Adjusting the EASY menu (Fig. A3)
1.0.0.0
Setpoint setting
2.0.0.0
Selecting the operating mode
EXPERT menu
3.0.0.0
ON
Pump
ON
OFF
4.0.0.0
Information
5.0.0.0
Adjusting the EXPERT menu (Fig. A4)

Fig. A3

ADJUSTING THE EASY MENU

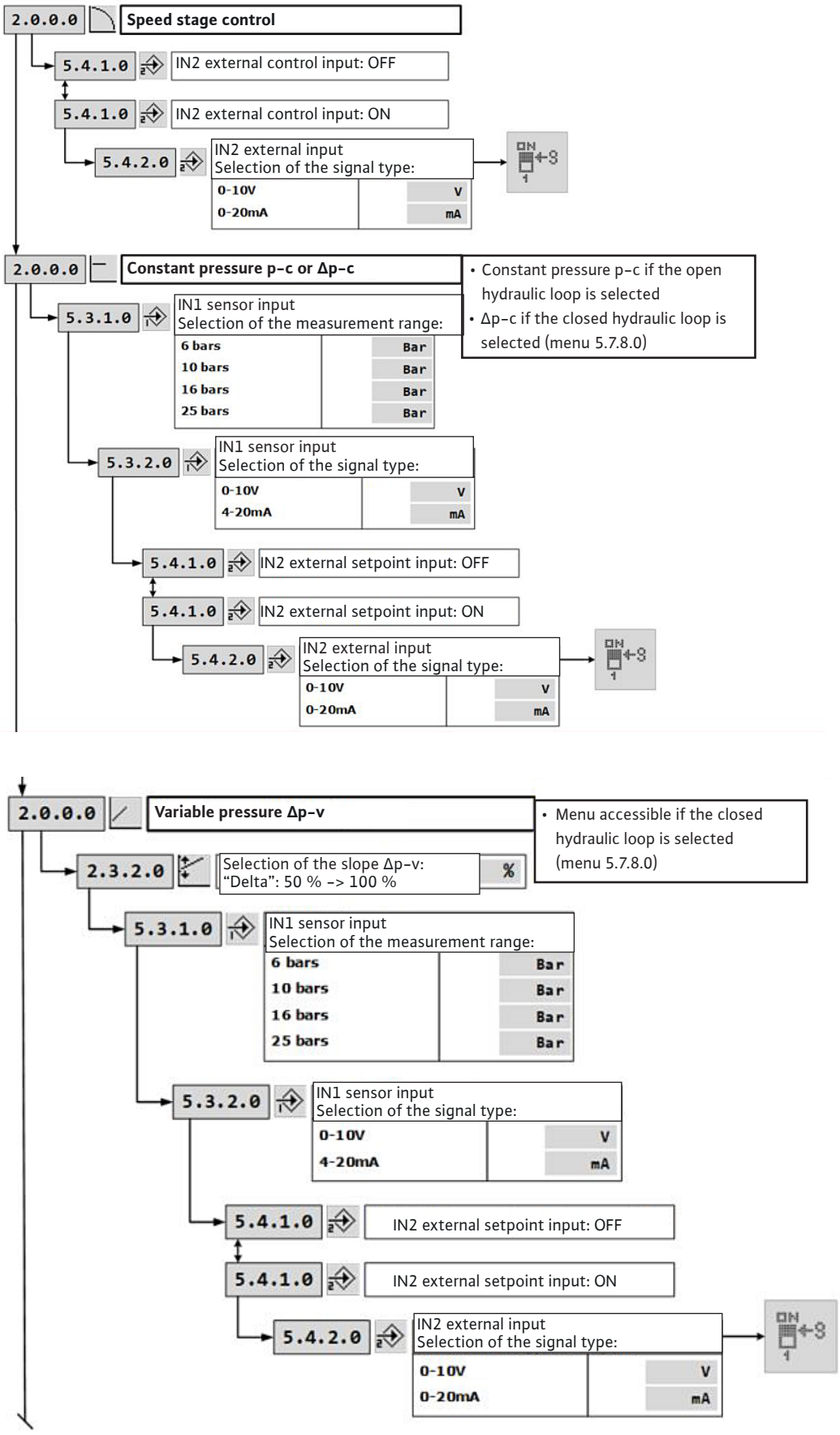


Fig. A3

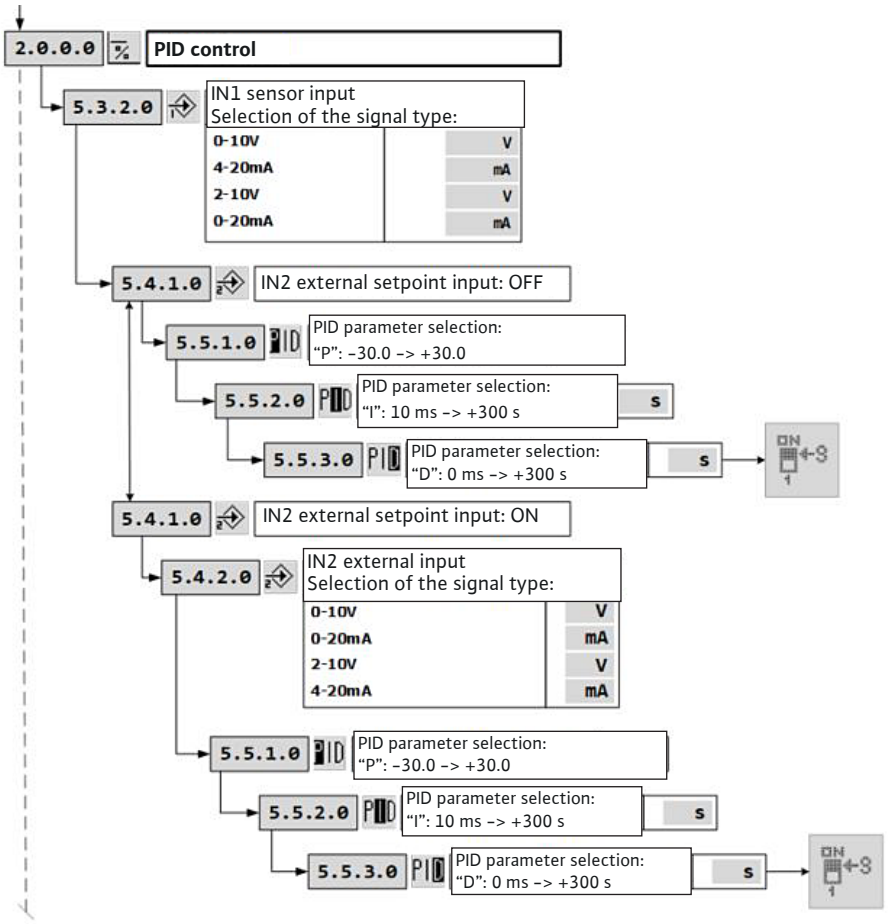

2.0.0.0
PID control
5.3.2.0
IN1 sensor input
Selection of the signal type:
0-10V
V
4-20mA
mA
2-10V
V
0-20mA
mA
5.4.1.0
IN2 external setpoint input: OFF
5.5.1.0
PID parameter selection:
"P": -30.0 -> +30.0
5.5.2.0
PID parameter selection:
"I": 10 ms -> +300 s
s
5.5.3.0
PID parameter selection:
"D": 0 ms -> +300 s
s
5.4.1.0
IN2 external setpoint input: ON
5.4.2.0
IN2 external input
Selection of the signal type:
0-10V
V
0-20mA
mA
2-10V
V
4-20mA
mA
5.5.1.0
PID parameter selection:
"P": -30.0 -> +30.0
5.5.2.0
PID parameter selection:
"I": 10 ms -> +300 s
s
5.5.3.0
PID parameter selection:
"D": 0 ms -> +300 s
s

Fig. A4

ADJUSTMENT OF THE EXPERT MENU

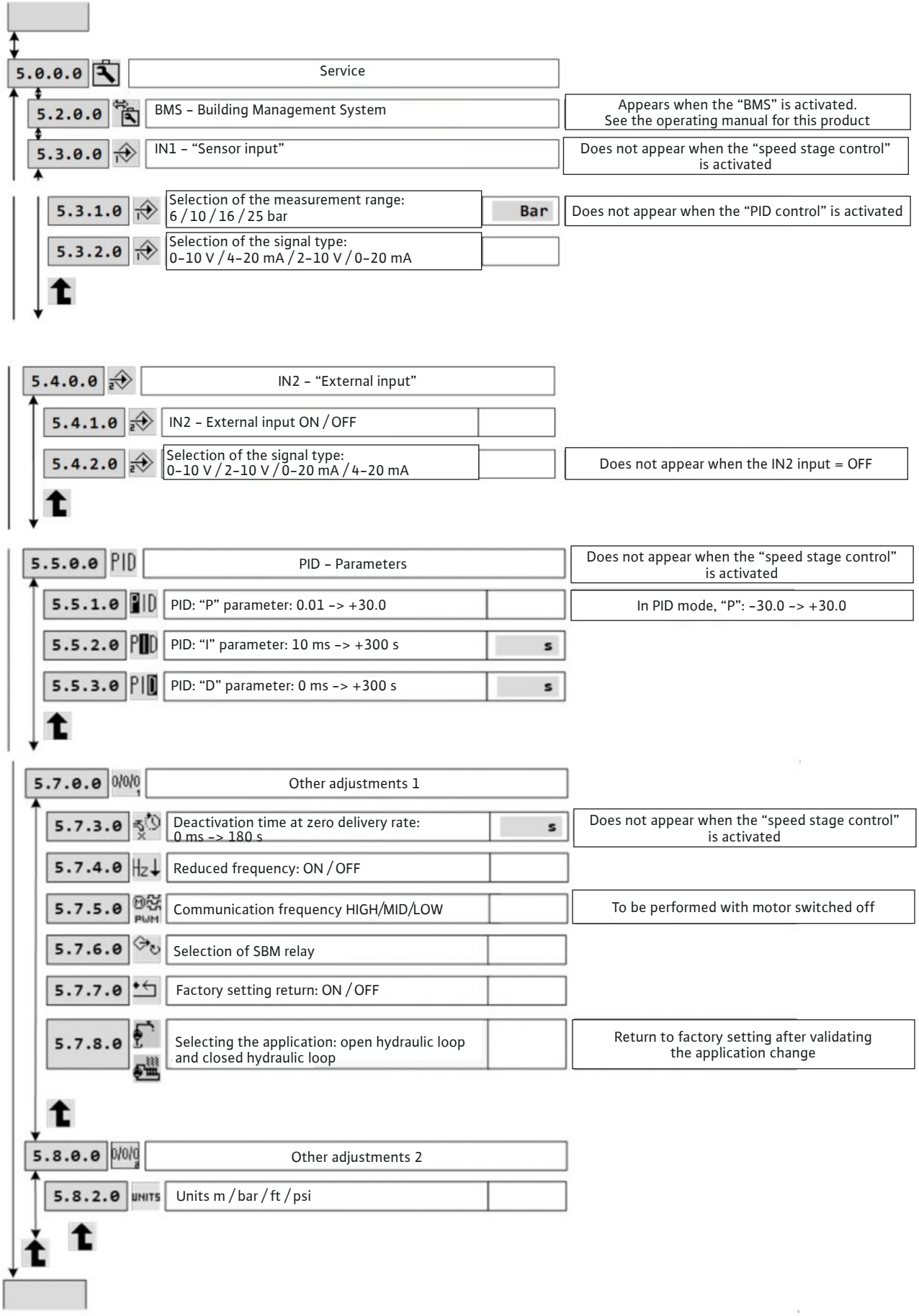
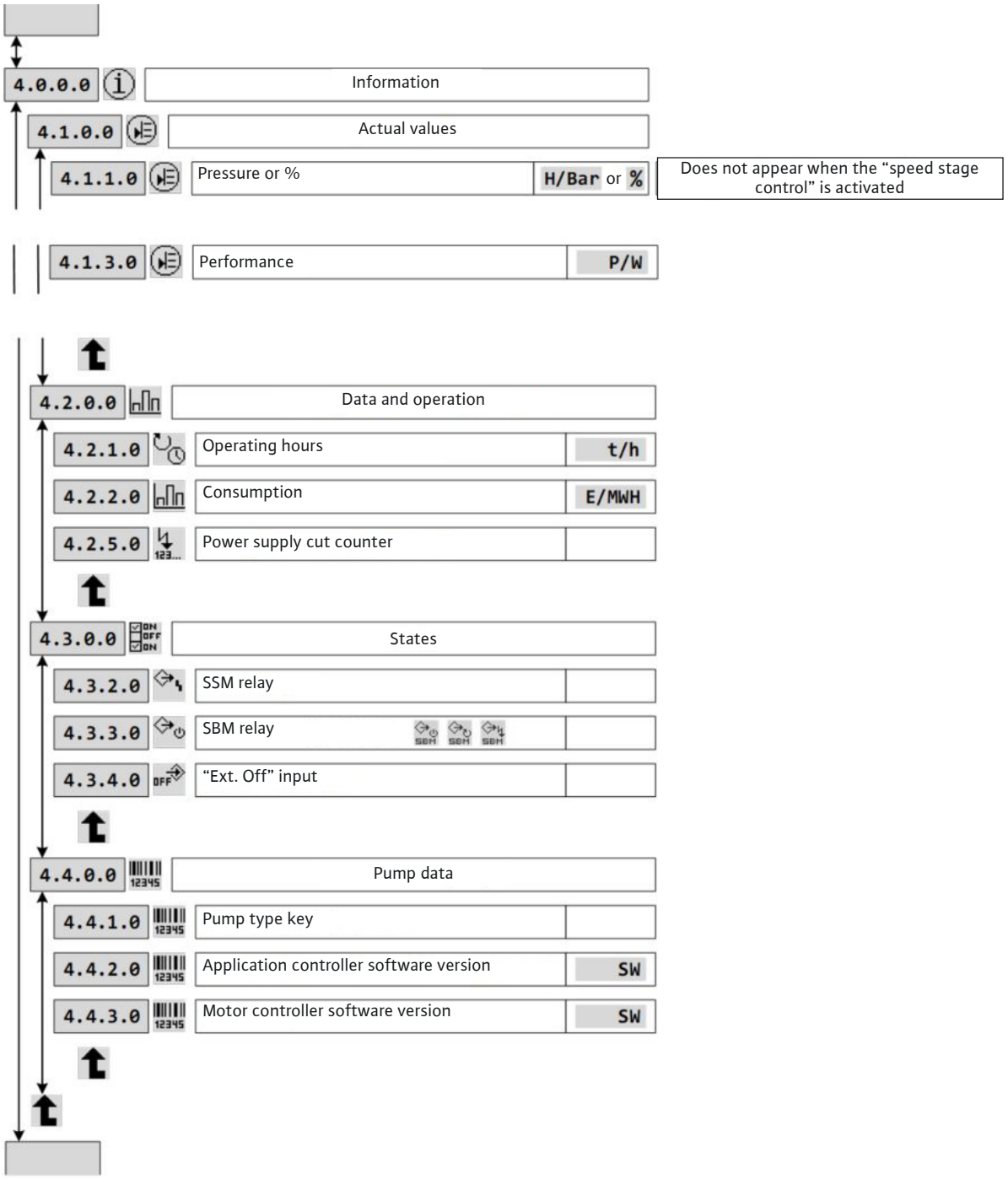


Fig. A5

NAVIGATING THE “4000” INFORMATION MENU



Access lock

The “Access lock” can be used to block all adjustments to the pump.

Proceed as follows:

- Place DIP switch 2 in the ON position.
  The menu <7.0.0.0> will appear.
- Turn the rotary knob to activate or deactivate the lock. The current status of the lock is represented by the following symbols:

Lock activated: The parameters are locked and access to the menus is authorised in read-only mode.

Lock deactivated: The parameters can be changed and access to the menus to make adjustments is authorised.

- Place DIP switch 2 in the OFF position. The status setting will reappear.

9. Maintenance

All maintenance must be performed by an authorised service representative only!

