BOSCH

Installation and maintenance instructions for specialists

Heat Interface Unit

FLOW 8000 D

F8000 40/50/60 D / F8000 40/50/60 DH

6721872703 (2024/07) UK

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1 Explanation of symbols and safety instructions

1.1 Explanation of symbols

Warnings

In warnings, signal words at the beginning of a warning are used to indicate the type and seriousness of the ensuing risk if measures for minimising danger are not taken.

The following signal words are defined and can be used in this document:

DANGER

DANGER indicates that severe or life-threatening personal injury will occur.

WARNING

WARNING indicates that severe to life-threatening personal injury may occur.

CAUTION

CAUTION indicates that minor to medium personal injury may occur.

NOTICE

NOTICE indicates that material damage may occur.

Important information

The info symbol indicates important information where there is no risk to people or property.

Additional symbols

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document
•	a list entry
–	a list entry (second level)

Table 1

1.2 General safety instructions

⚠ Notices for the target group

These installation instructions are intended for heating and electrical contractors. All instructions must be observed. Failure to comply with instructions may result in material damage and personal injury, including danger to life.

- ▶ Read the installation, service and commissioning instructions (heat source, heating controller, pumps, etc.) before installation.
- ▶ Observe the safety instructions and warnings.
- ▶ Follow national and regional regulations, technical regulations and guidelines.
- ▶ Record all work carried out.

⚠ Transport information

- ▶ Only remove packaging just before assembly.

- ▶ Wear protective gloves when transporting the HIU.
- ▶ Use suitable means of transportation (e.g. sack truck).

⚠ Mounting method

- ▶ Do not shut off pressure-relief valves.

Risk of fire from soldering and welding!

High pressures and high temperatures may occur on the primary side.

- ▶ Wear suitable protective equipment.

⚠ Packaging

The following points should be observed during unpacking.

- ▶ Check the delivery immediately upon receipt for completeness and possible transport damage.
- ▶ In the event of transport damage, the delivery should only be accepted conditionally.
- ▶ Do not use damaged components for assembly.
- ▶ Carefully unpack the unit.
- ▶ Ensure that all packaging material is removed and that the unit is free from all materials that may prevent the unit from operating correctly.

⚠ Electrical work

Electrical work must only be carried out by electrical installation contractors.

Before starting electrical work:

- ▶ Isolate all poles of the mains voltage and secure against reconnection.
- ▶ Make sure the main voltage is disconnected.
- ▶ Before touching live parts: Wait at least 5 minutes to discharge the capacitors.
- ▶ Observe the wiring diagrams of other system components as well.

⚠ Health and safety

The appliance contains no asbestos and no substances have been used in the construction process that contravene the COSHH Regulations (Control of Substances Hazardous to Health Regulations 1988).

⚠ Intended use

The HIU provides DHW and heating energy to each single apartment.

- ▶ Only use the HIU in sealed systems for central heating and DHW heating.
- ▶ To ensure compliance with the intended use, observe the information on the data plate and the specifications.
- ▶ Only install the HIU in frost-free room or enclosure. Ensure a ambient temperature range of 2 °C to 35 °C.
- ▶ Only install the HIU straight and vertically upright, as described in these instructions.

⚠ Danger of burns and scalds

Individual components and discharging water can be very hot and inflict burns.

- ▶ Do not touch hot surfaces.
- ▶ Unless you know what the temperature of the discharging water is, you should not touch it.

⚠ Inspection and maintenance

Regular inspection and maintenance are prerequisites for safe and energy efficient operation of the heating system.

We recommend you inspect the HIU at least every three years in line with BSRIA guidance.

- ▶ Have work carried out only by an approved installer.
- ▶ If any faults are discovered, have them remedied immediately.

⚠ Handover to the user

When handing over the heating system, explain the operation and operating conditions to the operator.

- ▶ Explain operation – with particular emphasis on all safety-related actions.
- ▶ Highlight the following points in particular:
  - – Point out that modifications or repairs may be carried out only by a competent contractor.
  - – To ensure safe and environmentally compatible operation, an inspection every three years, and also cleaning and maintenance if required, must be carried out.
- ▶ Point out the possible consequences (personal injury and possible danger to life or material damage) of not carrying out inspection, cleaning and maintenance correctly, or omitting it altogether.
- ▶ Hand over the installation and operating instructions to the user for safekeeping.

2 Product Information

2.1 Scope of delivery

- ▶ Check that the delivery is complete and undamaged.

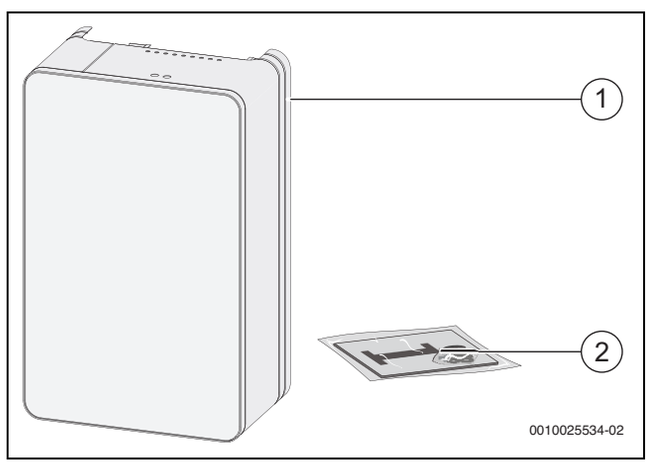

Fig. 1 Scope of delivery of heat interface unit

[1] Heat Interface Unit
[2] Installation and maintenance instructions, gaskets (10 x), drilling template

2.2 Product description

The heat interface unit (HIU) is used to provide heating energy and potable hot water.

The HIU complies with the COSHH regulations (Control of Substances Hazardous to Health Regulations 1988).

To remove the cover of the wall mounted HIU:

- ▶ Undo the screws at the bottom [2] and lift cover [1] up and out of the frame.

