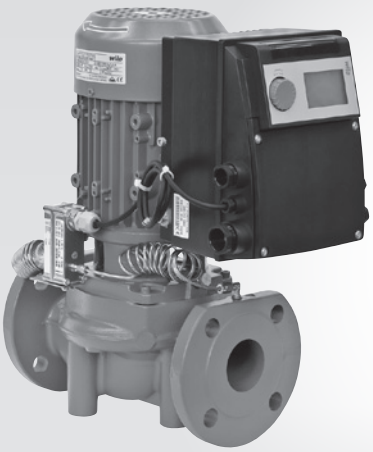
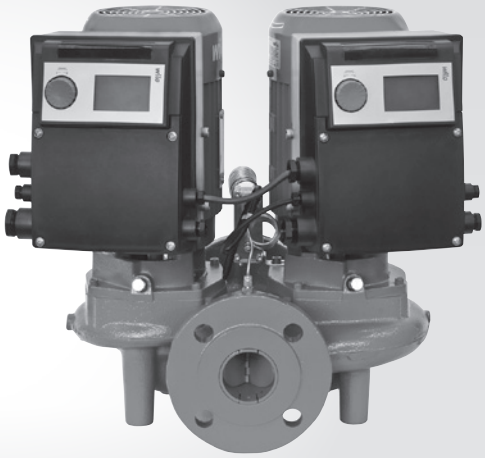
Pioneering for You

Wilo-VeroLine-IP-E
Wilo-VeroTwin-DP-E





ErP READY — APPLIES TO EUROPEAN DIRECTIVE FOR ENERGY RELATED PRODUCTS

en Installation and operating instructions

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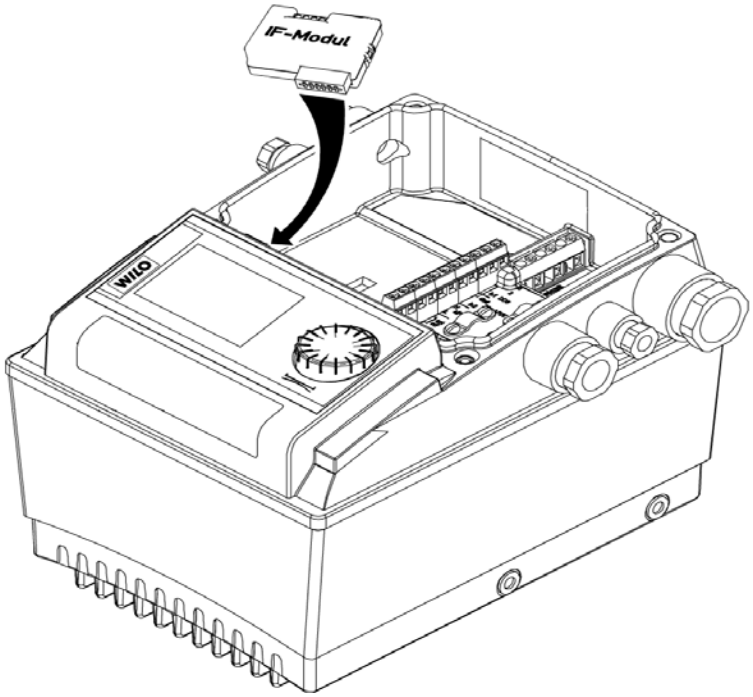
Fig. 1: IF-Modul



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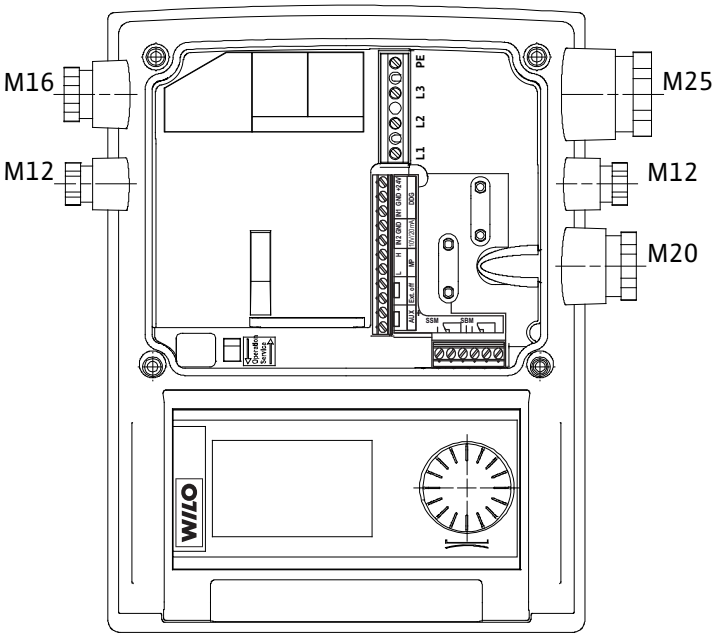
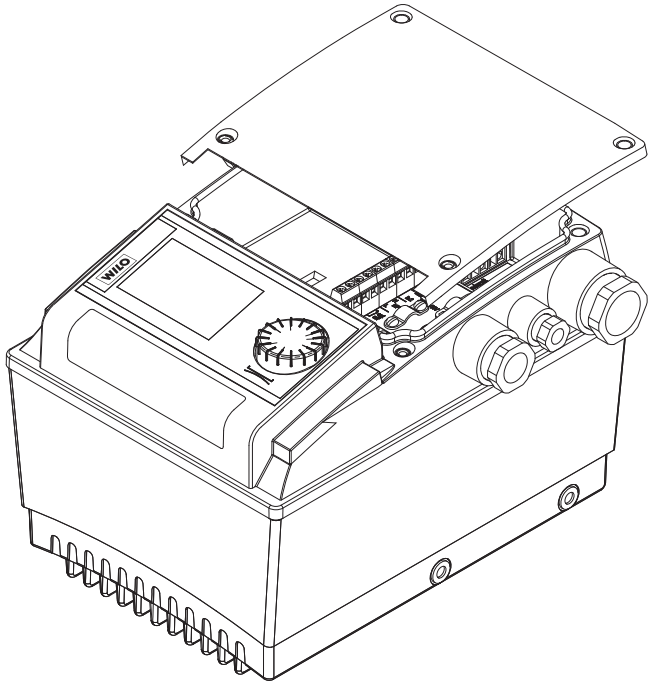


Fig. 3:



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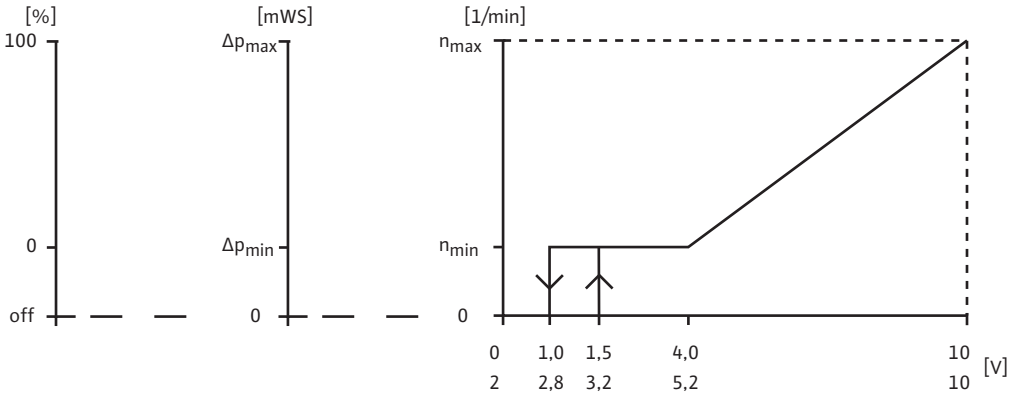
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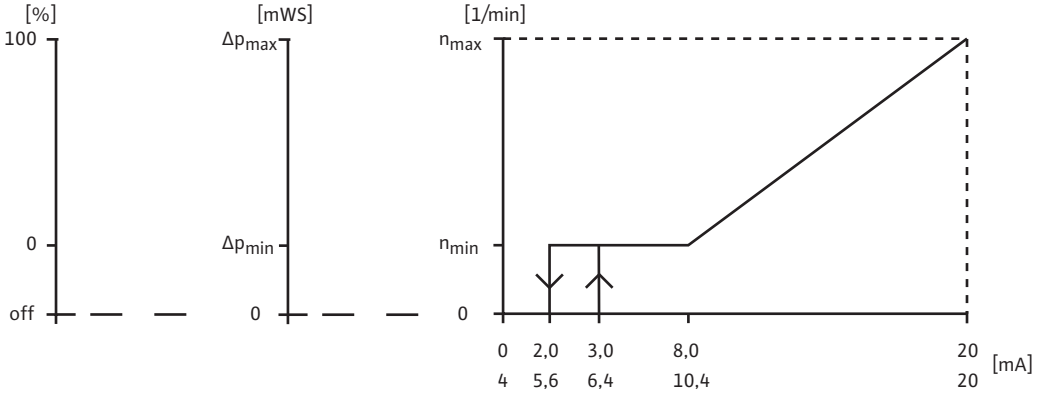
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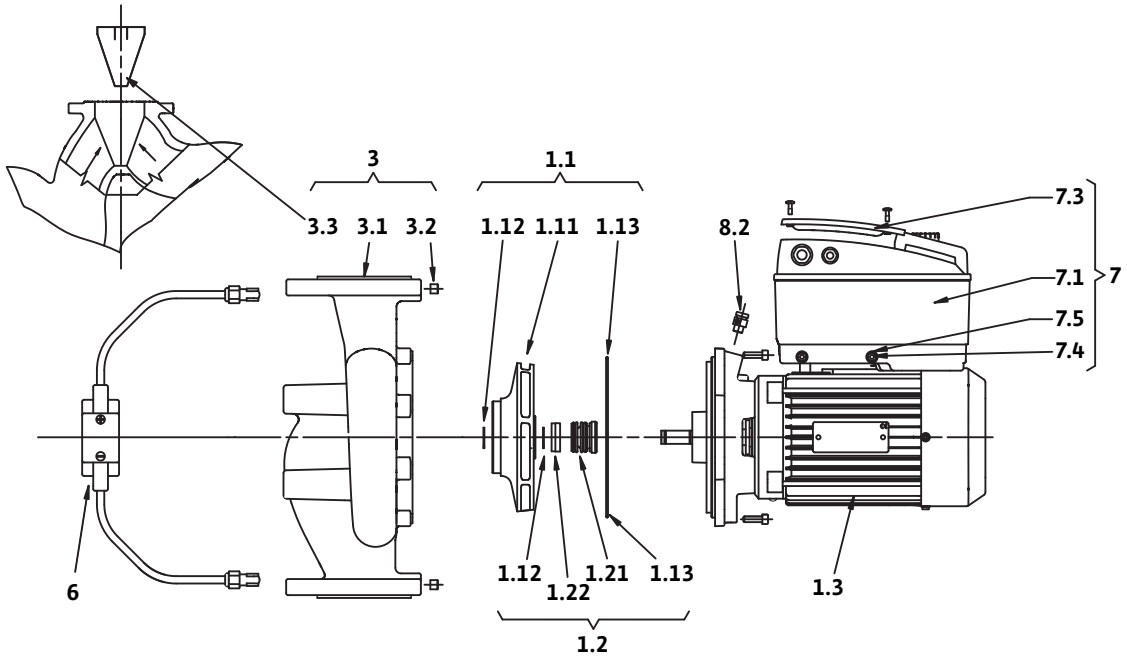
Fig. 5: IP-E/DP-E



1 General

About this document

The language of the original operating instructions is German. All other languages of these instructions are translations of the original operating instructions.
These installation and operating instructions are an integral part of the product. They must be kept readily available at the place where the product is installed. Strict adherence to these instructions is a precondition for the proper use and correct operation of the product.
These installation and operating instructions correspond to the relevant version of the product and the underlying safety standards valid at the time of going to print.
EC declaration of conformity:
A copy of the EC declaration of conformity is a component of these operating instructions.
If a technical modification is made on the designs named there without our agreement, this declaration loses its validity.

2 Safety

These operating instructions contain basic information which must be adhered to during installation and operation. For this reason, these operating instructions must, without fail, be read by the service technician and the responsible operator before installation and commissioning.
It is not only the general safety instructions listed under the main point “safety” that must be adhered to but also the special safety instructions with danger symbols included under the following main points.

2.1 Indication of instructions in the operating instructions

Symbols

General danger symbol

Danger due to electrical voltage

NOTE

Signal words

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

WARNING!
The user can suffer (serious) injuries. 'Warning' implies that (serious) injury to persons is probable if this information is disregarded.

CAUTION!
There is a risk of damage to the product/unit. 'Caution' implies that damage to the product is likely if this information is disregarded.

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

2.2 Personnel qualifications

The installation, operating and maintenance personnel must have the appropriate qualifications for this work.

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 product/unit. Non-observance of the safety instructions can result in the loss of any claims to damages.
In detail, non-observance can, for example, result in the following risks:

- Failure of important product/unit functions
- Failure of required maintenance and repair procedures
- Danger to persons from electrical, mechanical and bacteriological influences
- Property damage

2.4 Safety instructions for the operator

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 local power supply companies must be adhered to.
This device is not intended to be operated by persons (including children) with impaired physical, sensory or mental capacities or lack of experience and/or lack of knowledge, except in cases where they are supervised by a person responsible for their safety or where they receive instruction from such a person as to how the device is to be operated.
Children must be kept under supervision in order to ensure that they do not play with the device.

2.5 Safety instructions for inspection and installation work

The operator must ensure that all inspection and installation work is carried out by authorised and qualified personnel, who are sufficiently informed from their own detailed study of the operating instructions. Work on the product/unit should only be carried out when it has been brought to a standstill. It is mandatory that the procedure described in the installation and operating instructions for shutting down the product/unit be complied with.

2.6 Unauthorised modification and manufacture of spare parts

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 can nullify the liability from the results of their usage.

2.7 Improper use

The operating safety of the supplied product is only guaranteed when used properly in accordance with the section in the operating instructions titled “Intended use”. The limit values must on no account fall under or exceed those specified in the catalogue/data sheet.

3 Transport and interim storage

3.1 Shipping

The pump is enclosed in a box or lashed to a pallet ex works and is protected against dirt and moisture.

Transport inspection

On arrival, inspect the pump immediately for any transport damage. If damage is found, the necessary procedure involving the forwarding agent must be taken within the specified period.

Storage

Before installation, the pump must be kept dry, frost-free and protected from mechanical damage.

CAUTION! Risk of damage due to incorrect packaging!
If the pump is transported again at a later time, it must be packaged so that it cannot be damaged during transport.

- **Use the original packaging for this, or select equivalent packaging.**

3.2 Attachment

WARNING! Danger of personal injury!
Improper transport can lead to personal injury.

- **The pump must be transported using approved load bearing equipment. This is to be attached to the pump flanges and, if necessary, to the outer motor diameter (safeguarding against slipping required!).**
- **To lift with a crane, the pump must be supported by suitable belts, as shown. Place loops around the pump which tighten from the pump's own weight.**
- **The transport eyes on the motor are only for guiding while bearing the load (Fig. 7).**

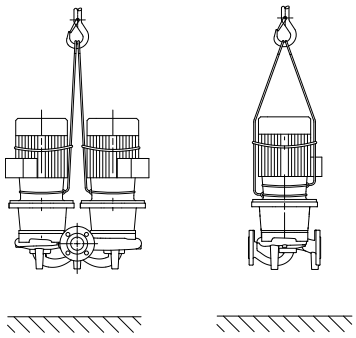


Fig. 7: Attaching the pump

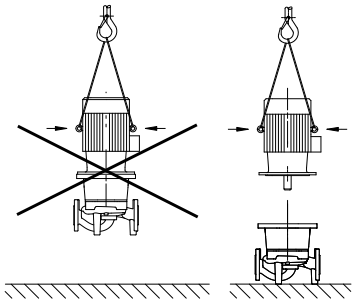


Fig. 8: Attaching the motor

- **The transport eyes on the motor are only for transporting the motor, and are not approved for transporting the complete pump (Fig. 8).**

WARNING! Risk of injury due to weight of the pump!
The pump itself and the parts of pump can be extremely heavy. Falling parts pose a risk of cuts, crush injuries, bruises or impacts, which may lead to death.