WARNING! Risk of electric shock!
Danger from electrical current must be eliminated.
Ensure that the pump’s power supply is switched off and secured against unauthorised reactivation before performing any work on the electric system.

WARNING! Risk of burns!
In case of high water temperatures and high system pressures, close the guard valves upstream and downstream of the pump. First, allow pump to cool down.

- No special maintenance required during operation. Nevertheless, a regular check is recommended every 15,000 hours.
- The cartridge mechanical seal can be easily replaced on some models thanks to its design. Insert its adjusting wedge in its housing (see Fig. 6) once the mechanical seal is correctly positioned.
- Always keep the pump perfectly clean.
- Pumps that are not being used during periods of frost should be drained to avoid damage:
  Close the guard valves, open the drain/priming plug completely and the drain cock.
- Service life: 10 years depending on the operating conditions and whether all requirements described in this operation manual have been met.

10. Faults, causes and remedies

WARNING! Risk of electric shock!
Danger from electrical current must be eliminated.
Ensure that the pump's power supply is switched off and secured against unauthorised reactivation before performing any work on the electric system.

WARNING! Risk of burns!
In case of high water temperatures and high system pressures, close the guard valves upstream and downstream of the pump. First, allow pump to cool down.

Faults	Causes	Remedies
The pump is not functioning	No electrical power supply	Check the fusible cut-outs, the wiring and the connections
	The motor protection device has cut off the power	Eliminate any motor overload
The pump is functioning but is failing to reach its duty point	Incorrect direction of rotation	Check the direction of rotation and correct it if necessary
	Parts of the pump are obstructed by foreign bodies	Check and clean the pump
	Air in the suction pipe socket	Make the suction pipe socket air-tight
	Suction pipe socket too narrow	Install a wider suction pipe socket
	The valve is not open far enough	Open the valve completely
The output of the pump is irregular	Presence of air in the pump	Remove the air from the pump and ensure that the suction pipe socket is sealed. Possibly start the pump for 20 – 30 s. Open the drain cock to let air escape. Close the drain cock and repeat several times until no more air comes out of the drain cock
	In "Constant pressure" mode, the pressure sensor is not adapted	Install a sensor with a compliant pressure scale and precision
The pump is vibrating or is noisy	Foreign matter in the pump	Remove the foreign matter
	The pump is not firmly secured to the ground	Tighten the anchor screws
	Bearing damaged	Contact Wilo customer service
The motor is overheating, the motor protection engages	A phase is interrupted	Check the fusible cut-outs, the wiring and the connections
	Ambient temperature too high	Provide cooling
The mechanical seal is leaking	The mechanical seal is faulty	Replace the mechanical seal
The delivery rate is inconsistent	In "Constant pressure" or "Variable pressure" mode, the pressure sensor is not adapted	Install a sensor with a compliant pressure scale and precision
In "Constant pressure" or "Variable pressure" mode, the pump does not switch off when the delivery rate is zero	The non-return valve is not impermeable	Clean or change it
	The non-return valve is not adapted	Replace it with an adapted non-return valve
	The tank does not have enough capacity for the installation	Change it or add another to the installation

If the fault cannot be resolved, please contact Wilo customer service.

Faults must be remedied by qualified personnel only!
Observe the safety instructions in section 9 Maintenance.

Relay
The converter is fitted with 2 output relays serving as interface with the centralised control, e.g.: switchgear, pump control.

SBM relay:
This relay can be configured in the “Service” menu <5.7.6.0> in 3 operating modes.

State: 1 (default setting)
“Available transfer” relay (normal operation of this pump type).
The relay is activated when the pump is running or in standby.
The relay is deactivated if an initial malfunction occurs or if the main power supply is disconnected (pump switches off). Pump availability, even temporarily, is signalled to the switchgear.

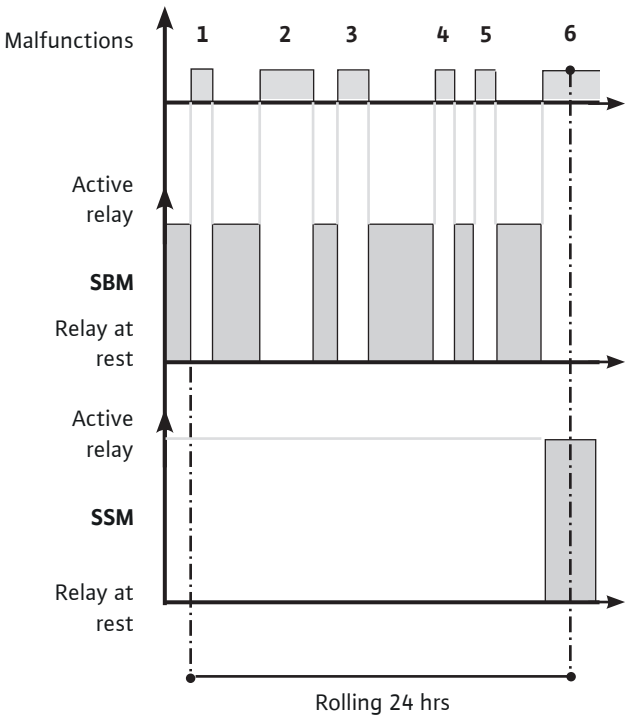
State: 2
“Run transfer” relay.
The relay is activated when the pump is running.

State: 3
“Power on transfer” relay.
The relay is activated when the pump is connected to the network.

SSM relay:
“Failures transfer” relay.
If consecutive malfunctions of the same type are detected (from 1 to 6 according to significance), the pump switches off, and this relay is activated (until manual intervention).

Example: 6 defects with a variable duration within 24 hours.

The state of the SBM relay is “Available transfer”.



10.1 Faults table

All incidents mentioned hereafter will have the following effect:

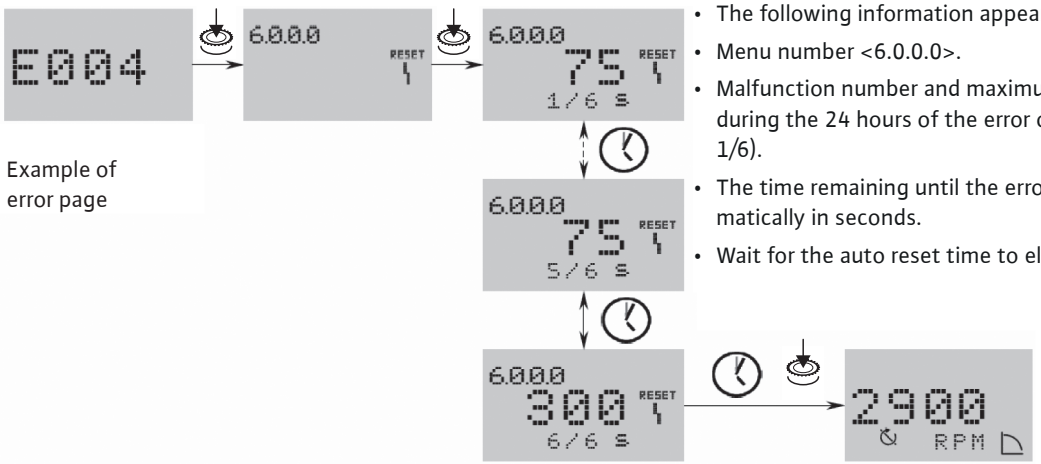
- Deactivation of the SBM relay (when parameterised in “available transfer” mode).
- Activation of the SSM relay “failure transfer” when the max. quantity of one malfunction type is reached within a 24-hour period.
- Lighting of a red LED.

Error code	Ramp time before signalling of error	Time before the error is taken into account after signalling	Waiting time before automatic reactivation	Max. error in 24 h	Faults Possible causes	Remedies	Waiting time before reset
E001	60 s	0 s	60 s	6	The pump is overloaded, malfunctioning	Density and/or viscosity of the pumped fluid too high	300 s
					The pump is obstructed by foreign bodies	Dismantle the pump, replace the malfunctioning components or clean it	
E004 (E032)	~5s	(0.55 to 7.5 kW) 300 s	(0.55 to 7.5 kW) 0 s if error deleted	6	The power supply to the converter is in undervoltage	Check the voltage at the converter terminals: • malfunction if power supply > 480 V (0.55 to 7.5 kW) • malfunction if power supply > 506 V (11 to 22 kW)	(0.55 to 7.5 kW) 0 s
		(11 to 22 kW) 0 s	(11 to 22 kW) 300 s				(11 to 22 kW) 300 s
E005 (E033)	~5s	300 s	0 s if error deleted	6	The power supply to the converter is at overvoltage	Check the voltage at the converter terminals: • malfunction if power supply > 506 V	0 s
E006	~5s	300 s	0 s if error deleted	6	A power supply phase is missing	Check the power supply	0 s
E007	0 s	0 s	0 s if error deleted	Un-limited	The converter operates as a generator. Warning, no pump deactivation	The pump has switched direction, check the impermeability of the valve	0 s
E010	~5s	0 s	Unlimited	1	The pump is blocked	Dismantle pump, clean it and replace the faulty parts. Possible mechanical motor malfunction (roller bearings)	60 s
E011	15s	0 s	60 s	6	The pump is deactivated or is running dry	Re-prime by filling the pump (See § 9.3). Check the impermeability of the foot valve	300 s
E020	~5s	0 s	300 s	6	The motor is heating up	Clean the cooling ribs at the back and under the converter, as well as the fan cap	300 s
					Room temperature above product characteristics	Improve the ventilation of the premises	
E023	0 s	0 s	60 s	6	The motor is short-circuited	Remove the motor-converter from the pump and check it or replace it	60 s
E025	0 s	0 s	Unlimited	1	A phase of the motor is missing	Check the connection between the motor and the converter	60 s
E026	~5s	0 s	300 s	6	The motor’s temperature sensor is faulty or has a bad connection	Remove the motor-converter from the pump and check it or replace it	300 s
E030 E031	~5s	0 s	(0.55 to 7.5 kW) 0 s if error deleted (11 to 22 kW) 300 s	6	The converter is heating up	Clean the cooling ribs at the back and under the converter, as well as the fan cap	300 s
					Room temperature above product characteristics	Improve the ventilation of the premises	
E042	~5s	0 s	Unlimited	1	The sensor cable (IN1) is cut	Check for the correct power supply and wiring to the sensor	60 s
E050	60 s	0 s	0 s if error deleted	Un-limited	The BMS communication is faulty	Check the connection	300 s
E077	0 s	0 s	Unlimited	1	24 V power supply voltage of sensors faulty	Check the sensors and their connections	60 s
E---	0 s	0 s	Unlimited	1	Converter internal malfunction	Call customer service	60 s

10.2 Errors acknowledgement

CAUTION! Risk of property damage!
Only acknowledge errors after they have been resolved.

- Errors may be resolved by qualified technicians only.
- When in doubt, contact the manufacturer.
- In case of a error, the malfunction page is displayed instead of the status page.
- To acknowledge a error, proceed as follows.
- Press the rotary knob.
- The following information appears in the display:
- Menu number <6.0.0.0>.
- Malfunction number and maximum number during the 24 hours of the error occurrence (e.g.: 1/6).
- The time remaining until the error is reset automatically in seconds.
- Wait for the auto reset time to elapse.



Example of error page

Example of status page

A timer runs inside the system. The remaining time (in seconds) until the error is automatically acknowledged is displayed.

- When the maximum number of error is reached and the last follow-up time has elapsed, press the rotary knob to acknowledge.

The system returns to the status page.

NOTICE: If time for the resolution of the malfunction remains after the error signal (e.g.: 300 s), then the error must always be acknowledged manually.
The auto reset timer is inactive and "- - -" is displayed.

11. Spare parts

All spare parts must be ordered through local authorised technicians and/or the Wilo customer service.
Please state all data shown on the rating plate with each order to avoid queries and incorrect orders.

12. Disposal

Information on the collection of used electrical and electronic products
Proper disposal and appropriate recycling of this product prevents damage to the environment and dangers to your personal health.

NOTICE: Disposal in domestic waste is forbidden!
In the European Union, this symbol can appear on the product, the packaging or the accompanying documentation. It means that the electrical and electronic products in question must not be disposed of along with domestic waste.
To ensure proper handling, recycling and disposal of the used products in question, please note the following points:

- Only hand over these products at designated, certified collecting points.
- Observe the locally applicable regulations!
  Please consult your local municipality, the nearest waste disposal site, or the dealer who sold the product to you for information on proper disposal. For further information on recycling, go to www.wilo-recycling.com.

Subject to change without prior notice.

1. 概述

1.1 关于本文档

原版安装及操作说明所采用的语言为英语。本说明的所有其他语言版本均为原版安装及操作说明的译本。
本安装及操作说明是产品的组成部分。必须将其存放在产品安装处，以便随时取用。严格遵循本说明是正确安装和使用本产品的必要条件。
本安装及操作说明符合本产品的相关版本以及付诸印制时有效的基本安全标准。
欧盟符合性声明：
欧盟符合性声明的副本是本安装及操作说明不可或缺的组成部分。
如果在未经我们同意的情况下对此处指定的系列进行技术修改，则此声明将失去效力。

2. 安全

本安装及操作说明包含了安装、操作和维护过程中必需遵守的重要信息。因此，在安装及试运行之前，维修人员及负责的专业人员/操作员务必阅读本说明。
他们不仅必须遵守本节所列出的一般安全说明，还必须遵守以下各节中所包含的带有危险符号的特殊安全说明。

2.1 操作说明的危险提示标识

符号


一般危险符号

电压造成的危险


注意：...

信号词：

危险！紧急危险情况。如果不遵守说明，则会导致死亡或极为严重的伤害。

警告！用户可能会受到（严重）伤害。“警告”意味着，如果忽视此信息，则可能会造成（严重）人身伤害。

小心！产品/设备有受损的风险。“小心”意味着，如果忽视此信息，则本产品及操作装置可能会受损。

注意：关于产品操作的有用信息。它提醒人们注意可能会出现的问题。
直接出现在产品上的信息，如
- 指示旋转方向的箭头、
- 连接标识符、
- 铭牌、
- 警告贴纸，

必须得到严格遵循，并保持清晰可读。

2.2 工作人员资质

负责安装、操作和维护的工作人员必须具备该项工作所要求的相应资质。运营方应确保工作人员的责任范围、职责和相应监督。如果工作人员不具备必要的知识，则必须接受培训和指导。如有必要，这项工作可以根据运营方的请求由产品制造商来完成。

2.3 违反安全说明时出现的危险情况

违反安全说明可能导致人员受伤，并对环境和产品/设备造成损害。违反安全说明还会导致丧失任何损害索赔权。具体来讲，违反安全说明可能会带来以下风险，例如：
- 电气、机械和细菌等影响对人员构成的危险
- 因危险物品泄漏导致的环境破坏
- 财产损失
- 重要产品/装置功能的失效
- 所需的维护和维修过程失败

2.4 作业时的安全意识

必须遵守现有的事故防范指令。
必须消除电流方面的危险。务必遵守当地指令或通用指令 [例如 IEC、VDE 等] 以及当地供电公司的指令。
本设备不适合身体、感官或精神能力较弱以及缺乏经验和知识的人（包括儿童）使用，除非有人监督或指导他们如何使用设备，并负责他们的安全。应照看好儿童，确保其不会玩耍设备。

2.5 运营方安全说明

本设备不适合身体、感官或精神能力较弱以及缺乏经验和知识的人（包括儿童）使用，除非有人监督或指导他们如何使用设备，并负责他们的安全。
应照看好儿童，确保其不会玩耍设备。
- 如果产品/装置上的高温或低温部件会导致危险，则必须采取局部措施以防接触。
- 当本产品处于运行状态时，不得拆除防止接触移动部件的防护装置（例如联轴器）。
- 必须将（例如从轴封处）泄漏的（易爆、有毒或高温）有害流体导出，以免对人员或环境造成危害。必须遵守国家法律规定。
- 必须消除电流方面的危险。必须遵守当地指令或通用指令 [例如 IEC、VDE 等] 以及本地供电公司的指令。