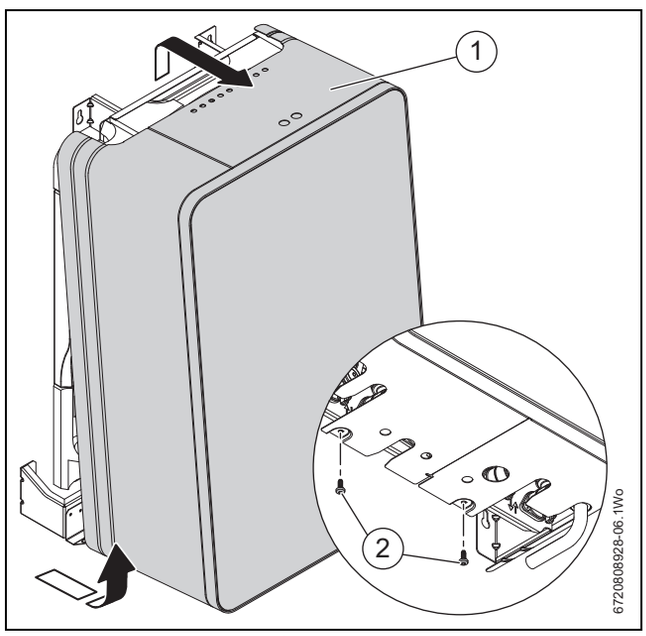

Fig. 2 Removing the cover of the wall mounted station

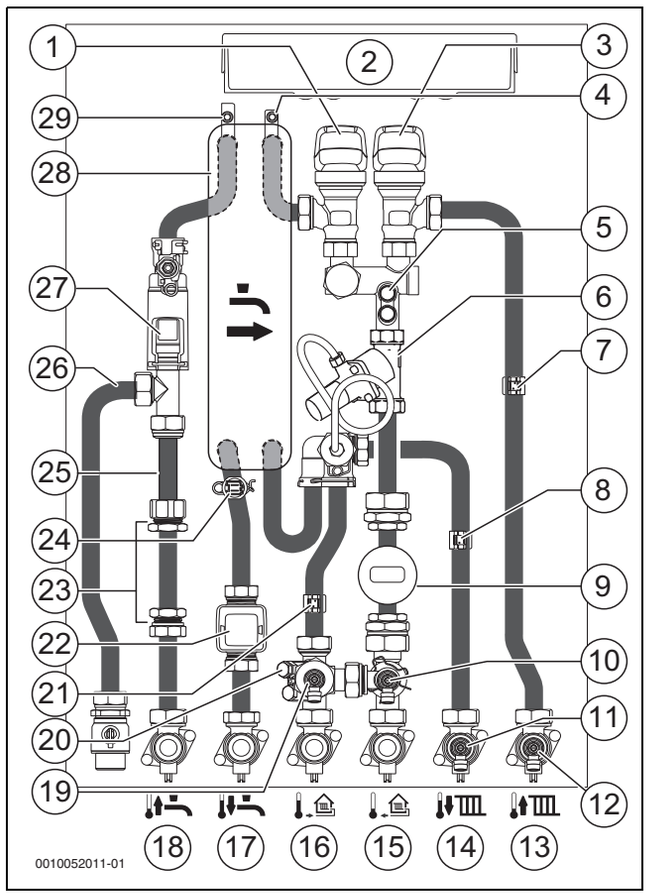

Fig. 3 Station with heating circuit

[1] DHW control valve
[2] Control unit
[3] Heating control valve
[4] Primary circuit air vent valve
[5] Connection heat meter return (optional)
[6] Differential pressure control valve, do not change adjusting screw!
[7] Return temperature sensor NTC for heating circuit (tertiary side)
[8] Flow temperature sensor NTC for heating circuit
[9] Heat meter, 130 × G1 / 110 × G¾ (optional)
[10] Drain valve, or accessory thermal bypass (optional)
[11] Heating circuit drain valve, flow
[12] Heating circuit drain valve, return
[13] Heating circuit return connection 22 mm compression ring fitting
[14] Heating circuit flow connection 22 mm compression ring fitting
[15] Primary circuit return connection 22 mm compression ring fitting (option: flat face fitting)
[16] Primary circuit flow connection 22 mm compression ring fitting (option: flat face fitting)
[17] Hot water connection (DHW) 22 mm compression ring fitting
[18] Cold water connection (CWC) 22 mm compression ring fitting
[19] Primary circuit drain valve and strainer
[20] Heat meter flow sensor connection M10x1
[21] Flow temperature sensor NTC primary circuit
[22] DHW over temperature valve (optional, need to be installed, if the primary flow is above 70 °C)
[23] Adapter for cold water meter (optional)
[24] DHW temperature sensor NTC
[25] Water hammer arrestor (optional)
[26] Cold water outlet (optional)
[27] Flow turbine and limiter with strainer
[28] Plate heat exchanger
[29] DHW air vent valve

DHW mode
- Opening the water tap activates the flow turbine [27]. The minimum volumetric flow rate is 2 l/min.
- The DHW control valve [1] modulates the heating water on the primary side to achieve the preset DHW temperature.
- The control valve for the heating remains closed [3] (DHW priority function).
- Primary side heating water flows through the plate heat exchanger [28] and heats the potable water instantaneously.
- If there is a risk of scalding, the DHW over temperature valve [22] interrupts the flow. The valve opens automatically following a cool down time.

Heating mode
- The control valve for the DHW [1] remains closed until DHW is requested (DHW priority function).
- The heating control valve [3] modulates according to the required heating capacity. The flow temperature remains the same and corresponds to the flow temperature of the primary circuit.

Summer bypass function
- This function bypasses the longer heating-up period of the pipework in the primary circuit which occurs when the heat interface unit has been inactive for a longer period. This reduces the DHW heating waiting times. The heat exchanger is not kept warm continuously. The summer bypass function can be activated in two ways.
- Variant 1 (standard) - electronic keep hot without manual thermostatic bypass, using the default electronic bypass. The DHW control valve [1] is used to allow water to flow through the HIU. The trigger temperature for this function is fixed at 41°C and can only be changed by a Sense II room controller (accessory). With this version, the quantity of heat is recorded by the heat meter (option) [9].
- Variant 2 (accessory) - using the manual thermostatic bypass option [10]: the heating water in the primary circuit flows through the bypass valve. This ensures that the temperature of the hot water at the heat interface unit is 30-70 °C. In this case the quantity of heat is **not** recorded by the heat meter (accessory) [9]!

If the manual thermostatic bypass valve is installed, the electronic bypass function must **not** be selected in the Sense II and the jumper must be removed (→Fig. 13.2, page 31).

Frost protection
- System frost protection: as soon as the temperature sensor [8] sends a frost protection signal, the heating control valve opens.
- Device frost protection: as soon as the temperature at the flow temperature sensor [21] for the heating is below 5 °C, the control valve opens the heating.

Limiting the return temperature in the heating circuit
- If the system is designed correctly, it is not necessary to limit the return temperature [7].
- The return temperature limit is set to 80 °C at the factory.
- This temperature can only be changed with the Sense II.
- When the Sense II is removed, the set value is saved.

2.3 Type Plate

The data plate includes the performance information, BESA Test Identification Number, approval data and serial number of the product [2]. There is an additional data plate behind the control unit [1].

