MIXIT

Installation and operating instructions

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GRUNDFOS

MIXIT

Original installation and operating instructions

Table of contents

1. General information

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Read this document before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.

1.1 Target group

These installation and operating instructions are intended for professional installers and for the operators of the product.

We recommend that installation is carried out by skilled persons with technical qualifications required by the specific legislation in force.

1.2 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.

DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:

SIGNAL WORD

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

1.3 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.

Observe these instructions for explosion-proof products.

A blue or grey circle with a white graphical symbol indicates that an action must be taken.

A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.

If these instructions are not observed, it may result in malfunction or damage to the equipment.

Tips and advice that make the work easier.

2. Product introduction

2.1 Intended use

MIXIT is a control valve with actuator and built-in unit control.

Besides a control valve, MIXIT also includes sensors and an integrated non-return valve (only threaded versions). The actuator is incorporated in a control box together with a control unit which controls both the actuator and the pump.

MIXIT can be used in mixing loops in all heating and cooling systems where there is a need to control the flow temperature, such as radiator heating, underfloor heating and air handling units.

MIXIT is perfect for new installations or complete renovations in commercial buildings as replacement for traditional mixing loops.

MIXIT can either operate as a stand-alone system or as a subsystem in installations controlled by a BMS system.

To avoid condensation and the risk of ice building up in cooling applications, MIXIT must not be powered off once it is installed.

2.2 Compatibility

MIXIT is compatible with MAGNA3 model D pumps with production code from 4319 (WWYY) and onwards.

2.3 Location

The product is designed for indoor installation.

Always install the product in an dry environment where it will not be exposed to drops or splashes, for example water, from surrounding equipment or structures. As the product contains stainless-steel parts, it is important that it is not installed directly in environments, such as:

- Indoor swimming pools where the product would be exposed to the ambient environment of the pool.
- Locations with direct and continuous exposure to a marine atmosphere.
- In rooms where hydrochloric acid (HCl) can form acidic aerosols escaping from, for example, open tanks or frequently opened or vented containers.

The above applications do not disqualify for installation of the product. However, it is important that the product is not installed directly in these environments.

2.4 Temporary heating

In new buildings MIXIT can be used for dehumidification, as MIXIT is ready to operate after the initial startup of the system.

This means that you can dry out excess water content from building materials while construction work continues. When ready, any additional wiring and the remaining setup is completed via Grundfos GO Remote.

Related information

6.2 Starting up MIXIT and connecting it with the pump

7.4 Initial setup wizard

2.5 Minimum space requirements

Threaded versions of MIXIT requires the following space on the installation site.

	Clearance [mm]
Top and bottom	200
Left and right	100
Front and rear	100

2.6 Ambient conditions

Ambient temperature during operation	0-50 °C
Ambient temperature during storage and transport	-40 to +70 °C
Relative humidity	Maximum 95 %

2.7 Pumped liquids

The product is suitable for mixing clean, thin, non-aggressive and non-explosive liquids without solid particles or fibres.

The liquid must not be freezing or boiling.

The liquid temperature must be between 0 and 90 °C, not freezing or boiling. For short periods the temperature can be up to 110 °C provided that the media is being liquid and not boiling.

You can use the product for water, water-glycol-mixtures with up to 50 % glycol or water-ethylene-mixtures with up to 50 % ethylene. No matter which is used, it is important that it is in a liquid state. Freezing or boiling of the media must be prevented.

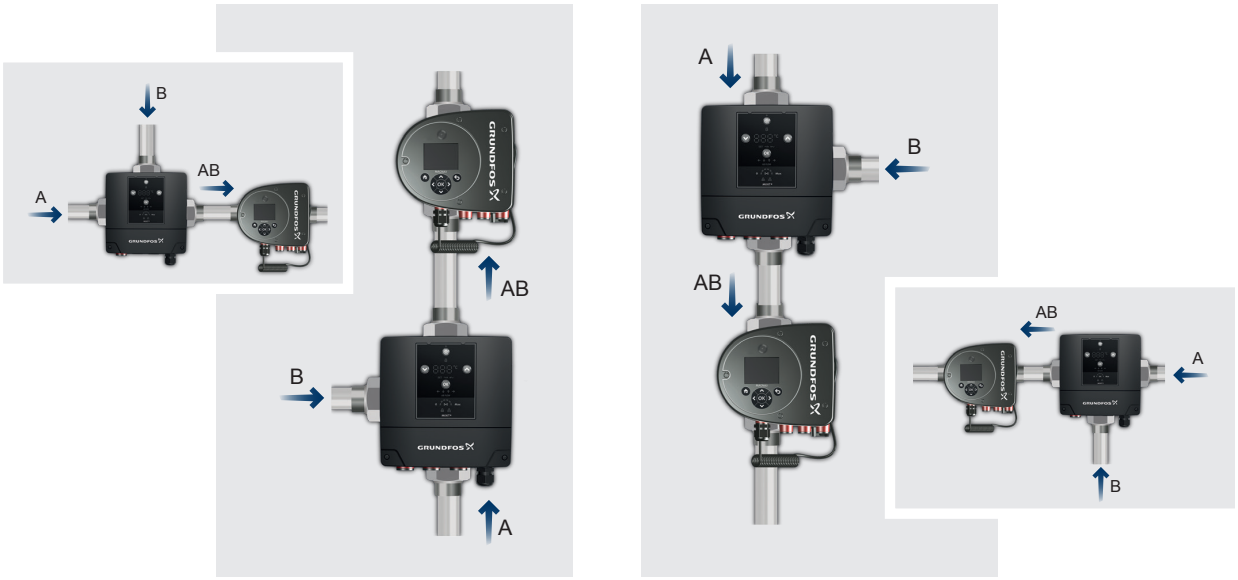
For the flow measurement to function effectively and precise at all flows, the viscosity must be equal to or below 2 cSt.

In heating systems, the water must meet the requirements of the accepted standard on water quality in heating systems according to local regulations.

The product is not intended for drinking water.

2.8 Orientations

MIXIT can be installed both horizontally and vertically. Normally, MIXIT and the pump will be mounted in line.



MIXIT installation orientations with indication of flow direction. Top: MIXIT with left B port orientation. Bottom: MIXIT with right B port orientation.

3. Receiving the product

3.1 Inspecting the product

When receiving the product make sure that:

- The product is in accordance with the order.
- The voltage and frequency of the product match the voltage and frequency of the installation site. See the product's nameplate.

3.2 Scope of delivery

The box contains the following items:

- MIXIT valve unit
- one cable gland mounted on the MIXIT unit
- insulating shells
- bag with:
  - quick guide
  - safety instructions
  - three gaskets for MIXIT DN 25
  - three gaskets for MIXIT DN 32.
- bag placed inside the MIXIT cover containing:
  - one M20 cable gland
  - six terminals plugs for input and output signals.
- quick quide for terminal connections placed in MIXIT's terminal cover.

4. Installation

WARNING
Electric shock
Death or serious personal injury
- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING
Electric shock
Death or serious personal injury
- All electrical connections must be carried out by a qualified electrician in accordance with local regulations.

WARNING
Electric shock
Death or serious personal injury
- In case of an insulation fault, the fault current may be a DC or pulsating DC. Observe national legislation about requirements for and selection of Residual Current Device (RCD) when installing the pump.

WARNING
Lifting hazard
Death or serious personal injury
- Observe local regulations concerning limits for manual lifting or handling.

WARNING
Falling objects
Death or serious personal injury
- Wear safety shoes and helmet.

CAUTION
Sharp element
Minor or moderate personal injury
- Wear protective gloves.

MIXIT must be paired with a MAGNA3 model D with a production code from 4319 (WWYY) and onwards.

Before installing the product, we recommend that you flush the system for impurities.

4.1 Preparing the product for installation

Before installing MIXIT in the pipes you must:

- Dismantle the insulating shells.
- Optional: Remove the non-return valve. Threaded versions of MIXIT are factory fitted with a non-return valve. Some systems require a non-return valve, while other systems might not need it. Therefore, the non-return valve can be removed to eliminate any unwanted pipe resistance.

Related information

4.1.1 Dismantling the insulating shells

4.1.2 Removing the non-return valve

4.1.1 Dismantling the insulating shells

The insulating shells are fitted on the pump from factory, but they must be removed before installation. The insulating shells are fitted tightly. Use the holes on the back of the largest shell to separate them from each other.

The shells must be refitted after installation.

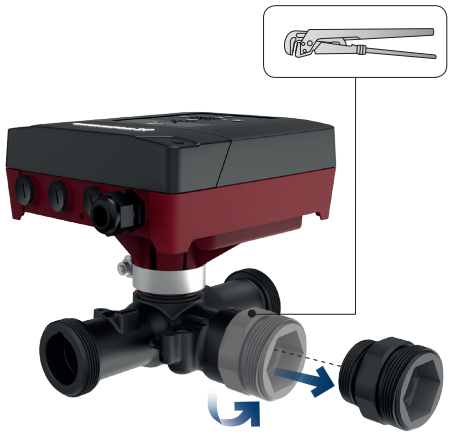
TM074162

4.1.2 Removing the non-return valve

WARNING
Pressurised system
Death or serious personal injury
- When refitting retainer B, it must be tightened to a torque of 120 Nm.

Threaded versions of MIXIT are factory fitted with a non-return valve. The non-return valve can be removed to eliminate any unwanted pipe resistance.

1. Locate port B on the valve body. Loosen the retainer with a wrench and remove it from the valve body.



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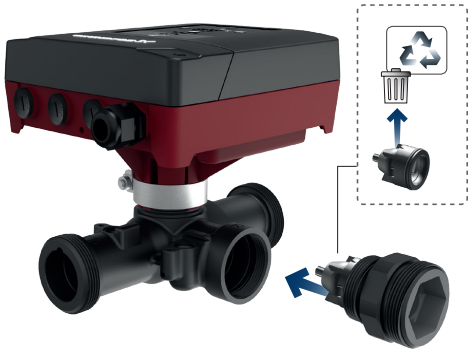
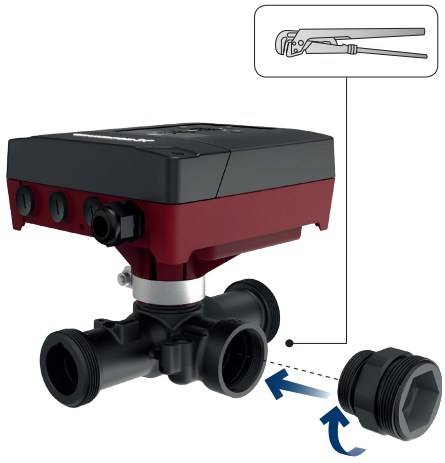
2. Locate the non-return valve inside the retainer and pull it out.



TM074187

3. Refit the retainer on the valve body and tighten it with a wrench with a torque of 120 Nm.



TM074188

4.2 Installing the product in the pipes

Observe the following points before installing the product in the pipes:

- Make sure that the insulating shells have been dismantled.
- Install the product so that it is not stressed by the pipes. You can suspend the product directly in the pipes, provided that the pipes support it. See *2.5 Minimum space requirements*.
- Position MIXIT and the pump in such a way that sufficient cooling is ensured. The ambient temperature must not exceed 50 °C.

Always install the product so that the operating panel is facing forward and upright.

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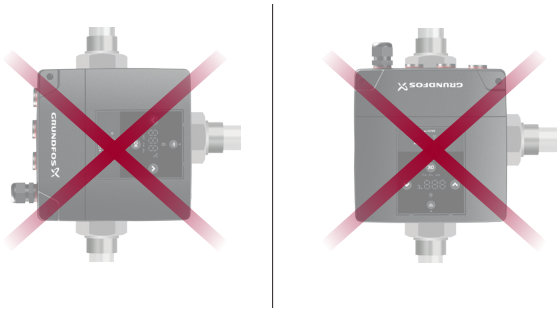
If the product is installed in such a way that the operating panel is turned to the side or upside down, the control box position must be changed.