2.6 有关安装和维护作业的安全指示

运营方须保证所有安装和维护作业均由经授权和具备资质的专业人员执行，且这些人员必须已经通过深入研习本安装及操作说明而掌握了充分的信息。只有在产品/设备处于休止状态时，才能对其进行操作。关闭产品/设备时，必须遵循本安装及操作说明中所述的步骤。
作业结束后，必须马上将所有的安全及防护装置放回原处并/或对其进行重新调试。

2.7 擅自改装部件和使用未授权备件

擅自改装部件和使用未授权备件将会危害产品/人员的安全，并使生产商安全声明无效。只有在与制造商协商后，才能对产品进行修改。
制造商授权的原装备件和附件可确保安全。使用其他部件将免除制造商的一切责任。

2.8 不当使用

对于所提供产品的常规使用，只有在遵守本安装及操作说明第 4 节的情况下才能确保操作安全。在任何情况下，极限值均不得高于或低于目录/数据表中指定的值。

3. 运输和临时存放

当您收到设备时，请检查它是否已在运输过程中损坏。如果在运输过程中发生损坏，请在允许的时间内与承运人一起采取一切必要的措施。

小心！存放环境可能会对本产品造成损害。
如果必须稍后安装提供的材料，则必须将其存储在干燥的地方防止其受到各种碰撞以及任何外界影响（湿度、霜冻等）。
在临时存储前，应对泵进行彻底清洁。应以一种妥善的方式来准备新泵，从而确保可以将其存放一年。
请小心搬运泵，以避免在安装之前损坏本产品。

4. 应用

此水泵设计用于抽吸热水或冷水、水/乙二醇混合物或其他不含矿物油、固体或研磨材料或长纤维物料的其他低黏度流体。泵送腐蚀性化学物质需要获得制造商的批准。

危险！小心爆炸风险！
请勿将此泵用于输送任何易燃或易爆液体。

4.1 应用领域

- 配水和超压系统、
- 工业循环设备、
- 工艺流体、
- 冷却水回路、
- 消防和清洗站、
- 喷洒系统、灌溉等。

5. 产品信息

5.1 型号代码

示例：Helix VE1613-1/25/E/K/2G	
Helix V **Helix FIRST V**	采用立式设计的高效多级串联泵
E	配备变频器
16	额定流量，单位为 m^3/h
13	级数
-1	1 = 304 不锈钢制泵壳 + 304 不锈钢制液压部件 2 = 316L 不锈钢制泵壳 + 316L 不锈钢制液压部件 3 = GJL -250 铸铁制泵壳 + 304 不锈钢制液压部件
25	25 = PN 25 法兰 16 = PN 16 法兰 P = Victaulic 连接
/E	E = EPDM O 形圈 (WRAS/KTW) V = VITON O 形圈
/K	K = 集装式机械密封件
/2G	第 2 代变频器

5.2 技术数据

<table>
<tr><th colspan="2">最大利用压力</th></tr>
<tr><td>泵壳</td><td>16、25 或 30 bar，具体取决于型号</td></tr>
<tr><td>最大吸入压力</td><td>10 bar
注意：实际输入压力 (P input) + 零输送速率时的压力 (P zero delivery rate) 必须始终低于最高允许工作压力 (Pmax)。如果超过最高允许工作压力，则机械密封件和滚针轴承可能会损坏或者其使用寿命将会缩短。
P input + P zero delivery rate ≤ Pmax
有关最高工作压力，请参阅泵的铭牌：Pmax</td></tr>
<tr><th colspan="2">温度范围</th></tr>
<tr><td>流体温度</td><td>–30 °C 至 +120 °C
–15 °C 至 +90 °C（使用 FKM 密封垫时）
–20 °C 至 +120 °C（使用铸造外壳时）</td></tr>
<tr><td>环境温度</td><td>–15 °C 至 +40 °C（其他要求的温度）</td></tr>
<tr><th colspan="2">电气数据</th></tr>
<tr><td>电机效率</td><td>IE4</td></tr>
<tr><td>电机保护等级</td><td>IP55</td></tr>
<tr><td>绝缘等级</td><td>155 (F)</td></tr>
<tr><td>频率</td><td>请参见电机铭牌</td></tr>
<tr><td>电源电压</td><td>
<table>
<tr><th colspan="13">功率 (kW)</th></tr>
<tr><td>0.55</td><td>0.75</td><td>1.1</td><td>1.5</td><td>2.2</td><td>3</td><td>4</td><td>5.5</td><td>7.5</td><td>11</td><td>15</td><td>18.5</td><td>22</td></tr>
<tr><td colspan="13">400 V (±10 %) 50 Hz
380 V (±10 %) 60 Hz
480 V (±10 %) 60 Hz</td></tr>
</table>
</td></tr>
<tr><td>支持的电源类型</td><td>TN、TT</td></tr>
<tr><th colspan="2">其他特性</th></tr>
<tr><td>环境湿度</td><td>< 90 %，无冷凝</td></tr>
<tr><td>海拔</td><td>< 1000 m（按客户要求，> 1000 m）</td></tr>
<tr><td>最大吸入压头</td><td>取决于泵的 NPSH</td></tr>
<tr><td>噪声级 dB(A) 0/+3 dB(A)</td><td>
<table>
<tr><th colspan="13">功率 (kW)</th></tr>
<tr><td>0.55</td><td>0.75</td><td>1.1</td><td>1.5</td><td>2.2</td><td>3</td><td>4</td><td>5.5</td><td>7.5</td><td>11</td><td>15</td><td>18.5</td><td>22</td></tr>
<tr><td colspan="2">61</td><td colspan="2">63</td><td>67</td><td>71</td><td>72</td><td colspan="2">74</td><td colspan="2">78</td><td colspan="3">81</td></tr>
</table>
</td></tr>
<tr><td>电源电缆横截面直径
（电缆配有 4 根电线）mm²</td><td>
<table>
<tr><th colspan="12">功率 (kW)</th></tr>
<tr><td>0.55</td><td>0.75</td><td>1.1</td><td>1.5</td><td>2.2</td><td>3</td><td>4</td><td>5.5</td><td>7.5</td><td>11</td><td>15</td><td>18.5</td><td>22</td></tr>
<tr><td colspan="2">1.2</td><td colspan="2">1.5–2.5</td><td colspan="2">2.5 – 4</td><td colspan="2">2.5 – 6</td><td>4 – 6</td><td colspan="2">6 – 10</td><td colspan="2">10 – 16</td></tr>
</table>
</td></tr>
</table>

- – 电磁兼容性 (*)
- • 住宅排放 –
  1 类环境： PN-EN 61800-3
- • 工业抗干扰性 –
  2 类环境： PN-EN 61800-3

(*) 当频率范围为 600 MHz 与 1 GHz 之间时，在直接靠近无线电传输装置、发射器或在此频率范围内工作的类似设备的特殊情况下（与电子模块相距 <1 m），显示屏中的显示或压力指示可能会受到干扰。泵的运行在任何时候都不会受到影响。

- – 外形和连接尺寸 (Fig. 4)。

5.3 供货范围

- • 高压多级离心泵。
- • 操作手册。
- • 用于 PN 16 配置的反向法兰、螺钉和形圈。

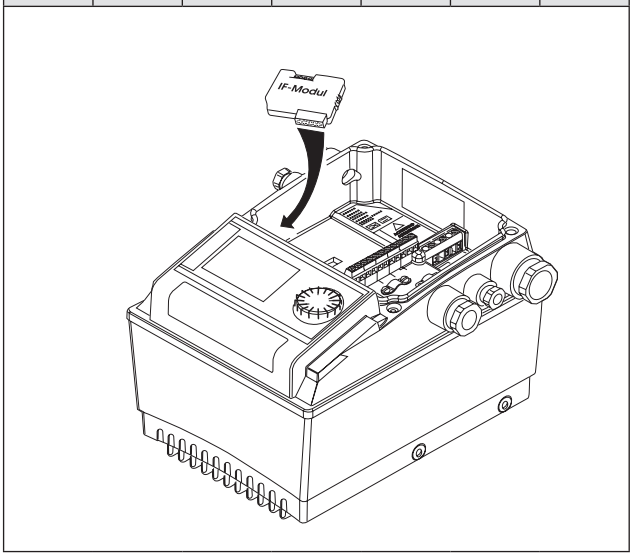
5.4 附件

以下原装附件适用于 Helix 系列：

型号代码	物品编号
2 个椭圆形不锈钢 1.4301 反向法兰（拧紧）(PN 16 – 1")	4016168
2 个圆形不锈钢 1.4404 反向法兰（拧紧）(PN 40 – DN 25)	4016165
2 个圆形钢反向法兰（焊接）(PN 40 – DN 25)	4016162
2 个椭圆形不锈钢 1.4301 反向法兰（拧紧）(PN 16 – 1"1/4)	4016169
2 个圆形不锈钢 1.4404 反向法兰（拧紧）(PN 40 – DN 32)	4016166
2 个圆形钢反向法兰（焊接）(PN 40 – DN 32)	4016163
2 个椭圆形不锈钢反向法兰（拧紧）(PN 16 – 1"1/2)	4016170
2 个圆形不锈钢 1.4404 反向法兰（拧紧）(PN 40 – DN 40)	4016167
2 个圆形钢反向法兰（焊接）(PN 40 – DN 40)	4016164
2 个椭圆形不锈钢 1.4301 反向法兰（拧紧）(PN 16 – 2")	4055063
2 个圆形不锈钢 1.4404 反向法兰（拧紧）(PN 40 – DN 50)	4038589
2 个圆形钢反向法兰（焊接）(PN 40 – DN 50)	4038588
旁路套件 25 bar	4146786
旁路套件（带 25 bar 气压测量仪）	4146788
带减震垫的底座，适用于最大功率为 5.5 kW 的泵	4157154

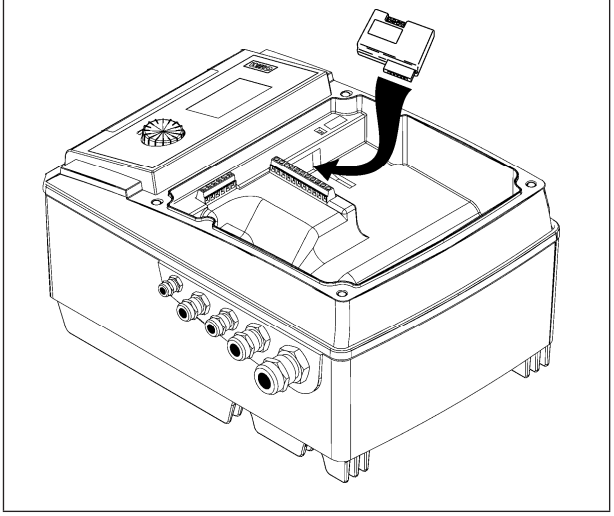
- IF 模块 PLR，用于连接 PLR/接口转换器
- IF 模块 LON，用于连接 LONWORKS 网络。这些模块直接插入变频器的连接接口中（请参见如下 Fig.）。
- 止回阀（带调节片或弹簧圈，适合在恒定压力下工作）
- 防干运行保护套件
- 控制用压力传感器套件（精度：≤ 1 %；在测量范围的 30% 至 100% 之间使用）。只能使用全新的附件。

功率 (kW)						
0.55	0.75	1.1	1.5	2.2	3	4

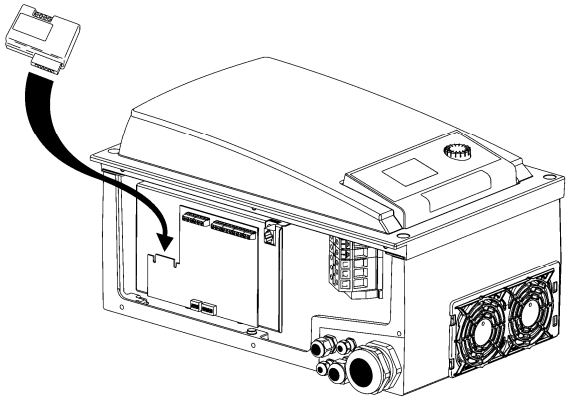


6. 说明和功能

功率 (kW)	
5.5	7.5



功率 (kW)			
11	15	18.5	22



6.1 产品说明

Fig. 1

1 – 电机固定件螺栓
2 – 联轴器护罩
3 – 机械密封件
4 – 液压段壳体
5 – 叶轮
6 – 泵轴
7 – 电机
8 – 联轴器
9 – 联接架
10 – 轴管衬套
11 – 法兰
12 – 泵壳
13 – 底板

Fig. 2, 3
1 – 滤网
2 – 泵抽吸阀
3 – 泵排放阀
4 – 止回阀
5 – 排水 + 起动注水塞
6 – 排气塞和填充塞
8 – 基础块
10 – 吊钩

Fig. A1、A2、A3 和 A4
1 – DIP 开关块
2 – 压力传感器
3 – 蓄水罐
4 – 蓄水罐保温阀

6.2 产品特性

- Helix 泵为立式非自吸高压多级离心泵，适用于串联式连接。
- Helix 泵包含液压部件和高性能电机。
- 所有与水接触的金属部件均采用不锈钢制成。
- 对于配有最重电机 (> 40 kg) 的型号，特定联轴器允许在不拆下电机的情况下更换密封件。因此，泵上采用了集装式机械密封件，以便于维护和维修。
- 泵上集成了专用搬运设备，以便于泵的安装（Fig. 8）。

7. 安装和电气连接

所有安装和电气作业只能由合格的人员按照当地法律和法规完成！

警告！小心严重受伤危险！
必须遵守用于预防事故的适用规定。

警告！小心触电危险！
必须消除电流方面的危险。

7.1 收到产品后

打开泵的包装，并按照环保方式回收或处置包装。

7.2 安装

必须将泵安装在干燥、通风良好且无霜冻的地方。

小心！存在损坏泵的风险！
泵壳中出现异物或杂质可能会影响本产品的功能。

- 建议在执行任何焊接和熔接作业之后再安装泵。
- 请在安装和试运行水泵前彻底冲洗回路。

– 水泵必须安装在易于触及的地方，以方便检查或更换。
– 对于重型泵，请在泵的上方安装吊钩（Fig. 2，位置 10），以方便拆卸。

警告！小心灼热表面导致事故的危险！
必须以一种妥善的方式安装泵，从而确保无人能在本产品运行时触摸到其灼热表面。

– 请在干燥、无霜冻的位置，使用合适的螺钉将泵安装在平坦的混凝土基座上。如果可能，请在混凝土基座下使用绝缘材料（软木塞或增强橡胶），以免设备任何噪声和振动传入设备。

警告！小心倾覆危险！
请确保将泵正确地固定在地面上。

– 必须将泵安装在易于接触的位置，以方便检查和拆卸作业。必须将泵完全直立地安装在混凝土基板上。

小心！泵中存在异物危险！
请确保在安装之前将所有堵头从泵壳上拆下。

注意：所有泵在出厂前均经过液压属性相关测试，因此可能含有少量残留的水。出于卫生考虑，建议在将泵安装到任何饮用水供应系统中之前对其进行冲洗。

– 有关安装和连接尺寸，请参阅第 5.2 节。
– 请遵循吊装规范，仅使用适当的吊装设备、提升装置和吊索来吊运泵。

警告！小心倾覆危险！
由于重心较高，泵容易发生倾覆，对于大型泵而言尤其如此。搬运时，请特别注意将泵安全地固定。

警告！小心倾覆危险！
集成式吊钩只能在未受损（例如未被腐蚀）的情况下使用。如果需要，请更换它们。

警告！小心倾覆危险！
切勿使用电机吊钩来吊运整个泵，因为这些吊钩仅设计用于吊运电机。

– 电机配有冷凝水排放孔（位于电机下方），这些排放孔已在出厂前采用塑料塞密封，以确保 IP55 级防护。如果在空调或冷却系统中使用，请移除这些塑料塞，以便冷凝水排出。