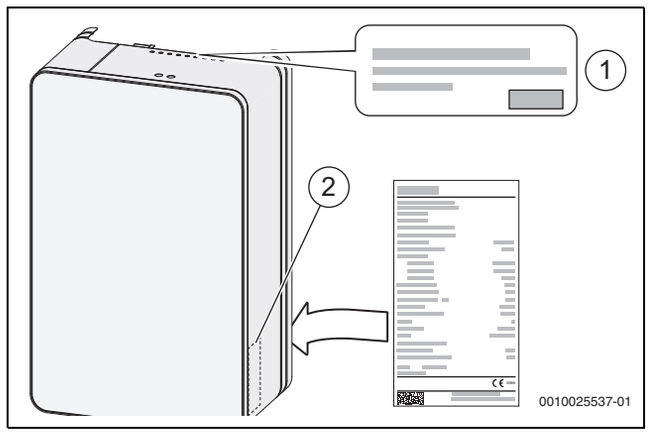

Fig. 4 Type plate and data plate

2.4 Appliance type overview and accessories

Example appliance: F8000 40DH
- F8000 = heat interface unit
- 40 = type
- D = Direct
- H = Heat meter

Type	Type-Nr.	Accessory NOT possible
F8000 40 D	7735600733	Heat meter wired Mbus
F8000 40 DH[1)]	7735600734	Heat meter adapter kit
F8000 50 D	7735600735	Heat meter wired Mbus
F8000 50 DH [1)]	7735600736	Heat meter adapter kit
F8000 60 D	7735600737	Heat meter wired Mbus
F8000 60 DH [1)]	7735600738	Heat meter adapter kit

1) with heat meter wired Mbus (standard)

Table 2 Appliance type overview

Refer to the Technical product brochure for a complete overview of all available accessories. Information on assembly is enclosed with the accessories.

Flushing valve	7733600133
Recommended for retrofits: • Filter central heating Mini 22 mm • Magnetic-Filter central heating 22 mm	 7733600266 7733600236
Rear vertical piping kit	7733600127
Water hammer arrestor	7735600804
Cold water outlet	7735600806
Sense II (room controller)	7738111064
Security fixings	7733600281
Summer bypass valve	7733600132
DHW over temperature valve (need to be installed, if the primary flow is above 70 °C)	7735600808
Mounting plate and flat face fittings	7735600758
Mounting plate and compression fittings	7735600759

Table 3 Accessory part

2.5 Product dimensions and minimum clearances

The protection class of the station is IPX4D.

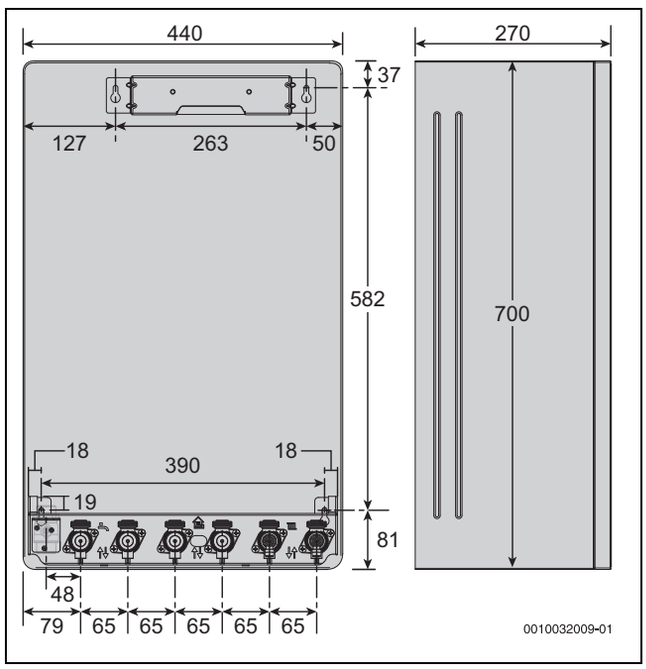

Fig. 5 Dimensions, sizes in mm

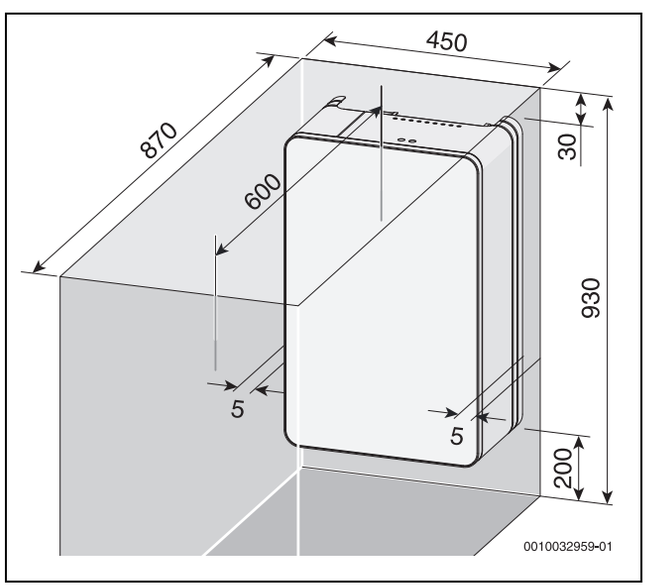

Fig. 6 Minimum clearances in mm for assembly and maintenance

Assembly in a cabinet

The minimum clearances specified below apply in addition to the normal minimum clearances.

- ▶ Make sure that the temperature in the cabinet does not exceed 35 °C.
- ▶ Provide ventilation openings at the top and bottom each of which are at least 240 cm^2.

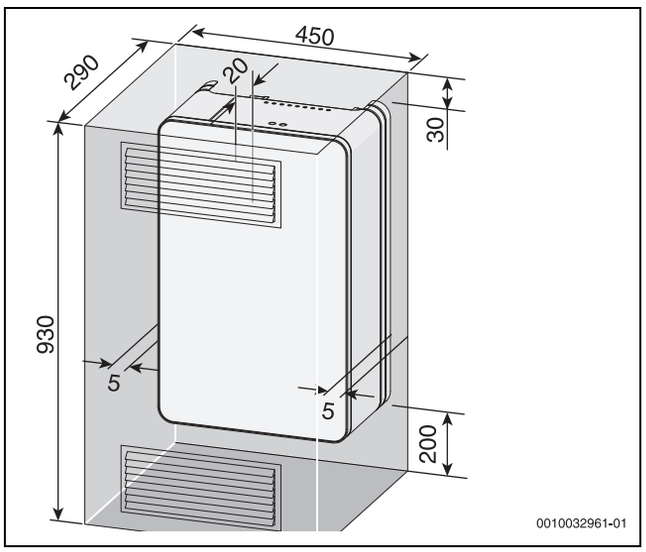

Fig. 7

2.6 Declaration of conformity

The design and operating characteristics of this product comply with the British requirements.

UK CA The UKCA marking declare that the product complies with all the applicable British legislation, which is stipulated by attaching these markings.

The complete text of the Declaration of Conformity is available on the Internet: worcester-bosch.co.uk.

3 Regulations

- ▶ Observe updated regulations or supplements. These regulations also apply at the time of installation.
- ▶ Observe all standards and guidelines applicable to the installation and operation of the system in your country and region.

Standards and Guidelines

- **Building Regulations Part L** (conservation of energy in buildings)
- **BS12502** Part 1 and 2
- **HSG85** (electrical separation)
- **GS38** (test equipment)
- **BS7671** (IET wiring regulations)
- CIBSE CP1(2020) Heat networks code of practice for the UK
- Local standards and regulations for the electrical connection and safety equipment of the water-filled heating system.