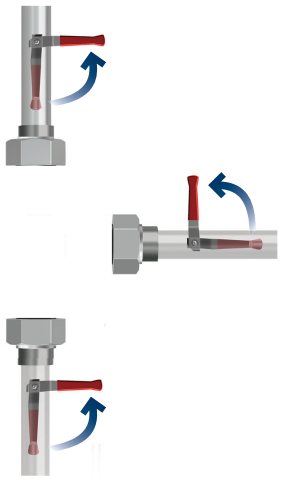


TM075441

Example of wrong control box positions

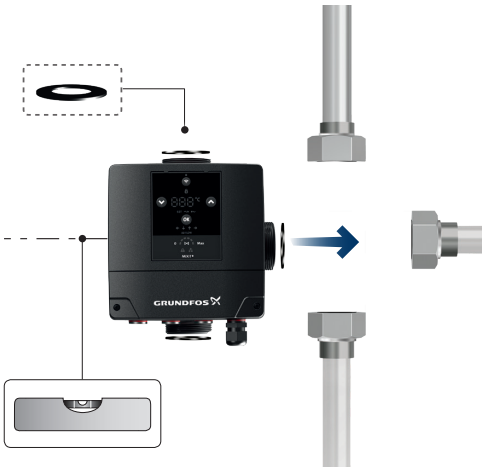
To install the product in the pipes, do as follows (here shown with a right B port orientation):

1. Close the isolating valves and make sure that the system is not pressurised.



TM074164

2. Mount the product in the pipes with the three gaskets provided with product.



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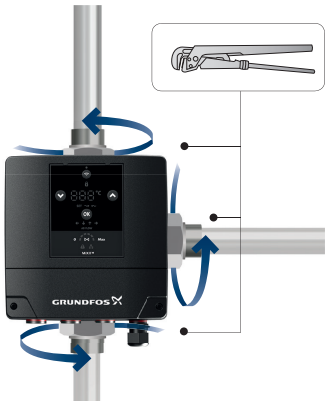
3. Tighten the union nuts.



TM074166

Related information

2.8 Orientations

4.3 Fitting the insulating shells

4.4 Changing the control box position

4.3 Fitting the insulating shells

Fit the insulating shells supplied with the product after it has been installed in the pipes. The shells are numbered from 1 to 3, indicating the easiest order in which to mount them.

TM074163

4.4 Changing the control box position

WARNING
Rotating parts
Minor or moderate personal injury
- Fit and tighten the screw that holds the clamp to 2.5 Nm ± 0.5.

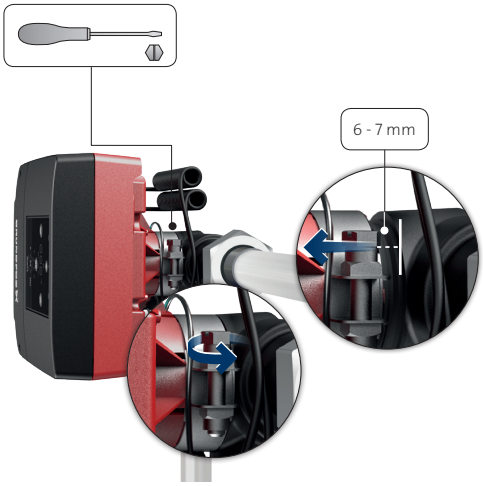
When changing the control box position, the AB port direction of the valve changes too. You must define the AB port position when starting up the product and selecting the AB port orientation. See *6.2 Starting up MIXIT and connecting it with the pump*, step 1.

Once installed in the pipes, the control box must be correctly positioned. Make sure that the control box is upright and facing forward.

To change the control box position, do as follows:

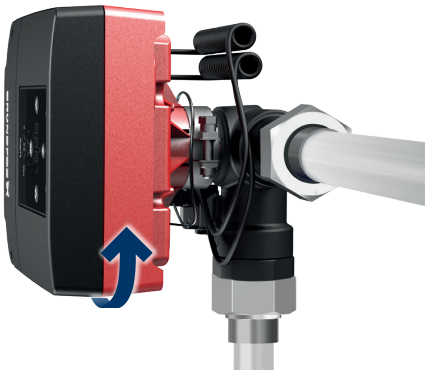
1. Loosen the screw in the clamp that holds the control box and the valve body together. Slowly pull the control box from the valve body approximately 6-7 mm.

   If the control box is pulled out too far, it will detach from the valve body completely. If that happens, re-attach the control box, making sure that the coupling inside the control box fits correctly on the stem inside the valve body.



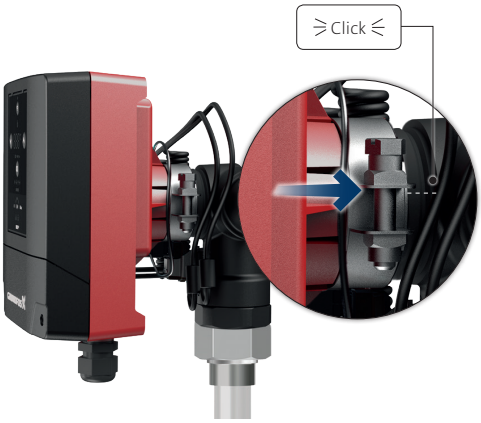
TM074180

2. When you sense that the control box loosens from the valve body, turn the control box to the desired position.



TM074181

3. Push and fit the control box back into place.



TM074182

4. Fit and tighten the screw that holds the clamp to 2.5 Nm ± 0.5 Nm.

TM074185

4.5 Connecting the product to the power supply

To connect MIXIT to the power supply, do as follows:

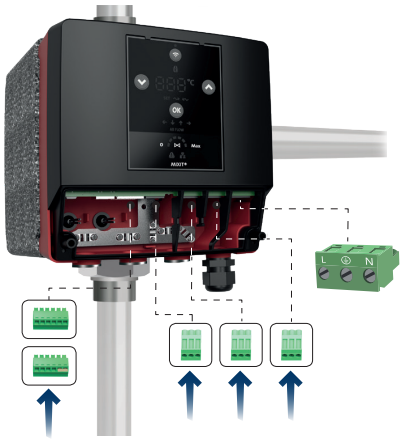
1. Remove the terminal cover on the control box by loosening the two screws. Locate the bag with one cable gland and six terminal plugs.

A folded wiring diagram is located inside the terminal cover.

TM074168

2. To avoid the terminal plugs being misplaced, insert them in the control box. Do not insert the terminal plug for the power supply yet. For correct placement of the terminal plugs, see *5.1 Terminal connections overview* .

Do not mount the cable gland from the bag unless you use it to connect a cable to one of the terminals. Otherwise, liquid can enter the product.



TM074178

3. Loosen the pre-fitted cable gland to the far right.

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4. Pull the power cable through the cable gland and control box and strip the cable conductors: 7 mm (1), 20 mm (2), 25 mm (3), ⌀7-14 (4).

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5. Connect the conductors in the power supply terminal. Insert the power supply terminal in the control box.

TM074173

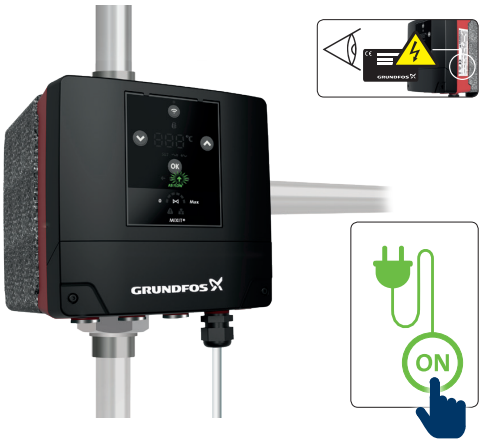
6. Tighten the cable gland to a torque of 1.2 Nm.

TM074175

7. Fit the terminal cover and tighten the screws with a torque of 1.1 to 1.4 Nm.

TM074176

8. Switch on the power supply.



TM074177

Related information

5. External connections

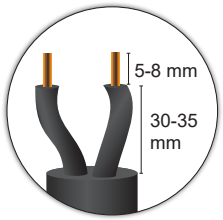
5. External connections

WARNING
Electric shock
Death or serious personal injury
- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING
Electric shock
Death or serious personal injury
- All electrical connections must be carried out by a qualified electrician in accordance with local regulations.

WARNING
Electric shock
Death or serious personal injury
- Use cable clamps when connecting cables to the relay terminals to avoid live wires touching other wires.

WARNING
Electric shock
Death or serious personal injury
- Relay cable conductors must be stripped between 5 and 8 mm, while the isolated wires must be stripped between 30 and 35 mm.



TM075208

Example of stripped relay cable

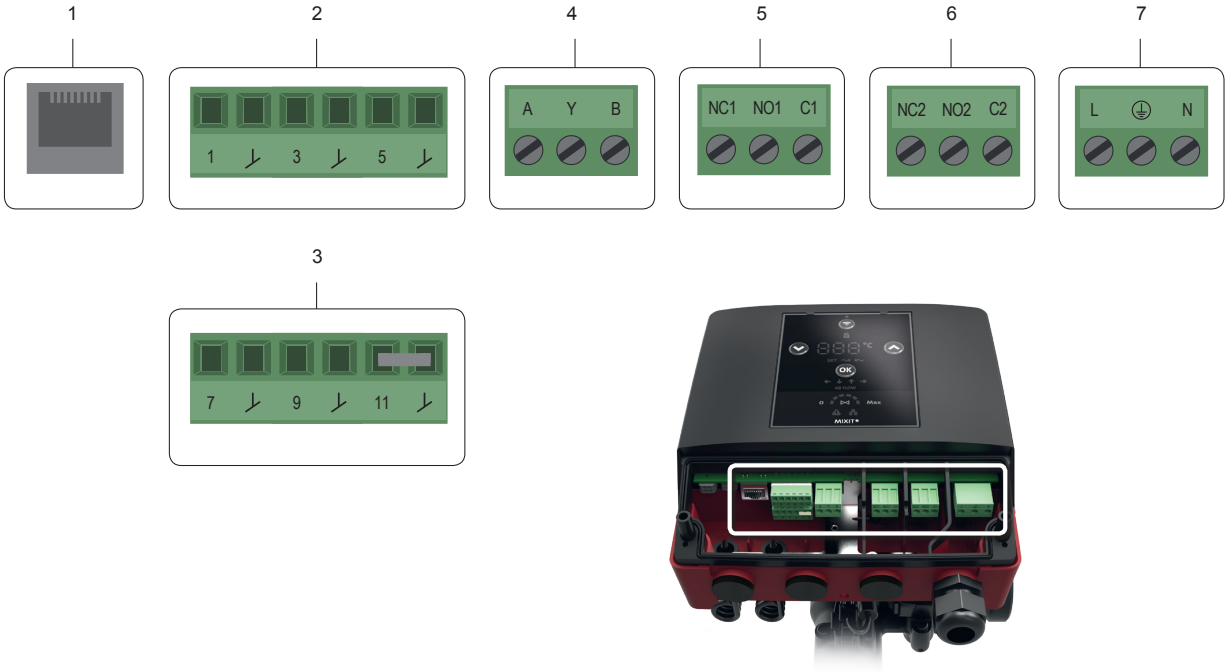
Make sure that all cables are heat-resistant from 75 °C.

MIXIT can be configured to suit your application system using the terminals supplied with the product. External connections are, however, not necessary for the MIXIT system to work.

Grundfos is not responsible for network security or for correctly configured firewalls.

Two cable glands are supplied with the product. Additional cable glands (M20) must be bought separately.

5.1 Terminal connections overview



TM071470

Pos.	Description
1	Ethernet RJ45 (BACnet IP, Modbus TCP)
2	Configurable I/O
3	Configurable I/O
4	RS485 transceiver (BACnet MS/TP, Modbus RTU)
5	Relay 1
6	Relay 2
7	AC supply. Carry out the electrical connection and protection according to local regulations.

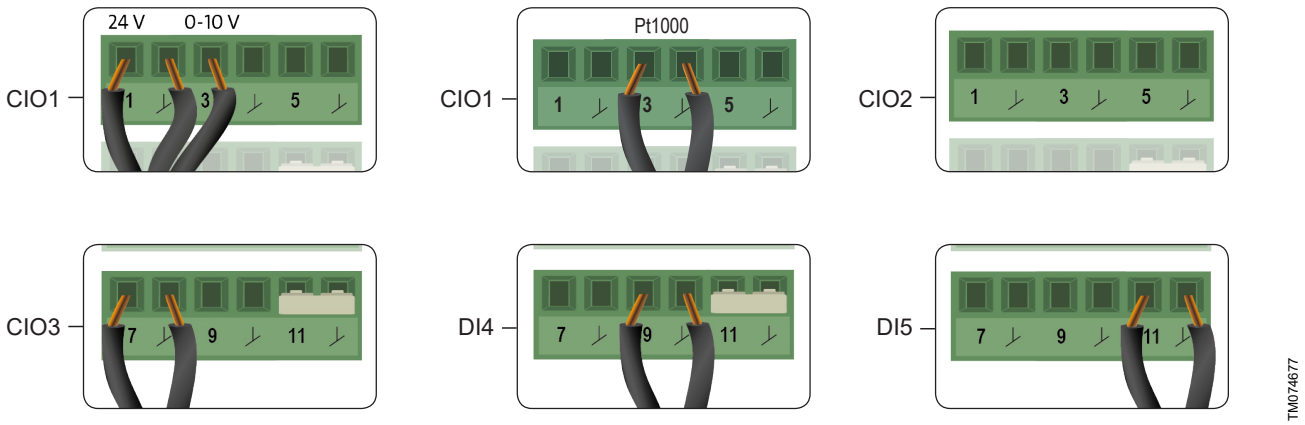
The terminals are coded in such a way that the relay terminal plugs cannot be used in the RS485 input and the configurable inputs and outputs cannot be switched around.