- **Always use suitable lifting equipment and secure parts against falling.**
- **Never stand underneath a suspended load.**

4 Intended use

Purpose

The glanded pumps of the IP-E (in-line) / DP-E (double) series are meant to be used as circulation pumps in building services.

Fields of application

They may be used for:

- Hot water heating systems
- Cooling and cold water circulation systems
- Industrial circulation systems
- Heat carrier circuits

Restrictions

Typical installation locations are technical rooms within the building with other domestic installations. Installing the device directly in other used rooms (residential and work rooms) is not intended.

Outdoor installation is not permitted for this series.

CAUTION! Risk of material damage!
Impermissible substances in the fluid can destroy the pump. Abrasive solids (e.g. sand) increase pump wear.
Pumps without an Ex rating are not suitable for use in potentially explosive areas.

- **The correct use of the pump/installation also includes following these instructions.**
- **Any other use is considered to be incorrect use.**

5 Product information

5.1 Type key

The type key consists of the following elements:

Example:	IP-E 40/160-4/2 xx DP-E 40/160-4/2 xx
IP DP	Flange-end pump as **i**nline single pump Flange-end pump as inline **d**ouble pump
-E	with **E**lectronic module for electronic speed control
40	Nominal diameter DN of the pipe connection
160	Impeller diameter [mm]
4	Rated motor power P_2 [kW]
2	Number of poles, motor
xx	Version: e.g. **R1** – without differential pressure sensor

5.2 Technical data

Property	Value	Remarks
Speed range	750–2900 rpm	
Nominal diameters DN	32; 40; 50; 65; 80	
Pipe connections	Flanges PN 16	EN 1092-2
Permissible min./max. fluid temperature	-20 °C to +120 °C	Depending on fluid
Ambient temperature min./max.	0 to 40 °C	
Maximum permissible operating pressure	10 bar	
Insulation class	F	
Protection class	IP 55	
Electromagnetic compatibility Emitted interference in acc. with Interference resistance in acc. with	 EN 61800-3 EN 61800-3	 Residential Industrial
Sound pressure level	< 71 dB(A)	
Approved fluids	Heating water in acc. with VDI 2035 Cooling/cold water Water/glycol mixture up to 40 % vol. Heat transfer oil Other fluids	Standard version Standard version Standard version Only for special version Only for special version
Electrical connection	3~440 V ± 10 %, 50/60 Hz 3~400 V ± 10 %, 50/60 Hz 3~380 V -5 % + 10 %, 50/60 Hz	Supported network types: TN, TT
Internal electric circuit	PELV, galvanically isolated	
Speed control	Built-in frequency converter	
Relative humidity	< 95 %, without condensation	

When ordering spare parts, make sure to state all the information given on the pump and motor name plates.

Fluids

If water/glycol mixtures are used (or fluids with a viscosity other than that of pure water), an increase in power consumption of the pump is to be taken into account. Only use mixtures with corrosion inhibitors. The respective manufacturer's instructions are to be observed.

- The fluid must be sediment-free.
- Wilo's approval must be obtained for the use of other fluids.
- Mixtures with a proportion of glycol of > 10 % influence the Δp-v pump curve and the flow calculation.

NOTE
The flow value shown on the IR-Monitor/IR-PDA display or output to the building management system must not be used to control the pump. This value is merely an indicator of general trends.

A flow value is not output on every type of pump.

NOTE
Always read and follow the material safety data sheet for the fluid being pumped!

- Pump IP-E/DP-E
- Installation and operating instructions

5.3 Accessories

Accessories must be ordered separately:

- 3 Mounting brackets with fixation material for installation on a base
- IR-Monitor
- IR-PDA
- IF-Module PLR for connecting to PLR/interface converter
- IF-Module LON for connection to the LONWORKS network
- BACnet IF-Module
- Modbus IF-Module
- CAN IF-Module

See catalogue for detailed list.

NOTE
IF-Module may only be plugged in when the pump is de-energised (voltage-free).

6 Description and function

6.1 Description of the product

The described pumps are single-stage low-pressure centrifugal pumps in compact design with a coupled motor. The pumps can be installed both directly as a pipe installation pump in a sufficiently anchored pipe or placed on a foundation base.

The pump housing has an IN-LINE construction, i.e. the flanges on the suction and pressure sides lie along a centre line. All pump housings are provided with a pump base. Installation on a foundation base is recommended.

Electronic module

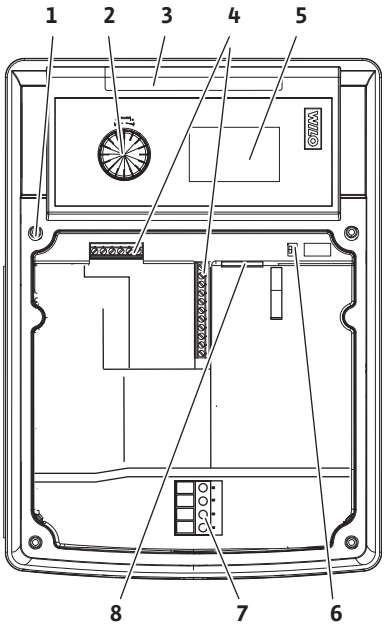


Fig. 9: Electronic module

The electronic module controls the speed of the pump to a setpoint that can be adjusted within the control range.

Depending on the control mode, the differential pressure follows different criteria. In all control modes, however, the pump adapts itself continuously to the changing power requirements of the system, which is the case especially when thermostatic valves or mixers are used.

The main advantages of the electronic control are the following:

- Fewer differential pressure valves required
- Energy savings
- Reduction of flow noise
- Adaptation of the pump to changing operating requirements

Legend (Fig. 9):

1 Attachment point, cover
2 The red button
3 Infrared window
4 Terminal strip
5 Display
6 DIP switch
7 Mains terminals
8 Interface for IF-Module

6.2 Control modes

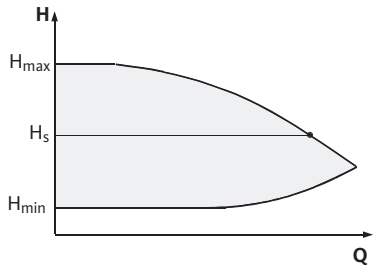


Fig. 10: Δp-c control

The selectable control modes are:

Δp-c:

The electronics keep the differential pressure created by the pump above the permitted feed flow range constantly at the pre-selected differential pressure setpoint H_s up to the maximum pump curve (Fig. 10).

Q = Volume flow
H = Differential pressure (min./max.)
H_S = Differential pressure setpoint

NOTE
For additional information about setting the control mode and the associated parameters, see Section 8 “Operation” on page 66 and Section 9.4 “Setting the control mode” on page 82.

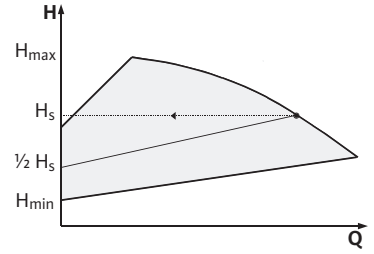


Fig. 11: Δp-v control

Δp-v:

The electronics change the differential pressure setpoint to be maintained by the pump linearly between the delivery head H_s and ½ H_s. The differential pressure setpoint H_s decreases/increases with the volume flow (Fig. 11).

Q = Volume flow
H = Differential pressure (min./max.)
H_S = Differential pressure setpoint

NOTE
For additional information about setting the control mode and the associated parameters, see Section 8 “Operation” on page 66 and Section 9.4 “Setting the control mode” on page 82.

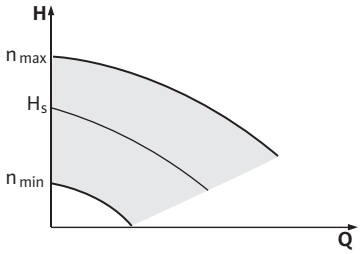


Fig. 12: Manual control mode

Manual control mode:

The speed of the pump can be kept to a constant speed between n_{min} and n_{max} (Fig. 12). “Manual control” mode deactivates all other control modes.

PID control

If the standard control modes mentioned above cannot be used – for example, for Y-pipe installation or generally if the controller is not directly connected to the pipe (Fig. 13) – the PID (**P**roportional-**I**ntegral-**D**ifferential) control function is available.

By selecting a good combination of individual control portions, the operator can ensure fast reacting, constant control without lasting setpoint deviations.

The output signal of the selected sensor can take any intermediate value. The respective actual value reached (sensor signal) will be shown as a percent (100 % = maximum measurement range of the sensor) on the status page of the menu.

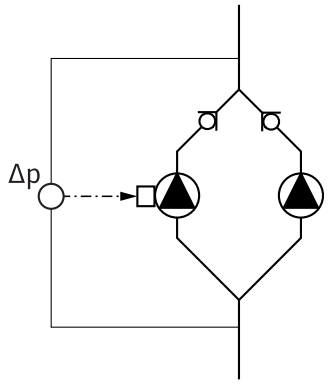


Fig. 13: Example; use of PID control

NOTE
The displayed percent value only corresponds indirectly to the current delivery head of the pump(s). It can be, for example, that the maximum delivery head has already been reached at a sensor signal < 100 %.
For further information about setting the control mode and the associated parameters, see Section 8 “Operation” on page 66 and Section 9.4 “Setting the control mode” on page 82.

6.3 Dual pump function

NOTE
The characteristics described below are only available when the internal MP interface (MP = multi-pump) is used.

- Both pumps are controlled by the master.

  If one of the pumps malfunctions, the other will run according to the master's control settings. If there is a total failure of the master, the slave will run at the emergency operation speed.
  The emergency operation speed can be set in menu <5.6.2.0> (see Section 6.3.3 on page 58).
- The master's display will show the status of the double pump. On the slave display, “SL” will appear.
- The master pump is the left pump in the direction of flow.

  Connect the differential pressure sensor to this pump.
  The measuring points of the differential pressure sensor of the master pump must be on the suction and pressure side of the double-pump system in the respective collector pipe.

InterFace-Module (IF-Module)

For communication between pumps and the main computer for the pumps , one IF-Module (accessory) is required per pump. This is plugged into the terminal space (Fig. 1).

- The master-slave communication uses an internal interface (terminal: MP, Fig. 19).
- For use of a main computer for the pumps (PLR)/interface converter or the LON interface, the master pump must be connected to the PLR or the LON. Only the master pump needs to be equipped in this case with a PLR or LON module.
- Normally for double pumps, only the master pump must be equipped with an IF-Module.

Communication	Master	Slave
PLR/Interface converter	PLR IF-Module	not necessary
LONWORKS network	LON IF-Module	not necessary
BACnet	BACnet IF-Module	not necessary
Modbus	Modbus IF-Module	not necessary
CAN bus	CAN IF-Module	not necessary

6.3.1 Operating modes

Main/standby mode

Each of the two pumps provides the configuration flow rate. The other pump is available in case of malfunction or runs after pump cycling. Only one pump runs at a time (see Fig. 10, 11 and 12).

Parallel operation

In the partial load range, the hydraulic output is provided at the beginning by one pump. The second pump will be switched on when it is most effective to do this, i.e. when the total power consumption P_1 of both pumps in the partial load range is less than the power consumption P_1 of one pump. Both pumps will then be simultaneously adjusted upwards to the maximum speed. (Fig. 14 and 15).

In manual control mode, both pumps always run synchronously.

See Section 6.4 “Other functions” on page 59.

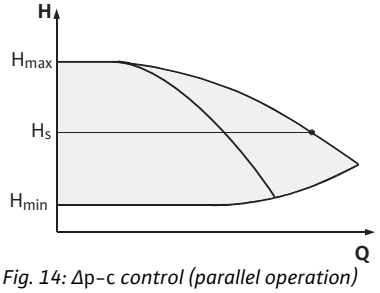


Fig. 14: Δp-c control (parallel operation)

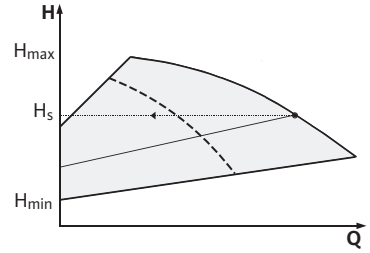


Fig. 15: Δp-v control (parallel mode)

6.3.2 Behaviour in dual pump operation

Pump cycling

In dual pump operation, pump cycling is done every 24 hours (configurable).

Pump cycling can be triggered:
- Internally, time-controlled (menu <5.1.3.2> + <5.1.3.3>),
- Externally (menu <5.1.3.2>) by a positive edge at the “AUX” contact (see Fig. 19),
- Manually, (menu <5.1.3.1>).

Manual or external pump cycling is possible 5 seconds after the last pump cycling, at the earliest.

Activation of external pump cycling simultaneously deactivates internal time-controlled pump cycling.

Behaviour of the inputs and outputs

Actual value input IN1 setpoint input IN2
- At the master: acts on the whole unit.

“External Off”
- Set at the master (menu <5.1.7.0 >): depending on the setting in menu <5.1.7.0 >, acts only on the master or on the master and the slave.
- Set at the slave: acts only on the slave.

Fault and run signals

ESM/SSM:

- A collective fault signal (SSM) can be connected to the master for a central control centre.
- In this case, the contact may only be made to the master.
- The display is for the whole unit.
- This signal can be programmed on the master (or using the IR-Monitor/PDA) as an individual fault signal (ESM) or a collective fault signal (SSM) in menu <5.1.5.0>.
- The contact must be made to each pump for individual fault signals.

EBM/SBM:

- A collective run signal (SBM) can be connected to the master for a central control centre.
- In this case, the contact may only be made to the master.
- The display is for the whole unit.
- This signal can be programmed on the IR-Monitor (or using the PDA) as an individual fault signal (ESM) or collective fault signal (SSM) (menu <5.1.6.0>).
- The functions – "Readiness", "Operation", "Mains-On" – from EBM/SBM can be set at <5.7.6.0> on the master.
- The contact must be made to each pump for individual run signals.

Operating possibilities at the slave pump

The only settings that are possible at the slave are "Extern Off" and "Disable/enable pump".

6.3.3 Operation during interruption of communication

During an interruption of communication, both displays show fault code "E052". Both pumps behave as single pumps for as long as the interruption lasts.

- Both modules report the malfunction via the ESM/SSM contact.
- The slave pump runs in emergency operation (manual control) mode according to the emergency operation speed previously set on the master (see menu items <5.6.2.0>). The factory setting for the emergency operation speed is n = 1850/925 rpm for 2/4 pole.
- After acknowledging the fault display, the status display will be shown on both pump displays for the duration of the communication interruption. This resets the ESM/SSM contact at the same time.
- The slave pump display will show the symbol (– Pump running in emergency operation).
- The (former) master pump continues to have control. The (former) slave pump follows the emergency operation settings. It is only possible to exit emergency operation by actuating the Works setting or, after ending the communication interruption, by shutting power off and on again.

NOTE
During communication interruptions, the (former) slave pump cannot run in auto control, since the differential pressure sensor has switched to the master. When the slave is running in emergency operation mode, changes cannot be made to the module.