4 Preparatory work

4.1 Observe general notices

- ▶ Remove the packaging, observing all notices in the packaging.
- ▶ Mount the HIU as close as possible to the most frequently used water draw-off point.
- ▶ When assembling the pipework, secure the connections at the HIU to prevent twisting.

Other components required

NOTICE

Push by due to excessively high differential pressure

The maximum differential pressure in the primary circuit of heat interface units with integrated differential pressure control valve is 400 kPa (4000 mbar).

- ▶ Where necessary, install a suitable control to limit the differential pressure.

- ▶ Protect the primary heating circuit with an expansion vessel and pressure-relief valve in accordance with BS EN 12828.

As the heat interface unit is not always accessible, we recommend using a central automatic air separator or a deaerator in the primary circuit.

- ▶ Install drain valves at all the low points in the system.
- ▶ Install air vents at all the highest points in the system.
- ▶ Install thermostatic radiator valves in accordance with CIBSE CP1.

DHW - water quality

- ▶ Comply with limits in the following table.
- ▶ Comply with UK Water Regulations.

CAUTION

Failure of the station due to calcification of heat exchanger.

- ▶ If the water hardness is 20°dH or more, install a water softener unit.

To minimise calcification of the heat exchanger, we recommend you install a water softener unit if the water hardness is **14°°dH** or more.

	Unit	Value
Water hardness	°dH	< 20
pH value		6.0 - 9.5
Conductivity	µS/cm	10 - 2790
Sulphate	mg/l	< 250
Chloride	mg/l	< 80

Table 4 Suitability of the potable water supply

Heating water quality

Water treatment and quality for the primary heat network should comply with the water treatment guidance contained within CIBSE CP1.

BASF Glythermin NF (20-62%)	Sentinel X100 (1-2%)
Fernox F1	Sentinel X200
Fernox F1 express	Sentinel X400
Fernox Alphi-11	Tyfocop Tyfocor L (25-80%)
Hoechst Antifrogen N (25-40%)	MC1+ Protector
Hoechst Antifrogen N+L (40%)	MC3+ Cleaner
Nalco Nalco (1-2%)	MC2 Silencer
Nalco Varidos 1+1 (1-2%)	MC ZERO (25-40%)
Nalco Varidos FSK (22-55%)	

Table 5 Typical additives for the heating water

4.2 Pipework installation

Any plastic pipe-work used on the central heating system must have a polymeric oxygen barrier coating.

- ▶ Carry out a pipe network calculation to determine the pipework sizes. Observe specified pressure losses of the HIU.
- ▶ Fit pipework and connections without stress.
- ▶ Sufficiently insulate all pipework leading to the HIU (according to CIBSE CP1 guidance).

Showers/bidets

- Ensure that the shower is suitable for use with mains water pressure.
- If a shower head can be immersed in water or comes closer than 25mm from the top edge of a bath or shower tray spill over level then an anti-siphon device must be fitted to the shower hose.
- Bidets with direct hot and cold mains water can be used (with the approval of the local water authority) and must be the over rim flushing type with shrouded outlets to prevent the fitting of hand held sprays.

Water pressure

- ▶ Observe water pressure limits (→ Appendix, page 26).

5 Assembly

5.1 Installation sequence

▶ For detailed information, refer to the following chapters.

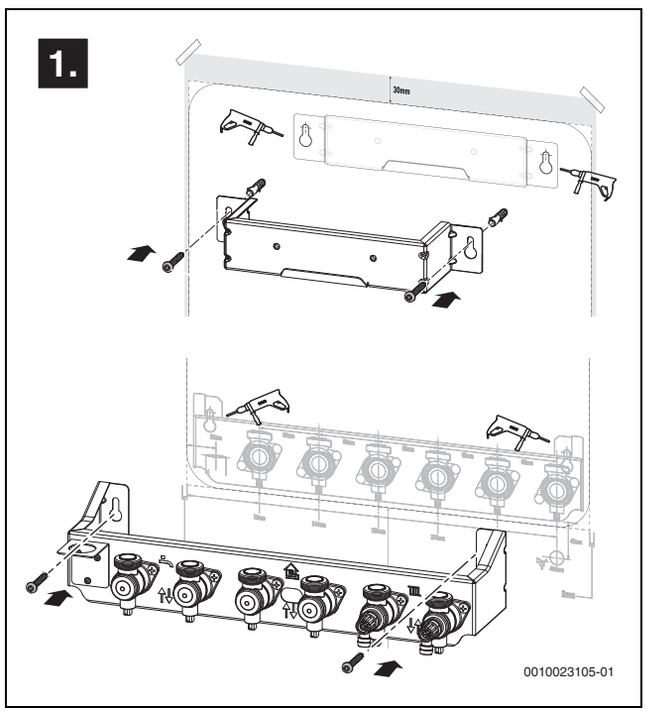

Fig. 8 Attach template, drill holes, install wall mounting bracket and mounting plate