5.2 Radiator heating, terminal connections

In a radiator heating system, the terminals can be used for the following:

Ethernet	RJ45		Communication to Grundfos iSolutions Cloud, Modbus TCP and BACnet IP.
I/O	1	+24 Volt	24 VDC supply for an active sensor. The 0-10 V temperature sensor must be used when several MIXIT units in a system share the same temperature sensor.
	⏚	GND	
	3	CI01	Outdoor temperature sensor (Pt1000 and 0-10 V) or external setpoint input.
	⏚	GND	
	5	CI02	
	⏚	GND	
I/O	7	CI03	Boiler setpoint voltage. It is used so MIXIT can control the boiler output temperature and reduce pipe heat loss.
	⏚	GND	
	9	DI4	External setpoint reduce. When the digital input is activated, MIXIT reduces the setpoint by 5 °C.
	⏚	GND	
	11	DI5	External start/stop of both MIXIT and pump.
	⏚	GND	
RS485	A	GENIbus, BACnet MS/TP or Modbus RTU	Signal input and output from the BMS system.
	Y		
	B		
Relay 1	NC1		Fault signal. A NC/NO output signal, which will be active in case of fault.
	NO1		
	C1		
Relay 2	NC2		Run signal. A NC/NO output signal, which is active when MIXIT operates without alarms.
	NO2		
	C2		
AC supply	L		Power supply connection, 230 V ± 10 %
	Earth	Mains supply	
	N		

Configuring the I/O terminals according to the terminal connections table

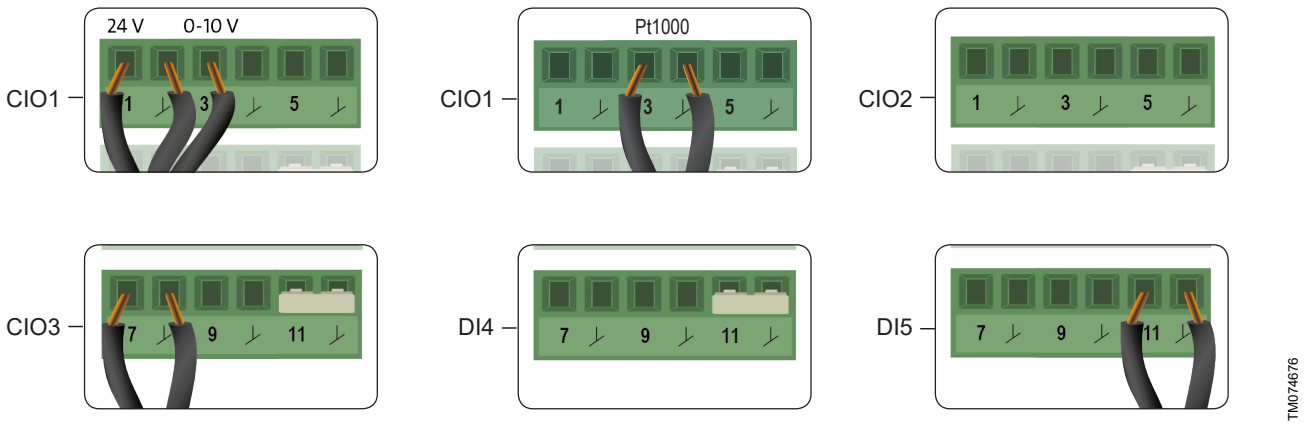


5.3 Underfloor heating, terminal connections

In an underfloor heating system the terminals can be used for the following:

Ethernet	RJ45		Communication to Grundfos iSolutions Cloud, Modbus TCP and BACnet IP.
IO	1	+24 Volt	24 VDC supply for an active sensor. The 0-10 V temperature sensor must be used when several MIXIT units in a system share the same temperature sensor.
	⏚	GND	
	3	CI01	Outdoor temperature sensor (Pt1000 and 0-10 V) or external setpoint input.
	⏚	GND	
	5	CI02	
	⏚	GND	
IO	7	CI03	Boiler setpoint voltage. It is used so MIXIT can control the boiler output temperature and reduce pipe heat loss.
	⏚	GND	
	9	DI4	External overheat indicator.
	⏚	GND	
	11	DI5	External start/stop of both MIXIT and pump.
	⏚	GND	
RS485	A	GENIbus, BACnet MS/TP or Modbus RTU	Signal input and output from the BMS system.
	Y		
	B		
Relay 1	NC1		Fault signal. A NC/NO output signal, which will be active in case of fault.
	NO1		
	C1		
Relay 2	NC2		Run signal. A NC/NO output signal, which is active when MIXIT operates without alarms.
	NO2		
	C2		
AC supply	L		Power supply connection, 230 V ± 10 %
	Earth	Mains supply	
	N		

Configuring the I/O terminals according to the terminal connections table

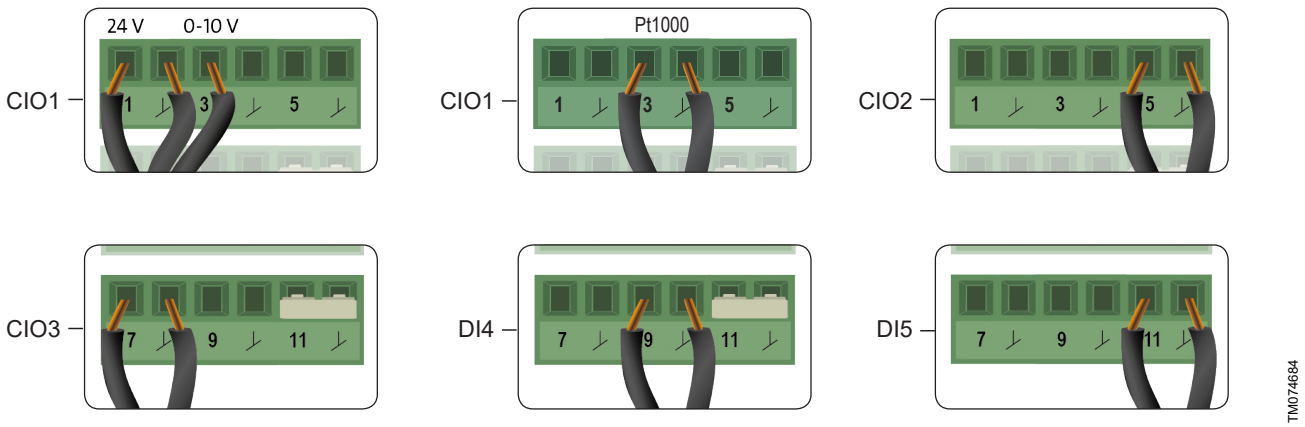


5.4 Air handling unit, terminal connections

In an air handling unit system, the terminals can be used for the following:

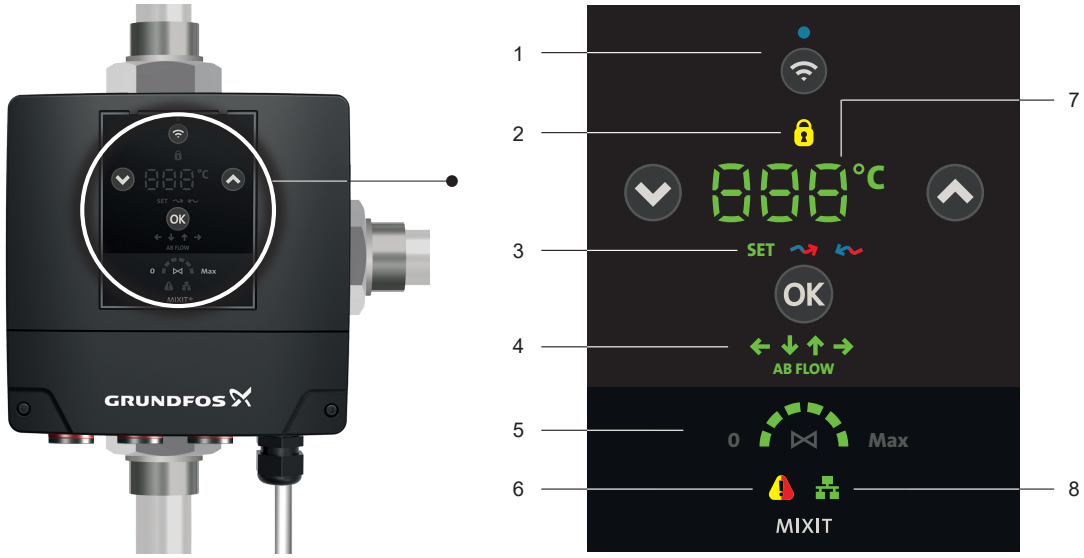
Ethernet	RJ45		Communication to Grundfos iSolutions Cloud, Modbus TCP and BACnet IP.
IO	1	+24 Volt	24 VDC supply for an active sensor. It is used when several MIXIT units in a system share the same 0-10 V temperature sensor.
	⏚	GND	
	3	CI01	Outdoor temperature sensor (Pt1000 and 0-10 V) or external setpoint input.
	⏚	GND	
	5	CI02	Air temperature sensor.
	⏚	GND	
IO	7	CI03	Boiler setpoint voltage. It is used so MIXIT can control the boiler output temperature and reduce pipe heat loss.
	⏚	GND	
	9	DI4	External frost indicator.
	⏚	GND	
	11	DI5	External start/stop of both MIXIT and pump.
	⏚	GND	
RS485	A	GENIbus, BACnet MS/TP or Modbus RTU	Signal input and output from the BMS system.
	Y		
	B		
Relay 1	NC1		Fault signal. A NC/NO output signal, which will be active in case of fault.
	NO1		
	C1		
Relay 2	NC2		Run signal. A NC/NO output signal, which is active when MIXIT operates without alarms. The signal is inactive when the coil is being preheated (purge function).
	NO2		
	C2		
AC supply	L		Power supply connection, 230 V ± 10 %
	Earth	Mains supply	
	N		

Configuring the I/O terminals according to the terminal connections table



6. Starting up the system

6.1 Operating panel for MIXIT



Pos.	Description	
1	Connect button for connecting the valve unit with the pump and connecting MIXIT with Grundfos GO Remote.	When MIXIT tries to establish contact with either the pump or Grundfos GO Remote, the blue LED flashes. Once connection is established, the LED is permanently on.
2	Locked operating panel	This indicates that the operating panel is locked. The panel can be locked and unlocked using Grundfos GO Remote.
3	Temperature indication (setpoint, inlet or return temperature) **Default mode:** None of the three LEDs are lit and the temperature shown is the mixed flow temperature.	Indicates which temperature is shown in the display (7). Press the **OK** button to toggle between the following: • SET: Setpoint. Shows the current setpoint. Indicates that the setpoint is being or can be adjusted. To adjust the setpoint use the two arrow buttons. • Arrow pointing right: Supply temperature. Lights red in heating systems, blue in cooling systems. • Arrow pointing left: Return temperature. Lights blue in heating systems, red in cooling systems. The display returns to its default mode after 12 seconds.
4	AB port orientation	This indicates the orientation of the AB port (flow outlet).
5	Valve position	This indicates to which degree the valve is open. **0** means that the valve is closed. **Max.** means that the valve is fully open. If a flow limit is configured, this limit will be **Max**.
6	Warning and alarm indication	Yellow indicates a warning. The system continues to operate. Red indicates an alarm. The system stops operating.
7	Temperature/fault code **Default mode:** Mixed flow temperature.	The display shows: • Temperature setpoint. To adjust the setpoint use the **Up** and **Down** buttons. • Inlet, outlet or mixed flow temperature, see 3. • Fault codes.
8	External control	This indicates that MIXIT is being controlled by external communication equipment.

Note: Once the pump and MIXIT are connected, MIXIT takes over and controls the pump. From then on the pump's operating panel is locked. Settings to the system are done via Grundfos GO Remote and the operating panel of MIXIT.