- After the end of the communication interruption, the pumps will resume regular dual pump operation as before the malfunction.

Slave pump behaviour

Slave discontinues emergency operation:

- Factory settings restored
  During a communication interruption on the (former) slave, if emergency operation is discontinued because the factory settings have been restored, the (former) slave will start up with the factory settings of a single pump. It will then run in Δp-c mode at approximately half the maximum delivery head.

NOTE
In the absence of a sensor signal, the (former) slave will run at maximum speed. To prevent this, the (former) master's differential pressure signal can be looped through. When the double pump is operating normally, it is not affected by sensor signals pending on the slave.

- Mains Off, Mains On
  During a communication interruption on the (former) slave, if emergency operation is discontinued due to power cycling (mains Off, mains On), the (former) slave will start up with the latest emergency operation settings received from the master (for example, manual control mode at a specific speed or off).

Master pump behaviour

Master discontinues emergency operation:

- Factory settings restored
  During a communication interruption on the (former) master, if the factory settings are restored, it will start up with the factory settings of a single pump. It will then run in Δp-c mode at approximately half the maximum delivery head.
- Mains Off, Mains On
  During a communication interruption on the (former) master, if emergency operation is discontinued due to power cycling (mains Off, mains On), the (former) master will start up with the latest settings it has from the double pump configuration.

6.4 Other functions

Disabling or enabling a pump

A particular pump can generally be enabled or disabled in terms of operation in menu <5.1.4.0>. A disabled pump cannot be used in operation until the disabling has been manually lifted.

The setting can be made at each pump directly or over the infrared interface.

Pump kick

A pump kick takes place 24 hours and 2 minutes after a pump or pump head stops operating. The reason for the standstill is not important (Manual off, Ext. off, Fault, Adjustment, Emergency operation, BMS setting). This procedure is repeated until the pump is switched back on via a control mechanism. The “pump kick” function cannot be disabled via the menu or any other interfaces. As soon as the pump is switched on via the control system, the countdown to the next pump kick is interrupted.

A pump kick lasts 5 seconds, during which the motor turns at minimum speed. If both pump heads on a double pump are switched off, for example, via Ext. Off, both will run for 5 seconds. Pump kick takes place even in “main/standby operation” mode if pump cycling takes longer than 24 hours. In the event of a malfunction, the system will also attempt to perform a pump kick.

The time remaining until the next pump kick can be seen on the display in menu <4.2.4.0>. This menu is only available when the motor is stopped. The number of pump kicks is shown in menu <4.2.6.0>.

With the exception of warnings, all faults detected during a pump kick will cause the motor to be switched off. The corresponding fault code is shown on the display.

Behaviour after being switched on

During commissioning, the pump will operate at the factory settings.

- The service menu deals with the setting and converting of individual pumps; see Section 8 “Operation” on page 66.
- To correct faults, also see Section 11 “Faults, causes and remedies” on page 86.

CAUTION! Risk of material damage!
Modifying the settings for the differential pressure sensor can lead to malfunctions. The factory settings are configured for the supplied WILO differential pressure sensor.

- **Default value: input In = 0–10 volts, pressure value correction = ON**
- **When using the supplied Wilo differential pressure sensor, these settings must not be changed!**

Modifications are only needed if another differential pressure sensor is used.

Switching frequency

At high ambient temperatures, the thermal load on the module can be reduced by lowering the switching frequency (menu <4.1.2.0>).

NOTE
The switching frequency can only be changed via the CAN bus or IR-PDA.
Lower switching frequencies result in increased noise levels.

Variants

If the menu <5.7.2.0> “Pressure value correction” is not available on the display of a given pump, that pump is a variant in which the following functions are not available:

- Pressure value correction (menu <5.7.2.0>)
- Efficiency-optimised activation and deactivation in double pumps

7 Installation and electrical connection

Safety

DANGER! Risk of fatal injury!
Incorrect installation and improper electrical connections can result in fatal injury.

- **Have the electrical connections established by approved electricians only, in compliance with the applicable regulations.**
- **Observe the accident prevention regulations!**

DANGER! Risk of fatal injury!
Failure to install safety devices on the module cover or near the coupling can cause electrical shock or contact with rotating parts, potentially resulting in life-threatening injuries.

- **Before commissioning, all safety devices such as module covers or coupling covers that were removed must be reinstalled!**

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

- **Have the pump installed by qualified personnel only.**

CAUTION! Damage to the pump due to overheating!
The pump must not be allowed to operate dry for more than 1 minute. Dry running causes a build-up of energy in the pump, which can damage the shaft, impeller, and mechanical seal.

- **Make sure that the volume flow does not go below the minimum value Q_{min}.**
  Calculation of Q_{min}:

$$Q_{min} = 10\% \times Q_{max\ pump} \times \frac{\text{actual speed}}{\text{max. speed}}$$

7.1 Installation

Preparation

- The pump should only be installed after completion of all welding and soldering work and, if necessary, flushing of the pipe system. Dirt can cause the pump to fail.
- The pumps must be protected from the weather and installed in a frost/dust-free, well-ventilated environment which is not potentially explosive. The pump must not be installed outdoors.
- Install the pump in a place that is easy to access so that subsequent inspections, maintenance (e.g. mechanical seal) or replacement is easily possible. Air flow to the electronic module's heat sink must not be restricted.

Positioning/alignment

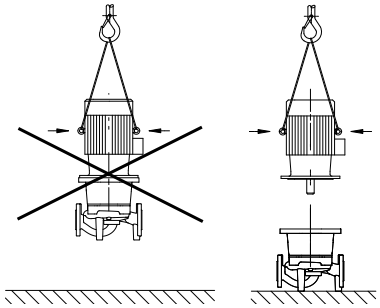


Fig. 16: Attaching the motor

- A hook or a lug with sufficient load-bearing capacity must be installed vertically over the pump (total weight of the pump: see catalogue/ data sheet). This is to allow hoisting gear or similar aids to be attached to the pump during maintenance or repair work.

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

- **Only use lifting eyes on the motor for carrying the weight of the motor and not for carrying the entire pump (Fig. 16).**
- **The pump is only to be lifted with approved load-bearing equipment.**

- Minimum axial distance between a wall and the fan cover of the motor: Free dismantling dimension of at least 200 mm + diameter of the fan cover.
- Shut-off devices must always be installed in front of and behind the pump in order to avoid having to drain the complete system when the pump is inspected or replaced.
- The pipes and pump must be free of mechanical stress when installed. The pipes must be fastened in such a way that the pump does not bear the weight of the pipes.
- The direction of flow must correspond to the direction arrow on the pump housing flange.

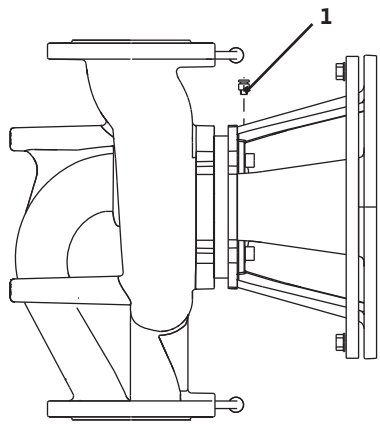


Fig. 17: Bleed valve

- The bleed valve (Fig. 17, Item 1) must always face upwards.
- All installation positions except for “motor facing down” are allowed.
- The electronic module must not face downwards. If required, the motor can be turned after loosening the hexagon head bolts.

NOTE
After loosening the hexagon head bolts, the differential pressure sensor is attached to the pressure measuring lines only. When turning the motor housing, make sure that the pressure measuring lines are not bent or kinked.

NOTE
When pumping out of a tank, ensure that the fluid level is always high enough above the suction port of the pump so that the pump never runs dry. The minimum intake pressure must be maintained.

- When using the pump in air-conditioning or cooling systems, the condensate which accumulates in the lantern can be discharged specifically via the existing holes. A drain pipe can be connected at this opening. Small amounts of fluid leakage can be also drained off.

NOTE
In the case of insulated systems, only the pump housing may be insulated, not the lantern or motor.

7.2 Electrical connection

Safety

DANGER! Risk of fatal injury!
Improper electrical connections can lead to fatal electrical shocks.

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

DANGER! Risk of fatal injury!
Contact voltage can be life-threatening
Work on the module may only be started once 5 minutes have passed, due to the dangerous residual contact voltage (capacitors).

- **Before working on the pump, disconnect the power supply and wait for 5 minutes.**
- **Check to ensure all connections (including potential-free contacts) are voltage-free.**
- **Never use an object to poke around the openings on the module and never insert anything into the module!**

WARNING! Risk of mains overload!
An inadequate mains design can lead to system failures and even to cable fires due to mains overload.

- **When designing the mains, with regard to the cable cross-sections and fuses, give special consideration to the fact that short-term simultaneous operation of all pumps is possible in multi-pump operation.**

Preparation/notes

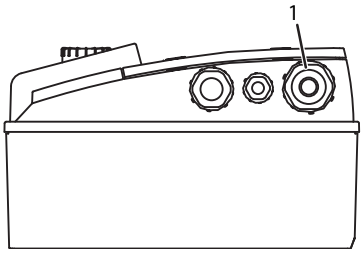


Fig. 18: M25 threaded cable connection

- The electrical connection must be established via a fixed power cable (cross-section to be maintained: 4 x 1.5 mm^2, min.; 4 x 4 mm^2, max.), which has a plug attachment or an all-pole switch with a contact opening of at least 3 mm. The power cable is to be fed through the M25 threaded cable connection (Fig. 18, Item 1).
- In order to comply with electromagnetic compatibility standards, the following cables must always be shielded:
  - DDG (if installed on-site)
  - IN2 (setpoint)
  - DP communication (for cable lengths > 1 m); (“MP” terminal)
    Pay attention to polarity:
    MA = L => SL = L
    MA = H => SL = H
  - Ext. Off
  - AUX

  The shield must be applied to both sides: on the EMC cable clips in the module and on the other end. The lines for SBM and SSM do not have to be shielded.
- In order to ensure drip protection and strain relief on the threaded cable connection, cables with a sufficient outer diameter must be used and must be screwed sufficiently tightly. Also, the cables near the threaded cable connection are to be bent to form a drainage loop, to drain any accumulated drips. Position the threaded cable connection or lay the cables accordingly to ensure that no drips can run into the module. Non-assigned threaded cable connections must remain sealed with the plugs provided by the manufacturer.

- The connection line is to be placed in such a way that it can under no circumstances come into contact with the pipe and/or the pump and motor housing.
- When pumps are used in systems with water temperatures above 90 °C, a suitably heat-resistant connection line must be used.
- This pump is equipped with a frequency converter and may not be protected by a residual-current-operated protection circuit. Frequency converters can impair the function of residual-current-operated protection circuits.

  Exception: residual-current-operated protection circuits which have a selective type B universal-current-sensitive design are allowed.
- Labelling: RCD
- Trigger current: > 30 mA
- Check the current type and voltage of the mains connection.
- Observe the name plate information for the pump. The current type and voltage of the mains connection must correspond to the details on the name plate.
- Mains side fuse protection: max. permissible 25 A
- Take additional earthing into account!
- The use of a miniature circuit breaker is recommended.

NOTE
Miniature circuit breaker tripping characteristic: B
- Overload: 1.13-1.45 x $I_{nominal}$
- Short circuit: 3-5 x $I_{nominal}$

Terminals

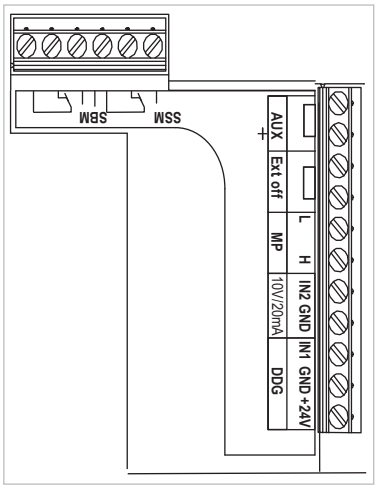


Fig. 19: Control terminals

- Control terminal (Fig. 19)
  (See following table for assignment)

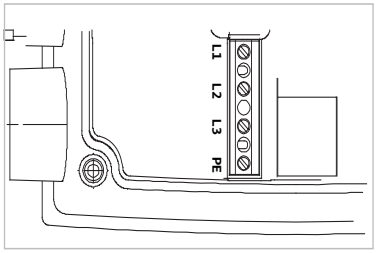


Fig. 20: Mains connection terminals

- Mains connection terminals (Fig. 20)
  (See following table for assignment)

Connection terminal allocation

Designation	Assignment	Notes
L1, L2, L3	Mains connection voltage	3~380 V AC – 3~440 V AC, 50/60 Hz, IEC 38
PE	Protective conductor connection	
IN1 (1) (input)	Actual value input	Type of signal: Voltage (0–10 V, 2–10 V) Input resistance: $R_i \geq 10$ kΩ Type of signal: Current (0–20 mA, 4–20 mA) Input resistance: $R_i = 500$ Ω Can be configured in the service menu <5.3.0.0> Connected at the factory via the M12 threaded connection (Fig. 2), via (1), (2), (3) according to the sensor cable designations (1,2,3).
IN (input)	Setpoint input	IN can be used as the input for remote setpoint adjustment in all operating modes. Type of signal: Voltage (0–10 V, 2–10 V) Input resistance: $R_i \geq 10$ kΩ Type of signal: Current (0–20 mA, 4–20 mA) Input resistance: $R_i = 500$ Ω Can be configured in the service menu <5.4.0.0>
GND (2)	Earth connections	For both input IN1 and IN2
+ 24 V (3) (output)	DC voltage for an ext. consumer/ sensor	Max. load 60 mA. The voltage is short-circuit proof.
AUX	External pump cycling	Can be configured in the service menu <5.1.3.2> The AUX terminal responds to the presence of an impulse. One-time bridging of the two terminals will cause external pumping to take place, if it is enabled. Bridging a second time will cause the procedure to repeat, provided the minimum run time is adhered to.
MP	Multi Pump	Interface for dual pump function
Ext. Off	Control input “Overriding Off” for external, potential-free switch	The pump can be switched on/off via an external potential-free contact. In systems with a high switching frequency (> 20 on/off operations per day), switching on/off must take place via “Ext. Off”. Can be configured in the service menu <5.1.7.0> Contact load: 24 V DC/10 mA
SBM	Individual run signal/collective run signal, readiness signal and mains On signal	Potential-free individual run signal/collective run signal (changeover contact), operation readiness signal is available at the SBM terminals (menus <5.1.6.0>, <5.7.6.0>).
	Contact load:	Minimum permitted: 12 V DC, 10 mA Maximum permitted: 250 V AC, 1 A
SSM	Individual/collective fault signal	Potential-free single/collective fault signal (changeover contact) is available at the SSM terminals (menu <5.1.5.0>).
	Contact load:	Minimum permitted: 12 V DC, 10 mA Maximum permitted: 250 V AC, 1 A
Interface for IF-Module	Connection terminals of the serial digital BA interface	The optional IF-Module is pushed into the multi-plug in the terminal box. The connection is twist-proof.

NOTE
The terminals IN1, IN2, AUX, GND, Ext. Off and MP meet the requirement for “safe isolation” (in acc. with EN61800-5-) to the mains terminals, as well as to the SBM and SSM terminals (and vice versa).

Differential pressure sensor connection

Cable	Colour	Terminal	Function
1	black	IN1	Signal
2	blue	GND	Earth
3	brown	+24 V	+24 V

NOTE
For double pumps or Y-pipe installation, connect the differential pressure sensor on the “master”.
The measuring points of the differential pressure sensor of the master pump must be on the suction and pressure side of the double-pump system in the respective collector pipe.