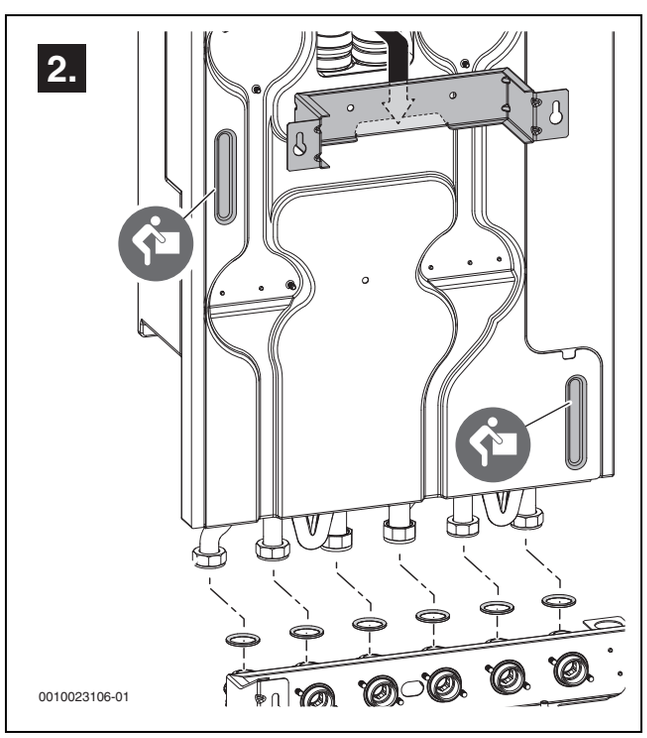

Fig. 9 Insert gaskets and hang HIU

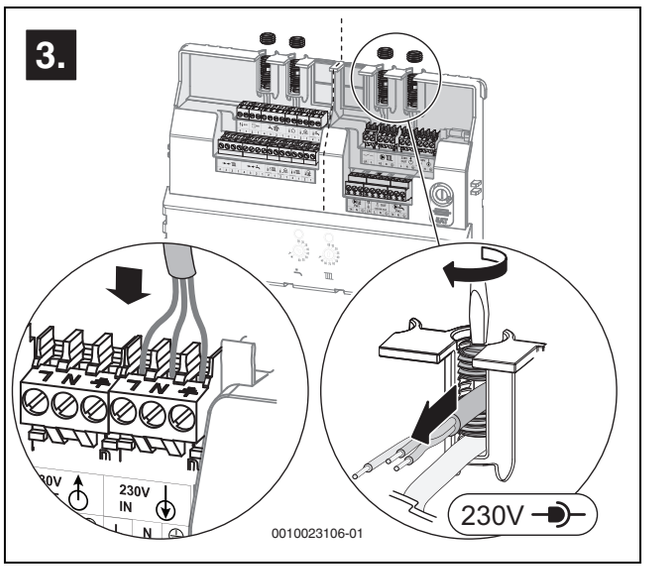

Fig. 10 Electric connection

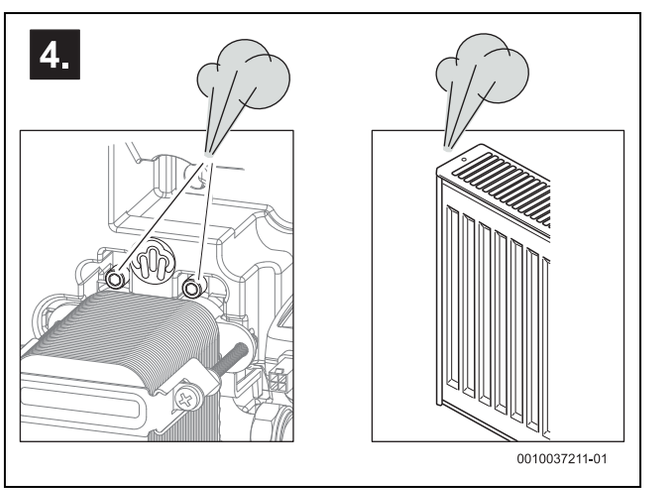

Fig. 11 Vent: HIU and radiator

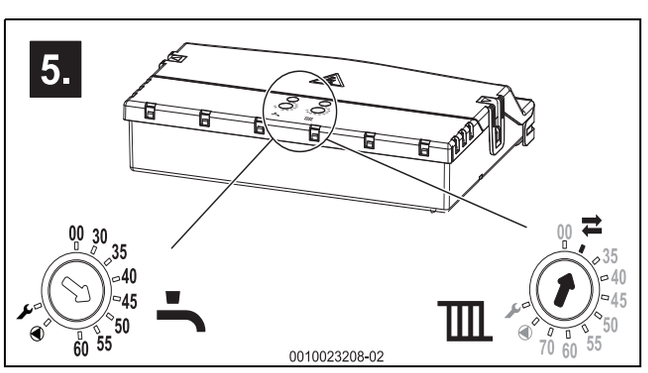

Fig. 12 Set rotary selector on control unit

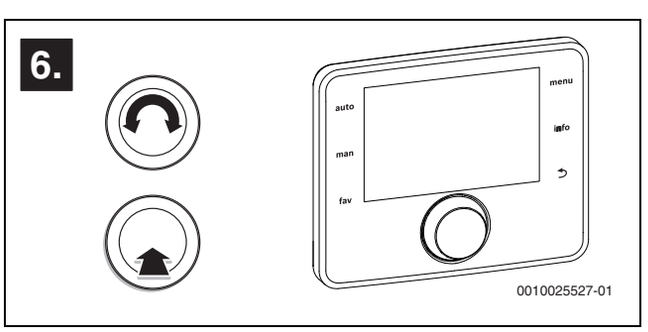

Fig. 13 Set room controller Sense II, if installed

5.2 Mounting wall mounting bracket

NOTICE

Incorrect assembly can cause material damage.

If the device is assembled incorrectly, it may fall off the wall.

- ▶ Only install the device on a rigid, solid wall. This wall must be able to carry the weight of the device and must at least be as large as the bearing surface of the device.
- ▶ Only use screws and rawl plugs that are suitable for the wall type and weight of the device.

The following hole patterns are printed on both sides of the drilling template:

- Installation on finished wall, wall mounting bracket at top, mounting plate at bottom.
- Installation on unfinished wall, hole at top for hanging the HIU when installing cabinet provided by the customer on unfinished wall, mounting plate at bottom.

- ▶ Align template with spirit level [1] and attach to wall [2]. Observe the minimum clearances.
- ▶ Drill holes for wall mounting bracket [3] and mounting plate (accessory).

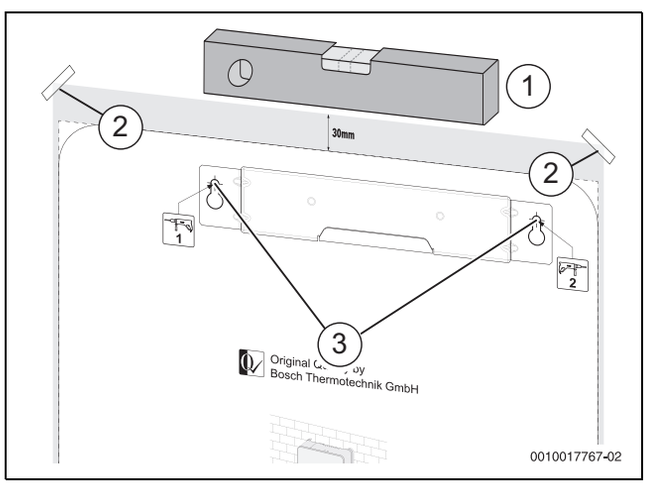

Fig. 14 Drilling template (wall mounting bracket at top), on finished walls

- ▶ Attach wall mounting bracket [1] securely to wall. Use appropriate screws [2] and anchors for this.

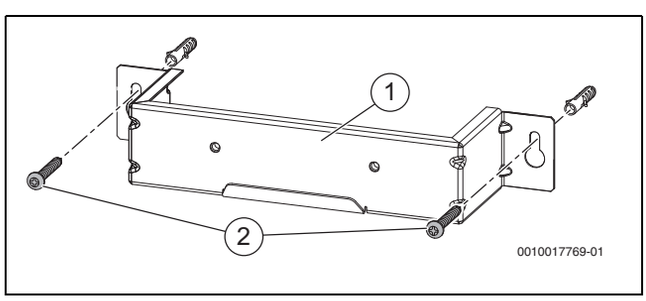

Fig. 15 Installing the wall mounting bracket

5.3 Installing the mounting plate (accessory)

The mounting plate makes it easier to connect the pipework to the HIU and is a necessary accessory.

- ▶ Attach mounting plate securely.
- ▶ Connect pipework to mounting plate.