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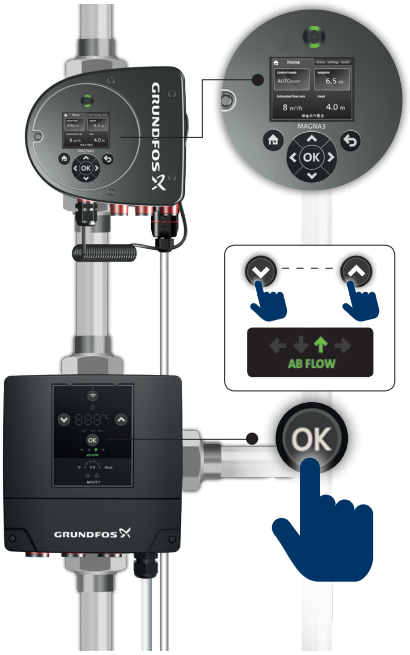
6.2 Starting up MIXIT and connecting it with the pump

Before connecting the pump with MIXIT, it must be installed in the pipes and powered on. Follow the installation and operating instructions for the pump.

1. Set the AB port orientation on the MIXIT unit by pressing the **Up** and **Down** buttons on the operating panel. The green AB flow arrow LEDs flash until you press the **OK** button. Press the **OK** button to select orientation. The corresponding port orientation LED is constantly lit.



TM071477

2. Set the pump by completing the startup wizard. The settings are not important to the setup of the system as the system will be configured via MIXIT.

TM071475

3. Press the connect button on the MIXIT operating panel. The blue connect LED starts to flash.

   While MIXIT attempts to establish contact with the pump (2), the temperature/fault code LEDs rotate.

4. A message in the pump's display asks you to confirm the connection by pressing its **OK** button (3).

   The temperature/fault code LEDs keep rotating until the connection is complete.

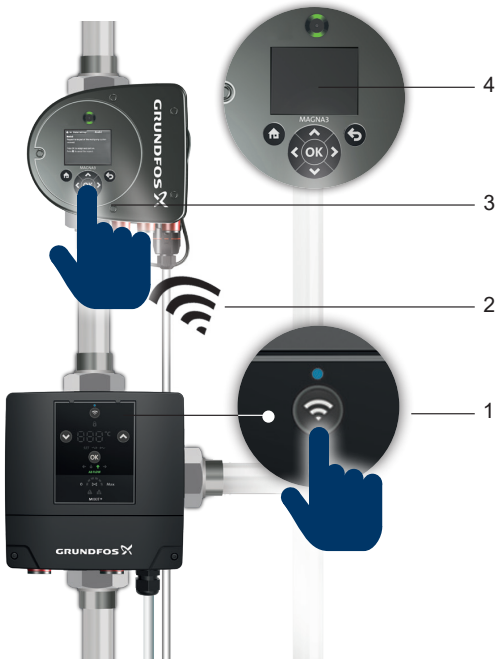
   When the connection between MIXIT and the pump is established, the following happens:

   - A BMS icon on the pump's operating panel is lit:

TM075931

   - The blue connect LED on the MIXIT operating panel is permanently on.
   - The pump's display is now locked and it is not possible to change the pump's settings. The pump's display turns off after approximately 20 minutes (4).

If MIXIT fails to establish contact with the pump, or if the **OK** button on the pump's operating panel was not pressed in time, MIXIT reverts back to step 3. Repeat the instructions in step 3.



TM071476

5. The temperature/fault code LEDs start to flash with a predefined setpoint of 40 °C. Set the temperature setpoint by pressing the **Up** and **Down** buttons on the operating panel. Confirm by pressing the **OK** button. The LEDs are now constantly lit.

MIXIT will automatically operate with the predefined setpoint of 40 °C if no other temperature setpoint is selected. The temperature setpoint can at all times be changed by pressing the **Up** and **Down** buttons.

TM071478

6. Startup of the system is complete and it is now ready to operate. This is useful when wanting to dry out buildings. See *2.4 Temporary heating*.

The temperature setpoint can be changed and the valve can be manually controlled via the operating panel. Further settings are made with Grundfos GO Remote.

TM074179

6.3 Indication of pump connection

To know which pump MIXIT is connected to, push the connect button on the MIXIT operating panel. Grundfos Eye on the corresponding pump starts to flash.

Grundfos Eye

Pos.	Description
1	Grundfos Eye

7. Setting the product

- Use the operating panel to control the setpoint and valve opening.
- Use Grundfos GO Remote to make the remaining settings.

7.1 Controlling MIXIT via the operating panel

7.1.1 Adjusting the setpoint

The setpoint can be adjusted directly on the operating panel. Do as follows:

1. Press the **Up** and **Down** buttons.
   When pushing the buttons, the temperature LEDs flash and the **SET** LED become lit.
2. Press **OK** to save the setting.
   The operating panel goes back to its previous setting if the **OK** button is not pressed within 12 seconds.

7.1.2 Controlling the valve

The valve can be controlled using the operating panel. Do as follows:

1. Press and hold the **Up** and **Down** buttons for three seconds.
2. Only the valve position LEDs are lit and start to flash two times a second.
3. Press the **Up** and **Down** buttons to change the valve position. Keep pressing the buttons until the desired position is reached.
4. Press **OK** to save the setting.
   The LEDs stop flashing.
   The position can be adjusted again using the **Up** and **Down** buttons. The new settings are confirmed by pressing the **OK** button.

The valve stays in the position without relying on the setpoint temperature. Return to normal mode by pressing and holding the **Up** and **Down** buttons for three seconds.

7.2 Connecting to Grundfos GO Remote

Before connecting the product to Grundfos GO Remote, the Grundfos GO Remote app must be downloaded to your smartphone or tablet. The app is free of charge and available for iOS and Android devices.

1. Open Grundfos GO Remote on your device. Make sure that Bluetooth is enabled.
   Your device must be within reach of the product to establish Bluetooth connection.
2. Press the Bluetooth **CONNECT** button on Grundfos GO Remote.
3. Press the connect button on the operating panel. The blue LED above the connect button is flashing until your device is connected. Once the connection is established, the LED will be permanently on.
   Grundfos GO Remote is now loading the data for the product.

7.3 Grundfos GO Remote menu overview

Menu	Description
Monitoring	The monitoring menu allows you to monitor the system's current status, including: • Temperature setpoint, flow, supply and return temperature • Flow, air and outdoor temperature depending on your settings • Thermal power (DYNAMIC upgrade) • Heat energy monitor (DYNAMIC upgrade) • Valve and pump status.
Settings	This menu allows you to make changes to the MIXIT system setup.
Upgrades	In this menu you can activate a upgrade package by entering the 10 digit activation code provided with your upgrade purchase.
Advanced	This menu includes: • A communication log, which logs communication between Grundfos GO Remote and MIXIT. • GENI view. Only available in service mode. It can be used to send and receive GENI telegrams. • Firmware view.

7.4 Initial setup wizard

The initial setup wizard automatically starts when Grundfos GO Remote has established connection to MIXIT for the first time. All settings done in the wizard can be changed later on. Exit the wizard by pressing **X** in the top left corner.

Step	Description	Action
Select AB flow direction	Confirm that the AB flow direction you chose when installing MIXIT is correct.	If the flow direction is incorrect, you can change the orientation of the valve by pressing the arrows.
Pair MIXIT with a pump	The setup wizard detects whether or not MIXIT is connected to a pump.	If connected, this step can be skipped by pressing **Next**. If not, the wizard will guide you through the connection process.
Temporary heating	Turn on temporary heating if you want to quick start the system, for example with the purpose of drying out the building.	Set the the desired temperature setpoint. The setpoint can be changed later on on the MIXIT display. See *6.1 Operating panel for MIXIT*. When set, you get a summary of your settings and the setup wizard closes. If you do not wish to turn on temporary heating press **Continue commissioning**.
Commissioning	Define application, valve and circuit type.	Select the application in which MIXIT is installed, whether MIXIT is going to operate as a two-way or three-way valve, and if MIXIT is going to operate in a mixing or injection circuit.
Pump setup	Set the pump's control mode and duty points.	This step lets you set the following: • **Control mode**. Based on your previous choice of application, the wizard has preselected a control mode best suited for that type of application. • **Dutypoints**.
Setpoint input type	Select the desired input type: • Local fixed setpoint • Outdoor temperature sensor • Analog input • Bus communication.	Select the desired input type: • **Local fixed setpoint** Set the temperature using the slider. • **Outdoor temperature sensor** Select the type of sensor you will be using, either Pt1000 or 0-10 V sensor. Both options allow you to define a five point temperature curve. See *7.10 Outdoor temperature compensation*. If your application is a heating or cooling coil, you will get the option of setting up an air temperature feedback sensor. • **Setpoint from analog input** Select between 0-10 V, 0-20 mA and 4-20 mA. If you application is a heating or cooling coil, you will get the option of setting up an air temperature feedback sensor. • **Setpoint from bus connection** - **Modbus** Define baud rate, parity and address. If you application is a heating or cooling coil, you will get the option of setting up an air temperature feedback sensor. - **BACnet** Define baud rate, fieldbus address and max. masters and select device object instance number. If you application is a heating or cooling coil, you will get the option of setting up an air temperature feedback sensor. - **GENIbus** Enter device ID.
Name	Give the MIXIT unit a name. This is especially helpful if several MIXIT units are installed in the system.	
Summary	A summary of your chosen settings.	
Upgrade	Activate your upgrade package.	Enter the activation code provided with your upgrade purchase.
Setup monitoring solution	Set Grundfos BuildingConnect. If you have activated the MIXIT CONNECT upgrade package, you will be setting the Premium version.	You will need to connect MIXIT to a router via an ethernet cable and create a Grundfos BuildingConnect account at grundfos.com. Make sure that there is internet connection and that MIXIT is allowed to communicate through firewall. Follow the instructions given by Grundfos GO Remote. Press **Finish** to skip this step. Press **Skip** to continue without setting up monitoring.

7.5 General settings

7.5.1 Setting a local fixed setpoint

Main menu > **Settings** > **Setpoint** > **Local fixed setpoint**

1. Slide the bar up and down to set the desired setpoint.
2. Press **OK** to save.

The setpoint can also be set directly on the MIXIT operating panel.

Related information

6.1 Operating panel for MIXIT

7.5.2 Configuring an outdoor temperature sensor input and outdoor temperature compensation

Main menu > **Settings** > **Setpoint**

1. Press **Reconfigure setpoint input** at the bottom of the screen.
2. Select **Outdoor temperature sensor** and press **Next**.
3. Select outdoor sensor type, either Pt1000 or 0-10 V, and press **Next**.
   a. If a 0-10 V sensor is selected, you must define its range.
4. Configure a heat curve to set the **Outdoor temperature compensation** function.
   a. Offset and slope
      Alter the heat curve by the means of offset and slope. Use the temperature buttons to adjust the offset, and use the **Up** and **Down** buttons to adjust the slope of the curve.
      Press **Next** or customise the heat curve, see step B.
   b. Customised heat curve (optional)
      Press **Customise heat curve** and define the desired setpoints for each of the five outdoor temperature points.
5. Connect a cable to MIXIT. Follow the instructions given in Grundfos GO Remote and press **Next**.
6. A summary is given. Press **Save** to complete the setup.

Once a heat curve is defined, the **Heat curve** menu is available in the **Settings** menu allowing you to change your settings.

7.5.3 Configuring a setpoint from analog input

Main menu > **Settings** > **Setpoint**

1. Press **Configure setpoint input** at the bottom of the screen.
2. Select **Setpoint from analog input** and press **Next**.
3. Select signal type and press **Next**.
   Select 0-10 V, 0-20 mA or 4-20 mA.
4. Define the range and press **Next**.
5. Connect a cable to MIXIT. Follow the instructions given by Grundfos GO Remote. Press **Next**.
6. A summary is given. Press **Save** to complete the setup.

7.5.4 Setting the application, valve operation and type of circuit

Main menu > **Settings** > **Application settings** > **Application and hydraulics configuration**

1. Press **Application and hydraulics** at the bottom of the screen.
2. Select the application in which MIXIT is going to operate. Press **Next**.
3. Define whether MIXIT is operating as a two- or three-way valve. Press **Next**.
4. Define the type of circuit. Press **Next**.
5. A summary is given. Press **Save** to confirm the setting.

7.5.5 Adjusting the temperature controller

Main menu > **Settings** > **Application settings** > **Temperature controller**

Use the temperature controller menu to adjust the speed of the temperature regulation. Do as follows:

1. Set the proportional gain (Kp) and integral time (Ti) values by pressing the pre-defined values and entering the desired value.
2. Press **OK** to confirm the setting.

7.5.6 Setting up a system pressure alarm

Main menu > **Settings** > **Application settings** > **System pressure alarm**

MIXIT can be set to activate an alarm if the pressure in the system drops below a defined threshold. The **System pressure alarm** function uses the sensor on port B to measure the pressure.