7.3 管道连接

- 使用合适的反向法兰、螺钉、螺母和密封垫将泵连接至管道。

小心！
不得以超过以下值的力矩拧紧螺钉或螺栓：

PN 16/PN 25 配置	
M10 – 20 N.m	M12 – 30 N.m
PN 40 配置	
M12 – 50 N.m	M16 – 80 N.m

禁止使用冲击式扳手。

- 泵的标识贴纸上指明了流体的流动方向。
- 必须安装抽吸和排放管套筒，以免这些管道对泵产生任何压力。必须连接管道，从而使泵不会承受它们的重量。
- 我们建议在泵的抽吸侧和排放侧均安装闸阀。
- 如果需要，请使用伸缩接头以减轻泵产生的噪声和振动。
- 管道横截面的大小必须至少与泵壳上抽吸口的直径相当。
- 建议在排放管中安装止回阀，以防止泵受到压力冲击。
- 如果直接连接到公共饮用水管道上时，则抽吸管套筒还必须配备止回阀和截止阀。
- 如果通过蓄水罐间接连接，则抽吸管套筒必须配备一个防止杂质进入泵中的吸滤器以及一个止回阀。

7.4 电气连接

危险！小心致命危险！

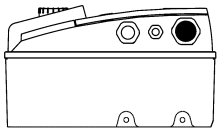
变频器电容器放电会产生危险电压。

- 在对变频器进行任何作业之前，请在断开电源之后等待 5 分钟。
- 检查所有电气连接和触点是否都已不带电。
- 检查压力连接端子是否已正确分配。

- 必须将电源线（3 根相线 + 地线）插入下图中以黑色指示的填料函压盖中。
- 不使用的填料函压盖必须使用制造商提供的插塞进行密封。

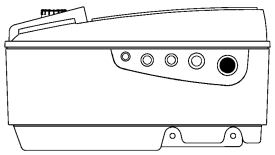
功率 (kW)						
0.55	0.75	1.1	1.5	2.2	3	4

M25



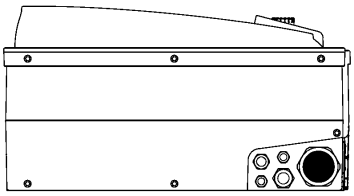
功率 (kW)	
5.5	7.5

M25



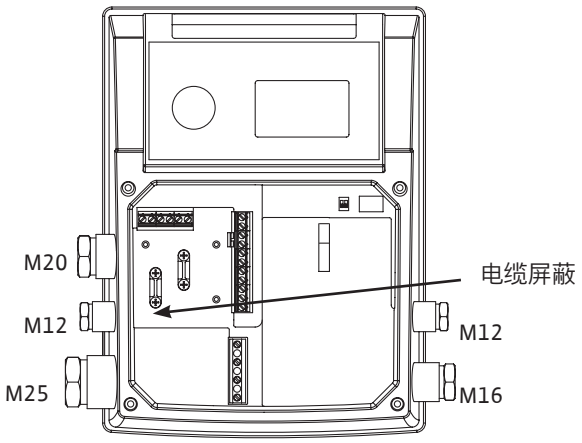
功率 (kW)			
11	15	18.5	22

M32/M40

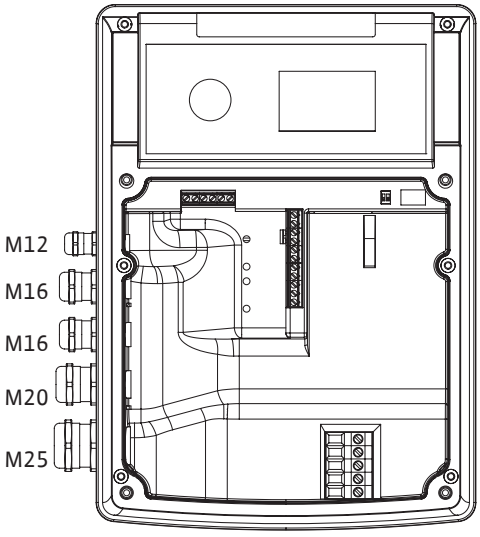


- 必须对用于传感器、外部指令以及输入端 [Ext. Off] 和 [Aux] 的电缆进行屏蔽处理。

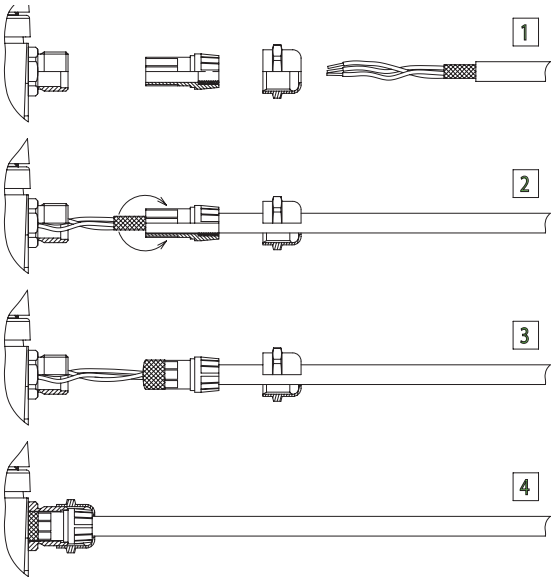
功率 (kW)						
0.55	0.75	1.1	1.5	2.2	3	4



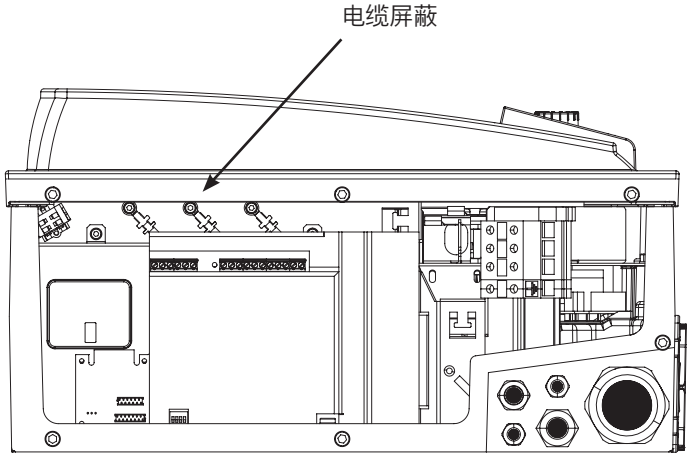
功率 (kW)	
5.5	7.5



变频器的金属填料函压盖适
用于带保护性编织物的装置。



功率 (kW)			
11	15	18.5	22



1xM32/40
1xM20
1xM16
2xM12

- 泵识别标签上详细列出了变频器的电气特性（频率、电压和额定电流）。请确保变频器符合将与其配合使用的电源。
- 电机的电动保护装置集成在变频器中。其设置考虑到了泵的特性，并可确保对泵和电机的保护。
- 在所有情况下，请安装熔断式隔离开关（gF 型）以保护设备。

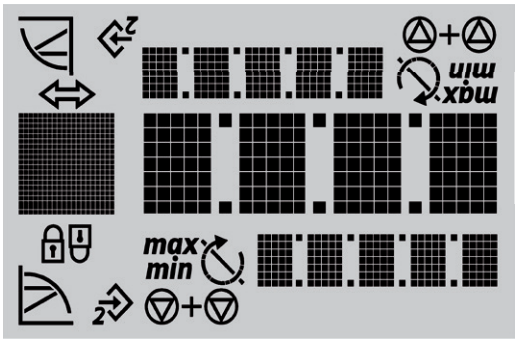
注意：如果需要安装漏电保护器以保护用户，则该设备必须具有延迟效果。请根据泵标识贴纸上规定的电流调节断路器的额定值。

注意：此泵配备了变频器，因此不需要漏电保护器提供保护。变频器可能会影响漏电保护器的功能。
例外：允许使用具有选择性通用电流敏感设计的漏电保护器。

- 标签： FI 
- 触发电流： > 30 mA。

- 只能使用符合适用法规的电源线。
- 电源侧的保护装置：最大允许电流为 25 A。
  熔断器触发特性：B.

  激活变频器电源后，系统将立即执行为时 2 秒的显示测试，显示屏上的所有特性都会在此期间显示。



注意：谐波电流的要求和限值。

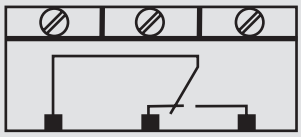
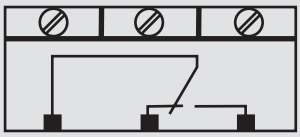
发动机功率级别为 11 kW、15 kW、18.5 kW 和 22 kW 的泵 属于专业用途设备。由于连接点处值为 33 的短路比 Rsce 不足以达到您操作类型的要求，因此这些设备受特殊连接条件限制。通向公共低压电源的连接应符合
IEC 61000-3-12 标准 – 这些泵的额定值均基于适用于规定条件下三相设备的表 4。对于公共连接点，用户电气装置和公共电源之间接口处的短路功率 Ssc 必须大于或等于下表中列出的值。安装人员或用户（以及适用情况下也包括配电系统运营方）负责确保这些泵能够正常工作。如果在工业中压系统内使用泵，则由运营费全权负责连接条件。

电机功率 [kW]	短路 Ssc 功率 [kVA]
11	1800
15	2400
18.5	3000
22	3500

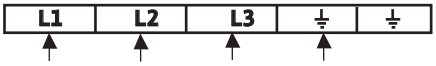
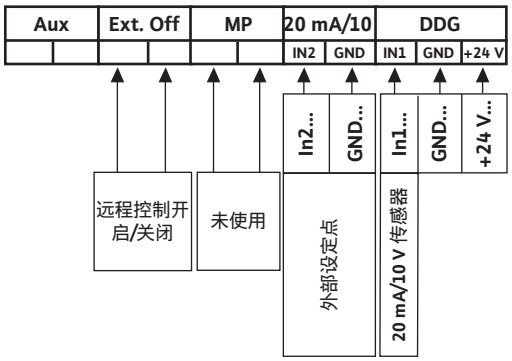
在泵与电源之间安装适当的谐波滤波器之后，谐波电流将会下降。

连接端子分配

- 拆下螺钉并取下变频器盖。

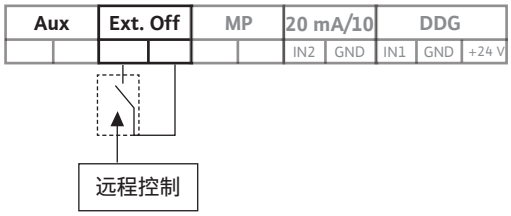
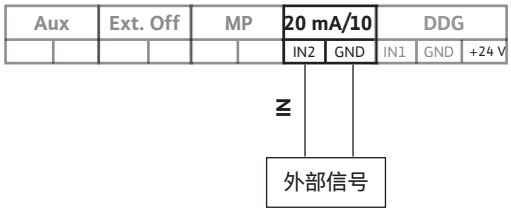
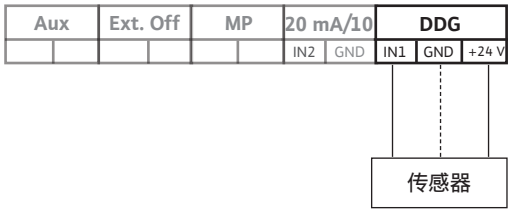
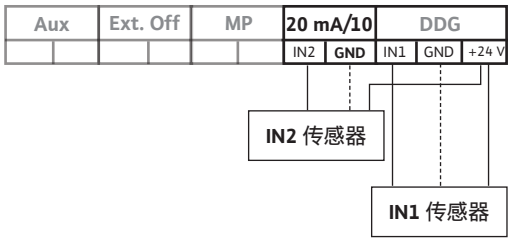
型号代码	分配	备注
L1、L2、L3	电源连接电压	三相电流 3 ~ IEC38
PE	接地端子	0.55 0.75 1.1 1.5 2.2 3 4 5.5 7.5 11 15 18.5 22 x1 x2
IN1	传感器输入	信号性质：电压（0–10 V，2–10 V） 输入电阻器：Ri ≥ 10 kΩ 信号性质：电流（0–20 mA，4–20 mA） 输入电阻器：RB = 500 Ω 可以在 “Service” 菜单 <5.3.0.0> 中配置
IN2	外部设定点输入	信号性质：电压（0–10 V，2–10 V） 输入电阻器：Ri ≥ 10 kΩ 信号性质：电流（0–20 mA，4–20 mA） 输入电阻器：Rb = 500 Ω 可以在 “Service” 菜单 <5.4.0.0> 中配置
GND (x2)	接地端子	用于每一个 IN1 和 IN2 输入
+24 V	传感器的连续供电	最大电流：60 mA。 电源受到短路保护。
Ext. Off	开启/关闭控制输入 “DEACTIVATION priority” 用于无电势外部开关	无电势外部开关用于激活和停用泵。 在起动次数较为频繁（每天超过 20 次）的装置，应通过 “Ext. Off” 来执行激活和停用。
SBM	“Available Transfer” 继电器 	在正常运行中，当泵处于运行或待机状态时，继电器被激活。 如果发生初始故障或主电源断开（泵关闭），则此继电器将被停用。 因此泵的可用性（即使是暂时性的）可以通过信号发送至开关设备。 可以在 “Service” 菜单 <5.7.6.0> 中配置 无电势触点： 最小值：12 V DC，10 mA 最大值：250 V AC，1 A
SSM	“Failures Transfer” 继电器 	如果检测到相同类型的连续故障（按严重性为 1 个到 6 个）， 则泵将关闭，且此继电器将被激活（直至手动干预）。 无电势触点： 最小值：12 V DC，10 mA 最大值：250 V AC，1 A
PLR	PLR 通信接口的连接端子	可选的 IF 模块 PLR 可以插入放置在变频器连接器区域中的多个连接器中。 模块受到防极性反转保护。
LON	LON 通信接口的连接端子	可选的 IF 模块 LON 可以插入放置在变频器连接器区域中的多个连接器中。 模块受到防极性反转保护。

注意：端子 IN1、IN2、GND 和 Ext. Off 满足电源端子处以及 SBM 和 SSM 端子处“安全隔离”的要求（符合 EN 61800-5-1）（反之亦然）。

电源连接	电源端子排
将 4 导线电缆插入电源端子排（相线 + 地线）。	
输入/输出连接	**输入/输出端子排**
• 必须对用于传感器、外部设定点和远程控制 (Ext. Off) 的电缆进行屏蔽处理。	
• 远程控制可实现泵的起动和停用（无电势），此功能优先于其他功能。 • 用户可以通过分流远程控制 (Ext. Off) 的端子来移除此远程控制。	例如：浮子开关、低水压调节器等

各运行模式的连接和控制规则：

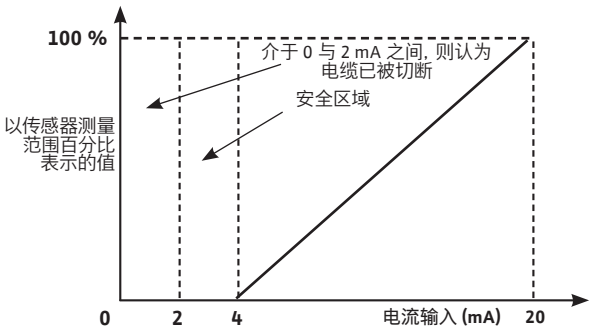
信号链接和控制规则		连接		信号	
				电流	电压
运行模式	设置	请参见下图			
• 在 “Speed stage control” 模式下 	...速度，手动	C1	/	/	/
	...速度，外部控制	C1	C2	S3	S4
• 在 “Constant pressure: p-c” 模式下 • 使用相对压力传感器进行控制 • 在 “Δp-c” 模式下 • 使用压差传感器进行控制 	使用旋钮设置...的设定点	C1	C3	S1	S2
	...按照外部设定点	C1	C2	S5	S6
			C3	S1	S2
• 在 “Variable pressure:Δp-v” 模式下 • 使用压差传感器进行控制 	使用旋钮设置...的设定点	C1	C3	S1	S2
	...按照外部设定点	C1	C2	S5	S6
			C3	S1	S2
• 在 “PID control” 模式下 • 使用温度传感器或输送速率传感器...进行控制 	使用旋钮设置...的设定点	C1	C3	S1	S2
	...按照外部设定点	C1	C2	S5	S6
			C3	S1	S2