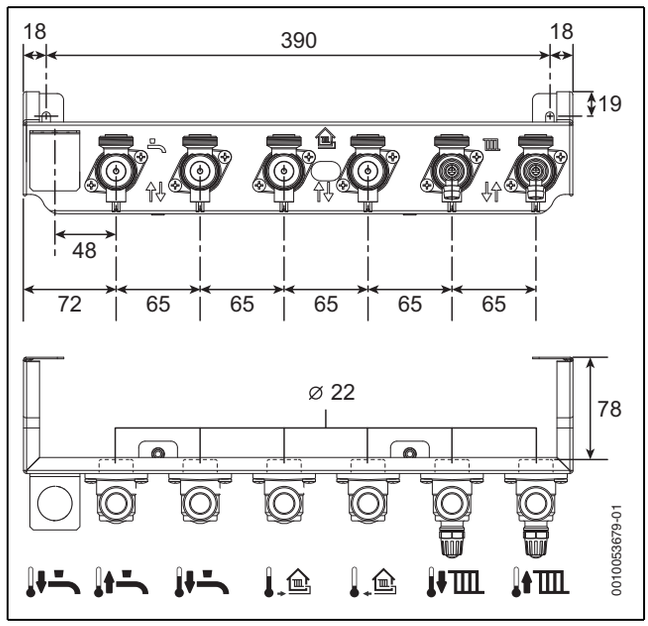

Fig. 16 Mounting plate, dimensions in mm

5.4 Hanging the HIU

- ▶ Insert the enclosed gaskets before hanging the HIU. The blue gaskets [4] are for the potable water connections.
- ▶ Place the suspension point of the HIU [1] on the hook [3] of the wall mounting bracket [2].
- ▶ Tighten the connections [5].

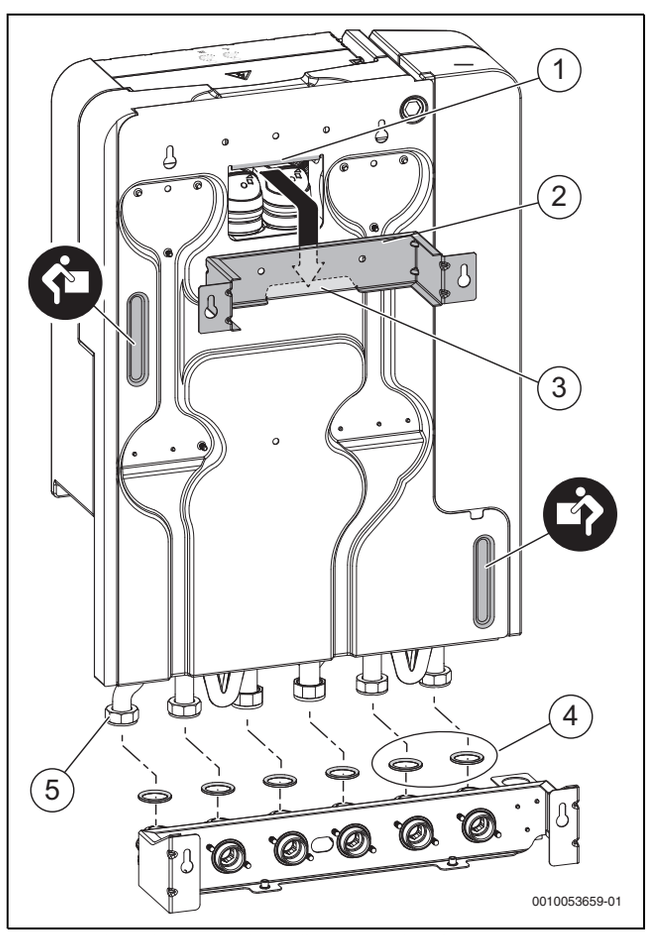

Fig. 17 Place the HIU on the wall mounting bracket

6 Electrical connection

WARNING

Danger to life from electric shock!

Touching live electrical parts can cause an electric shock.

- ▶ Before installing accessories: Disconnect the power supply to the heat generator, building management system and any other BUS systems (all poles) and secure against unintentional reconnection.

You can also find information on safe electrical isolation in the Health and Safety Executive guidance HSG85 and in the GS38.

NOTICE

Overload damage

Never exceed the specified maximum power input.

- ▶ Install a standard all-pole isolator (to EN60335-1) to disconnect the mains voltage.

Electrical work may only be performed by qualified electricians.

- ▶ Only connect to a single phase and earth system.
- ▶ Any system/appliances connected to the HIU must not have a separate power supply.
- ▶ Use a Type A residual current device if additional protection is required.

The module is prewired. All you need to do is connect the accessories (if applicable) and connect to the mains power supply.

6.1 Opening the control unit

To access the unit:

- ▶ Pull the unit [1] forwards and attach to the holder of the heat exchanger [2].

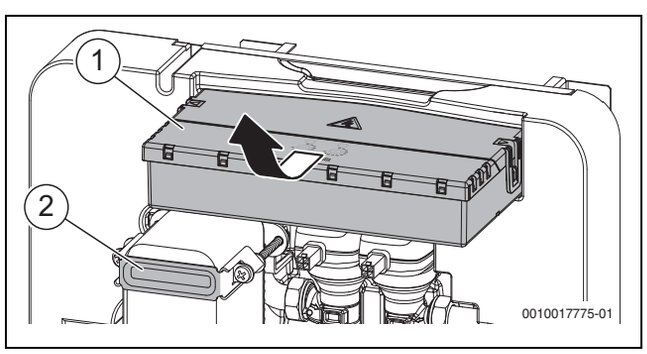

Fig. 18 Move the unit into the service position

- ▶ Release locking devices [4].
- ▶ Fold up cover [3].

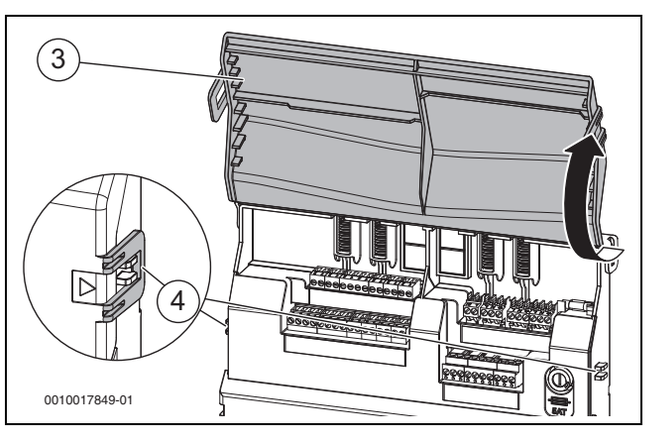

Fig. 19 Fold up cover

6.2 Control unit terminals

In this chapter, you will find an overview of the components that are connected at the factory and the components you need to connect yourself (→ chapter: appendix, wiring diagram).

The following chapters show how to establish the connection itself and secure the cable.