1. Set a minimum pressure threshold.
2. Press **OK** to confirm the setting.

7.5.7 Other settings

Main menu > **Settings** > **Other settings**

In **Other settings** you can do the following:

- Lock the MIXIT operating panel and Grundfos GO Remote. When Grundfos GO Remote is locked, you will still be able to connect to and monitor MIXIT.
- Manually control the valve. See *Controlling the valve via Grundfos GO Remote*.
- Update the firmware. When connecting Grundfos GO Remote to MIXIT, the app will automatically detect if the firmware needs to be updated and ask you to update it. Firmware can also be updated using PC Tool. See seperate service instructions.
- Change the name of the MIXIT unit.
- Set the date and time.
- Configure device ID for GENIbus.
- Store and recall settings as well as resetting the MIXIT unit to its factory settings.
- Unpair MIXIT from the pump.

7.5.7.1 Controlling the valve via Grundfos GO Remote

Main menu > **Settings** > **Other settings** > **Manual valve control**

Manual valve control can for example be useful in the following situations:

- Ventilation of a system.
- In service situations to control if the valve is fully functional.
- If MIXIT experiences a fault and stops the valve. By manually controlling the valve, it is possible to force it to open.

Do as follows:

1. Activate manual valve control at the bottom of the screen and press **Activate** in the pop-up box to confirm.
2. Use the slider to adjust the valve opening. The valve position indicator flashes. If a flow limit is configured, this limit will be maximum.
3. Press **Save**. The valve position indicator is constantly lit.

Manually controlling the valve opening overrides the setpoint. Exit manual valve control in the **Manual valve control** menu by pressing **Deactivate manual valve control** at the bottom of the screen.

7.5.8 How to activate an upgrade package

Main menu > **Upgrades**

1. Press the desired upgrade package and press **Unlock**.
2. Activate your package by entering the activation code provided with your upgrade purchase.

7.6 Functions overview

	Valve unit variants		Upgrade packages	
Functions	**MIXIT**	**MIXIT DYNAMIC**	**MIXIT DYNAMIC**	**MIXIT CONNECT**
Temperature controller	•	•	•	•
Underfloor overheat protection (available in underfloor heating systems)	•	•	•	
Coil preheat and frost protection (available in air handling unit systems)	•	•	•	
Pump control modes • Proportional pressure • Constant pressure • Constant flow • Constant curve/constant speed	•	•	•	•
Outdoor temperature compensation	•	•	•	
Eco schedule and warm-weather shutdown	•	•	•	
Pressure independence			•	•*
Supply flow limit			•	•*
Return temperature limit			•	•*
Thermal power limiting			•	•*
Differential temperature limit			•	•*
Energy monitor			•	•*
Grundfos BuildingConnect, Freemium	•	•	•	
Grundfos BuildingConnect, Premium			•	•
Fieldbus integration (BACNet and Modbus)			•	•

* These functions are only available if MIXIT CONNECT is combined with the MIXIT DYNAMIC upgrade package.

7.7 Underfloor overheat protection

Main menu > **Settings** > **Application settings** > **Floor overheat protection**

This function is only available if the application setting is set to **Underfloor heating**.

1. Activate the function by pressing the grey slide-button in the top right corner of the screen.
2. Press **Max. flow temperature** to define a maximum forward-flow temperature. The temperature in the system will never exceed the given value.

The setpoint can be set to a maximum of 5 °C below the set maximum forward-flow temperature.

7.8 Coil preheat and frost protection

Main menu > **Settings** > **Application settings** > **Coil preheat and frost protection**

When choosing the application type **Heating coil**, you can activate the coil preheat and frost protection functions.

Coil preheat

With MIXIT you can preheat the coil, before allowing the fan to start.

Do as follows:

1. Activate the function by pressing the grey slide-button.
2. Press **Coil preheat temperature** to define a return temperature threshold.

Frost protection

You can protect the coil from freezing by defining an air and return flow temperature. If the temperature falls below one of the two temperature limits, MIXIT will react by fully opening the valve in order to circulate hot water in the system.

The return flow temperature is measured by the sensor in port B of MIXIT. To measure the air temperature you will need to install a temperature sensor in the coil.

To set up frost protection, do as follows:

1. Activate the function by pressing the grey slide-button.
2. Press **Frost return temperature limit** to define a return temperature threshold. Press **OK**.
3. Press **Frost air temperature limit** to define an air temperature threshold. Press **OK**.
4. Press **Forced pump start** to define a temperature threshold for the antifreeze sensor. Press **OK**

7.9 Selecting pump control mode

Main menu > Settings > Setpoint > Pump setpoint

Once connected, MIXIT takes control of the pump. From then on all pump settings are made via MIXIT.

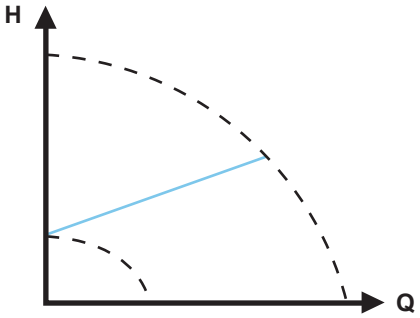
To change the pump control mode do as follows:

1. Press **Control mode** to set the desired control mode. Press **OK** to save.
2. Press **Head dutypoint** to set the desired duty point. Press **OK** to save.
3. Press **Flow dutypoint** to set the desired duty point. Press **OK** to save.

   This menu is only available in proportional-pressure mode.

7.9.1 Proportional-pressure curve

When the pump control mode is set to proportional pressure, the pump performance is automatically adjusted to the actual heat demand in the system by following a proportional-pressure curve within the pump's maximum and minimum proportional curve.



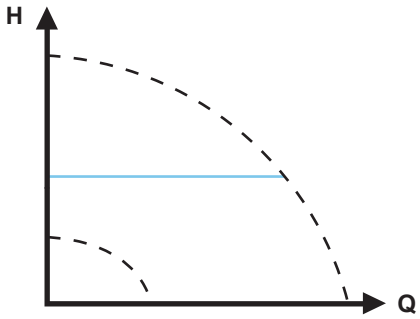
Proportional-pressure curve

Proportional pressure is suitable for systems with relatively large pressure losses in the distribution pipes. The pump head will increase proportionally to the flow in the system to compensate for the large pressure losses in the distribution pipes.

We recommend that you select this control mode in radiator heating systems.

7.9.2 Constant-pressure curve

The pump performance is automatically adjusted to the actual heat demand in the system by following a constant-pressure curve within the pump's maximum and minimum constant curve.



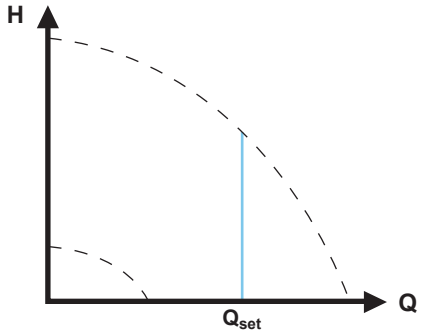
Constant-pressure curve

Constant pressure is used in systems with relatively small pressure losses. The pump head is kept constant, independently of the flow in the system.

We recommend that you select this control mode in underfloor heating systems.

7.9.3 Constant flow

In this control mode, the pump maintains a constant flow in the system independently of the head.

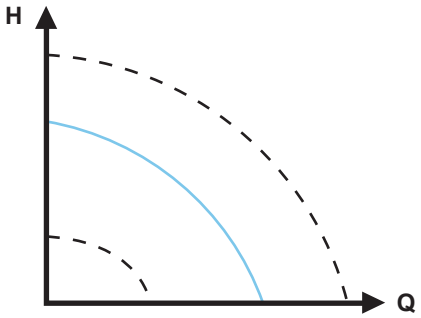


Constant-flow curve

We recommend that you select this control mode in air handling unit systems.

7.9.4 Constant curve/constant speed

At constant-curve/constant-speed operation, the pump runs at a constant speed, independently of the actual flow rate demand in the system.



Constant-curve/constant-speed curve

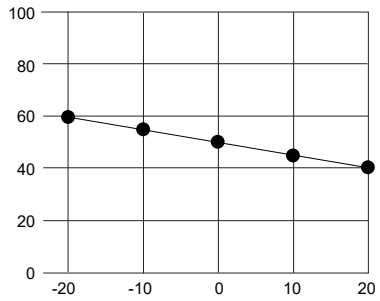
A constant curve is suitable for systems, where both a constant flow rate and a constant head are required, that is heating and cooling surfaces, heating and air condition systems with three-way valves.

7.10 Outdoor temperature compensation

With the outdoor temperature compensation function activated, the product automatically adjusts the mixed flow temperature according to the outdoor temperature.

Outdoor temperature compensation is set in Grundfos GO Remote by the means of a five-point temperature curve. The curve allows you to predefine five liquid temperature setpoints. MIXIT interpolates between the setpoints and automatically adjusts the liquid temperature accordingly to compensate for the heat demand.

For heating-coil applications the curve defines the air temperature.



Example of five point temperature curve. Y axis: Setpoint [°C]. X axis: Outdoor temperature [°C].

7.10.1 Configuring an outdoor temperature sensor input and outdoor temperature compensation

Main menu > **Settings** > **Setpoint**

1. Press **Reconfigure setpoint input** at the bottom of the screen.
2. Select **Outdoor temperature sensor** and press **Next**.
3. Select outdoor sensor type, either Pt1000 or 0-10 V, and press **Next**.
   a. If a 0-10 V sensor is selected, you must define its range.
4. Configure a heat curve to set the **Outdoor temperature compensation** function.
   a. Offset and slope
      Alter the heat curve by the means of offset and slope. Use the temperature buttons to adjust the offset, and use the **Up** and **Down** buttons to adjust the slope of the curve.
      Press **Next** or customise the heat curve, see step B.
   b. Customised heat curve (optional)
      Press **Customise heat curve** and define the desired setpoints for each of the five outdoor temperature points.
5. Connect a cable to MIXIT. Follow the instructions given in Grundfos GO Remote and press **Next**.
6. A summary is given. Press **Save** to complete the setup.

Once a heat curve is defined, the **Heat curve** menu is available in the **Settings** menu allowing you to change your settings.

7.11 Eco schedule

In some applications it can be useful to predefine a start and stop schedule and apply an automatic temperature setback function in order to minimise consumption, and thereby energy costs.

With the Eco schedule you can configure start and stop intervals on a weekly basis as well as set single events.

7.11.1 Scheduling Eco periods

Main menu > **Settings** > **Eco functions** > **Eco schedule**

To customise the system's start and stop intervals, do as follows:

1. Activate the scheduling function by pressing the grey slide-button in the top right corner of the screen.
2. Select the weekday for which you want to schedule the pump performance.
3. Insert a time period by pressing the light grey perimeter of the clock.
4. Customise the time period by dragging the bar clockwise or counterclockwise on the light grey perimeter.
5. You can assign more weekdays to the same schedule by pressing the weekdays at the bottom of the screen. Days are chosen when they are shown as green.
   You can insert up to four time periods per day.
   Delete a time period by holding and dragging it to the wastebin in the top left corner.
6. Press **Save** to complete the setup.

Specify whether MIXIT must run according to a temperature setback or shut down in the defined Eco period(s).

Related information

7.11.2 Setting temperature setback and system turn off

7.11.2 Setting temperature setback and system turn off

Main menu > **Settings** > **Eco functions** > **Eco schedule**

A temperature setback can be defined for the period in which MIXIT runs according to **Eco schedule**. In this period, MIXIT sets the normal operation temperature back with the number of degrees set in Grundfos GO Remote. Temperature setback is only available for heating applications. MIXIT can also be set to turn off during the **Eco period**.

Do as follows:

1. Make sure that **Eco schedule** has been activated and one or more periods have been defined.
2. When in the **Eco schedule** menu, press **Settings** at the bottom of the screen.
3. Select **Eco period**.
4. Define a setback temperature or press **MIXIT OFF** to have MIXIT turn off.
5. Press the arrow back at the top of the screen to save and return to the **Settings** menu.

Related information

7.11.1 Scheduling Eco periods

7.11.3 Setting up single events

Main menu > **Settings** > **Eco functions** > **Eco schedule**

1. Activate **Eco schedule**.
2. Press **Events** at the bottom of the screen and press **Add event**. Up to 10 single events can be set.
3. Define an action for the event. Choose if the system must act according to a temperature setback or shut down.
4. Define a date and time for the event. Press **Next**.
5. According to your chosen action, define a temperature setback or confirm that MIXIT turns off in the given period.
6. Press **Next** to save the setting and return to the **Events** menu.

Related information

7.11.1 Scheduling Eco periods

7.12 Warm-weather shutdown

When a defined maximum outdoor temperature has been surpassed one to three days in a row, MIXIT automatically shuts down and the pump stops.