Procedure

- Establish connections observing the terminal allocation.
- Earth the pump/installation according to regulations.

8 Operation

8.1 Operating elements

The electronics module is operated using the following operating elements:

The red button

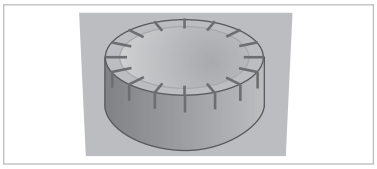


Fig. 21: The red button

The red button (Fig. 21) can be turned to select menu elements and used to change values. Pressing the red button activates a selected menu element and confirms values.

DIP switch

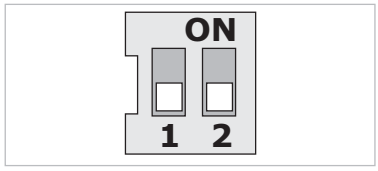


Fig. 22: DIP switch

The DIP switches (Fig. 9, Item 6/Fig. 22) are located under the housing cover.

- Switch 1 is for switching between the standard and service mode.
  For additional information, see Section 8.6.6 “Activating/deactivating service mode” on page 73.
- Switch 2 allows activations or deactivation of the access disable feature.
  For additional information, see Section 8.6.7 “Activating/deactivating access disable” on page 73.

8.2 Display structure

Information appears on the display as shown in the sample illustration below:

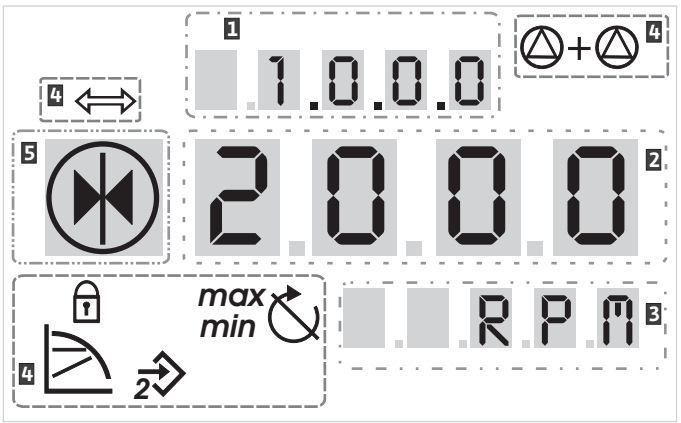


Fig. 23: Display structure

Item no.	Description	Item no.	Description
1	Menu number	4	Standard symbols
2	Value display	5	Symbol display
3	Units display		

NOTE
The display can be rotated by 180°. To change, see menu number <5.7.1.0 >.

8.3 Explanation of standard symbols

The following symbols are shown on the display at the positions shown above:

Symbol	Description	Symbol	Description
	Constant speed control	min	Min operation
	Constant control Δp-c or PID control	max	Max. operation
	Variable control Δp-v		Pump is running
	Input IN2 (external setpoint) activated		Pump stopped
	Access disable		Pump running in emergency operation
	BMS (**B**uilding **M**anagement **S**ystem) is active		Pump stopped in emergency operation
	DP/MP operating mode: Parallel operation		DP/MP operating mode: Main/reserve

8.4 Symbols in graphics/instructions

Section 8.6 “Operating instructions” on page 70 contains graphics that illustrate the operating concept and provide instructions for configuring settings.

In the graphics and instructions, the following symbols are used as simple representations of menu elements or actions:

Menu elements

- **Menu status page**: Standard view on the display.
- **“One level down”:** A menu element that can be used to jump to a lower menu level (e.g. <4.1.0.0> to <4.1.1.0>).
- **“Information”**: A menu element that shows information about the device status or settings that cannot be changed.
- **“Selection/setting”**: A menu element that provides access to a changeable setting (element with menu number <X.X.X.0>).

“One level up”: A menu element that can be used to jump to a higher menu level (e.g. <4.1.0.0> to <4.1.1.0>).

Menu error page: In the event of an error, the current error number is displayed instead of the status page.

Actions

- **Turn red button**: Turn the red button or increase or decrease settings or menu numbers.
- **Press red button**: Press the red button to activate a menu element or confirm a change.
- **Navigate**: Perform the steps that follow to navigate in the menu to the displayed menu number.
- **Wait time:** The remaining time (in seconds) is displayed on the value display until the next state is reached automatically or manual input can be made.
- **Set DIP switch to the OFF position**: Set the DIP switch number “X” under the housing cover to the OFF position.
- **Set DIP switch to the ON position**: Set the DIP switch number “X” under the housing cover to the OFF position.

8.5 Display modes

Display test

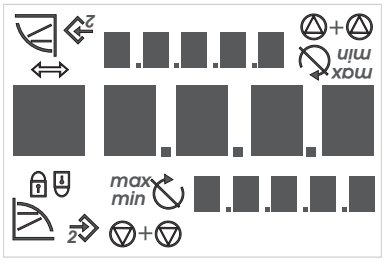


Fig. 24: Display test

As soon as the power supply of the electronic module has been established, a two-second display test is carried out, during which all characters on the display are shown (Fig. 24). Afterwards the status page is displayed.

After interruption of the power supply, the module carries out various shut-off functions. The display will be shown for the duration of this process.

DANGER! Risk of fatal injury!
There can be electrical charges present in the display even if is switched off.

- **Observe general safety instructions!**

8.5.1 Display status page

The standard view on the display is the status page. The current setpoint is displayed in the number segments. Other settings are displayed using symbols.

NOTE
For dual pump operation, the operating mode is also shown in symbol format on the status page (“Parallel operation” or “Main/reserve”). The display of the slave pump shows “SL”.

8.5.2 Display menu mode

The electronic module functions can be called via the menu structure. The menu contains sub-menus on several levels.

The current menu level can be changed using “One level up” or “One level down” menu items, for example, to change from menu <4.1.0.0.> to <4.1.1.0>.

The menu structure is similar to structure of the chapters and sections in these operating instructions: Section 8.5(.0.0) contains subsections 8.5.1(.0) and 8.5.2(.0); in the electronics module, menu <5.3.0.0> contains menu sub-items <5.3.1.0> to <5.3.3.0>, etc.

The currently selected menu element can be identified by the menu number on the display and the associated symbol.

Within a menu level, menu numbers can be selected sequentially by turning the red button.

NOTE
If the red button is not operated for 30 seconds at any position in menu mode, the display returns to the status page.

Every menu level can contain four different element types:

“One level down” menu element

The “One level down” menu element is indicated on the display by the symbol shown here (arrow on the units display). If a “One level down” menu element is selected, pressing the red button causes a change to the next menu level down. On the display, the new menu level is indicated by a menu number that has increased by one digit as a result of the change; for example, menu <4.1.0.0> changes to menu <4.1.1.0>.

“Information” menu element

The “Information” menu element is marked on the display by the symbol shown here (standard symbol for “access disable”). If an “Information” menu element is selected, pressing the red button has no effect. When an “Information” menu element is selected, current settings or measurements that cannot be changed by the user are displayed.

“One level up” menu element

The “One level up” menu element is indicated on the display by the symbol shown here (arrow on the symbol display). If a “One level up” menu element is selected, briefly pressing the red button causes a change to the next higher menu level. On the display, the new menu level is indicated by the menu number. For example, moving up from menu level <4.1.5.0> causes the menu number to jump to <4.1.0.0>.

NOTE
If the red button is pressed for two seconds while a “One level up” menu element is selected, the display jumps back to the status page.

“Selection/setting” menu element

The “Selection/setting” menu element does not have a special label on the display, but is identified graphically in these instructions by the adjacent symbol.

If a “Selection/setting” menu element is selected, pressing the red button will change to edit mode. In edit mode, flashing values can be changed by turning the red button.

In some menus, acceptance of the input by pressing the red button will be confirmed by the brief display of the “OK” symbol.

8.5.3 Display error page

If an error occurs, the error page will be shown on the display rather than the status page. The value display shows the letter “E” and the three-digit error code separated by a decimal point (Fig. 25).

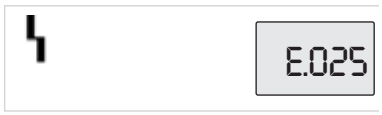


Fig. 25: Error page
(status in the event of an error)

8.5.4 Menu groups

Basic menu

Basic settings are shown in the main menus <1.0.0.0>, <2.0.0.0> and <3.0.0.0>, which provide access to set values that may have to be changed during regular pump operation.

Info menu

The main menu <4.0.0.0> and its sub-menu elements show measuring data, device data, operating data and current states.

Service menu

The main menu <5.0.0.0> and its sub-menu elements provide access to basic system settings for commissioning. The sub-elements are in a write-protected mode as long as service mode is not activated.

Caution – material damage!
Improper setting changes can lead to pump operation errors, which can lead to material damage to the pump or system.

- **Settings in service mode should only be made during commissioning and only by qualified personnel.**

Error acknowledgement menu

In the event of an error, the error page is displayed instead of the status page. Pressing the red button from this position opens the error acknowledgement menu (menu number <6.0.0.0>). Any fault signals present can be acknowledged after a waiting period.

Caution – material damage!

Errors which are acknowledged without their cause having been remedied can result in repeated faults, which could lead to material damage to the pump or system.

- **Only acknowledge errors after they have been remedied.**
- **Allow faults to be remedied by qualified personnel only.**
- **If in doubt, consult the manufacturer.**

For additional information, see Chapter 11 “Faults, causes and remedies” on page 86 and the error table shown there.

Access disable menu

The main menu <7.0.0.0> is only displayed when DIP switch 2 is in the ON position. It cannot be reached via normal navigation.

In the “Access disable” menu, the access disable can be activated or deactivated by turning the red button. The change is confirmed by pressing the red button.

8.6 Operating instructions

8.6.1 Adjusting the setpoint

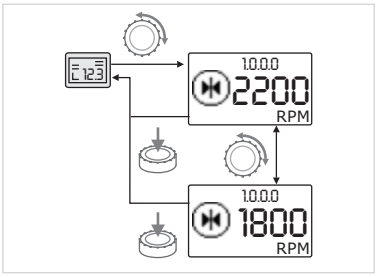


Fig. 26: Entering the setpoint

On the status page of the display, the setpoint can be adjusted as follows (Fig. 26):

- Turn the red button.

  The display changes to menu number <1.0.0.0>. The setpoint begins to flash and is increased or decreased by continuing to turn.
- To confirm the change, press the red button.

  The new setpoint will be accepted and the display will return to the status page.

8.6.2 Changing to menu mode

To change to menu mode, proceed as follows:

- While the display is showing the status page, press the red button for 2 seconds (except in case of an error).

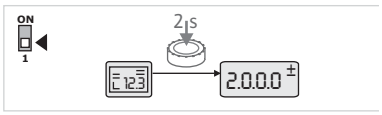


Fig. 27: Standard menu mode

Standard behaviour:
The display changes to menu mode. Menu number <2.0.0.0> is displayed (Fig. 27).

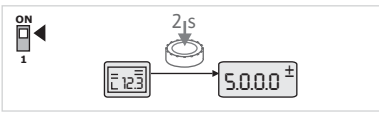


Fig. 28: Service menu mode

Service mode:
If service mode is activated via DIP switch 1 menu number <5.0.0.0> is displayed first (Fig. 28).

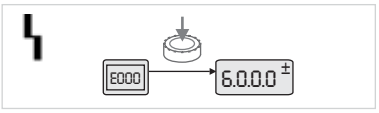


Fig. 29: Error case menu mode

Error case:
In case of error, menu number <6.0.0.0> is displayed (Fig. 29).

8.6.3 Navigation

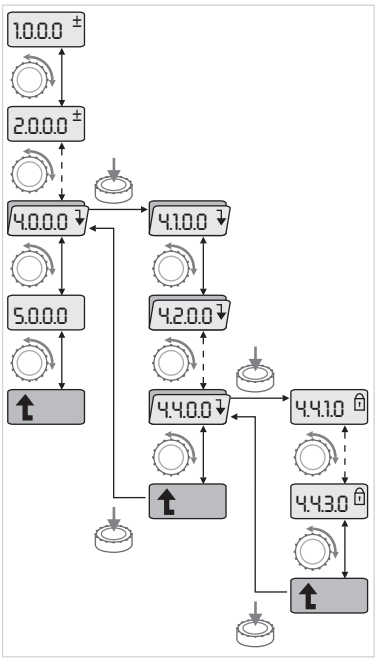


Fig. 30: Navigation example

- Change to menu mode (see 8.6.2 “Changing to menu mode” on page 71).

Carry out general menu navigation as follows (for an example, see Fig. 30):

During navigation, the menu number flashes.

- To select the menu element, turn the red button.

  The menu number is incremented up or down. The symbol associated with the menu element and the setpoint or actual value are shown, if applicable.
- If the downward pointing arrow for “One level down” is shown, press the red button to change to the next level down. On the display, the new menu level is indicated by the menu number, for example, <4.4.0.0> changes to <4.4.1.0>.

  The symbol for the menu element and/or the current value (setpoint, actual value or selection) is shown.
- To return to the next higher menu level, select the “One level up” menu element and press the red button.

  On the display, the new menu level is indicated by the menu number, for example, <4.4.0.0> changes to <4.4.1.0>.

NOTE
If the red button is pressed for two seconds while a “One level up” menu element is selected, the display jumps back to the status page.

8.6.4 Changing selection/settings

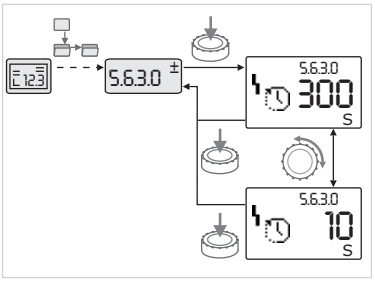


Fig. 31: Setting with return to the "Selection/settings" menu element

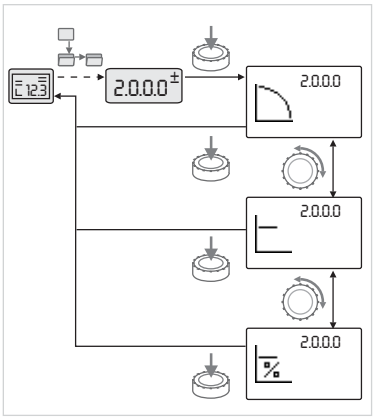


Fig. 32: Setting with return to the status page

To change a setpoint or a setting, generally proceed as follows (for an example, see Fig. 31):

- Navigate to the desired "Selection/settings" menu element.

  The current value or state of the setting and the associated symbol are displayed.
- Press the red button. The symbol representing the setpoint or the setting flashes.
- Turn the red button until the desired setpoint or setting is displayed. For an explanation of the settings represented by the symbols, see the table in Section 8.7 "Menu elements reference" on page 74.
- Press the red button again.

  The selected setpoint or setting is confirmed, and the value or symbol stops flashing. The display is back in menu mode with the menu number unchanged. The menu number flashes.

NOTE
When values are changed under <1.0.0.0>, <2.0.0.0> and <3.0.0.0>, <5.7.7.0> and <6.0.0.0>, the display jumps back to the status page (Fig. 32).

8.6.5 Calling up information

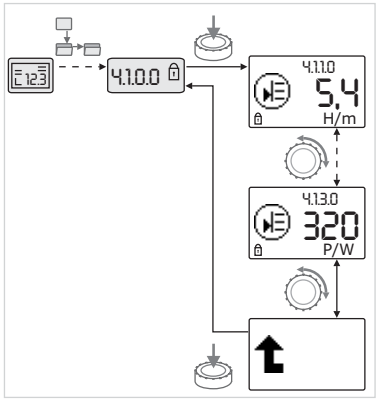


Fig. 33: Calling up information

Changes cannot be made in "Information" menu elements. These are identified on the display by the default "access disable" symbol. To call up current settings, proceed as follows:

- Navigate to the desired "Information" menu element (<4.1.1.0> in the example).