输入/输出连接	
远程控制：位置 [C1] • 变频器在交付时随附一条跳线。 • 使用远程控制为可选项	
外部信号 IN2：位置 [C2] • 2 条电线 ([20 mA/10 V] / 0 V)	
IN1 传感器：位置 [C3] • 2 条电线 ([20 mA/10 V] / +24 V) • 3 条电线 ([20 mA/10 V] / 0 V / +24 V)	
IN1 和 IN2 传感器：位置 [C4] • 2 条电线 ([20 mA/10 V] / +24 V) • 3 条电线 ([20 mA/10 V] / 0 V / +24 V)	

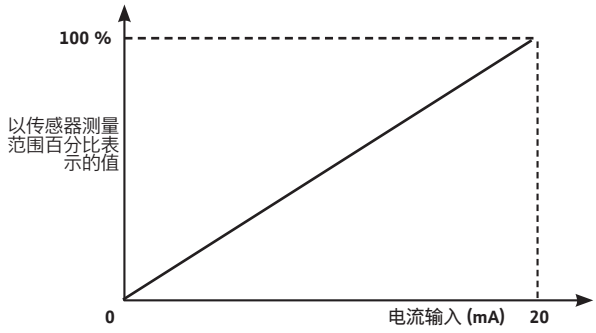
输入信号的控制规则

传感器输入 – 电流信号：位置 [S1]

传感器信号 4–20 mA

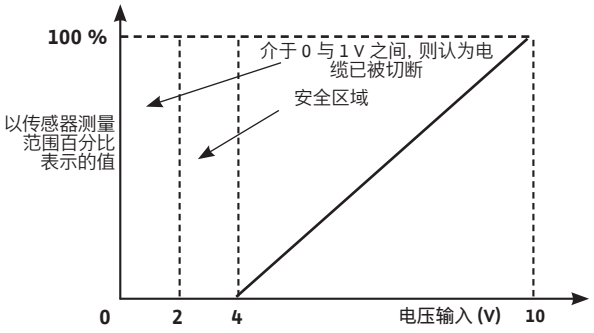


传感器信号 0–20 V

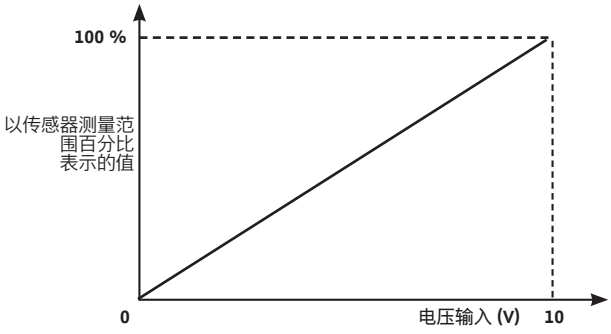


传感器输入 – 电压信号：位置 [S2]

传感器信号 2–10 V

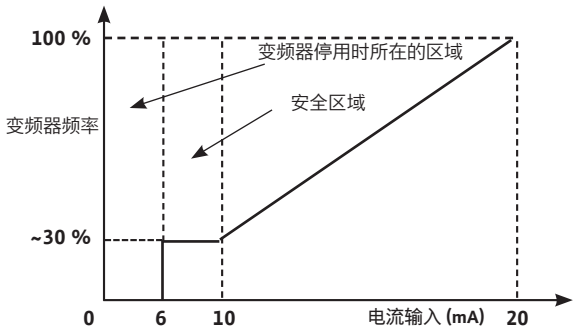


传感器信号 0–10 V

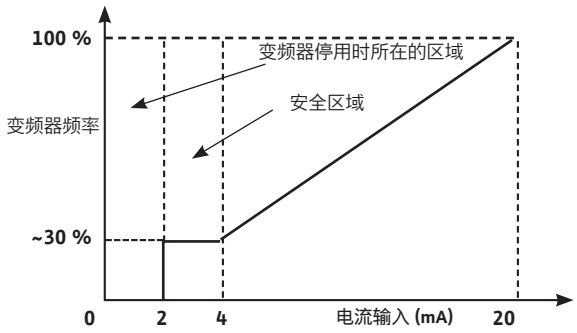


速度等级的外部控制输入 – 当前信号：位置 [S3]

外部信号 4–20 mA

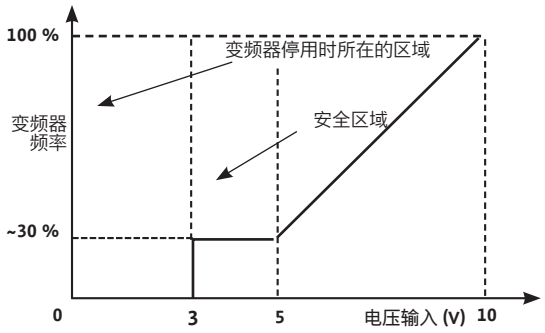


外部信号 0–20 mA

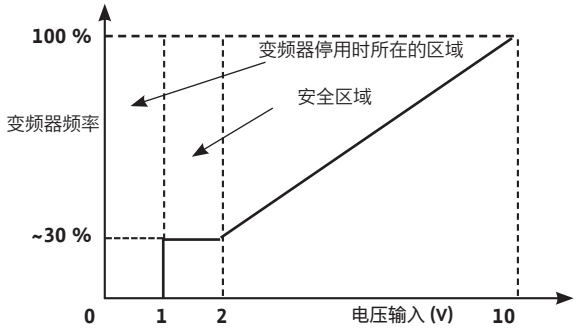


速度等级的外部控制输入 – 电压信号：位置 [S4]

外部信号 2–10 V

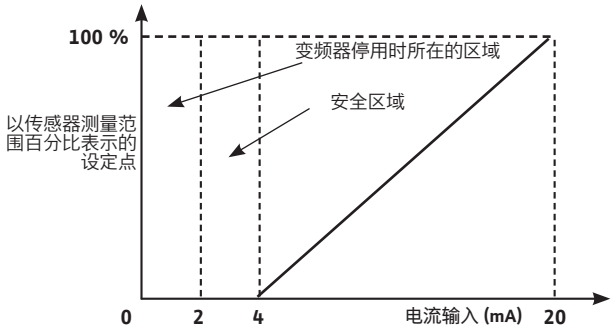


外部信号 0–10 V

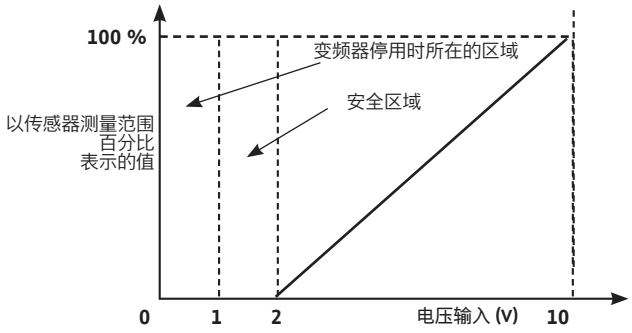


带传感器时控件的外部设定点输入（例如压力、温度、输送速率等）

设定点信号 4–20 mA：位置 [S5]



设定点信号 2–10 V：位置 [S6]



8. 试运行

8.1 系统填充和脱气

小心！存在损坏泵的风险！
切勿在泵内无水的情况下操作泵。
必须在启动泵之前对系统注水。

8.1.1 排气 – 进气模式下的泵（Fig. 3）

- 关闭两个防护阀 (2 + 3)。
- 打开排气塞 (6a) 的排放旋塞。
- 缓缓地打开吸入侧 (2) 的阀门。
- 一旦空气已经逸出且液体在泵 (6a) 中流动，则立即关闭排放旋塞。

警告！小心烫伤危险！
如果泵送的液体灼热且处于高压下，则排放旋塞处逸出的液体可能会造成烫伤或其他伤害。

- 将吸入侧 (2) 的防护阀完全打开。
- 启动泵。

8.1.2 排气过程 – 吸入模式下的泵（Fig. 2）

- 关闭排放侧 (3) 的防护阀。打开吸入侧 (2) 的防护阀。
- 拆下填充塞 (6b)。
- 将注水起动/排放塞 (5b) 部分打开。
- 向泵和吸入管中注水。
- 确保水泵和吸入管中没有滞留的空气。加注系统，直到除去所有空气。
- 关闭填充塞 (6b)。
- 起动泵，并验证旋转方向是否符合泵贴纸上印制的规范。如果不符合，则在电机接线端上互换两个相位。

小心！
旋转方向不正确将导致水泵性能不良，并可能会损坏联轴器。

- 稍稍打开排放侧 (3) 的防护阀。
- 拧下排放旋塞以去除空气 (6a)。
- 一旦空气已经逸出且液体在泵中流动，则立即关闭排放旋塞。

警告！
如果泵送的液体灼热且处于高压下，则排放旋塞处逸出的液体可能会造成烫伤或其他伤害。

- 完全打开排放侧 (3) 的防护阀。
- 关闭注水起动/排放塞 (5a)。

8.2 起动

小心！小心财产损失危险！
不得在零流量（排放阀已关闭）的情况下操作泵。

警告！小心受伤危险！
当泵运行时，联轴器护罩必须就位并使用所有所需的螺钉固定。

警告！噪音刺耳！
大功率泵可能会发出刺耳的噪音。在泵附近长时间作业时，请使用适当的防护装置。

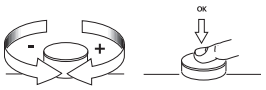
警告！
必须以妥善方式放置装置，防止流体泄漏（如机械密封件失效所致）情况下发生使人受伤的危险。

8.3 操作变频器

8.3.1 控制元件

变频器由以下控制元件控制：

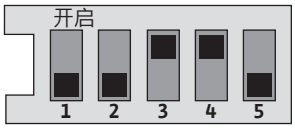
旋钮



- 只需将旋钮沿“+”方向转向右侧或“–”方向转向左侧即可选择新参数。
- 短按旋钮即可确认此新设置。

DIP 开关

此变频器具有一个由五个 DIP 开关（Fig. 1D，位置 1）组成的开关块，其中每个开关都有两个档位。

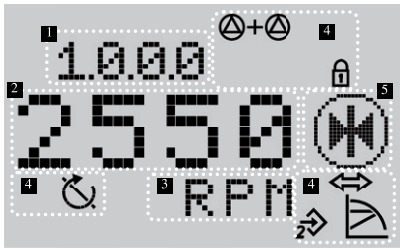


- DIP 开关 1 从 “OPERATION” 模式 [DIP 开关 1 关闭] 切换至 “SERVICE” 模式 [DIP 开关 1 开启]，然后再次切换回原状。“OPERATION” 档位允许运行所选的模式并停止访问参数化（正常操作）。“SERVICE” 档位允许用户对不同操作进行参数化。
- DIP 开关 2 用于激活或停用 “Access Lock”（请参见第 8.3.6.5 节）。
- DIP 开关 3 和 4 必须保持在 “ON” 档位。
- DIP 开关 5 未使用，且必须保持在 “OFF” 档位。

继电器

（请参见第 10 节）

8.3.2 显示结构



位置	说明
1	菜单编号
2	数值显示
3	单位显示
4	标准符号
5	图标显示

8.3.3 标准符号说明

符号	说明
	在 “Speed stage control” 模式下运行
	在 “Constant pressure” 或 “PID control” 模式下运行
	在 “Variable pressure” 或 “PID control” 模式下运行
	IN2 输入已激活（外部设定点）
	访问锁 当此符号出现时，无法修改设置或当测量值。信息以只读形式显示
	BMS（建筑管理系统） PLR 或 LON 已激活
	泵在运行中（如果闪烁，则表示检测到零输送速率）
	水泵关闭

8.3.4 显示屏

显示状态页面

- 状态页面作为显示屏的默认页面显示。它显示了当前设置的设定点。基本设置以符号显示。

显示状态页面示例

注意：在所有菜单中，如果您没有在 30 秒内操作旋钮，则显示会重新出现，且所有更改都不会被记录。

导航元素

- 此菜单结构可以调用变频器的功能。每个菜单和子菜单都有一个数字。
- 转动旋钮可浏览任何等级的菜单（例如 4000 –> 5000）。
- 闪烁元素（值、菜单编号、符号或图标）允许用户选择新值、新菜单编号或新功能。

符号	说明
	当箭头出现时： • 按下旋钮即可访问子菜单（例如 4000 –> 4100）。
	当 “return” 箭头出现时： • 按下旋钮即可放回上一级菜单（例如 4130 –> 4100）。

8.3.5 定义开式或闭式液压回路的应用

本产品具有两种类型的应用。所选应用的类型将决定可以使用的运行模式。

液压部件应用	运行模式	
开式回路	“p-c” 模式	速度等级控制模式 PID 模式
闭式回路	“Δp-c” 模式 “Δp-v” 模式	

“EXPERT” 菜单的菜单 5.7.8.0 可以用于选择所需应用的类型。

注意：更改应用时，必须将本产品重新初始化。所有用户参数都将恢复为出厂设置。

8.3.6 定义运行模式

定义压力传感器

- 相对压力传感器测量相对于大气压力的压力。
- 绝对压力传感器测量相对于真空中零压力的压力。
- 压差传感器测量两点之间的压力。

注意：泵指示的所有压力均相对于大气压力进行测量，但使用压差传感器时除外。

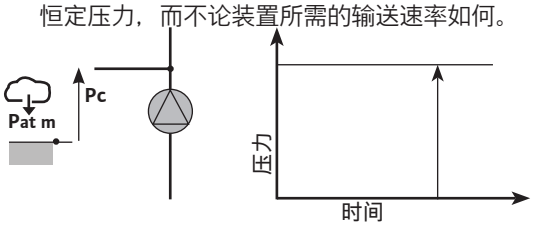
注意：如果我们只提供了泵，且没有将其集成到安装的系统中，则交付时的配置模式将为 “speed stage control” 模式。

“Speed stage control” 模式（Fig. 2 和 3）

- 通过菜单手动调节速度等级或使用适用于以百分比表示的速度等级的外部命令信号，即可获得工况点。
- 若要进入使用状态，应将电机速度等级设置在 2400 rpm。

“Constant pressure: pc” 模式（Fig. 2D、 3D、 4D）

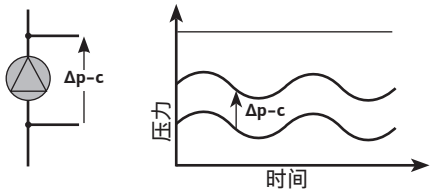
- 在 “p-c” 模式下，变频器将在泵排放口处保持恒定压力，而不论装置所需的输送速率如何。



- 工况点通过菜单或外部信号手动定义。
- 若在菜单 5.7.8.0 中选择了开式液压回路参数时，则可使用此模式。
- 相对压力传感器用于控制（传感器：精度：≤ 1 %；在测量范围的 30 % 与 100 % 之间使用）。
- 若要进入使用状态，应将设定压力设置为泵最高压力的 60 %。

“Δp-c” 模式（Fig. 2D、 3D、 4D）

- 在 “Δp-c” 模式下，变频器将保持恒定压差（由泵生成），而不论装置所需的输送速率如何。



- 压差通过菜单或外部信号手动定义。
- 当您在菜单 5.7.8.0 中选择了闭式液压回路参数时，可以访问此模式。
- 压差传感器用于控制（传感器：精度：≤ 1 %；在测量范围的 30 % 与 100 % 之间使用）。
- 若要进入使用状态，应将设定压力设置为泵最高压力的 60 %。

“variable pressure:Δp-v” 模式（Fig. 2D、 3D 和 4D）

- 在 “Δp-v” 模式下，变频器将以线性方式改变泵的压差，与装置所需的输送速率保持一致。
- 工况点 (Pset) 通过菜单或外部信号手动定义。
- 零输送速率 (%Pset) 时的工况点通过菜单手动定义。
- 此模式包括可关闭泵的零输送速率检测。
- 压差传感器用于控制（传感器：精度：≤ 1 %；在测量范围的 30 % 与 100 % 之间使用）。
- 若要进入使用状态，应将设定压力设置为泵最高压力的 60 %。
- 当您在菜单 5.7.8.0 中选择了闭式液压回路参数时，可以访问此模式。