When the outdoor temperature drops below the temperature limit, MIXIT starts again immediately.

The temperature signal must be available from either an outdoor temperature sensor or fieldbus.

7.12.1 Setting warm weather shutdown

Main menu > **Settings** > **Eco functions** > **Warm weather**

1. Activate the function by pressing the grey slide-button in the top right corner of the screen.
2. Press **Outdoor temperature threshold** and define a maximum outdoor temperature. Press **OK** to save the setting.
3. Press **Average period** to define the number of days the outdoor temperature is allowed to surpass the defined threshold.
4. Press **OK** to save the setting.

7.13 Pressure independence

The function is automatically activated when MIXIT is upgraded with the MIXIT DYNAMIC upgrade package.

If the differential pressure varies on the primary side, the flow through the valve changes, causing poor control performance and fluctuating temperature.

By measuring the flow on the primary side, MIXIT is able to regulate the valve position accordingly. This means that MIXIT maintains a constant flow even though the differential pressure on the primary side changes. This allows the system to perform optimally, increasing both comfort and energy efficiency.

7.14 Supply flow limit

To ensure enough primary flow to all installed MIXIT systems, you can balance each system according to their heat demand. This is done by limiting the primary flow through the valve.

If the MIXIT CONNECT upgrade package is installed, the primary flow data can be provided to a building automation system for monitoring purposes.

All limiters can run simultaneously.

7.14.1 Setting a supply flow limit

Main menu > **Settings** > **Balancing limiters**

1. Activate the function by pressing the grey **Supply flow limit** slide-button.
2. Press **Supply flow limit** and define a maximum flow. Press **OK** to save the setting.

7.15 Return temperature limit

Return temperature limit is commonly used to keep a high efficiency at the heat source and to protect the production plant.

The integrated temperature sensor in MIXIT monitors the return temperature. By using the return temperature limit function, you are able to keep the temperature below a set limit.

All limiters can run simultaneously.

7.15.1 Setting a return temperature limit

Main menu > **Settings** > **Balancing limiters**

1. Activate the function by pressing the grey **Return temperature limit** slide-button.
2. Press **Return temperature limit** and define a maximum return temperature. Press **OK** to save the setting.

7.16 Thermal power limiting

MIXIT can be configured to limit the thermal power delivered by the mixing loop. The power limiter automatically limits the valve opening whenever the configured power limit is exceeded.

All limiters can run simultaneously.

7.16.1 Setting a thermal power limit

Main menu > Settings > Balancing limiters

1. Activate the function by pressing the grey **Thermal power limit** slide-button.
2. Press **Thermal power limit** and define a maximum limit. Press **OK** to save the setting.

7.17 Differential temperature limit

MIXIT can be configured to limit the temperature difference between the primary supply and return flow. This is especially useful in district heating where the payment tariff can dependent on the differential temperature.

All limiters can run simultaneously.

7.17.1 Setting a differential temperature limit

Main menu > Settings > Balancing limiters

1. Activate the function by pressing the grey **Differential temperature limit** slide-button.
2. Press **Differential temperature limit** and define the allowed temperature difference. Press **OK** to save the setting.

7.18 Energy monitor

Main menu > Monitoring > Heat energy monitor

The function is automatically activated when MIXIT is upgraded with the MIXIT DYNAMIC upgrade package.

With the energy monitor function it is possible to monitor the energy consumption in individual zones. This function does not require any additional sensors or any additional settings to the system.

The calculated value cannot be used for billing purposes. However, it is perfect for optimisation purposes in order to prevent excessive energy costs caused by system imbalances.

7.19 Grundfos BuildingConnect

With Grundfos BuildingConnect you can monitor your MIXIT system from the office or on the go. Grundfos BuildingConnect offers realtime monitoring, including alarm and warning notifications.

With the Premium version you get access to even more monitoring points as well as the ability to control the system.

7.19.1 Setting up Grundfos iSolutions Cloud

Main menu > Upgrades > Grundfos iSolution Cloud

1. Set up a free Grundfos BuildingConnect account at grundfos.com.
2. Go to **Upgrade** in Grundfos GO Remote, press **Grundfos iSolution Cloud** and follow the instructions. You will need to connect the product to a router via an ethernet cable. Make sure that there is internet connection and that the product is allowed to communicate through firewall.
3. When logged into Grundfos BuildingConnect, enter the code provided by Grundfos GO Remote.

7.20 Connecting the product to fieldbus

1. Set a bus connection in Grundfos GO Remote.
2. Connect a bus cable to the product.

7.20.1 Configuring a setpoint via Grundfos GO Remote

Main menu > Settings > Setpoint

1. Press **Reconfigure setpoint input** at the bottom of the screen.
2. Select **Setpoint from fieldbus connection** and press **Next**.
3. Select bus control and press **Next**.
   Select **Modbus**, **BACnet** or **GENIbus** depending on your chosen fieldbus connection.
4. Define baud rate and press **Next**.
5. For Modbus configuration:
   a. Modbus: Select parity and press **Next**. Next, define an address and press **Next**.
   b. BACnet: Define a fieldbus address and press **Next**. Next, choose a device object instance number and press **Next**.

   The BACnet address must be within the range of 1 to 127 and must be unique on the BACnet MS/TP segment. An illegal value will result in a MAC address of 0.
6. If not done already, connect a bus cable to MIXIT. Follow the instructions given by Grundfos GO Remote. Press **Next**.
7. A summary is given. Press **Save** to complete the setup.

7.21 Starting and stopping the product

The product can be started and stopped by doing one of the following:

- Switch off the power supply.
- Use the external start/stop terminal.
- Use the **Eco schedule** function.

Related information

5.1 Terminal connections overview

7.11 Eco schedule

8. Fault finding the product

8.1 Fault indication on the operating panel

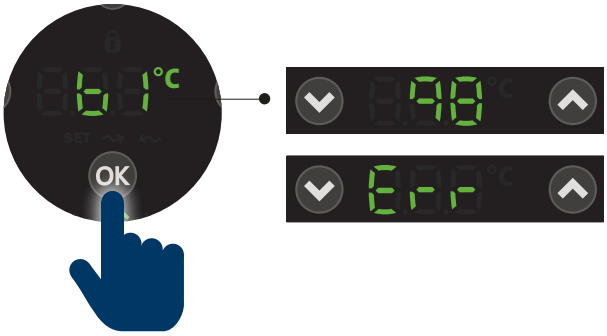
Warnings

When MIXIT detects a warning, the yellow **!** lights up. The system will continue to operate.

To see the fault code, push and hold the **OK** button. The display changes between **Err** and the code.

TM074656

Example of the operating panel when a warning occurs



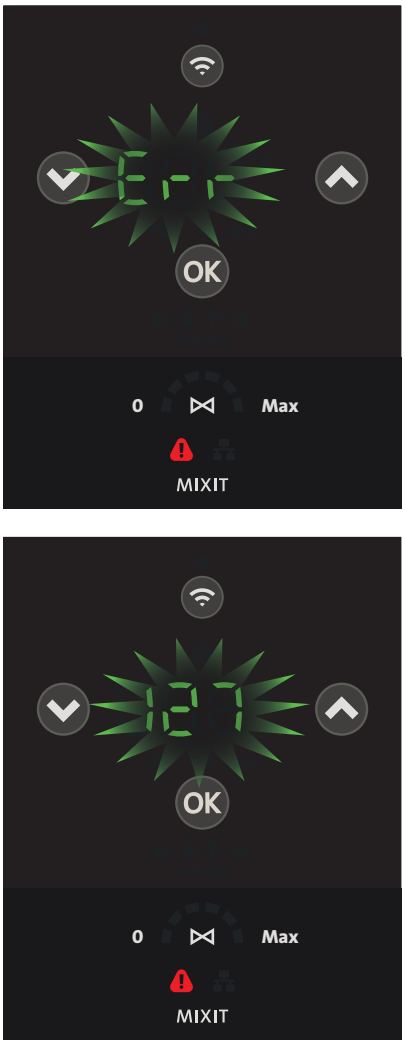
TM074664

*Example of the operating panel indicating a warning when the **OK** button is pushed and held.*

Alarms

When MIXIT detects an alarm, the **!** turns red and the system stops. The display changes between **Err** and the fault code, while the LEDs flash.

When there is an alarm, you cannot change the temperature or toggle between temperatures.



TM074659

Example of the operating panel indicating an alarm code

8.2 Resetting alarms and warnings

MIXIT returns to normal operation if it detects that a fault has been corrected.

Alarms and warnings are reset in Grundfos GO Remote. Do as follows:

1. Go to the **Alarms and warnings** menu or press the icon indicating an alarm or warning in the top of the screen.
2. Press **Reset alarm**.
   All current alarms and warnings have been reset. However, if the fault causing the alarm or warning has not been removed, the alarm or warning will appear again.
3. If you want to delete all alarms and warnings from the history log, press **Show log** > **Reset alarm and warning logs**.
   By pressing the alarm code, you get information on the type of warning or alarm, remedies and, if relevant, system behaviour.

8.3 Alarm and warning codes

8.3.1 Code 10 (Pump communication fault)

Cause

There is no radio communication between the MIXIT unit and the pump.

Remedy

1. Check that pump is powered on.
2. If the pump is powered on and communication does not reestablish within 2 minutes, pair the MIXIT unit and the pump again via the MIXIT operating panel.

8.3.2 Code 25 (Wrong configuration of sensor and valve)

Cause

The configuration of the sensor and the valve does not match.

Remedy

- Connect MIXIT to Grundfos GO Remote and follow the pop-up guide.

8.3.3 Code 39 (Valve blocked)

Product behaviour

MIXIT has no control over the flow. To prevent high temperatures, close the isolating valves and shut down the MIXIT unit.

Cause

The ball valve is blocked and cannot rotate.

Remedy

1. Remove the control box. Gently rotate the stem to loosen the ball valve.
2. If it is not possible to rotate the stem, contact Grundfos.

8.3.4 Code 91 (Pump temperature sensor fault)

Cause

The temperature sensor in the pump is faulty.

Remedy

1. Check that the sensor cable is connected to the pump and sensor.
2. Replace the sensor.

8.3.5 Code 97 (Missing setpoint)

Product behaviour

The product uses the default setpoint.

Cause

The product is not receiving a temperature setpoint from either an analog input or from fieldbus.

Remedy

1. Check the terminal connections.
2. Check the output signal of the sensor cable. Replace the sensor if faulty
3. Check the output of the fieldbus connection.
4. Contact Grundfos.

8.3.6 Code 125 (Outdoor temp. sensor fault)

Cause

The product is configured with an outdoor temperature sensor, but it is not receiving a signal from either fieldbus or analog input.

Remedy

1. Check the terminal connection.
2. Check the output signal of the sensor cable.
3. Replace the sensor.

8.3.7 Code 126 (Air temp. sensor fault)

Product behaviour

- If available, MIXIT uses the flow sensor in the pump and operates according to the local setpoint.
- If the pump flow sensor is faulty, MIXIT operates according to the default temperature of the return temperature sensor. The default temperature is 30 °C.
- If all sensors are faulty, MIXIT and the pump stops.

Cause

The product is not receiving an input from the air temperature sensor.

Remedy

1. Check the terminal connection.
2. Check the signal of the sensor cable.
3. Replace the sensor.

8.3.8 Code 127 (Relative-pressure sensor fault)

Product behaviour

MIXIT continues to operate without performance loss of the temperature control. The system pressure alarm does not work.

Cause

The combined relative-pressure and temperature sensor at port B is faulty.

Remedy

1. Check that the sensor cable is connected to the control box and the sensor.
2. Replace the sensor.

8.3.9 Code 132 (Missing GSC file configuration)

Cause

The GSC file configuration is missing.

Remedy

- Contact Grundfos.

8.3.10 Code 157 (Real time clock out of order)

Cause

Internal fault. Normal MIXIT operation is not affected, but the fault might have an impact on scheduled operation.

Remedy

- Replace the MIXIT unit and dispose it in an environmentally sound way according to local regulations, or contact Grundfos.

8.3.11 Code 161 (Power supply fault)

Cause

Internal power supply fault.

Remedy

- Contact Grundfos.

8.3.12 Code 162 (Power supply fault)

Cause

Internal power supply fault.

Remedy

- Contact Grundfos.

8.3.13 Code 169 (Flow sensor fault)

Product behaviour

MIXIT continues to operate. Performance at higher differential pressures might be reduced. Flow measurements and the thermal power limiting function are not available in Grundfos GO Remote.

Cause

The combined flow and supply temperature sensor at port A is faulty.