  The current value or state of the setting and the associated symbol are displayed. Pressing the red button has no effect.
- Turn the red button to access the "Information" menu elements in the current sub-menu (see Fig. 33). For an explanation of the settings represented by the symbols, see the table in Section 8.7 "Menu elements reference" on page 74.
- Turn the red button until the "One level up" menu element is displayed.
- Press the red button.

  The display returns to the next higher menu level (<4.1.0.0> here).

8.6.6 Activating/deactivating service mode

Additional settings can be made in service mode. The mode is activated or deactivated as follows.

Caution – material damage!
Improper setting changes can lead to pump operation errors, which can lead to material damage to the pump or system.

- **Settings in service mode should only be made during commissioning and only by qualified personnel.**

- Set DIP switch 1 to the ON position.

  Service mode is activated. The symbol shown here flashes on the status page.

The sub-elements of menu 5.0.0.0 switch from the “Information” element type to the “Selection/setting” element type, and the standard “access disable” symbol (see symbol) is hidden for the respective elements (except for <5.3.1.0>).

The values and settings for these elements can now be edited.

8.6.7 Activating/deactivating access disable

In order to prevent impermissible changes to the pump settings, all functions can be disabled.

When access is disabled, this is shown on the status page by the default “access disable” symbol.

To activate or deactivate this, proceed as follows:

- Set DIP switch 2 to the ON position.

  Menu <7.0.0.0> is displayed.

- Turn the red button to activate or deactivate the disable.

  The current state of the disable is represented on the symbol display by the symbols shown here.

- To confirm the change, press the red button.

  The new setpoint will be accepted and the display will return to the status page.

Disable active

No changes can be made to setpoints or settings. The read access to all menu elements remains as it was.

Disable inactive

The elements of the basic menu can be edited (menu elements <1.0.0.0>, <2.0.0.0> and <3.0.0.0>).

NOTE
To edit the sub-elements of menu <5.0.0.0>, service mode must also be activated.

- Reset DIP switch 2 to the OFF position.

  The display returns to the status page.

NOTE
Errors can be acknowledged after a waiting period despite the “access disable” being active.

8.7 Menu elements reference

The following table gives an overview of the available elements of all menu levels. The menu number and the element type are designated separately, and the function of the element is explained. If applicable, there is information about the setting options of the individual elements.

NOTE
A few elements are hidden under certain conditions and are therefore skipped in the menu navigation.

If, for example, the external setpoint adjustment under menu number <5.4.1.0> is set to “OFF”, the number <5.4.2.0> will be hidden. Menu number <5.4.2.0> will only be visible if menu number <5.4.1.0> has been set to “ON”.

The condition for hiding a menu element is explained in the last column of the table.

No.	Designation	Type	Symbol	Values/explanations	Display conditions
1.0.0.0	Setpoint	±		Setting/display of the setpoint (for further information, see Section 8.6.1 “Adjusting the setpoint” on page 70)	
2.0.0.0	Control mode	±		Setting/display of the control mode (for further information, see Sections 9.4 “Setting the control mode” on page 82 and 6.2 “Control modes” on page 55)	
				Constant speed control	
				Constant Δp-c control	
				Variable Δp-v control	
				PID control	
3.0.0.0	Pump on/off	±		ON Pump switched on	
				OFF Pump switched off	
4.0.0.0	Information			Information menus	
4.1.0.0	Actual values			Display of current actual values	
4.1.1.0	Actual values sensor (IN1)			Depending on current control mode Δp-c, Δp-v: Value H in mWs PID control: Value in %	Not displayed for manual control mode
4.1.2.0	Switching frequency		PWM	HIGH High switching frequency (factory setting)	The switching frequency can only be changed via the CAN bus or IR-PDA.
			PWM	LOW Low switching frequency	
4.1.3.0	Power			Current power input P_1 in watts	
4.2.0.0	Operating data			Display of operating data	

No.	Designation	Type	Symbol	Values/explanations	Display conditions
4.2.1.0	Operating hours			Sum of the pump's active hours of operation (meter can be reset by infrared interface)	
4.2.2.0	Consumption			Energy consumption in kWh/MWh	
4.2.3.0	Countdown, pump cycling			Time to pump cycling in h (at a resolution of 0.1 h)	Shown only for DP-MA and internal pump cycling Can be set in the service menu <5.1.3.0>
4.2.4.0	Remaining time until pump kick			Time until the next pump kick (after a pump has had a 24 h standstill (e.g. via Ext. Off), it will be automatically operated for 5 seconds)	
4.2.5.0	Mains On counter		123...	Number of switching-on procedures of the supply voltage (each occasion the supply voltage is established after an interruption is counted)	
4.2.6.0	Pump kick counter		123...	Number of pump kicks that have occurred	
4.3.0.0	States		ON OFF ON		
4.3.1.0	Base-load pump			The value display statically shows the identity of the regular base-load pump. The unit display statically shows the identity of the temporary regular base-load pump.	Only displayed in DP-MA mode
4.3.2.0	SSM			ON State of the SSM relay if there is no fault signal	
			MA		
			MA/SL		
				OFF State of the SSM relay if no fault signal is present	
			MA		
			MA/SL		
4.3.3.0	SBM			ON State of the SBM relay if a readiness/operation or mains On signal is present	
				OFF State of the SBM relay if no readiness/operation or mains On signal is present	

No.	Designation	Type	Symbol	Values/explanations	Display conditions
			  	SBM Operating message	
			  	SBM Readiness signal	
				SBM Mains On signal	
4.3.4.0	Ext. Off		  	Signal present at the input “Ext. Off”	
			  	OPEN Pump is switched off	
			  	SHUT Pump is enabled for operation	
4.3.5.0	BMS protocol type			PLR protocol	Only displayed when BMS is active
				LON field bus system	Only displayed when BMS is active
				CAN field bus system	Only displayed when BMS is active
				Gateway protocol	Only displayed when BMS is active
4.4.0.0	Device data			Displays device data	
4.4.1.0	Pump name			Example: IP-E 40/160-4/2 (display in ticker format)	Only the basic pump model appears on the display; version names are not shown.
4.4.2.0	Software version, user controller			Shows the user controller software version	

No.	Designation	Type	Symbol	Values/explanations	Display conditions
4.4.3.0	Motor controller software version			Shows the motor controller software version	
5.0.0.0	Service			Service menus	
5.1.0.0	Multi pump			Double pump	Only displayed when DP is active (incl. sub-menus)
5.1.1.0	Operating mode	±		Main/standby mode	Only displayed in DP-MA mode
				Parallel operation	Only displayed in DP-MA mode
5.1.2.0	Setting, MA/SL	±		Manual converting from master to slave mode	Only displayed in DP-MA mode
5.1.3.0	Pump cycling				Only displayed in DP-MA mode
5.1.3.1	Manual pump cycling	±		Carries out pump cycling independent of the countdown	Only displayed in DP-MA mode
5.1.3.2	Internal/external	±		Internal pump cycling	Only displayed in DP-MA mode
				External pump cycling	Only displayed in DP-MA mode, see “AUX” terminal
5.1.3.3	Internal: time interval	±		Can be set between 8 hours and 36 hours in 4-hour increments	Displayed when internal pump cycling is activated
5.1.4.0	Pump enabled/ disabled	±		Pump enabled	
				Pump disabled	
5.1.5.0	SSM	±		Individual fault signal	Only displayed in DP-MA mode
				Collective fault signal	Only displayed in DP-MA mode
5.1.6.0	SBM	±		Individual readiness signal	Only displayed for DP-MA and SBM readiness/operation function
				Individual run signal	Only displayed in DP-MA mode
				Collective readiness signal	Only displayed in DP-MA mode
				Collective run signal	Only displayed in DP-MA mode
5.1.7.0	External Off	±		Individual external Off	Only displayed in DP-MA mode
				Collective external Off	Only displayed in DP-MA mode
5.2.0.0	BMS			Settings for Building Management System (BMS) - building automation	Incl. all sub-menus, only displayed when BMS is active
5.2.1.0	LON wink/service	±		The wink function permits the identification of a device in the LON network. A “wink” is executed by confirmation.	Only displayed in LON operation
5.2.2.0	Local/remote operation	±		BMS local operation	

No.	Designation	Type	Symbol	Values/explanations	Display conditions
				BMS remote operation	
5.3.0.0	IN1 (sensor input)			Settings for sensor input 1	Not displayed in the manual control mode (incl. all sub-menus)
5.3.1.0	IN1 (sensor value range)			Display of sensor value range 1	Not displayed with PID control
5.3.2.0	IN1 (value range)			Setting of the value range Possible values: 0...10 V/2...10 V/ 0...20 mA/4...20 mA	
5.4.0.0	IN2			Setting for external setpoint input 2	
5.4.1.0	IN2 active/inactive			ON External setpoint input 2 active	
				OFF External setpoint input 2 inactive	
5.4.2.0	IN2 (value range)			Setting of the value range Possible values: 0...10 V/ 2...10 V/0...20 mA/4...20 mA	Not displayed when IN2 = inactive
5.5.0.0	PID parameters			Settings for PID control	Only displayed when PID control is active (incl. all sub-menus)
5.5.1.0	P parameter			Setting of the proportional term of the control	
5.5.2.0	I parameter			Setting of the integral term of the control	
5.5.3.0	D parameter			Setting of the derivative term of the control	
5.6.0.0	Error			Settings for behaviour in case of error	
5.6.1.0	HV/AC			HV “heating” mode	
				AC “cooling/air-conditioning” mode	
5.6.2.0	Emergency operation speed			Display of emergency operation speed	
5.6.3.0	Auto reset time			Time until automatic acknowl-edgement of an error	
5.7.0.0	Other settings				
5.7.1.0	Display orientation			Display orientation	
				Display orientation	
5.7.2.0	Pressure value correction			When pressure value correction is enabled, the differential pres-sure deviation measured by the differential pressure sensor that is factory-fitted on the pump flange is taken into account and corrected.	Only displayed in Δp-c mode
				Pressure value correction Off	

No.	Designation	Type	Symbol	Values/explanations	Display conditions
				Pressure value correction On	
5.7.6.0	SBM function	±		Setting for behaviour of signals	
				SBM run signal	
				SBM readiness signal	
				SBM mains On signal	
5.7.7.0	Factory setting	±		OFF (default setting) Settings are not changed by confirming.	Not displayed when “access disable” is active
				ON Confirming will reset the settings to factory settings. **Caution!** All manual settings will be lost.	Not displayed when “access disable” is active
6.0.0.0	Error acknowledgement	±		For additional information, see Section 11.3 “Acknowledging errors” on page 88.	Only displayed if an error is present
7.0.0.0	Access disable	±		“Access disable” inactive (changes possible) (for further information, see 8.6.7 “Activating/deactivating access disable” on page 73)	
				“Access disable” active (no changes possible) (for further information, see 8.6.7 “Activating/deactivating access disable” on page 73)	

9 Commissioning

Preparation

Before commissioning, the pump and module must be at ambient temperature.

9.1 Priming and bleeding

- Prime and bleed the system following the proper procedures.

CAUTION! Damage to the pump!
Dry running will destroy the mechanical seal.

- **Make sure that the pump does not run dry.**
- To avoid cavitation noise and damage, a minimum intake pressure must be guaranteed at the suction port of the pump. This minimum intake pressure depends on the operating situation and the duty point of the pump, and must be defined accordingly.
- The main parameters for defining the minimum intake pressure are the NPSH of the pump at its duty point and the vapour pressure of the fluid.
- Bleed the pumps by releasing the bleed valves (Fig. 34, Item 1). Dry running destroys the mechanical seal of the pump. The differential pressure sensor must not be bled (risk of destruction).

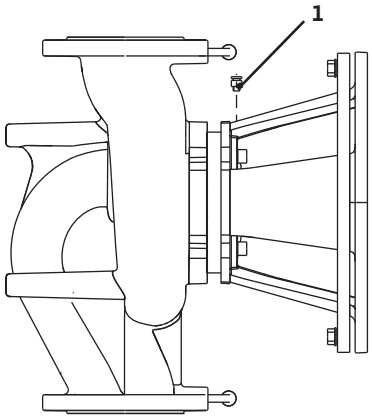


Fig. 34: Bleed valve

WARNING! Danger due to extremely hot or extremely cold pressurised fluid!
Depending on the temperature of the fluid and the system pressure, when the vent screw is opened completely, extremely hot or extremely cold fluid in liquid or vapour form may escape or shoot out at high pressure.

- **Always exercise caution when opening the vent screw.**
- **Protect the module box from any water escaping when bleeding.**

WARNING! Risk of burns or freezing to the pump when body parts come into contact with the pump!
Depending on the pump or system operating conditions (fluid temperature), the entire pump can become very hot or very cold.

- **Keep a safe distance during operation!**
- **Allow the pump/system to cool off/warm up before performing any work.**
- **Always wear protective clothing and gloves when working.**

WARNING! Risk of injury!
If the pump/system is installed improperly, liquid may be ejected during commissioning. Individual components may also become loose.

- **Keep a safe distance from the pump during commissioning.**
- **Wear protective clothing and gloves.**

DANGER! Risk of fatal injury!
Falling pumps or pump parts may result in life-threatening injuries.

- **When performing installation work, protect the pump components against falling.**

9.2 Double pump installation

NOTE:

For DP-E pumps, the left-hand pump in the direction of flow is already factory-configured as the master pump.

For the initial commissioning of a double pump or Y-pump installation that is not preconfigured, both pumps are set to their factory setting. After connecting the double pump communication cable, the fault code “E035” is displayed. Both drives run at the emergency operation speed.

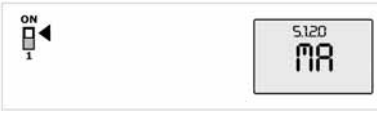


Fig. 35: Setting the master pump

On acknowledgement of the fault signal, menu <5.1.2.0> is displayed and “MA” (= master) flashes. In order to acknowledge “MA”, “access disable” must be deactivated and service mode must be active (Fig. 35).

Both pumps are set to “master” and “MA” flashes on the displays of both electronic modules.

- Acknowledge one of the two pumps as master pump by pressing the red button. The status “MA” appears on the display of the master pump. The differential pressure sensor must be connected on the master.
  The measuring points of the differential pressure sensor of the master pump must be on the suction and pressure side of the double-pump system in the respective collector pipe.

  The other pump will then display the status “SL” (= slave).

  All further pump settings must now be made via the master only.

NOTE:
The procedure can be manually started later by selecting the menu <5.1.2.0>.
(For information about navigation in the service menu, see 8.6.3 “Navigation” on page 71).

9.3 Setting the pump output

- The system was designed for a certain duty point (full load point, calculated maximum heating capacity requirement). During commissioning, the pump output (delivery head) must be set according to the duty point of the system.
- The factory setting does not correspond to the output required for the system. It is determined with the help of the pump curve diagram for the selected pump type (from catalogue/data sheet).

NOTE:
The flow value shown on the IR-Monitor/IR-PDA display or output to the building management system must not be used to control the pump. This value is merely an indicator of general trends.

A flow value is not output on every type of pump.

CAUTION! Material damage!

If the volume flow is too low, this may damage the mechanical seal.