Connections made to the control unit at the factory

Connection	Function	Cables/wires
63 N	Heating pump (only with HIU with integrated pump)	• Phase (63, brown) • PEN conductor (N, blue) • Earthing (green/yellow)
4 3 2 1	Turbine, DHW flow rate	• Red (4) • Yellow (2) • Black (1)
2 1	NTC temperature sensor, primary circuit	• White (2) • White (1)
2 1	NTC temperature sensor DHW	• Blue (2) • Blue (1)
4 3 2 1	Heating control valve	• Brown (4) • Black (3) • White (2) • Yellow (1)
4 3 2 1	DHW control valve	• Blue (4) • Green (3) • Grey (2) • Red (1)
2 1	Flow temperature sensor NTC, heating circuit	• Yellow (2) • Yellow (1)
2 1	Return temperature sensor NTC, heating circuit	• Green (2) • Green (1)
2 1	Electronic summer bypass	• Jumper

Table 6 Components connected to the control unit at the factory

Accessory connections to be established on site (if available)

Connection	Function	Cables/wires
LR L	Temperature limiter, underfloor heating system	• Volt free
230V OUT L N	External control modules 230 V (output)	• Phase (L) • PEN conductor (N) • Earthing
230V IN L N	Mains power supply to HIU (input)	• Phase (L) • PEN conductor (N) • Earthing
OUT 120/230 VAC LR L N	External time and temperature control (e.g. 230 V room thermostat)	• On-off switch (LR) • Phase (L) • PEN conductor (N) • Earthing

Table 7 Accessory connections to 230 V mains voltage, if available

Connection	Function	Cables/wires
EMS 2 1	BUS connection, Sense II room temperature-dependent controller	• Not polarity sensitive
2 1	Outdoor ambient temperature sensor	• Not polarity sensitive

Table 8 Accessory connections to low voltage (signal cable), if available

6.3 Wiring the control unit

This section shows which connections you can use to connect accessories to the control unit.

Heating circuit with radiator

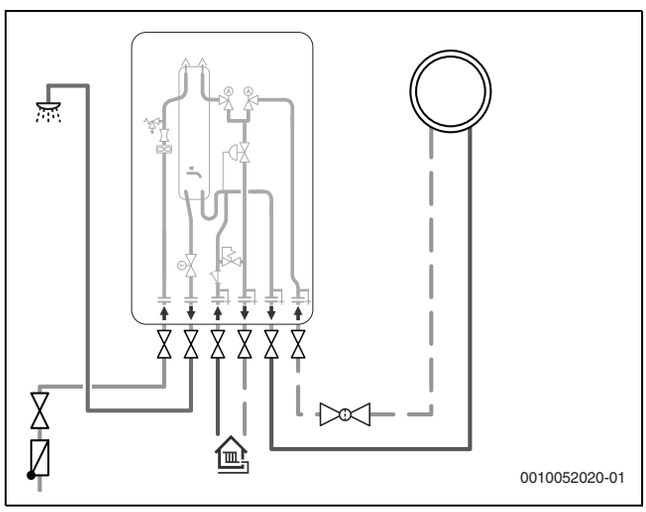

Fig. 20 Heating with radiators

Connection	Function
2 1	Outdoor ambient temperature sensor
EMS 2 1	BUS connection for Sense II room temperature-dependent controller

Table 9 Option 1: Sense II room controller connection

Connection	Function
OUT 120/230 VAC LR L N	External time and temperature control (e.g. 230 V room thermostat)

Table 10 Option 2: 230 V programmable room thermostat

6.4 Cable preparations

WARNING

Risk of fire due to damaged cables!

Hot appliance parts in the HIU can damage the cables and cause fire.

▶ Do not route cables along hot appliance components.

NOTICE

Damage to control unit!

Small pieces of wire can cause shorts and damage to electronics.

▶ Make sure when stripping the cables that copper strands do not fall into the module.

▶ Strip the cable so that the earth conductor is longer than the other wires.

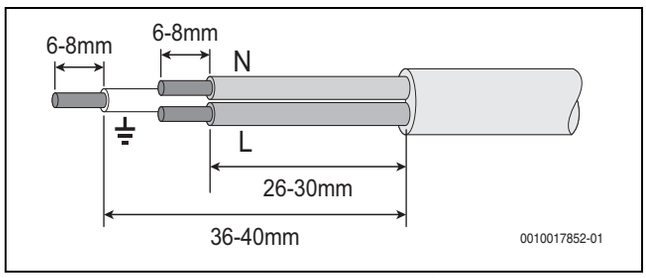

Fig. 21 Cable preparations (here: power cable)

6.5 Connecting and securing the cable

Each cable entering the control unit must pass through and be secured by a cable clamp.

To remove the cover [1]:

▶ Release locking devices [2] with a screwdriver.

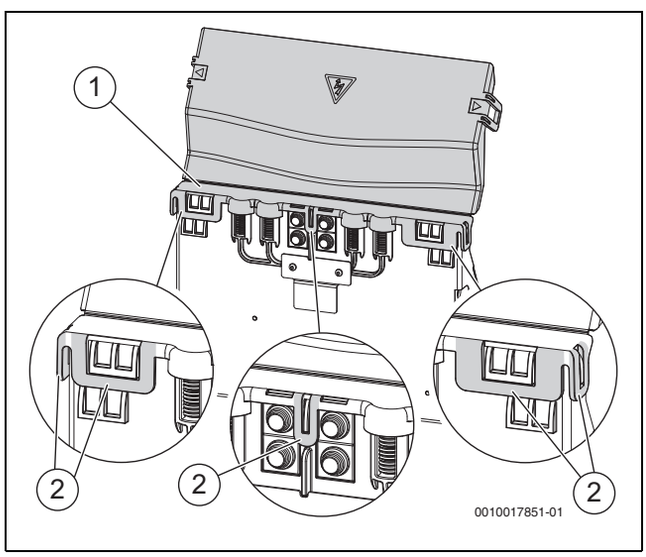

Fig. 22 Remove cover

▶ Undo locking screw [3].

▶ Feed the cable [4] through the cable clamp. Make sure that the cable is long enough to reach the connections.

▶ Fix cable with locking screw [3].

▶ Connect the cable to the terminals.

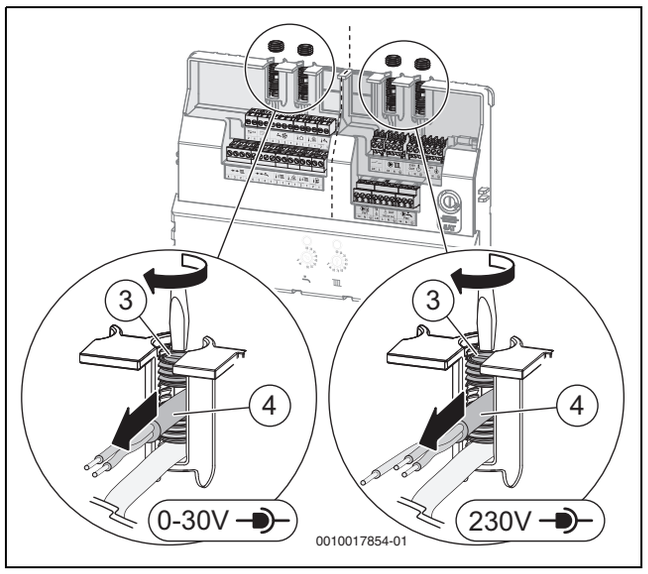

Fig. 23 Securing the cables

7 Commissioning

Make all electrical connections in accordance with the wiring diagram and then carry out the commissioning!