Remedy

1. Check that the sensor cable is connected to the control box and the sensor.
2. Replace the sensor.

8.3.14 Code 175 (Supply temp. sensor fault)

Product behaviour

MIXIT continues to operate, but some features are disabled.

Cause

The combined flow and supply temperature sensor at port A is faulty.

Remedy

1. Check that the sensor cable is connected to the control box and the sensor.
2. Replace the sensor.

8.3.15 Code 176 (Return temp. sensor fault)

Product behaviour

MIXIT continues to operate, but some features are disabled.

Cause

The combined relative-pressure and return temperature sensor at port B is faulty.

Remedy

1. Check that the sensor cable is connected to the control box and the sensor.
2. Replace the sensor.

8.3.16 Code 211 (Low system pressure)

Product behaviour

MIXIT continues to operate without performance decrease, but depending on the differential pressure there may be a risk of cavitation.

Cause

The system pressure is below the defined threshold.

Remedy

- Increase the system pressure by adding liquid to the system or lower the system pressure threshold in Grundfos GO Remote.

8.3.17 Code 230 (MAC address not configured)

Cause

The MAC address is not configured.

Remedy

- Contact Grundfos.

8.3.18 Code 236 (Pump alarm)

Cause

The pump is faulty.

Remedy

- Check the fault code on the operating panel of the pump and if possible, remove the fault causing the alarm. The MIXIT unit will automatically reset itself after the pump alarm has been solved.

8.4 Setpoint limit

The setpoint is limited to a certain temperature and cannot be increased.

Cause

MIXIT operates in an underfloor heating application, and the underfloor overheat protection function is activated.

Remedy

- Deactivate the function in Grundfos GO Remote in **Main menu** > **Settings** > **Application settings** > **Floor overheat protection**

9. Service

WARNING
Electric shock
Death or serious personal injury
- Switch off the power supply before you start any work on the product. Make sure that the power supply cannot be switched on accidentally.

WARNING
Electric shock
Death or serious personal injury
- All electrical connections must be carried out by a qualified electrician in accordance with local regulations.

WARNING
Pressurised system
Death or serious personal injury
- Before servicing the product, close the isolating valves on all sides of the product and then drain it. The pumped liquid may be scalding hot and under high pressure. Wear safety glasses.

WARNING
Hot surface
Death or serious personal injury
- At high liquid temperatures, the product may become so hot that only the operating panel must be touched to avoid burns. Close the isolating valves on all sides of the product and then drain it. Wear protective gloves.

WARNING
Hot liquid
Death or serious personal injury
- Wear safety glasses. The pumped liquid may be scalding hot and under high pressure.

WARNING
Falling objects
Death or serious personal injury
- Wear safety shoes and helmet.

Only qualified persons are allowed to service the pump.

9.1 Performing daily maintenance

Do not use tools to de-ice the product.

9.2 Updating the firmware

Before updating the firmware, MIXIT must be connected to Grundfos GO Remote.

1. Once connected to Grundfos GO Remote, the app automatically checks if MIXIT has the latest firmware installed. If a newer version is available, a pop-up message will appear in Grundfos GO Remote with the text **Firmware needs update**.
2. Follow the guide to install the firmware update.

9.3 Resetting the product

MIXIT can be reset in two ways:

- **Via the operating panel**
  Press and hold the **OK** and connect buttons for 10 seconds.
  All LEDs light up after which the operating panel returns to step 2 in *6.2 Starting up MIXIT and connecting it with the pump*.
- **Via Grundfos GO Remote**
  1. Connect MIXIT to the Grundfos GO Remote app.
  2. Select **Settings** and **Other settings**.
  3. Select **Factory reset.**
  4. Press **Reset user settings to factory**.
  5. A dialogue box pops up. Confirm that you wish to reset the product by pressing **Reset**.

9.4 Disconnecting MIXIT and the pump

Settings > **Other settings** > **Unpair MIXIT**

Disconnect MIXIT from the pump via **Other settings** in Grundfos GO Remote.

9.5 Replacing or cleaning the non-return valve

WARNING
Falling objects
Minor or moderate personal injury
- If the control box is removed, fit and tighten the screw that holds the clamp to 2.5 Nm ± 0.5 when remounting it.

WARNING
Pressurised system
Death or serious personal injury
- When refitting retainer B, it must be tightened to a torque of 120 Nm.

This task only applies to threaded versions in DN 25 and DN 32 sizes.

The non-return valve is located on port B of the main valve.

1. Switch off the power supply.
2. Close the isolating valves on the A, B and AB port side of the valve.
3. Remove the insulating shells if mounted.
4. Dismantle the system in such a way that retainer B can be removed. Dismantle the control box if necessary. We recommend that you mount the product in a vice. Make sure it clamps on the retainer.
5. Unscrew retainer B using a wrench to turn the valve.
6. Remove the O-ring from the retainer B.
7. Locate the non-return valve inside the retainer and pull it out.
8. Check the condition of the non-return valve and its O-ring, clean them if they can be re-used. If not, replace it with a new part.
9. Lubricate the O-ring on the new or cleaned non-return valve with Rocol Sapphire Aqua-Sil.
10. Fit the non-return valve in the retainer and gently push it home.

    When pushing the non-return valve home, be careful not to pinch the O-ring.

11. Mount a new O-ring on retainer B and lubricate the O-ring with Rocol Sapphire Aqua-Sil.
12. Refit the retainer B on the valve body and tighten to a torque of 120 Nm.
13. Fit the system pipes back to normal position.
14. Mount the isolation shells.
15. Set the isolating valves back to the open position.
16. Switch on the power supply and check that the valve functions correctly.

9.6 Replacing the sensors

WARNING
Pressurised system
Death or serious personal injury
- All valves must be closed to avoid liquid backflow.
- Fit the bracket screw and tighten it with a torque of 1.5 Nm.

The temperature sensor has a red sensor body, while the flow sensor has a black sensor body.

You can replace both the temperature and the flow sensor of the MIXIT unit. Do as follows:

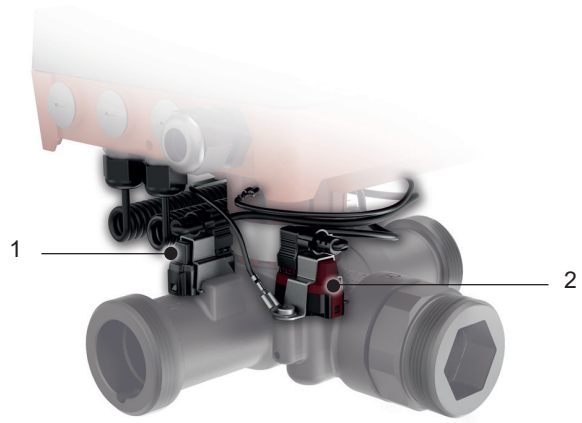
Dismantling

1. Switch off the power supply.
2. Close the isolating valves on all three ports of the MIXIT unit.
3. Remove the insulating shells
4. Remove the terminal cover by loosening the two screws.
5. Loosen the cable gland of the sensor cable in question and unscrew it from the control box. Make sure not to turn the sensor cable at the same time.
6. Unplug the sensor cable from the terminal and gently pull the sensor cable out of the control box.
7. Loosen the clamp
8. Carefully detach the control box.
9. Unscrew the bracket screw on the sensor in question and slide the sensor bracket to the right and remove the bracket.
10. Hold the faulty sensor by its sides and move it gently from side to side until the sensor comes off. Make sure to remove the sensor sleeve from the valve housing.

Assembly

11. Clean the sensor hole with a clean piece of cloth, and make sure that there are no particles in the sensor hole.
12. Fit the new sensor with the sensor cap, and gently push it home.
13. Fit the bracket by sliding it from the right to the left.
14. Mount the earth cable and flat connector (only temperature sensor).
15. Fit the bracket screw and tighten it with a torque of 1.5 Nm.
16. Attach the control box, making sure that an intervention is made between the stem and coupling.
17. Tighten the clamp with a torque of 2.75 Nm.
18. Lead the sensor cable through the hole in the control box and connect it to the terminal.
19. Fit and tighten the cable gland. Do not turn the sensor cable while tightening the cable gland.
20. Fit the terminal cover and tighten the two screws with a torque of 1.1 to 1.4 Nm.

Example:



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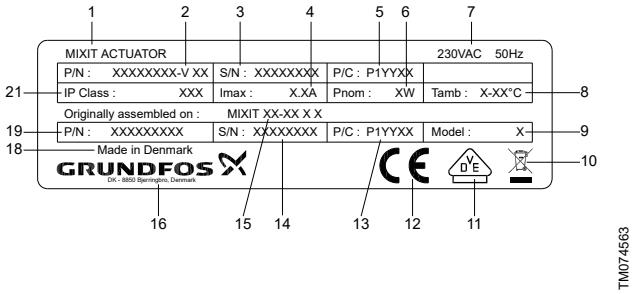
Sensor placement on the MIXIT valve body

Pos.	Description
1	Vortex Flow sensor Standard (VFS)
2	Integrated temperature sensor Standard (ITS)

10. Technical data

10.1 Nameplate



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Pos.	Description
1	Product name
2	Product number and version, actuator
3	Serial number, actuator
4	Maximum rated current [A]
5	Production code (year and week)
6	Nominal power
7	Voltage and frequency
8	Ambient temperature
9	Product model
10	WEEE mark
11	VDE mark
12	CE mark
13	Production site and production code
14	Serial number, MIXIT
15	Type designation, MIXIT
16	Grundfos logo and address
18	Country of origin
19	Product number, MIXIT
20	Enclosure class

10.2 Type key

Example: MIXIT DYNAMIC 32 16 L NRV

Code	Designation	Explanation
MIXIT	Type range	MIXIT valve unit
[ ] DYNAMIC	Upgrade package	[ ] : Standard functionalities included, but no additional upgrade package DYNAMIC: MIXIT DYNAMIC upgrade package
25 32 40 50	Nominal diameter (DN) of inlet and outlet ports [mm]	
6.3 10 16 25 40	K_{VS} value	
L R	B port orientation	L: Left R: Right
[ ] F	Pipe connection type	[ ] : Thread F: Flange
[ ] NRV	Hydraulic accessories	[ ] : No non-return valve NRV: Non-return valve

10.3 Sound pressure level

The sound pressure level for MIXIT without cavitation is below 40 dB(A).

10.4 Cable requirements

Cable type: H07RN-F
All control terminals are supplied by safety extra-low voltage (SELV) and separated.
All cables used must be heat-resistant up to at least 75 °C.
All cables used must be installed in accordance with EN 60204-1 and EN 50174-2:2000.
Use cable clamps and double insulated cables for relays.

Terminal	Cable	Cable cross section [mm^2/ AWG]	Torque [Nm]
I/O terminals	Screened cable	0.5 - 1.5 / 28-16	0.2
AC supply	Cable	0.5 - 2.5 / 28-12	0.5
RS-485	Screened 3-core cable		
Relay 1 and 2	Screened cable		

Cable length		
Speed [Mbit/s]	**Cable type**	**Max. cable length [m / ft]**
10	CAT5	100 / 328
100	CAT5e	100 / 328

10.5 Electrical data

All specified voltages refer to GND. GND is internally connected to protective earth.

Supply voltage	1 x 230 V - ± 10 %, 50 Hz, PE
Protective class	I
Insulation class	-
Maximum power	15 W
Rated impulse-withstand voltage	4kV
Short-circuit current rating	500 A
Overvoltage category (OVC)	III
Pollution degree	2

10.6 Inputs and outputs

Absolute maximum voltage and current limits

Relay 1 and 2, maximum contact load	250 VAC or 30 VDC, 2 A
RS-485 terminal	-5.5 to +9.0 VDC, else < 25 mADC
Other I/O terminals	-0.5 to +26 VDC, else < 15 mADC

Exceeding the electrical limits may result in severely reduced operating reliability and product life.

Digital input (DI)

Internal pull-up current	> 10 mA at Vi = 0 V, Ri = 100 kΩ at Vi > 5 V
Certain low logic level	Vi < 1.8 V
Certain high logic level	Vi > 2.7 V or floating
Hysteresis	Yes

The I/Os, CIO and DI, are 24 V tolerant.