- **Make sure that the volume flow does not go below the minimum value Q_{min}.**
  Calculation of Q_{min}:

$$Q_{min} = 10\% \times Q_{max\ pump} \times \frac{\text{actual speed}}{\text{max. speed}}$$

9.4 Setting the control mode

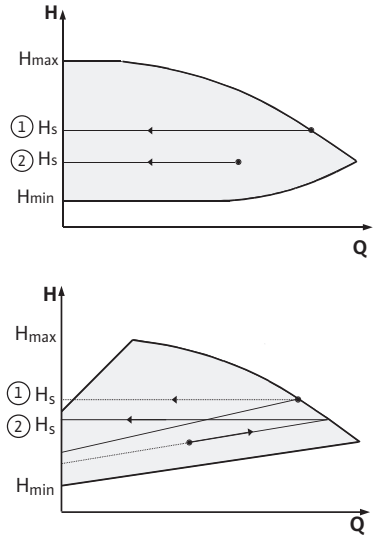


Fig. 36: Δp-c/Δp-v control

Δp-c/Δp-v control:

	Setting (Fig. 36)	Δp-c	Δp-v
①	Duty point on maximum pump curve	Starting at the duty point, draw towards the left. Read off setpoint H_S and set the pump to this value.	Starting at the duty point, draw towards the left. Read off setpoint H_S and set the pump to this value.
②	Duty point within the control range	Starting at the duty point, draw towards the left. Read off setpoint H_S and set the pump to this value.	Move to max. pump curve along control curve, then horizontally to the left, read off setpoint H_S and set the pump to this value.
	Setting range	H_{min}, H_{max} see pump curves (in catalogue, select or online)	H_{min}, H_{max} see pump curves (in catalogue, select or online)

NOTE:
Alternatively, manual control mode (Fig. 37) or PID operating mode can also be set.

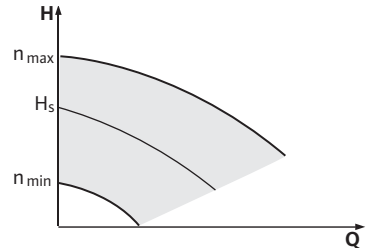


Fig. 37: Manual control mode

Manual control mode:

"Manual control" mode deactivates all other control modes. The speed of the pump is kept to a constant value and set using the rotary knob.

The speed range is dependent on the motor.

PID controller

The PID controller in the pump is a standard PID controller, as described in control engineering literature. The controller compares a measured process value to a predefined setpoint and attempts to adjust the process value to match the setpoint as closely as possible. Provided appropriate sensors are used, a variety of control systems (including pressure, differential pressure, temperature and flow control) can be realised. When selecting a sensor, keep in mind the electrical values presented in the table titled "Connection terminal allocation" on page 65.

The control behaviour can be optimised by adjusting the P, I and D parameters. The P (or proportional) term of the controller contributes a linear gain of the deviation between the process (actual) value and the setpoint to the controller output. The sign of the P term determines the controller's direction of action.

The I (or integral) term of the controller provides integral control based on the system deviation. A constant deviation results in a linear increase at the controller output. Hence a continuous system deviation is avoided.

The D (or derivative) term responds directly to the rate of change of the system deviation. This affects the rate at which the system responds. In the factory settings, the D term is set to zero, since this is an appropriate setting for a number of applications.

These parameters should only be changed in small increments, and the effects on the system should be monitored continuously. Parameter values should only be tuned by someone with training in control engineering.

Controller term	Factory setting	Setting range	Increment
P	0.5	–30.0...–2.0 –1.99...–0.01 0.00 ... 1.99 2.0 ... 30.0	0.1 0.01 0.01 0.1
I	0.5 s	10 ms ... 990 ms 1 s ... 300 s	10 ms 1 s
D	0 s (= deactivated)	0 ms ... 990 ms 1 s ... 300 s	10 ms 1 s

The direction of action of the controller is determined by the sign of the P term.

Positive PID control (default):

If the sign of the P term is positive and the process value drops below the setpoint, the control will increase the pump speed until the setpoint has been reached.

Negative PID control:

If the sign of the P term is negative and the process value drops below the setpoint, the control will decrease the pump speed until the setpoint has been reached.

NOTE:
Check the controller's direction of action if PID control is being used, but the pump is only running at minimum or maximum speed without responding to changes in the parameter values.

10 Maintenance

Safety

Maintenance and repair may only be carried out by qualified personnel!

It is recommended to have the pump serviced and checked by Wilo-Customer Service.

DANGER! Risk of fatal injury!
There is risk of fatal injury due to electrical shock when working on electrical equipment.

- **Work on electrical equipment may only be done by electricians approved by the local electricity supplier.**
- **Before working on electrical equipment, switch it off and secure it against being switched on again.**
- **Never use an object to poke around the openings on the module and never insert anything into the module!**
- **Follow the installation and operating instructions for the pump, level control device and other accessories.**

DANGER! Risk of fatal injury!
Failure to install safety devices on the module cover or near the coupling can cause electrical shock or contact with rotating parts, potentially resulting in life-threatening injuries.

- **After maintenance, all safety devices such as module covers or coupling covers that were removed must be reinstalled!**

DANGER! Risk of burns or freezing to the pump when body parts come into contact with the pump!
Depending on the pump or system operating conditions (fluid temperature), the entire pump can become very hot or very cold.

- **Keep a safe distance during operation!**
- **In the case of high water temperatures and system pressures, allow the pump to cool down before all work.**
- **Always wear protective clothing and gloves when working.**

10.1 Air supply

The air supply to the motor housing must be checked at regular intervals. In case of contamination, ensure that an air supply is re-established in order to allow the both the motor and the module to cool sufficiently.

10.2 Maintenance work

DANGER! Risk of fatal injury!
Falling pumps or pump parts may result in life-threatening injuries.

- **When performing installation work, protect the pump components against falling.**

10.2.1 Replacing the mechanical seal

During the running-in period, a minor amount of dripping is to be expected. A visual inspection should be performed from time to time, however. If there is clearly detectable leakage, the seal must be changed.

Replacement

Dismantling:

- Disconnect the system from the power supply and secure it against being switched back on again
- Close the check valves in front of and behind the pump.
- Disconnect the power cables if the cable for dismantling the drive is too short.
- De-pressurise the pump by opening the bleed valve (Fig. 38, Item 1).

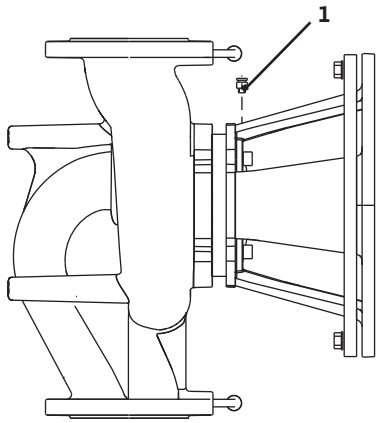


Fig. 38: Bleed valve

DANGER! Risk of scalding!
Due to high fluid temperatures there is a risk of scalding.

- **If the fluid is hot, allow it to cool down before performing any work.**
- Release the pressure measuring lines of the differential pressure sensor.
- Remove the motor with impeller and shaft seal from the pump housing by undoing the flange screws (Fig. 5, Item 4).
- Remove the circlip (Fig. 5, Item 1.12) from the shaft.
- Pull the impeller (Fig. 5, Item 1.11) off the shaft.

- Pull the spacing ring (Fig. 5, Item 1.22) off the shaft.
- Pull the mechanical seal (Fig. 5, Item 1.21) off the shaft.
- Push the counter ring of the mechanical seal out of seating in the motor flange and the clean the seating surfaces.
- Clean the seating surfaces of the shaft carefully.

Installation:

- Insert the new counter ring.
- Push the new mechanical seal (Fig. 5, Item 1.21) onto the shaft.
- Push the spacing ring (Fig. 5, Item 1.22) onto the shaft.
- Mount the impeller (Fig. 5, Item 1.11) onto the shaft.
- Push the new circlip (Fig. 5, Item 1.12) onto the pump shaft. –
- Insert a new O-ring (Fig. 5, Item 1.13).
- Insert the motor with impeller and shaft seal into the pump housing and fasten using the flange screws (Fig. 5, Item 4).
- Install the pressure measuring lines of the differential pressure sensor.
- Connect the power cable.
- Open the check valves in front of and behind the pump.
- Reset the fuse.
- Observe the measures for commissioning (Section 9 “Commissioning” on page 80).

NOTE:
Observe the specified screw tightening torque for the thread type.

Screw tightening torque

Screw connection		Tightening torque Nm ±10 %	Installation instruction
Pump housing — Motor	M6 M10	10 35	Tighten evenly and diagonally
Control terminals		0.5	
Power terminals		0.5	
Cable clips		0.5	
Cover		0.8	

10.2.2 Changing the drive

Increased bearing noise and unusual vibrations are a sign of bearing wear. The bearing or motor must then be replaced. The drive may only be replaced by the Wilo customer service.

11 Faults, causes and remedies

Have faults remedied by qualified personnel only! Follow the safety instructions in Section 10 Maintenance.

- **If the malfunction cannot be rectified, consult a specialist technician or the nearest customer service or representative office.**

Fault displays

For faults, their causes and remedies, see the "Fault/warning message" flow diagram and the following tables. The first column of the table lists the code numbers displayed in the event of a fault.

NOTE:
If the cause of the fault no longer exists, some faults resolve themselves automatically.

Key

The following types of errors can occur with differing priorities (1 = lowest priority; 6 = highest priority):

Error type	Explanation	Priority
A	Permanent error	6
B	Permanent error on the 6th occurrence	5
C	Warning, after 5 min, transition to an error permanent error on the 6th occurrence	4
D	Like error type A, but error type A has a higher priority than error type D	3
E	Emergency operation: warning with emergency operation speed and activated SSM	2
F	Warning	1

11.1 Mechanical faults

Fault	Cause	Remedy
Pump does not start or stops working	Cable terminal loose	Check all cable connections
	Fuses defective	Check fuses; replace defective fuses
Pump is running at reduced output	Stop valve on pressure side throttled	Slowly open the stop valve
	Air in the suction line	Seal leaks at the flanges; bleed
Pump is making noise	Insufficient supply pressure	Increase supply pressure, observe minimum pressure at the suction port, check slide valve and filter on the suction side and clean if necessary
	Motor has bearing damage	Have the pump checked by Wilo customer service or a specialised service centre and serviced if necessary

11.2 Error table

Classification	No.	Error	Cause	Remedy	Error type	
					HV	AC
–	0	No error				
System errors	E004	Undervoltage	Mains overloaded	Check electrical installation	C	A
	E005	Overvoltage	Mains voltage too high	Check electrical installation	C	A
	E006	2-phase operation	Missing phase	Check electrical installation	C	A
	E007	Generator operation (flow in flow direction)	The flow is driving the pump impeller; electrical current is being fed back to the mains	Check the setting, check system for proper operation CAUTION! Prolonged operation can cause damage to the module	F	F
Pump errors	E010	Blocking	Shaft is mechanically blocked	If the blocking has not been removed after 10 s, the pump switches off; Check shaft for ease of movement Contact customer service	A	A
Motor errors	E020	Excess winding temperature	Motor overloaded	Allow motor to cool off, check settings, check/correct duty point	B	A
			Motor ventilation limited	Provide unobstructed air access		
			Water temperature too high	Lower water temperature		
	E021	Motor overload	Duty point outside of duty chart	Check/correct the duty point	B	A
			Deposits in the pump	Contact customer service		
	E023	Short circuit/earth leakage	Motor or module defective	Contact customer service	A	A
	E025	Faulty contact	Module has no contact to motor	Contact customer service	A	A
		Winding interrupted	Motor defective	Contact customer service		
	E026	WSK or PTC interrupted	Motor defective	Contact customer service	B	A
Module errors	E030	Excess module temperature	Limited air supply to module heat sink	Provide unobstructed air access	B	A
	E031	Excess hybrid/power section temperature	Ambient temperature too high	Improve room ventilation	B	A
	E032	Intermediate circuit undervoltage	Voltage fluctuations in the mains	Check electrical installation	F	D
	E033	Intermediate circuit overvoltage	Voltage fluctuations in the mains	Check electrical installation	F	D
	E035	DP/MP: multiple instances of same identity	Multiple instances of same identity	Reallocate master and/or slave (see Section 9.2 on page 81)	S	S
Communication errors	E050	BMS communication time-out	Bus communication interrupted or timed out Cable break	Check cable connection to building automation	F	F
	E051	Impermissible DP/MP combination	Different pumps	Contact customer service	F	F
	E052	DP/MP communication time-out	Cable MP communication defective	Check cable and cable connections	S	S
Electronics errors	E070	Internal communication error (SPI)	Internal electronics error	Contact customer service	A	A
	E071	EEPROM error	Internal electronics error	Contact customer service	A	A

Classification	No.	Error	Cause	Remedy	Error type	
					HV	AC
	E072	Power section/frequency converter	Internal electronics error	Contact customer service	A	A
	E075	Charging relay defective	Internal electronics error	Contact customer service	A	A
	E076	Internal transformer defective	Internal electronics error	Contact customer service	A	A
	E077	24 V operating voltage for sensor defective	Sensor defective or connected incorrectly	Check differential pressure sensor connection	A	A
	E096	Infobyte not set	Internal electronics error	Contact customer service	A	A
	E097	Flexpump data record missing	Internal electronics error	Contact customer service	A	A
	E098	Flexpump data record invalid	Internal electronics error	Contact customer service	A	A
Impermissible combinatorics	E099	Pump type	Different pump types have been interconnected	Contact customer service	A	A

11.3 Acknowledging errors

General

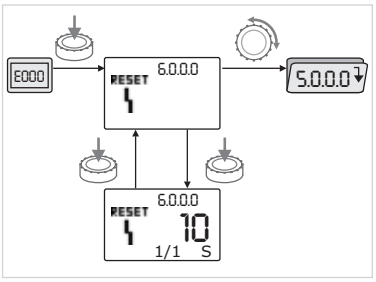


Fig. 39: Navigation in case of error

In the event of an error, the error page is displayed instead of the status page.

In this case, the following procedure can generally be used for navigation (Fig. 39):

- To change to menu mode, press the red button.

  Menu number <6.0.0.0> flashes on the display.

  By turning the red button, it is possible to navigate in the menu as usual.

- Press the red button.

  Menu number <6.0.0.0> appears steady on the display.

  On the units display, the current incidence (x) as well as the maximum incidence of the error (y) are displayed in the format “x/y”.

  Until the error can be acknowledged, pressing the red button again will cause a return to menu mode.

NOTE:
A 30-second time-out causes the display to revert to the status page or error page.

NOTE:
Every error number has its own error meter, which counts the incidence of the error within the last 24 hours and is reset after manual acknowledgement, 24-hour continuous “mains On” or a new “mains On”.