“PID control” 模式

- 通过 PID 控制（比例积分微分控制），变频器可以使用其他类型的传感器（温度、输送速率等传感器）实现控制。
- 工况点表示为所用传感器测量范围的百分比。工况点通过菜单或外部控制信号手动定义。

8.3.7 菜单说明

菜单列表（Fig. A5）

<1.0.0.0> 设定点设置

<2.0.0.0> 运行模式设置

<3.0.0.0> 开启/关闭泵设置

<4.0.0.0> “Information” 菜单
读取泵参数

<5.0.0.0> “Service” 菜单
访问泵参数设置

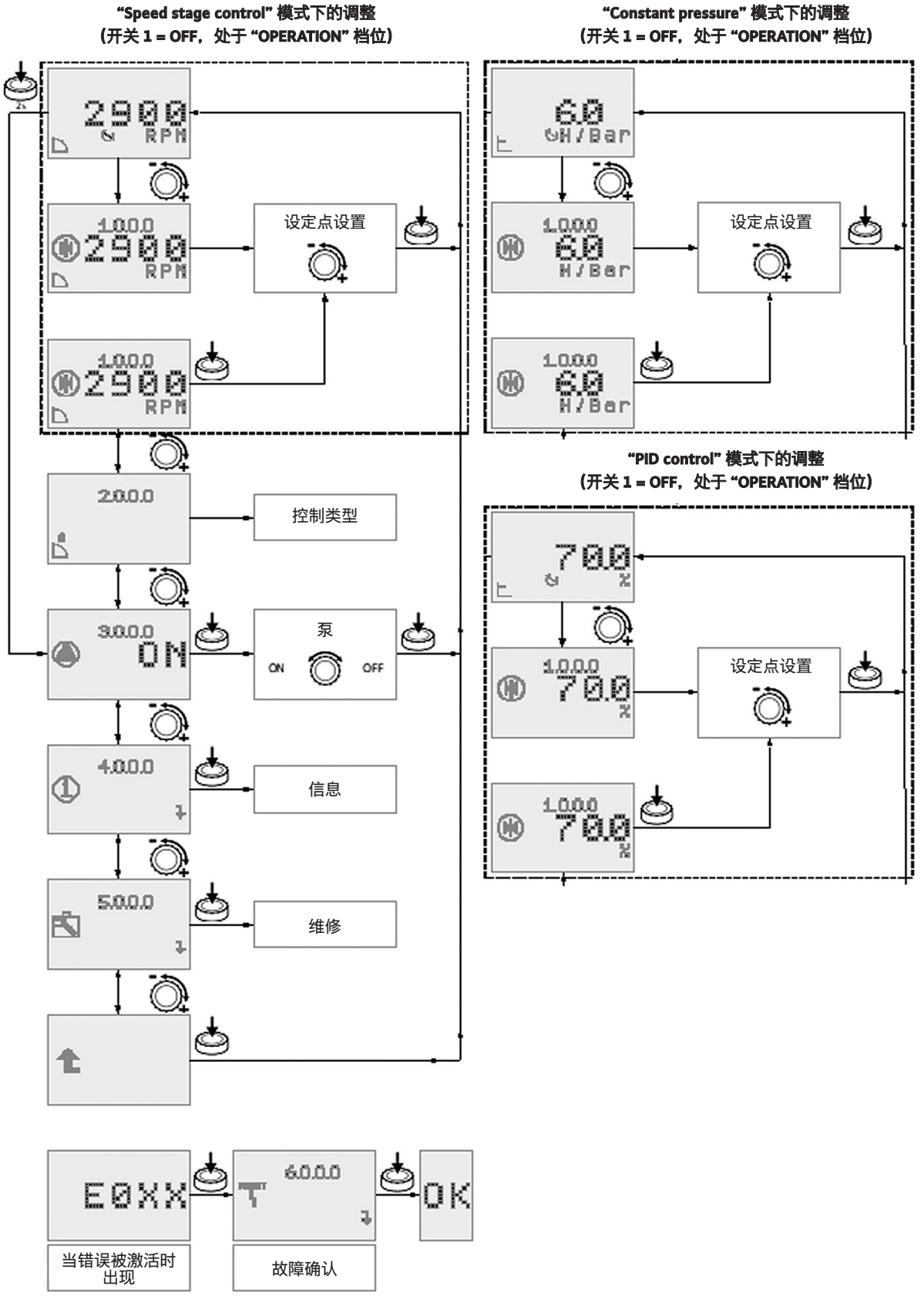
<6.0.0.0> 错误确认
如果发生一个或多个故障，则故障页面将出现。后面紧跟三位数代码的字母“E”将出现（请参见第 10 节）。

<7.0.0.0> 访问锁
当 DIP 开关 2 处于“ON”档位时，您可以访问 “Access Lock”。

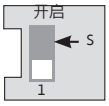
小心！小心财产损失危险！
不正确的设置更改可能会造成可能导致泵或装置损坏的泵运行故障。

菜单导航

Fig. A1


"Speed stage control" 模式下的调整
(开关 1 = OFF，处于 "OPERATION" 档位)
"Constant pressure" 模式下的调整
(开关 1 = OFF，处于 "OPERATION" 档位)
"PID control" 模式下的调整
(开关 1 = OFF，处于 "OPERATION" 档位)
2900 RPM
1.0.0.0
2900 RPM
设定点设置
2.0.0.0
控制类型
3.0.0.0
ON
泵
ON
OFF
4.0.0.0
信息
5.0.0.0
维修
60 H/Bar
1.0.0.0
60 H/Bar
设定点设置
70.0 %
1.0.0.0
70.0 %
设定点设置
E0XX
当错误被激活时出现
6.0.0.0
故障确认
OK

- 试运行时，只能在 “SERVICE” 模式下执行调节，且只能由专业技术人员来执行。



导航 “Easy” 和 “Expert” 菜单

将 DIP 开关 1 置于 “ON” 档位（Fig. A1，位置 1）。“SERVICE” 模式随即被激活。
在显示屏上，符号将在此处闪烁（Fig. A7）。
在 “SERVICE” 模式下，用户可以更改菜单 <2.0.0.0> 和 <5.0.0.0> 的参数。

调整模式分为以下 2 种类型：

简易菜单

即可以访问运行模式主要参数的简化菜单。

- 按下旋钮两秒钟。“Easy” 菜单符号随即显示（Fig. A7）。
- 按下旋钮以确认此选择。显示屏将切换到菜单编号 <2.0.0.0>（Fig. A8）。
- 执行调整后，将 DIP 开关 1 置于“OFF”档位（Fig. A1，位置 1）。

专家菜单

即用于访问所有参数的菜单。

- 按下旋钮两秒钟，然后转动以选择 “Expert” 菜单。“Expert” 菜单符号随即显示（Fig. A7）。
- 按下旋钮以确认此选择。显示将切换至菜单 <2.0.0.0>（Fig. A8）。
- 在菜单 <2.0.0.0> 中选择运行模式并确认。
- 选择菜单 <5.0.0.0> 可访问变频器的所有参数（Fig. A9）。
- 执行调整后，将 DIP 开关 1 置于“OFF”档位（Fig. A1，位置 1）。

Fig. A2


简易菜单
2.0.0.0
调整简易菜单
(Fig. A3)
1.0.0.0
设定点 设置
2.0.0.0
选择运行模式
专家菜单
3.0.0.0
ON
泵
ON
OFF
4.0.0.0
信息
5.0.0.0
调整专家菜单
(Fig. A4)

Fig. A3

调整简易菜单

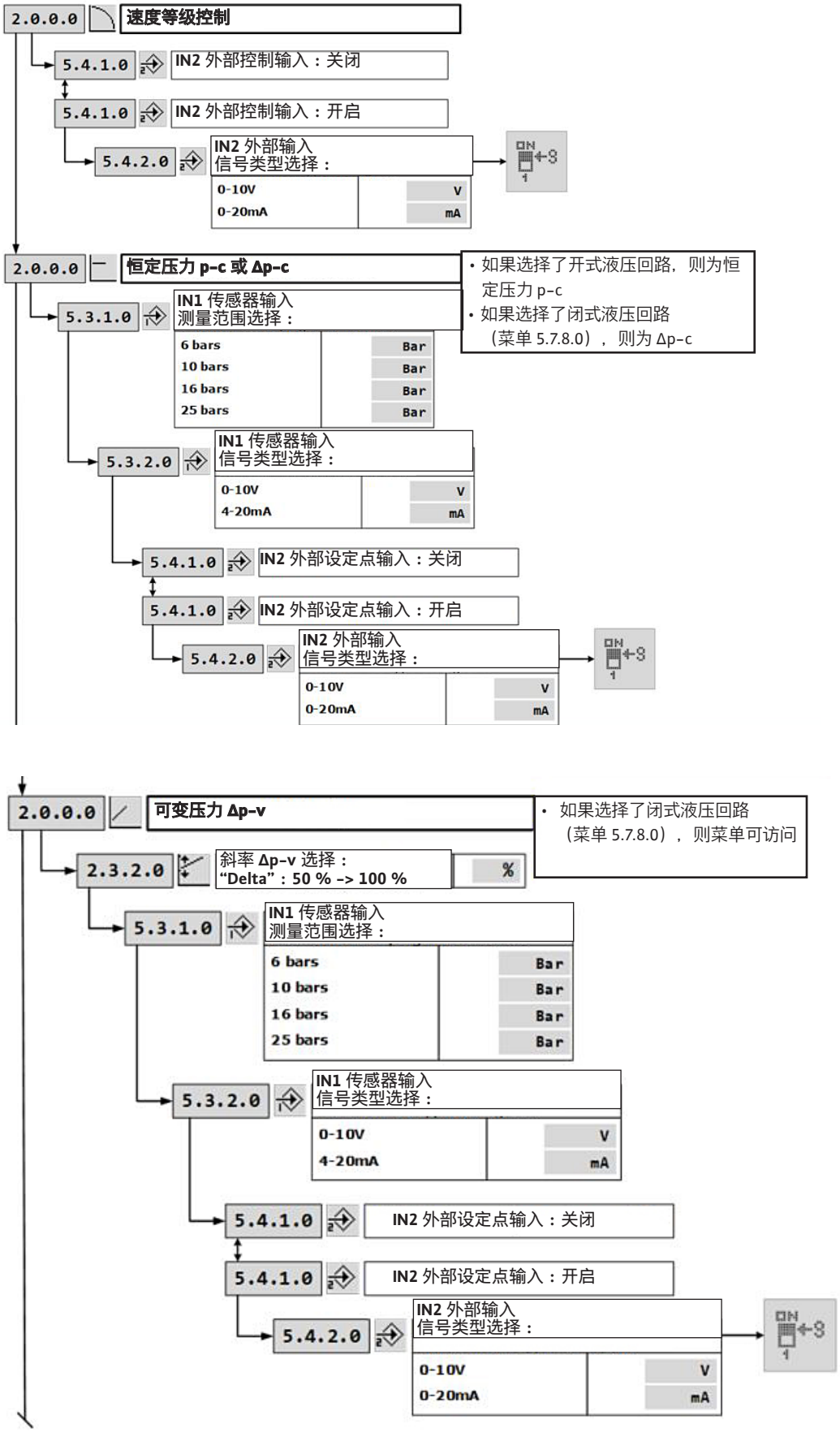


Fig. A3

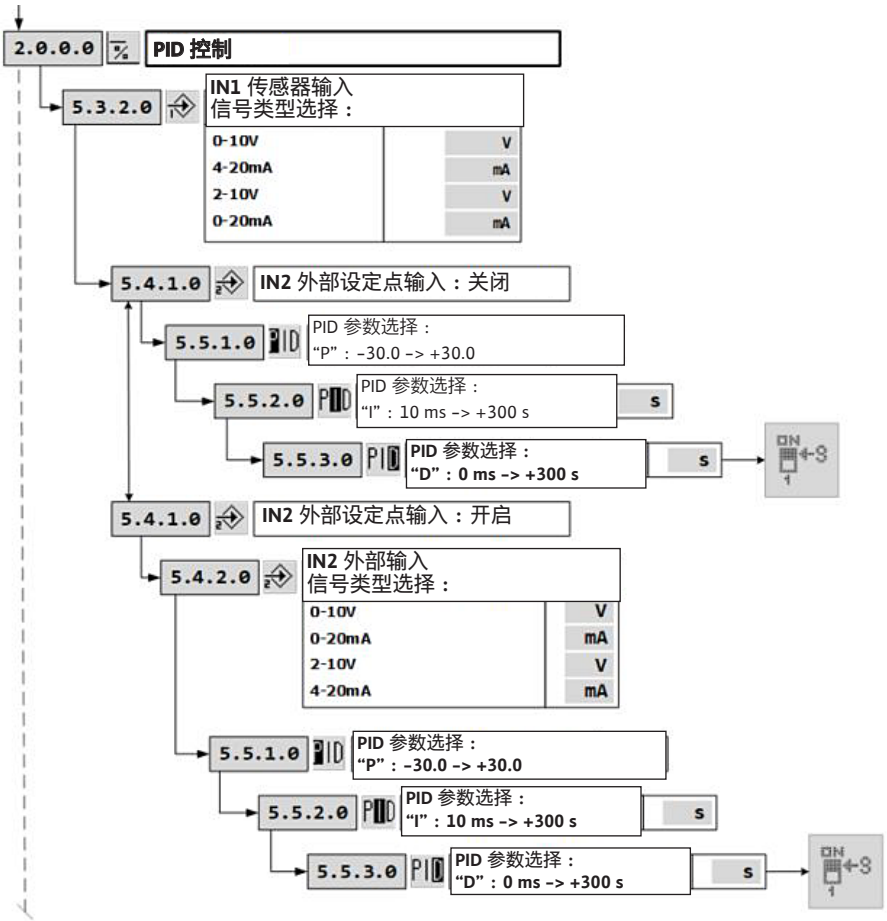
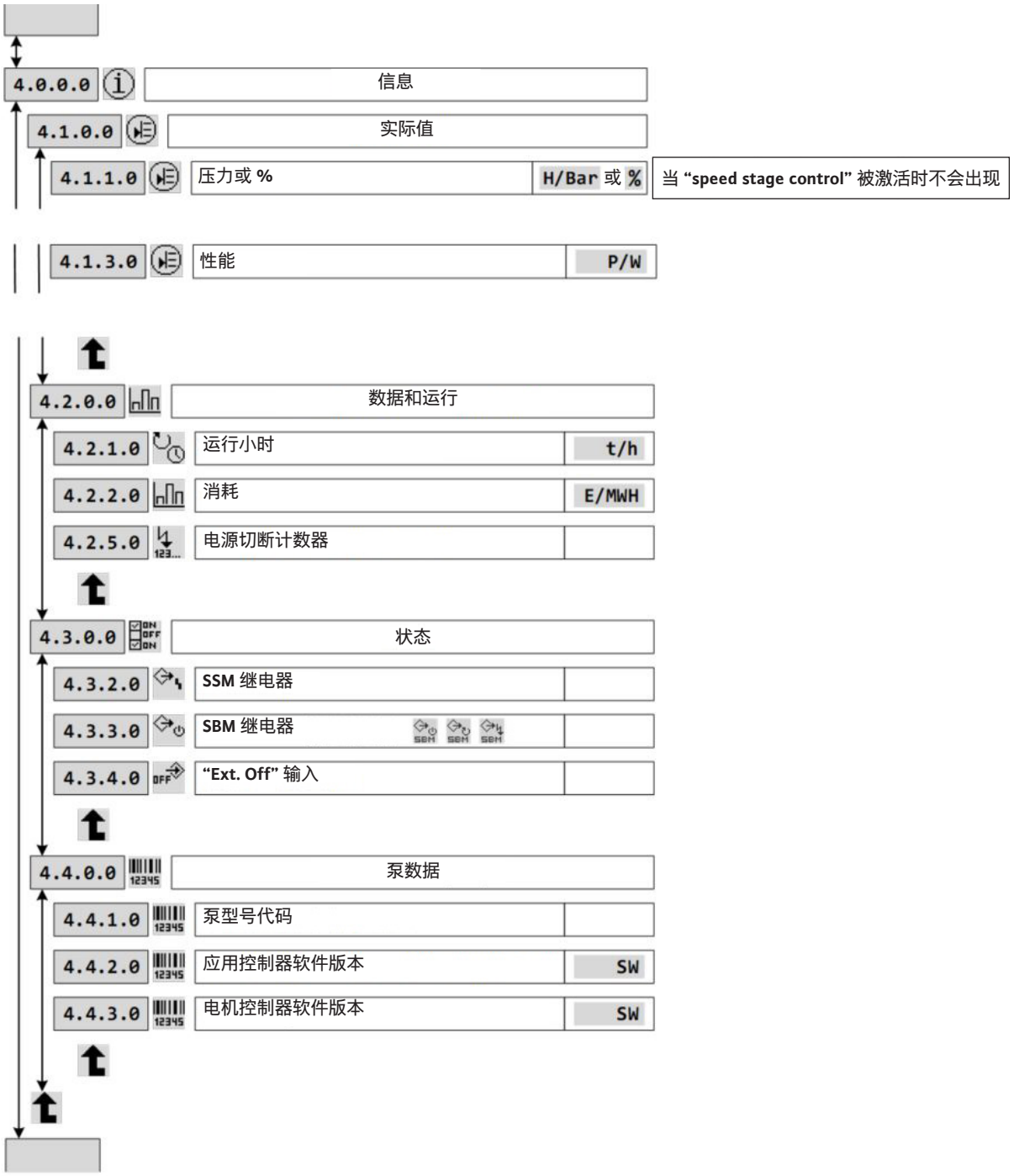