Relay outputs

Potential-free changeover contacts (SPDT)	
Contact ratings	250 VAC, 2 A, 50/60 Hz, AC-1 (resistive)
Action type	1.B (micro disconnection)
Minimum contact load when in use	5 VDC, 10 mA

Analog input (AI)

Voltage mode range	0-10 V
Voltage mode	Ri = 100 kΩ
Current mode range	4-20 mA
Current mode	Vin (appr.) = Iin * 50 Ω + 1 V
Current mode overload protection	Yes, current limit > 75 mA
Measurement tolerance	± 3 % of full scale

Analog output (AO)

Sourcing capability only	
Voltage mode range	0-10 V
Min. load between AO and GND	3 kΩ
Short-circuit protection	Yes
Current mode range	4-20 mA
Voltage drive capability	10 V at 20 mA
Open-circuit protection	Yes
Tolerance	± 5 % of set value

Pt1000 input (PT)

Temperature measurement range	-30 to +180 °C
Measurement tolerance	± 1.5 °C
Measurement resolution	0.15 °C

Power supplies (24 V)

Output voltage	-24 VDC ± 5%
Max. current	100 mADC (sourcing only)
Overload protection	Yes

Bus input (RS-485)

Protocols	GENIbus, BACnet MS/TP, Modbus RTU, RS-485
Supply voltage	5 VDC ± 5 %, $I_{max.}$ 350mA

Bus input (Ethernet)

Protocols	BACnet IP, Modbus TCP
Cable type, BACnet IP	Standard CAT5, CAT5e or CAT6
Cable type, Modbus TCP	Standard CAT5, CAT5e or CAT6

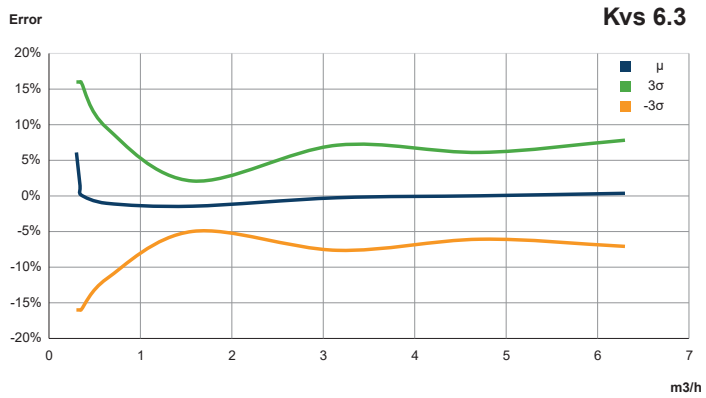
10.7 Classes

Temperature class	TF110 (EN 60335-2-51)
Enclosure class	X4D (EN 60529)

10.8 Sensor data

Vortex flow sensor, port A	From 0.3 m^3/h depending on the MIXIT variant with a dynamic range of 1:25.
Temperature range, port A and port B	-10 to +120 °C
Accuracy temperature, port A and port B	± 1.25 °C (-10 to +80 °C), ± 1.3 °C (80-90 °C), ± 1.3 °C (80-90 °C), ± 2 °C (90-110 °C), Flow ratio, Qab/Qa: 1.1-10.

Flow sensor accuracy



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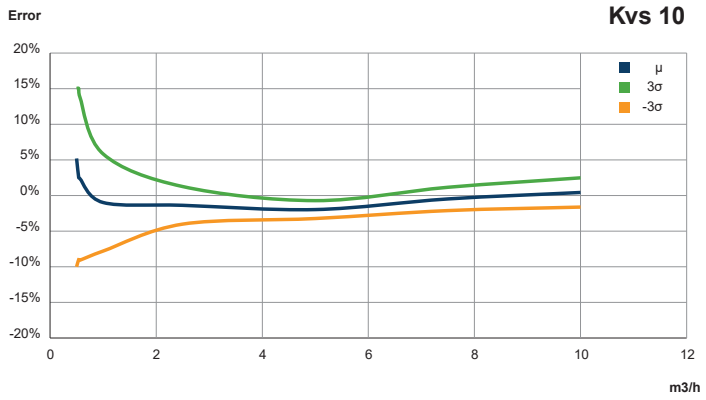

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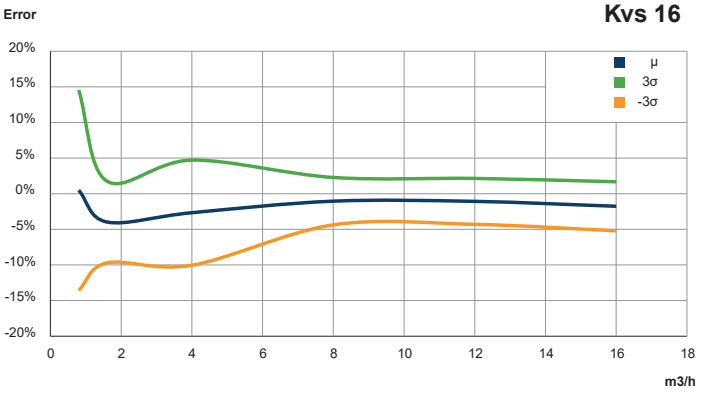

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10.9 Actuator

Ball valve, movement and type of action	Angular rotation, 360° both ways Multiposition
Temperature for ball pressure test	125 °C
Maximum rated mechanical load	15 Nm
Travel time	1 minute
Limitation of operating time	1 second on / 4 seconds off

10.10 Valve

Valve details

Type of valve	Mixing valve
Function	Three-way inverting valve or two-way modulating valve with integrated shunt
Type of closure member	Ball
Type of operation	Directly controlled and operated, no minimum differential pressure
Type of movement	Rotational, no mechanical stops
Positioning	Modulating
Valve stroke (rated travel)	90°
Position when de-energised	N/A, no fail-safe
Leakage	Port A: max. $5*10^{-6}*K_{vs}$ (according to EN 60534-4, class IV-S1) Port B: max. $10^{-3}*K_{vs}$ (according to EN 60534-4, class III)

Connections

Number of ports	3
Type of end-connection	Externally threaded, ISO 228-1
Inner dimension of ports	DN size
Dimension of end-connection threads	DN 25 - G 1 1/2, DN 32 - G 2

Size and capacity

DN size	**Capacity [K_{vs}]**
DN 25-6.3	6.3
DN 25-10	10
DN 32-16	16

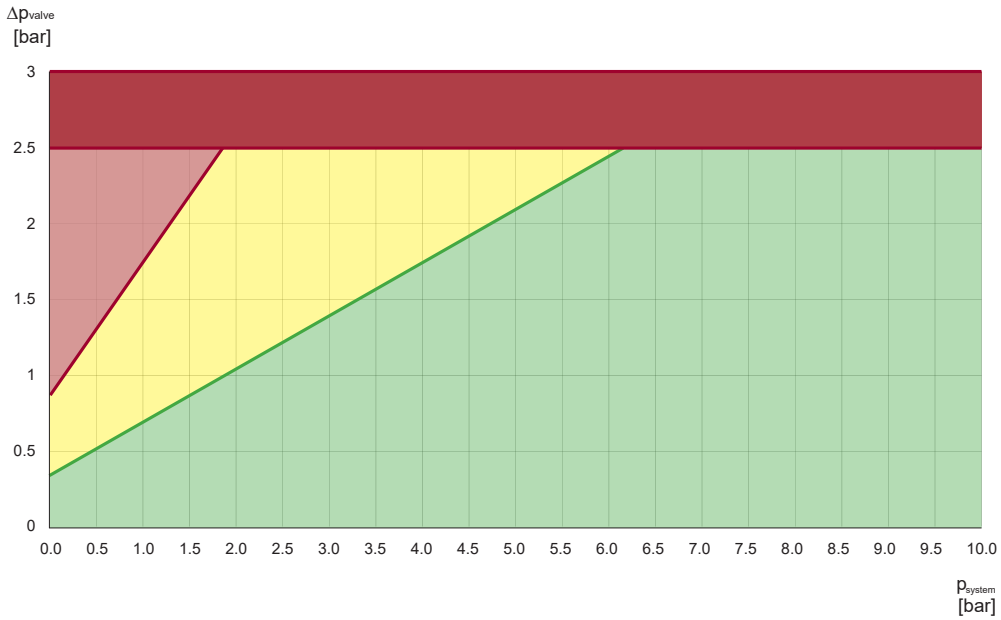
Media and working conditions

Minimum temperature	0 °C, non-freezing
Maximum temperature	90 °C
Maximum temperature, short term	110 °C, non-boiling
Minimum differential pressure	0 bar
Maximum differential pressure for normal operation and close-off	2.5 bar
Maximum differential pressure for positioning	5 bar
Maximum differential pressure, not for normal operation	10 bar
Maximum rated working pressure (PS)	10 bar
Liquid types	Water Water-glycol-mixtures with up to 50 % glycol Water-ethylene-mixtures with up to 50 % ethylene
Not suitable for drinking water.	

Wetted materials

Valve housing	Cast iron GJS500-7, CED coated
O-rings	EPDM (EP70)
Seats	Carbon reinforced PTFE
Ball	Brass CW314N, Ni and Cr plated
Other metal parts	Stainless steel
Friction discs	PTFE
Other plastic parts	PPS 40-GF
Non-return valve	PPO, EPDM, stainless steel
Sensors	PPS, EPDM, corrosion-resistant coating

Cavitation risk



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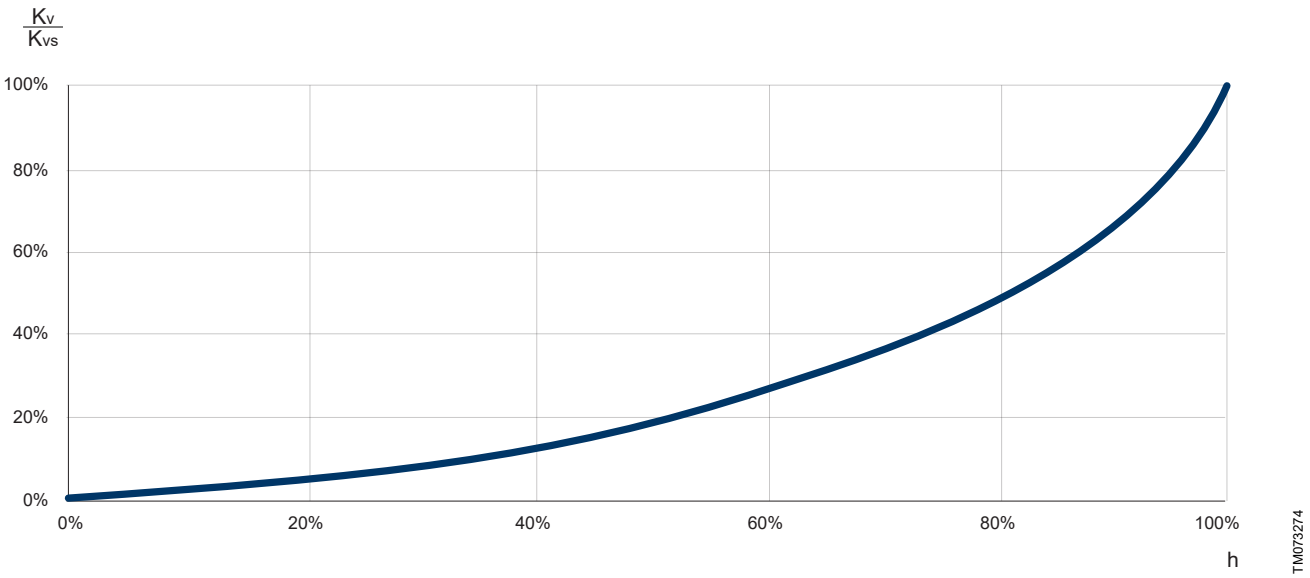
Cavitation risk in a system with a liquid temperature of 20 °C. Y axis: Differential pressure [bar]. X axis: Static pressure, relative [bar].

Coloured area	Description
Green	No or very low risk of cavitation
Yellow	Risk of cavitation
Red	Cavitation
Dark red	The differential pressure must not exceed 2.5 bar.

As a rule of thumb, the relative static pressure must be at least 3 times the differential pressure across any valve in the system. According to the figure above, cavitation is present in the light red area, while the dark red area is out of specification. Stay clear of the red areas and carefully consider avoiding the yellow area. The risk of cavitation increases with the temperature, and thus the static pressure must be adjusted accordingly.

10.10.1 Valve characteristics



Modified equal percentage curve, inherent flow characteristic. Y axis: K_v/K_{vs} in percentage. X axis: Relative travel, h.

100 % on the Y axis equals the maximum K_v value (K_{vs}).

Inherent flow characteristic A-AB	Modified equal percentage (tested according to EN 60534-2-4 and VDI/VDE 2173)
Inherent flow characteristic B-AB, three-way function	Modified equal percentage (tested according to EN 60534-2-4 and VDI/VDE 2173)
Inherent flow characteristic B-AB, two-way function	Fully open
Inherent rangeability A-AB	>150 (tested according to EN 60534-2-4 and VDI/VDE 2173)

11. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way.

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

The crossed-out wheelie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities. The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at *www.grundfos.com/product-recycling*.

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