11.3.1 Error type A or D

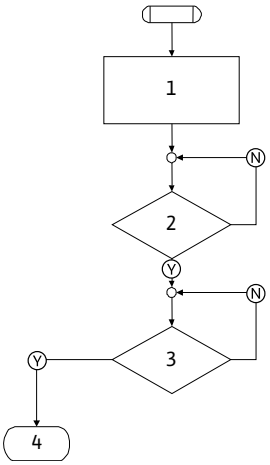


Fig. 40: Error type A, flowchart

Error type A (Fig. 40):

Program step/query	Contents
1	• Error code is displayed • Motor Off • Red LED On • SSM is activated • Error meter is incremented
2	> 1 minute?
3	Error acknowledged?
4	End; auto control resumes
Ⓨ	Yes
Ⓝ	No

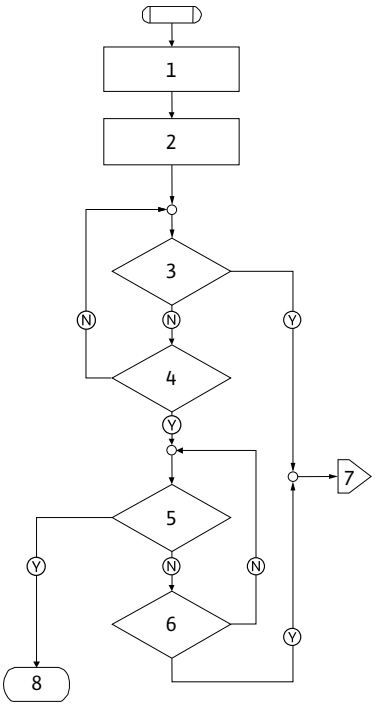


Fig. 41: Error type D, flowchart

Error type D (Fig. 41):

Program step/query	Contents
1	• Error code is displayed • Motor Off • Red LED On • SSM is activated
2	• Error meter is incremented
3	Is there a new type “A” error?
4	> 1 minute?
5	Error acknowledged?
6	Is there a new type “A” error?
7	Branch to error type “A”
8	End; auto control resumes
Ⓨ	Yes
Ⓝ	No

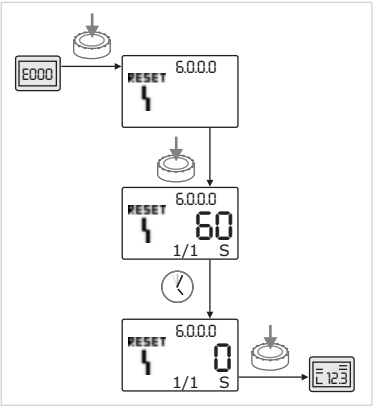


Fig. 42: Acknowledging error type A or D

If type A or D errors occur, proceed as follows to acknowledge (Fig. 42):

- To change to menu mode, press the red button.

  Menu number <6.0.0.0> flashes on the display.
- Press the red button again.

  Menu number <6.0.0.0> appears steady on the display.

  The time remaining until the error can be acknowledged is displayed.
- Wait until the remaining time is up.

  The time until manual acknowledgement is always 60 seconds for error types A and D.
- Press the red button again.

  The error is acknowledged, and the status page is displayed.

11.3.2 Error type B

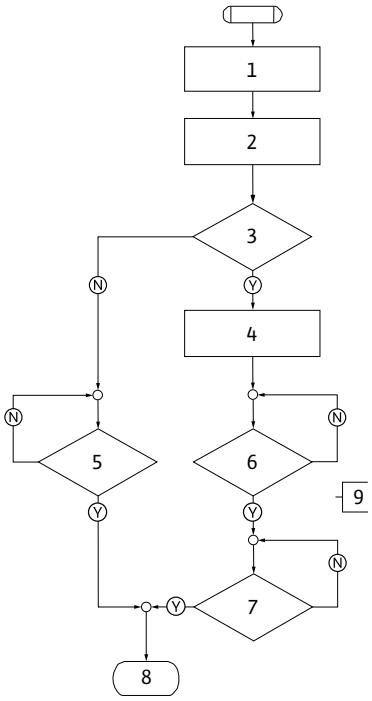


Fig. 43: Error type B, flowchart

Error type B (Fig. 43):

Program step/query	Contents
1	• Error code is displayed • Motor Off • Red LED On
2	• Error meter is incremented
3	Error meter > 5?
4	• SSM is activated
5	> 5 minutes?
6	> 5 minutes?
7	Error acknowledged?
8	End; auto control resumes
9	Error E021 > 1 minute
Ⓨ	Yes
Ⓝ	No

If type B errors occur, proceed as follows to acknowledge:

- To change to menu mode, press the red button.

  Menu number <6.0.0.0> flashes on the display.
- Press the red button again.

  Menu number <6.0.0.0> appears steady on the display.

  On the units display, the current incidence (x) as well as the maximum incidence of the error (y) are displayed in the format “x/y”.

Incidence X < Y

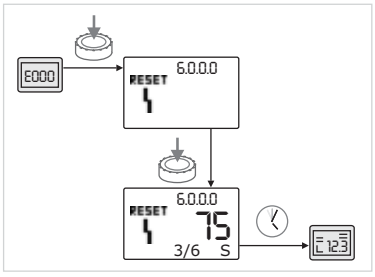


Fig. 44: Acknowledging error type B (X < Y)

If the current incidence of the error is less than the maximum incidence (Fig. 44):

- Wait until the auto reset time is over.

  On the value display, the remaining time until auto reset of the error is displayed in seconds.

  After the auto reset time has run out, the error will be automatically acknowledged and the status page will be displayed.

NOTE:
The auto reset time can be set on menu number <5.6.3.0>
(time input 10 to 300 s)

Incidence X = Y

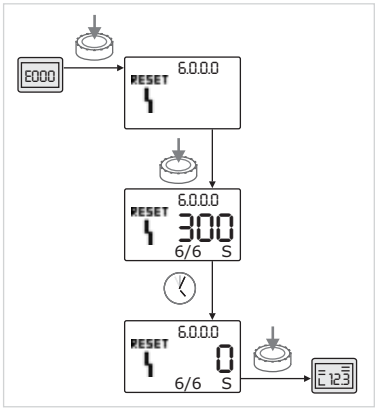


Fig. 45: Acknowledging error type B (X = Y)

If the current incidence of the error is equal to the maximum incidence (Fig. 45):

- Wait until the remaining time is up.

  The time until manual acknowledgement is always 300 seconds.

  On the value display, the remaining time until manual acknowledgement of the error is displayed in seconds.
- Press the red button again.

  The error is acknowledged, and the status page is displayed.

11.3.3 Error type C

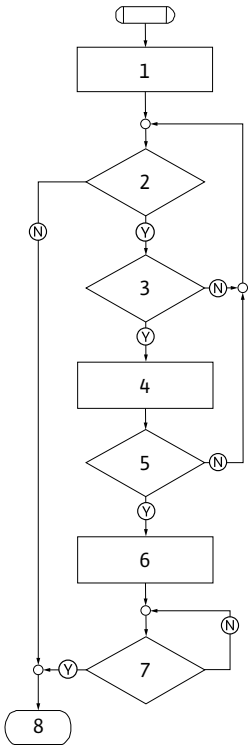


Fig. 46: Error type C, flowchart

Error type C (Fig. 46):

Program step/query	Contents
1	• Error code is displayed • Motor Off • Red LED On
2	Error criterion fulfilled?
3	> 5 minutes?
4	• Error meter is incremented
5	Error meter > 5?
6	• SSM is activated
7	Error acknowledged?
8	End; auto control resumes
Ⓨ	Yes
Ⓝ	No

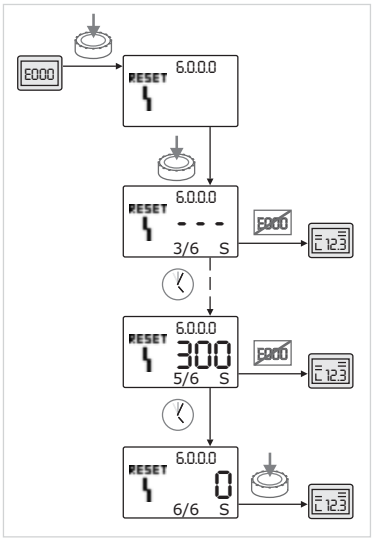


Fig. 47: Acknowledging error type C

If type C errors occur, proceed as follows to acknowledge (Fig. 47):

- To change to menu mode, press the red button.

  Menu number <6.0.0.0> flashes on the display.
- Press the red button again.

  Menu number <6.0.0.0> appears steady on the display.

  On the value display, "– – –" appears.

  On the units display, the current incidence (x) as well as the maximum incidence of the error (y) are displayed in the format "x/y".

  After 300 seconds, the current incidence will be counted up by one.

NOTE:
The error will be acknowledged automatically if the cause of the error is eliminated.

- Wait until the remaining time is up.

  If the current incidence (x) is the same as the maximum incidence of the error (y), this error can be acknowledged manually.
- Press the red button again.

  The error is acknowledged, and the status page is displayed.

11.3.4 Error type E or F

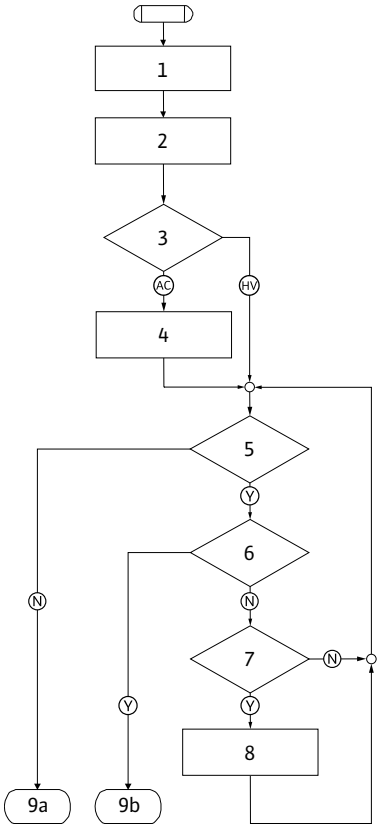


Fig. 48: Error type E, flowchart

Error type E (Fig. 48):

Program step/query	Contents
1	• Error code is displayed • Pump goes into emergency operation
2	• Error meter is incremented
3	Error matrix AC or HV?
4	• SSM is activated
5	Error criterion fulfilled?
6	Error acknowledged?
7	Error matrix HV and > 30 minutes?
8	• SSM is activated
9a	End; auto control (double pump) resumes
9b	End; auto control (single pump) resumes
Ⓨ	Yes
Ⓝ	No

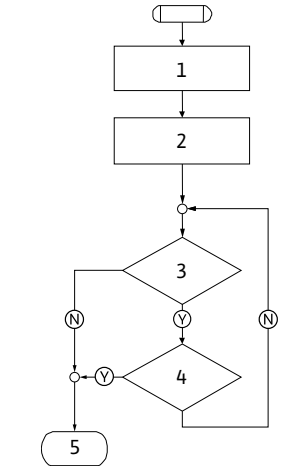


Fig. 49: Error type F, flowchart

Error type F (Fig. 49):

Program step/query	Contents
1	• Error code is displayed
2	• Error meter is incremented
3	Error criterion fulfilled?
4	Error acknowledged?
5	End; auto control resumes
Ⓨ	Yes
Ⓝ	No

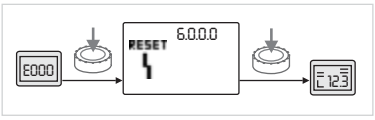


Fig. 50: Acknowledging error type E or F

If type E or F errors occur, proceed as follows to acknowledge (Fig. 50):

- To change to menu mode, press the red button.

  Menu number <6.0.0.0> flashes on the display.
- Press the red button again.

  The error is acknowledged, and the status page is displayed.

NOTE:
The error will be acknowledged automatically if the cause of the error is eliminated.

12 Spare parts

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

To avoid queries and incorrect orders, all data on the name plate should be submitted with each order.

CAUTION! Risk of material damage!
Trouble-free pump operation can only be guaranteed when original spare parts are used.

- **Only use original Wilo spare parts.**
- **Each component is identified in the table below.Information to be provided when ordering spare parts:**
  - **Spare part number**
  - **Name/description of the spare part**
  - **All data on the pump and motor name plate**

Spare parts table

See Figs. 5 for a labelled illustration of each component.

No.	Part	Details
1.1	Impeller (set)	
1.11		Impeller
1.12		Circlip
1.13		O-ring
1.2	Mechanical seal (set)	
1.12		Circlip
1.13		O-ring
1.21		Mechanical seal
1.22		Spacing ring
1.3	Motor	
3	Pump housing (set)	
1.13		O-ring
3.1		Pump housing
3.2		Screw plug (for R1)
3.3		Valve (for double pump)
6	Differential pressure sensor (set)	
7	Module (set)	
7.1		Module
7.3		Module over
7.4		Screws
7.5		Tooth lock washers
8.2	Bleed valve	

13 Disposal

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

Proper disposal requires the drainage and cleaning and the dismantling of the pump unit.

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

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

Technical information subject to change without prior notice!

D EG – Konformitätserklärung
GB EC – Declaration of conformity
F Déclaration de conformité CE

(gemäß 2006/42/EG Anhang II,1A und 2004/108/EG Anhang IV,2,
according 2006/42/EC annex II,1A and 2004/108/EC annex IV,2,
conforme 2006/42/CE appendice II,1A et 2004/108/CE l'annexe IV,2)

Hiermit erklären wir, dass die Bauart der Baureihe : **IP-E**
Herewith, we declare that this pump type of the series: **DP-E**
Par le présent, nous déclarons que le type de pompes de la série:
(Die Seriennummer ist auf dem Typenschild des Produktes angegeben./
The serial number is marked on the product site plate./ Le numéro de série est inscrit sur la plaque signalétique du produit.)

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

EG-Maschinenrichtlinie **2006/42/EG**
EC-Machinery directive
Directive CE relative aux machines
Die Schutzziele der Niederspannungsrichtlinie 2006/95/EG werden gemäß Anhang I, Nr. 1.5.1 der 2006/42/EG Maschinenrichtlinie eingehalten.
The protection objectives of the low-voltage directive 2006/95/EC are realized according annex I, No. 1.5.1 of the EC-Machinery directive 2006/42/EC.
Les objectifs de protection (sécurité) de la directive basse-tension 2006/95/CE sont respectés conformément à l'annexe I, n° 5.1 de la directive CE relatives aux machines 2006/42/CE.

Elektromagnetische Verträglichkeit - Richtlinie **2004/108/EG**
Electromagnetic compatibility - directive
Directive compatibilité électromagnétique

Richtlinie energieverbrauchsrelevanter Produkte **2009/125/EG**
Energy-related products - directive
Directive des produits liés à l'énergie
Die verwendeten 50Hz Induktionselektromotoren - Drehstrom, Käfigläufer, einstufig - entsprechen den Ökodesign - Anforderungen der Verordnung 640/2009 und der Verordnung 547/2012 von 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 50 Hz and of the regulation 547/2012 for water pumps.
Qui s'applique 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 50 Hz et, du règlement 547/2012 pour les pompes à eau.

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

angewendete harmonisierte Normen, insbesondere: **EN 809+A1**
as well as following harmonized standards: **EN 60034-1**
ainsi qu'aux normes (européennes) harmonisées suivantes: **EN 61800-3:2004**
EN 61800-5-1

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen ist:
Authorized representative for the completion of the technical documentation:
Personne autorisée à constituer le dossier technique est:

WILO SE
Division Pumps & Systems
PBU Pumps - Quality
Nortkirchenstraße 100
44263 Dortmund
Germany

Dortmund, 15. Januar 2013

ppa. H. Herchenhein

Holger Herchenhein
Group Quality Manager

wilo

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Nortkirchenstraße 100
44263 Dortmund
Germany

Document: 2117830.1

NL

EG-verklaring van overeenstemming

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

EG-richtlijnen betreffende machines 2006/42/EG

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

Elektromagnetische compatibiliteit 2004/108/EG

Richtlijn voor energieverbruiksrelevante producten 2009/125/EG

De gebruikte 50 Hz inductie-elektromotoren – draaistroom, kooianker, ééntraps – conform de ecodesign-vereisten van de verordening 640/2009.

Conform de ecodesign-vereisten van de verordening 547/2012 voor waterpompen.

gebruikte geharmoniseerde normen, in het bijzonder: zie vorige pagina

IT

Dichiarazione di conformità CE

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

Direttiva macchine 2006/42/EG

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

Compatibilità elettromagnetica 2004/108/EG

Direttiva relativa ai prodotti connessi all'energia 2009/125/CE

I motori elettrici a induzione utilizzati da 50 Hz – corrente trifase, motore a gabbia di scoiattolo, monostadio – soddisfano i requisiti di progettazione ecocompatibile del regolamento 640/2009.