2.0.0.0
PID 控制
5.3.2.0
IN1 传感器输入
信号类型选择：
0-10V
V
4-20mA
mA
2-10V
V
0-20mA
mA
5.4.1.0
IN2 外部设定点输入：关闭
5.5.1.0
PID 参数选择：
“P”：–30.0 –> +30.0
5.5.2.0
PID 参数选择：
“I”：10 ms –> +300 s
s
5.5.3.0
PID 参数选择：
“D”：0 ms –> +300 s
s
5.4.1.0
IN2 外部设定点输入：开启
5.4.2.0
IN2 外部输入
信号类型选择：
0-10V
V
0-20mA
mA
2-10V
V
4-20mA
mA
5.5.1.0
PID 参数选择：
“P”：–30.0 –> +30.0
5.5.2.0
PID 参数选择：
“I”：10 ms –> +300 s
s
5.5.3.0
PID 参数选择：
“D”：0 ms –> +300 s
s

Fig. A4

调整专家菜单

Fig. A5

导航 “4000” 信息菜单



访问锁
“Access Lock” 功能可用于阻止对泵的所有调整。

按照以下方式进行操作：
- 将 DIP 开关 2 置于“ON”档位。菜单 <7.0.0.0> 随即出现。
- 转动旋钮以激活或停用访问锁。访问锁的当前状态由以下符号表示：

访问锁已激活：参数已被锁定，且访问菜单将在只读模式下授权。

访问锁已停用：用户可以更改参数，且被授权访问菜单以进行调整。

- 将 DIP 开关 2 置于“OFF”档位。状态设置将随即出现。

9. 维护

所有维护都只能由经过授权的维修代表来执行!

警告！小心触电危险！
必须消除电流方面的危险。
在进行任何电气系统作业之前，请确保关闭并锁定泵的电源，以防止未经授权的重启。

警告！小心烫伤危险！
在高水温和高系统压力的情况下，请关闭泵上游和下游的防护阀。首先，让泵冷却。

- 运行期间无需特殊维护。不过，建议每 15,000 小时定期检查一次。
- 由于其设计，集装式机械密封件可以在某些型号上轻松地更换。正确定位机械密封件之后，立即将其调节楔插入其壳体中（请参见 Fig. 6）。
- 务必保持水泵完全清洁。
- 必须将霜冻期间未使用的水泵排干，以避免损坏： 关闭防护阀，完全打开排放/起动注水塞和排放旋塞。
- 使用寿命：10 年，取决于操作条件以及是否可以满足本操作手册中所述的所有要求。

10. 故障、原因和排除方法

警告！小心触电危险！
必须消除电流方面的危险。
在进行任何电气系统作业之前，请确保关闭并锁定泵的电源，以防止未经授权的重启。

警告！小心烫伤危险！
在高水温和高系统压力的情况下，请关闭泵上游和下游的防护阀。首先，让泵冷却。

故障	原因	排除方法
泵不工作	无电源	检查熔断器、接线和连接
	电机保护装置已切断电源	消除任何电机过载
泵虽然工作但未能达到工况点	旋转方向不正确	检查旋转方向，并在必要时纠正
	泵的局部被异物阻塞	检查并清洁泵
	吸入管套筒中有空气	使吸入管套筒保持气密性
	吸入管套筒过窄	安装较宽的吸入管套筒
	阀门打开幅度不足	将阀门完全打开
泵输出不规则	泵中有空气	清除泵中的空气，并确保已密封吸入管套筒。 可以启动泵 20 – 30 s。打开排放旋塞，以让空气逸出。关闭排放旋塞，然后重复几次，直到不再有空气从排放旋塞中流出
	在 “Constant pressure” 模式下，压力传感器不适用	安装带合规压力刻度和精度的传感器
泵振动或发出噪音	泵中有异物	清除异物
	泵未牢牢固定在地面上	拧紧锚固螺钉
	轴承损坏	联系 Wilo 客服部门
电机过热，电机保护装置接合	相位中断	检查熔断器、接线和连接
	环境温度过高	提供冷却
机械密封件泄漏	机械密封件出现问题	更换机械密封件
输送速率不一致	在 “Constant pressure” 或 “Variable pressure” 模式下，压力传感器不适用	安装带合规压力刻度和精度的传感器
在“Constant pressure” 或 “Variable pressure” 模式下，泵没有在输送速率为零时关闭	止回阀并非密不透水	对其进行清洁或更换
	止回阀不适用	使用适用的止回阀进行更换
	蓄水罐没有适用于装置的足够容量	对其进行更换，或在装置上再加装一个蓄水罐

如果故障无法解决，
请联系 WILO 客服部门。

只能由合格的人员修复故障！
请遵循第 9 节“维护”中的安全说明。

继电器
变频器配有 2 个用作集中式控制（例如开关设备、水泵控制器）接口的输出继电器。

SBM 继电器：
此继电器可以在 “Service” 菜单 < 5.7.6.0 > 中配置为 3 种运行模式。

状态：1 （默认设置）
“Available Transfer” 继电器（此类泵正常运行）。
当泵处于运行或处于待机状态时，此继电器被激活。
如果发生初始故障或主电源断开（泵关闭），则此继电器将被停用。泵的可用性（即使是暂时性的）将通过信号发送至开关设备。

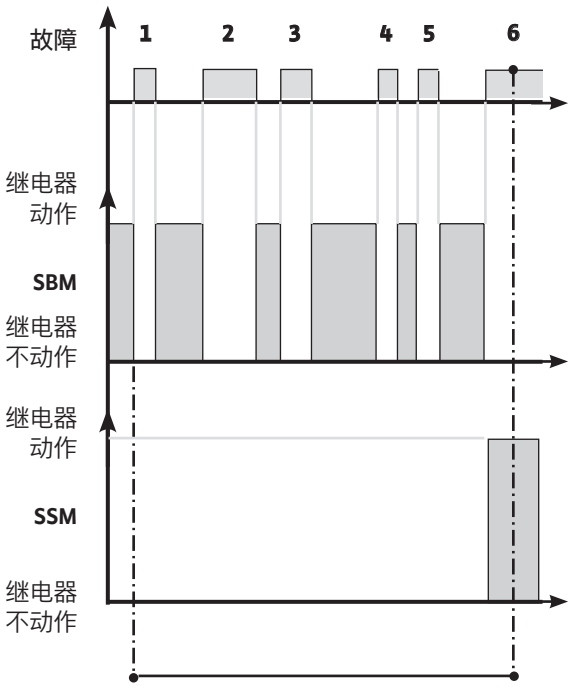
状态：2
“Run Transfer” 继电器。
当泵运行时，此继电器被激活。

状态：3
“Power On Transfer” 继电器。
当泵连接到网络上时，此继电器被激活。

SSM 继电器：
“Failures Transfer” 继电器。
如果检测到相同类型的故障连续出现（按严重性为 1 个到 6 个），则泵将关闭，且此继电器将被激活（直至手动干预）。

示例：24 小时内在不同时间出现的 6 个故障。

SBM 继电器状态为 “Available Transfer”。



滚动 24 小时

10.1 故障表

以下提到的所有意外事件将具有如下影响：

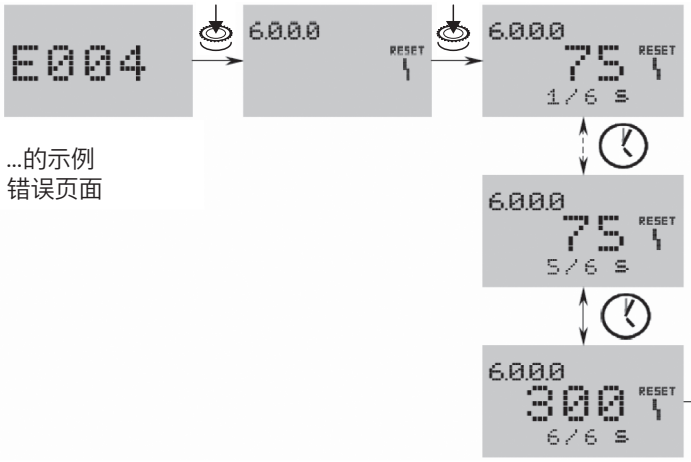
- 停用 SBM 继电器（在 “Available Transfer” 模式下进行参数化时）。
- 在 24 小时内达到一种类型故障的数量上限时，激活 SSM 继电器 “Failure Transfer”。
- 红色 LED 亮起。

错误代码	发出信号以指示错误之前的斜坡时间	在发出信号之后考虑错误之前的时间	自动重新激活之前的等待时间	24 小时之内的错误数量上限	故障 可能原因	排除方法	重置之前的等待时间
E001	60 s	0 s	60 s	6	泵已过载，发生故障	泵送流体的密度和/或粘度太高	300 s
					泵被异物阻塞	拆卸泵，更换或清洁发生故障的部件	
E004 (E032)	~5 s	(0.55 至 7.5 kW) 300 s	(0.55 至 7.5 kW) 0 s (如果删除了错误)	6	变频器的电源处于欠压状态	检查变频器端子处的电压： • 如果电源电压 > 480 V (0.55 至 7.5 kW)，则表明发生了故障 • 如果电源电压 > 506 V (11 至 22 kW)，则表明发生了故障	(0.55 至 7.5 kW) 0 s
		(11 至 22 kW) 0 s	(11 至 22 kW) 300 s				(11 至 22 kW) 300 s
E005 (E033)	~5 s	300 s	0 s (如果删除了错误)	6	变频器的电源处于过压状态	检查变频器端子处的电压： • 如果电源电压 > 506 V，则表明发生了故障	0 s
E006	~5 s	300 s	0 s (如果删除了错误)	6	电源缺相	检查电源	0 s
E007	0 s	0 s	0 s (如果删除了错误)	无限制	变频器像发电机一样运行。警告，没有泵停用	泵已切换方向，请检查阀门的密封性	0 s
E010	~5 s	0 s	无限制	1	泵堵塞	拆卸泵，对其进行清洁并更换故障部件。可能发生了电机机械故障 (滚针轴承)	60 s
E011	15 s	0 s	60 s	6	泵已停用或在无水状态下运行	通过向泵注水以重新起动 (请参见第 9.3 节)。检查底阀的密封性	300 s
E020	~5 s	0 s	300 s	6	电机发热	清洁变频器背面和下方的冷却肋片，以及风扇盖	300 s
					室温高于产品特性温度	改善房屋的通风	
E023	0 s	0 s	60 s	6	电机存在短路	将电机变频器从泵上拆下，然后对其进行检查或更换	60 s
E025	0 s	0 s	无限制	1	电机缺相	检查电机与变频器之间的连接	60 s
E026	~5 s	0 s	300 s	6	电机温度传感器发生故障或连接不良	将电机变频器从泵上拆下，然后对其进行检查或更换	300 s
E030 E031	~5 s	0 s	(0.55 至 7.5 kW) 0 s (如果删除了错误)；(11 至 22 kW) 300 s	6	变频器发热	清洁变频器背面和下方的冷却肋片，以及风扇盖	300 s
					室温高于产品特性温度	改善房屋的通风	
E042	~5 s	0 s	无限制	1	传感器电缆 (IN1) 已断开	检查传感器的电源和接线是否正确	60 s
E050	60 s	0 s	0 s (如果删除了错误)	无限制	BMS 通信发生故障	检查连接	300 s
E077	0 s	0 s	无限制	1	传感器的 24 V 电源电压不正常	检查传感器及其连接	60 s
E---	0 s	0 s	无限制	1	变频器内部故障	呼叫客服部门	60 s

10.2 错误确认

小心！小心财产损失危险！
只有在解决错误之后才能进行确认。

- 错误只能由合格的技术人员来解决。
- 如有任何疑问，请联系制造商。
- 如果发生错误，则屏幕上会显示故障页面，而不是状态页面。
- 若要确认错误，请按照以下方式进行操作。
- 按下旋钮。
- 显示屏上将出现以下信息：
- 菜单编号 <6.0.0.0>。
- 发生错误后 24 小时内的故障数量和最大数量（例如：1/6）。
- 自动重置错误之前剩余的时间（单位：秒）。
- 等待自动重置时间过去。



...的示例
错误页面

状态页面示例

计时器在系统内部运行。屏幕上显示已自动确认故障之前剩余的时间（单位：秒）。

- 当达到错误的数量上限且最后一次跟进时间已过去时，请按下旋钮以确认。

系统将返回状态页面。

注意：如果错误信号发出之后仍留有故障处理时间 （例如：300 s），则务必手动确认错误。
自动重置计时器处于不活动状态且“- - -”显示在屏幕上。

11. 备件

所有备件都必须通过当地经授权技术人员和/或 Wilo 客服部门订购。
请在各订单上注明铭牌上显示的所有数据，以避免查询和错误订单。

12. 处置

有关旧电气和电子产品回收的信息
正确处置和恰当回收本产品可防止破坏环境或危害人身健康。

注意：禁止与生活垃圾一起处置！
在欧盟，该符号可能出现在产品上、包装上或随附文件上。它意味着，禁止将该电器或电子产品与生活垃圾一起处置。
为确保相关旧产品的妥善搬运、回收和处置，请注意以下要点：

- 只能在指定的经认证回收点移交这些产品。
- 请遵守当地适用法规！有关妥善处置的信息，请咨询当地市政厅、最近的废物处置场或向您出售产品的经销商。有关回收的更多信息，请访问 www.wilo-recycling.com。

如有更改，恕不另行通知。

EU/EG KONFORMITÄTSERKLÄRUNG
EU/EC DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE UE/CE

Als Hersteller erklären wir hiermit, dass die Pumpenbauarten der Baureihe
We, the manufacturer, declare that the pump types of the series
Nous, fabricant, déclarons que les types de pompes de la série

Helix VE

(Die Seriennummer ist auf dem Typenschild des Produktes nach Punkten b) & c) von §1.7.4.2 und §1.7.3 des Anhanges I der Maschinenrichtlinie angegeben. / The serial number is marked on the product site plate according to points b) & c) of §1.7.4.2 and §1.7.3 of the annex I of the Machinery directive. / Le numéro de série est inscrit sur la plaque signalétique du produit en accord avec les points b) & c) du §1.7.4.2 et du §1.7.3 de l'annexe I de la Directive Machines.)

in der gelieferten Ausführung folgenden einschlägigen Bestimmungen entsprechend :
In their delivered state comply with the following relevant directives :
dans leur état de livraison sont conformes aux dispositions des directives suivantes :

_ Maschinenrichtlinie 2006/42/EG
_ *Machinery 2006/42/EC*
_ *Machines 2006/42/CE*
und gemäss Anhang 1, §1.5.1, werden die Schutzziele der Niederspannungsrichtlinie 2014/35/EU ab 20 April 2016 eingehalten
and according to the annex 1, §1.5.1, comply with the safety objectives of the Low Voltage Directive 2014/35/EU from April 20th 2016
et, suivant l'annexe 1, §1.5.1, respectent les objectifs de sécurité de la Directive Basse Tension 2014/35/EU à partir du 20/04/2016

_ Elektromagnetische Verträglichkeit-Richtlinie 2014/30/EU ab 20 April 2016
_ *Electromagnetic compatibility 2014/30/EU from April 20th 2016*
_ *Compabilité électromagnétique 2014/30/EU à partir du 20 avril 2016*

_ Richtlinie energieverbrauchsrelevanter Produkte 2009/125/EG
_ *Energy-related products 2009/125/EC*
_ *Produits liés à l'énergie 2009/125/CE*
Nach den Okodesign-Anforderungen der Verordnung 640/2009 für Ausführungen mit einem einstufigen Dreiphasen - 50Hz - Käfigläufer - Induktionselektromotor, der Verordnung 4/2014 "Geänderte / Nach den Ökodesign-Anforderungen der Verordnung 547/2012 für Wasserpumpen,
This applies according to eco-design requirements of the regulation 640/2009 to the versions with an induction electric motor, squirrel cage, three-phase, single speed, running at 50Hz, amended by Regulation 4/2014 " / This applies according to eco-design requirements of the regulation
suivant les exigences d'éco-conception du règlement 640/2009 aux versions comportant un moteur électrique à induction à cage d'écureuil, triphasé, mono-vitesse, fonctionnant à 50Hz, amendé par le règlement 4/2014" / suivant les exigences d'éco-conception du règlement 547/2012

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

sowie auch den Bestimmungen zu folgenden harmonisierten europäischen Normen :
comply also with the following relevant harmonized European standards :
sont également conformes aux dispositions des normes européennes harmonisées suivantes :

EN 809+A1 **EN 60034-1** **EN 60204-1** **EN 61800-5-1** **EN 61800-3+A1:2012**

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen ist:
Person authorized to compile the technical file is :
Personne autorisée à constituer le dossier technique est :

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Quality Manager – PBU Multistage
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Original-erklärung / Original declaration / Déclaration originale

F_GQ_013-16

(BG) - български език
ДЕКЛАРАЦИЯ ЗА СЪОТЕТСТВИЕ ЕО

WILO SE декларират, че продуктите посочени в настоящата декларация съответстват на разпоредбите на следните европейски директиви и приелите ги национални законодателства:

Машини 2006/42/ЕО ; Електромагнитна съвместимост 2004/108/ЕО ; Продукти, свързани с енергопотреблението 2009/125/ЕО

както и на хармонизираните европейски стандарти, упоменати на предишната страница.

(CS) - Čeština
ES PROHLÁŠENÍ O SHODĚ

WILO SE prohlašuje, že výrobky uvedené v tomto prohlášení odpovídají ustanovením níže uvedených evropských směrnic a národním právním předpisům, které je přejímají:

Stroje 2006/42/ES ; Elektromagnetická Kompatibilita 2004/108/ES ; Výrobků spojených se spotřebou energie 2009/125/ES

a rovněž splňují požadavky harmonizovaných evropských norem uvedených na předcházející stránce.

(DA) - Dansk
EF-OVERENSSTEMMELSESERKLÆRING

WILO SE erklærer, at produkterne, som beskrives i denne erklæring, er i overensstemmelse med bestemmelserne i følgende europæiske direktiver, samt de nationale lovgivninger, der gennemfører dem:

Maskiner 2006/42/EF ; Elektromagnetisk Kompatibilitet 2004/108/EF ; Energirelaterede produkter 2009/125/EF

De er ligeledes i overensstemmelse med de harmoniserede europæiske standarder, der er anført på forrige side.

(EL) - Ελληνικά
ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΚ

WILO SE δηλώνει ότι τα προϊόντα που ορίζονται στην παρούσα ευρωπαϊκά δήλωση είναι σύμφωνα με τις διατάξεις των παρακάτω οδηγιών και τις εθνικές νομοθεσίες στις οποίες έχει μεταφερθεί:

Μηχανήματα 2006/42/ΕΚ ; Ηλεκτρομαγνητικής συμβατότητας 2004/108/ΕΚ ; Συνδεόμενα με την ενέργεια προϊόντα 2009/125/ΕΚ

και επίσης με τα εξής εναρμονισμένα ευρωπαϊκά πρότυπα που αναφέρονται στην προηγούμενη σελίδα.

(ES) - Español
DECLARACIÓN CE DE CONFORMIDAD

WILO SE declara que los productos citados en la presenta declaración están conformes con las disposiciones de las siguientes directivas europeas y con las legislaciones nacionales que les son aplicables :

Máquinas 2006/42/CE ; Compatibilidad Electromagnética 2004/108/CE ; Productos relacionados con la energía 2009/125/CE

Y igualmente están conformes con las disposiciones de las normas europeas armonizadas citadas en la página anterior.

(ET) - Eesti keel
EÜ VASTAVUSDEKLARATSIOONI

WILO SE kinnitab, et selles vastavustunnistuses kirjeldatud tooted on kooskõlas alljärgnevate Euroopa direktiivide sätetega ning riiklike seadusandlustega, mis nimetatud direktiivid üle on võtnud:

Masinad 2006/42/EÜ ; Elektromagnetilist Ühilduvust 2004/108/EÜ ; Energiamõjuga toodete 2009/125/EÜ

Samuti on tooted kooskõlas eelmisel leheküljel ära toodud harmoniseeritud Euroopa standarditega.

(FI) - Suomen kieli
EY-VAATIMUSTENMUKAISUUSVAKUUTUS

WILO SE vakuuttaa, että tässä vakuutuksessa kuvatut tuotteet ovat seuraavien eurooppalaisten direktiivien määräysten sekä niihin sovellettavien kansallisten lakiasetusten mukaisia:

Koneet 2006/42/EY ; Sähkömagneettinen Yhteensopivuus 2004/108/EY ; Energiaan liittyvien tuotteiden 2009/125/EY

Lisäksi ne ovat seuraavien edellisellä sivulla mainittujen yhdenmukaistettujen eurooppalaisten normien mukaisia.

(GA) - Gaeilge
EC DEARBHÚ COMHLÍONTA

WILO SE ndearbhaíonn an cur síos ar na táirgí atá i ráiteas seo, siad i gcomhréir leis na forálacha atá sna treoracha seo a leanas na hEorpa agus leis na dlíthe náisiúnta is infheidhme orthu:

Innealra 2006/42/EC ; Comhoiriúnacht Leictreamaighnéadach 2004/108/EC ; Fuinneamh a bhaineann le táirgí 2009/125/EC

Agus siad i gcomhréir le forálacha na caighdeáin chomhchuibhithe na hEorpa dá dtagraítear sa leathanach roimhe seo.

(HR) - Hrvatski
EZ IZJAVA O SUKLADNOSTI

WILO SE izjavljuje da su proizvodi navedeni u ovoj izjavi u skladu sa sljedećim prihvaćenim europskim direktivama i nacionalnim zakonima:

EZ smjernica o strojevima 2006/42/EZ ; Elektromagnetna kompatibilnost - smjernica 2004/108/EZ ; Smjernica za proizvode relevantne u pogledu potrošnje energije 2009/125/EZ

i usklađenim europskim normama navedenim na prethodnoj stranici.

(HU) - Magyar
EK-MEGFELELŐSÉGI NYILATKOZAT

WILO SE kijelenti, hogy a jelen megfelelőségi nyilatkozatban megjelölt termékek megfelelnek a következő európai irányelvek előírásainak, valamint azok nemzeti jogrendbe átültetett rendelkezéseinek:

Gépek 2006/42/EK ; Elektromágneses összeférhetőségre 2004/108/EK ; Energiával kapcsolatos termékek 2009/125/EK

valamint az előző oldalon szereplő, harmonizált európai szabványoknak.

(IS) - Íslenska
EB LEYFISYFIRLÝSING

WILO SE lýsir því yfir að vörurnar sem um getur í þessari yfirlýsingu eru í samræmi við eftirfarandi tilskipunum ESB og landslögum hafa samþykkt:

Vélartilskipun 2006/42/EB ; Rafseguls-samhæfni-tilskipun 2004/108/EB ; Tilskipun varðandi vörur tengdar orkunotkun 2009/125/EB

og samhæfða evrópska staðla sem nefnd eru í fyrri síðu.

(IT) - Italiano
DICHIARAZIONE CE DI CONFORMITÀ

WILO SE dichiara che i prodotti descritti nella presente dichiarazione sono conformi alle disposizioni delle seguenti direttive europee nonché alle legislazioni nazionali che le traspongono :

Macchine 2006/42/CE ; Compatibilità Elettromagnetica 2004/108/CE ; Prodotti connessi all'energia 2009/125/CE

E sono pure conformi alle disposizioni delle norme europee armonizzate citate a pagina precedente.

(LT) - Lietuvių kalba
EB ATITIKTIES DEKLARACIJA

WILO SE pareiškia, kad šioje deklaracijoje nurodyti gaminiai atitinka šių Europos direktyvų ir jas perkeliančių nacionalinių įstatymų nuostatus:

Mašinos 2006/42/EB ; Elektromagnetinis Suderinamumas 2004/108/EB ; Energija susijusiems gaminiams 2009/125/EB

ir taip pat harmonizuotas Europas normas, kurios buvo cituotos ankstesniame puslapyje.

(LV) - Latviešu valoda
EK ATBILSTĪBAS DEKLARĀCIJU

WILO SEdeklarē, ka izstrādājumi, kas ir nosaukti šajā deklarācijā, atbilst šeit uzskaitīto Eiropas direktīvu nosacījumiem, kā arī atsevišķu valstu likumiem, kuros tie ir ietverti:

Mašīnas 2006/42/EK ; Elektromagnētiskās Saderības 2004/108/EK ; Enerģiju saistītiem ražojumiem 2009/125/EK

un saskaņotajiem Eiropas standartiem, kas minēti iepriekšējā lappusē.

(MT) - Malti
DIKJARAZZJONI KE TA' KONFORMITÀ

WILO SE jiddikjara li l-prodotti speċifikati f'din id-dikjarazzjoni huma konformi mad-direttivi Ewropej li jsegwu u mal-leġislazzjonijiet nazzjonali li japplikawhom:

Makkinarju 2006/42/KE ; Kompatibbiltà Elettromanjetika 2004/108/KE ; Prodotti relatati mal-enerġija 2009/125/KE

kif ukoll man-normi Ewropej armoniżżati li jsegwu imsemmija fil-paġna preċedenti.

(NL) - Nederlands
EG-VERKLARING VAN OVEREENSTEMMING

WILO SE verklaart dat de in deze verklaring vermelde producten voldoen aan de bepalingen van de volgende Europese richtlijnen evenals aan de nationale wetgevingen waarin deze bepalingen zijn overgenomen:

Machines 2006/42/EG ; Elektromagnetische Compatibiliteit 2004/108/EG ; Energiegerelateerde producten 2009/125/EG

De producten voldoen eveneens aan de geharmoniseerde Europese normen die op de vorige pagina worden genoemd.

(NO) - Norsk
EU-OVERENSSTEMMELSESERKLAEING

WILO SE erklærer at produktene nevnt i denne erklæringen er i samsvar med følgende europeiske direktiver og nasjonale lover:

EG–Maskindirektiv 2006/42/EG ; EG–EMV–Elektromagnetisk kompatibilitet 2004/108/EG ; Direktiv energirelaterte produkter 2009/125/EF

og harmoniserte europeiske standarder nevnt på forrige side.

(PL) - Polski
DEKLARACJA ZGODNOŚCI WE

WILO SE oświadcza, że produkty wymienione w niniejszej deklaracji są zgodne z postanowieniami następujących dyrektyw europejskich i transponującymi je przepisami prawa krajowego:

Maszyn 2006/42/WE ; Kompatybilności Elektromagnetycznej 2004/108/WE ; Produktów związanych z energią 2009/125/WE

oraz z nastepującymi normami europejskich zharmonizowanymi podanymi na poprzedniej stronie.

(PT) - Português
DECLARAÇÃO CE DE CONFORMIDADE

WILO SE declara que os materiais designados na presente declaração obedecem às disposições das directivas europeias e às legislações nacionais que as transcrevem :

Máquinas 2006/42/CE ; Compatibilidade Electromagnética 2004/108/CE ; Produtos relacionados com o consumo de energia 2009/125/CE

E obedecem também às normas europeias harmonizadas citadas na página precedente.

(RO) - Română
DECLARAŢIE DE CONFORMITATE CE

WILO SE declară că produsele citate în prezenta declaraţie sunt conforme cu dispoziţiile directivelor europene următoare şi cu legislaţiile naţionale care le transpun :

Maşini 2006/42/CE ; Compatibilitate Electromagnetică 2004/108/CE ; Produselor cu impact energetic 2009/125/CE

şi, de asemenea, sunt conforme cu normele europene armonizate citate în pagina precedentă.

(RU) - русский язык
Декларация о соответствии Европейским нормам

WILO SE заявляет, что продукты, перечисленные в данной декларации о соответствии, отвечают следующим европейским директивам и национальным предписаниям:

Директива ЕС по машинному оборудованию 2006/42/EC ; Директива ЕС по электромагнитной совместимости 2004/108/EC ; Директива о продукции, связанной с энергопотреблением 2009/125/EC

и гармонизированным европейским стандартам, упомянутым на предыдущей странице.

(SK) - Slovenčina
ES VYHLÁSENIE O ZHODE

WILO SE čestne prehlasuje, že výrobky ktoré sú predmetom tejto deklarácie, sú v súlade s požiadavkami nasledujúcich európskych direktív a odpovedajúcich národných legislatívnych predpisov:

Strojových zariadeniach 2006/42/ES ; Elektromagnetickú Kompatibilitu 2004/108/ES ; Energeticky významných výrobkov 2009/125/ES

ako aj s harmonizovanými európskych normami uvedenými na predchádzajúcej strane.

(SL) - Slovenščina
ES-IZJAVA O SKLADNOSTI

WILO SE izjavlja, da so izdelki, navedeni v tej izjavi, v skladu z določili naslednjih evropskih direktiv in z nacionalnimi zakonodajami, ki jih vsebujejo:

Stroji 2006/42/ES ; Elektromagnetno Združljivostjo 2004/108/ES ; Izdelkov, povezanih z energijo 2009/125/ES

pa tudi z usklajenimi evropskih standardi, navedenimi na prejšnji strani.

(SV) - Svenska
EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE

WILO SE intygar att materialet som beskrivs i följande intyg överensstämmer med bestämmelserna i följande europeiska direktiv och nationella lagstiftningar som inför dem:

Maskiner 2006/42/EG ; Elektromagnetisk Kompatibilitet 2004/108/EG ; Energirelaterade produkter 2009/125/EG

Det överensstämmer även med följande harmoniserade europeiska standarder som nämnts på den föregående sidan.

(TR) - Türkçe
CE UYGUNLUK TEYID BELGESI

WILO SEbu belgede belirtilen ürünlerin aşağıdaki Avrupa yönetmeliklerine ve ulusal kanunlara uygun olduğunu beyan etmektedir:

Makine Yönetmeliği 2006/42/AT ; Elektromanyetik Uyumluluk Yönetmeliği 2004/108/AT ; Eko Tasarım Yönetmeliği 2009/125/AT

ve önceki sayfada belirtilen uyumlaştırılmış Avrupa standartlarına.

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