Ai sensi dei requisiti di progettazione ecocompatibile del regolamento 547/2012 per le pompe per acqua.

norme armonizzate applicate, in particolare: vedi pagina precedente

ES

Declaración de conformidad CE

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

Directiva sobre máquinas 2006/42/EG

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

Directiva sobre compatibilidad electromagnética 2004/108/EG

Directiva 2009/125/CE relativa a los productos relacionados con el consumo de energía

Los motores eléctricos de inducción de 50 Hz utilizados (de corriente trifásica, rotores en jaula deardilla, motores de una etapa) cumplen los requisitos relativos al ecodiseño establecidos en el Reglamento 640/2009.

De conformidad con los requisitos relativos al ecodiseño del Reglamento 547/2012 para bombas hidráulicas.

normas armonizadas adoptadas, especialmente: véase página anterior

PT

Declaração de Conformidade CE

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

Directivas CEE relativas a máquinas 2006/42/EG

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

Compatibilidade electromagnética 2004/108/EG

Directiva relativa à criação de um quadro para definir os requisitos de concepção ecológica dos produtos relacionados com o consumo de energia 2009/125/CE

Os motores eléctricos de indução de 50 Hz utilizados – corrente trifásica, com rotor em curto-circuito, monocelular – cumprem os requisitos de concepção ecológica do Regulamento 640/2009.

Cumprem os requisitos de concepção ecológica do Regulamento 547/2012 para as bombas de água.

normas harmonizadas aplicadas, especialmente: ver página anterior

SV

CE- försäkran

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

EG–Maskindirektiv 2006/42/EG

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

EG–Elektromagnetisk kompatibilitet – riktlinje 2004/108/EG

Direktivet om energirelaterade produkter 2009/125/EG

De använda elektriska induktionsmotorerna på 50 Hz – trefas, kortslutningsmotor, enstegs – motsvarar kraven på ekodesign för elektriska motorer i förordning 640/2009.

Motsvarande ekodesignkraven i förordning 547/2012 för vattenpumpar.

tillämpade harmoniserade normer, i synnerhet: se föregående sida

NO

EU-Overensstemmelseserklæring

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

EG–Maskindirektiv 2006/42/EG

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

EG–EMV–Elektromagnetisk kompatibilitet 2004/108/EG

Direktiv energirelaterte produkter 2009/125/EF

De 50 Hz induksjonsmotorene som finner anvendelse – trefasevekselstrøms kortslutningsmotor, ettrinns – samsvarer med kravene til økodesign i forordning 640/2009.

I samsvar med kravene til økodesign i forordning 547/2012 for vannpumper.

anvendte harmoniserte standarder, særlig: se forrige side

FI

CE-standardinmukaisuusseloste

Ilmoitamme täten, että tämä laite vastaa seuraavia asiaankuuluvia määräyksiä:

EU–konedirektiivit: 2006/42/EG

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

Sähkömagneettinen soveltuvuus 2004/108/EG

Energiaan liittyviä tuotteita koskeva direktiivi 2009/125/EY

Käytettävät 50 Hz:n induktio-sähkömoottorit (vaihevirta- ja oikosulkumoottori, yksivaiheinen moottori) vastaavat asetuksen 640/2009 ekologista suunnittelua koskevia vaatimuksia.

Asetuksessa 547/2012 esitettyjä vesipumppujen ekologista suunnittelua koskevia vaatimuksia vastaava.

käytetyt yhteensovitetut standardit, erityisesti: katso edellinen sivu.

DA

EF-overensstemmelseserklæring

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

EU–maskindirektiver 2006/42/EG

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

Elektromagnetisk kompatibilitet: 2004/108/EG

Direktiv 2009/125/EF om energirelaterede produkter

De anvendte 50 Hz induktionselektromotorer – trefasestrøm, kortslutningsmotor, et-trins – opfylder kravene til miljøvenligt design i forordning 640/2009.

I overensstemmelse med kravene til miljøvenligt design i forordning 547/2012 for vandpumper.

anvendte harmoniserede standarder, særligt: se forrige side

HU

EK-megfelelőségi nyilatkozat

Ezennel kijelentjük, hogy az berendezés megfelel az alábbi irányelveknek:

Gépek irányelv: 2006/42/EK

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

Elektromágneses összeférhetőség irányelv: 2004/108/EK

Energiával kapcsolatos termékekről szóló irányelv: 2009/125/EK

A használt 50 Hz-es indukciós villanymotorok – háromfázisú, kalickás forgórész, egyfokozatú – megfelelnek a 640/2009 rendelet környezetbarát tervezésre vonatkozó követelményeinek.

A vízszivattyúkról szóló 547/2012 rendelet környezetbarát tervezésre vonatkozó követelményeinek megfelelően.

alkalmazott harmonizált szabványoknak, különösen: lásd az előző oldalt

CS

Prohlášení o shodě ES

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

Směrnice ES pro strojní zařízení 2006/42/ES

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

Směrnice o elektromagnetické kompatibilitě 2004/108/ES

Směrnice pro výrobky spojené se spotřebou energie 2009/125/ES

Použité 50Hz třífázové indukční motory, s klecovým rotorem, jednostupňové – vyhovují požadavkům na ekodesign dle nařízení 640/2009.

Vyhovuje požadavkům na ekodesign dle nařízení 547/2012 pro vodní čerpadla.

použité harmonizační normy, zejména: viz předchozí strana

PL

Deklaracja Zgodności WE

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

dyrektywą maszynową WE 2006/42/WE

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

dyrektywą dot. kompatybilności elektromagnetycznej 2004/108/WE

Dyrektywa w sprawie ekoprojektu dla produktów związanych z energią 2009/125/WE.

Stosowane elektryczne silniki indukcyjne 50 Hz – trójfazowe, wirniki klatkowe, jednostopniowe – spełniają wymogi rozporządzenia 640/2009 dotyczące ekoprojektu.

Spełniają wymogi rozporządzenia 547/2012 dotyczącego ekoprojektu dla pomp wodnych.

stosowanymi normami zharmonizowanymi, a w szczególności: patrz poprzednia strona

RU

Декларация о соответствии Европейским нормам

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

Директивы ЕС в отношении машин 2006/42/EG

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

Электромагнитная устойчивость 2004/108/EG

Директива о продукции, связанной с энергопотреблением 2009/125/EC

Используемые асинхронные электродвигатели 50 Гц – трехфазного тока, короткозамкнутые, одноступенчатые – соответствуют требованиям к экодизайну

Соответствует требованиям к экодизайну предписания 547/2012 для водяных насосов.

Используемые согласованные стандарты и нормы, в частности : см. предыдущую страницу

EL

Δήλωση συμμόρφωσης της ΕΕ

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

Οδηγίες ΕΚ για μηχανήματα 2006/42/ΕΚ

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

Ηλεκτρομαγνητική συμβατότητα ΕΚ-2004/108/ΕΚ

Ευρωπαϊκή οδηγία για συνδεόμενα με την ενέργεια προϊόντα 2009/125/ΕΚ

Οι χρησιμοποιούμενοι επαγωγικοί ηλεκτροκινητήρες 50 Hz – τριφασικοί, δρομέας κλωβού, μονοβάθμιοι – ανταποκρίνονται στις απαιτήσεις οικολογικού σχεδιασμού του κανονισμού 640/2009.

Σύμφωνα με τις απαιτήσεις οικολογικού σχεδιασμού του κανονισμού 547/2012 για υδραντλίες.

Εναρμονισμένα χρησιμοποιούμενα πρότυπα, ιδιαίτερα: Βλέπε προηγούμενη σελίδα

TR

CE Uygunluk Teyid Belgesi

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

AB-Makina Standartları 2006/42/EG

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

Elektromanyetik Uyumluluk 2004/108/EG

Enerji ile ilgili ürünlerin çevreye duyarlı tasarımına ilişkin yönetmelik 2009/125/AT

Kullanılan 50 Hz indüksiyon elektromotorları – trifaze akım, sincap kafes motor, tek kademeli – 640/2009 Düzenlemesinde ekolojik tasarımla ilgili gerekliliklere uygundur.

Su pompaları ile ilgili 547/2012 Düzenlemesinde ekolojik tasarıma ilişkin gerekliliklere uygun.

kısmen kullanılan standartlar için: bkz. bir önceki sayfa

RO

EC-Declarație de conformitate

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

Directiva CE pentru mașini 2006/42/EG

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

Compatibilitatea electromagnetică – directiva 2004/108/EG

Directivă privind produsele cu impact energetic 2009/125/CE

Electromotoarele cu inducție, de 50 Hz, utilizate – curent alternativ, motor în scurtcircuit, cu o treaptă – sunt în conformitate cu parametrii ecologici cuprinși în Ordonanța 640/2009.

În conformitate cu parametrii ecologici cuprinși în Ordonanța 547/2012 pentru pompe de apă.

standarde armonizate aplicate, îndeosebi: vezi pagina precedentă

ET

EÜ vastavusdeklaratsioon

Käesolevaga tõendame, et see toode vastab järgmistele asjakohastele direktiividele:

Masinadirektiiv 2006/42/EÜ

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

Elektromagnetilise ühilduvuse direktiiv 2004/108/EÜ

Energiamõjuga toodete direktiiv 2009/125/EÜ

Kasutatud 50 Hz vaheldUvvoolu elektrimootorid (vahelduvvool, lühisrootor, üheastmeline) vastavad määruses 640/2009 sätestatud ökodisaini nõuetele.

Kooskõlas veepumpade määruses 547/2012 sätestatud ökodisaini nõuega.

kohaldatud harmoneeritud standardid, eriti: vt eelmist lk

LV

EC – atbilstības deklarācija

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

Mašīnu direktīva 2006/42/EK

Zemsprieguma direktīvas drošības mērķi tiek ievēroti atbilstoši Mašīnu direktīvas 2006/42/EK

Pielikumam I, Nr. 1.5.1.

Elektromagnētiskās savietojamības direktīva 2004/108/EK

Direktīva 2009/125/EK par ar enerģiju saistītiem produktiem

Izmantotie 50 Hz indukcijas elektromotori – maiņstrāva, īsslēguma rotora motors, vienpakāpes – atbilst Regulas Nr. 640/2009 ekodizaina prasībām.

Atbilstoši Regulas Nr. 547/2012 ekodizaina prasībām ūdenssūkņiem.

piemēroti harmonizēti standarti, tai skaitā: skatīt iepriekšējo lappusi

LT

EB atitikties deklaracija

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

Mašinų direktyvą 2006/42/EB

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

Elektromagnetinio suderinamumo direktyvą 2004/108/EB

Su energija susijusių produktų direktyva 2009/125/EB

Naudojami 50 Hz indukciniai elektriniai varikliai – trifazės įtampos, su narveliniu rotoriumi, vienos pakopos – atitinka ekologinio projektavimo reikalavimus pagal Reglamentą 640/2009.

Atitinka ekologinio projektavimo reikalavimus pagal Reglamentą 547/2012 dėl vandens siurblių.

pritaikytus vieningus standartus, o būtent: žr. ankstesniame puslapyje

SK

ES vyhlásenie o zhode

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

Stroje – smernica 2006/42/ES

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

Elektromagnetická zhoda – smernica 2004/108/ES

Smernica 2009/125/ES o energeticky významných výrobkoch

Použité 50 Hz indukčné elektromotory – jednostupňové, na trojfázový striedavý prúd, s rotormi nakrátko – zodpovedajú požiadavkám na ekodizajn uvedeným v nariadení 640/2009.

V súlade s požiadavkami na ekodizajn uvedenými v nariadení 547/2012 pre vodné čerpadlá.

používané harmonizované normy, najmä: pozri predchádzajúcu stranu

SL

ES – izjava o skladnosti

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

Direktiva o strojih 2006/42/ES

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

Direktiva o elektromagnetni združljivosti 2004/108/ES

Direktiva 2009/125/EG za okoljsko primerno zasnovo izdelkov, povezanih z energijo

Uporabljeni 50 Hz indukcijski elektromotorji – trifazni tok, kletkasti rotor, enostopenjski – izpolnjujejo zahteve za okoljsko primerno zasnovo iz Uredbe 640/2009.

izpolnjujejo zahteve za okoljsko primerno zasnovo iz Uredbe 547/2012 za vodne črpalke.

uporabljeni harmonizirani standardi, predvsem: glejte prejšnjo stran

BG

ЕО-Декларация за съответствие

Декларираме, че продуктът отговаря на следните изисквания:

Машинна директива 2006/42/ЕО

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

Електромагнитна съвместимост – директива 2004/108/ЕО

Директива за продуктите, свързани с енергопотреблението 2009/125/ЕО

Използваните индукционни електродвигатели 50 Hz – трифазен ток, търкалящи се лагери, едностъпални – отговарят на изискванията за екодизайн на Регламент 640/2009.

Съгласно изискванията за екодизайн на Регламент 547/2012 за водни помпи.

Хармонизирани стандарти: вж. предната страница

MT

Dikjarazzjoni ta' konformità KE

B'dan il-mezz, niddikjaraw li l-prodotti tas-serje jissodisfaw id-dispożizzjonijiet relevanti li ġejjin:

Makkinarju - Direttiva 2006/42/KE

L-objettivi tas-sigurta tad-Direttiva dwar il-Vultaġġ Baxx huma konformi mal-Anness I, Nru 1.5.1 tad-Direttiva dwar il-Makkinarju 2006/42/KE.

Kompatibbiltà elettromanjetika - Direttiva 2004/108/KE

Linja Gwida 2009/125/KE dwar prodotti relatati mal-użu tal-enerġija

Il-muturi elettriċi b'induzzjoni ta' 50 Hz użati- tliet fażijiet, squirrel-cage, singola - jissodisfaw ir-rekwiżiti tal-ekodisinn tar-Regolament 640/2009.

b'mod partikolari: ara l-paġna ta' qabel

HR

EZ izjava o sukladnosti

Ovim izjavljujemo da vrste konstrukcije serije u isporučenoj izvedbi odgovaraju sljedećim važećim propisima:

EZ smjernica o strojevima 2006/42/EZ

Ciljevi zaštite smjernice o niskom naponu ispunjeni su sukladno prilogu I, br. 1.5.1 smjernice o strojevima 2006/42/EZ.

Elektromagnetna kompatibilnost - smjernica 2004/108/EZ

Smjernica za proizvode relevantne u pogledu potrošnje energije 2009/125/EZ

Korišteni 50 Hz-ni indukcijski elektromotori – trofazni, s kratko spojenim rotorom, jednostupanjski – odgovaraju zahtjevima za ekološki dizajn iz uredbe 640/2009.

primijenjene harmonizirane norme, posebno: vidjeti prethodnu stranicu

SR

EZ izjava o usklađenosti

Ovim izjavljujemo da vrste konstrukcije serije u isporučenoj verziji odgovaraju sledećim važećim propisima:

EZ direktiva za mašine 2006/42/EZ

Ciljevi zaštite direktive za niski napon ispunjeni su u skladu sa prilogom I, br. 1.5.1 direktive za mašine 2006/42/EZ.

Elektromagnetna kompatibilnost – direktiva 2004/108/EZ

Direktiva za proizvode relevantne u pogledu potrošnje energije 2009/125/EZ

Korišćeni 50 Hz-ni indukcioni elektromotori – trofazni, s kratkospojenim rotorom, jednostepeni – odgovaraju zahtevima za ekološki dizajn iz uredbe 640/2009.

primenjeni harmonizovani standardi, a posebno: vidi prethodnu stranu

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Pioneering for You

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