▶ Observe the installation instructions for all components and assemblies in the system.

Before commissioning, ensure the system has been filled and flushed from the primary side.

Procedure:

To commission the overall system, follow the sequence of steps below (described in the following chapters):

1. Fill flush and vent the system.
2. Adjust the control unit at the rotary selector
3. Adjust the room control for the heat interface unit and the heating circuit.
4. Fill out the commissioning checklist.

7.1 Filling, flushing and venting the system

Purging the primary circuit

▶ Refer to CIBSE CP1 for water quality requirements and to BSRIA BG29 for system flushing.

NOTICE

Blocking of HIU filter due to dirt

▶ Do not flush supply network through HIU to avoid accumulation of dirt at HIU filter. Use flushing bypass or manifold.

When installing in a **retro fit** ensure the use of an external filter [1] for central heating circuit to prevent the accumulation of dirt inside the HIU.

▶ Flush the heating circuit before you put the HIU on.

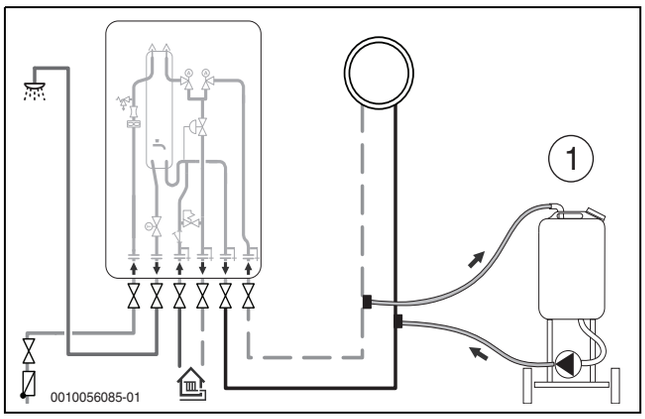

Fig. 24

The primary circuit can be flushed without risk to the heat interface unit using the flushing kit which is available as an accessory.

▶ Close the shut-off valves on the primary side.
▶ Open the shut-off valve on the flushing kit to flush the pipework.
▶ Close the isolation valve once flushing is complete.

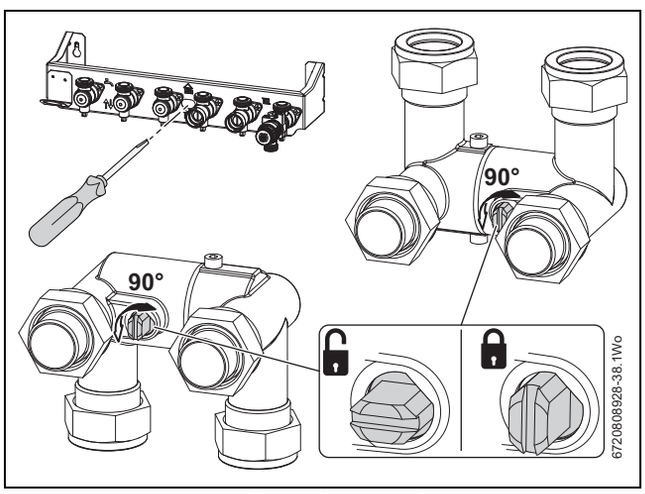

Fig. 25 Flushing kit shut-off valve (accessory)

Heat Interface Unit

CAUTION

Failure of the flow turbine

▶ Open several DHW draw-off points to prevent the formation of compressed air pockets in the pipework.
▶ Carefully fill the system: slowly open the shut-off devices.

▶ To avoid water hammer: **slowly** open the shut-off valves at the cold water inlet and hot water outlet.
▶ Flush the system correctly.
▶ Clean strainer (→ chapter " Cleaning the strainer", page 18).
▶ Fill the system and check for tightness.
▶ Switch on the power supply.
▶ Ensure the correct primary flow rates are available to the HIU (→ chapter " Heat meter (optional)", page 14).

Control valves: the valves can be fully opened via the service function . The valve is calibrated first and then after 10 seconds the valve is opened for 10 minutes. When the power supply is interrupted, the valves remain in position.

When the air vent valves are opened, water may be discharged from the valves.

- ▶ Collect discharging water with a vessel or cloth.

To vent the DHW circuit:

- ▶ Open the water tap. Open the air vent valve on the DHW heat exchanger [1] to allow air to escape.

To vent the secondary circuit (heating circuit):

- ▶ Open the thermostatic valves to open the control valve.
- ▶ Vent the radiators.

To vent the heating circuit:

If the heat meter is reading Error Code E7 (→page 25) the venting process needs to be repeated.

- ▶ Open both control valves with the service function . Open the air vent valve on the heating circuit heat exchanger [2] to allow air to escape.
- ▶ Make sure that the air vents are fully closed after venting.

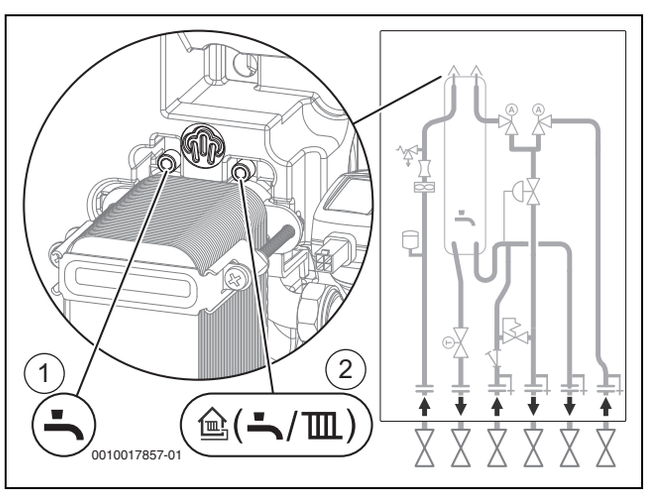

Fig. 26 Manual vent points

Overall system

Air bound in the water is only released after a specific time as a result of pressure fluctuations as well as solution and degassing processes.

- ▶ After 1-2 weeks, vent the system again and top up if required.

- ▶ Vent at every highest point in the system.

7.2 Adjusting the control unit

The LED On/Off indicators of the module are visible through the enclosure.

NOTICE

Risk of scalding due to missing DHW over temperature valve

If the primary flow is above 70 °C:

- ▶ Mounting an DHW over temperature valve (mandatory).

NOTICE

Malfunction due to incorrect setting of rotary selector .

- ▶ Make sure that the rotary selector on appliances with heating circuit (no integrated pump) is at position .
- ▶ To set the desired DHW setpoint temperature, observe the hot water output (→ Page 26).

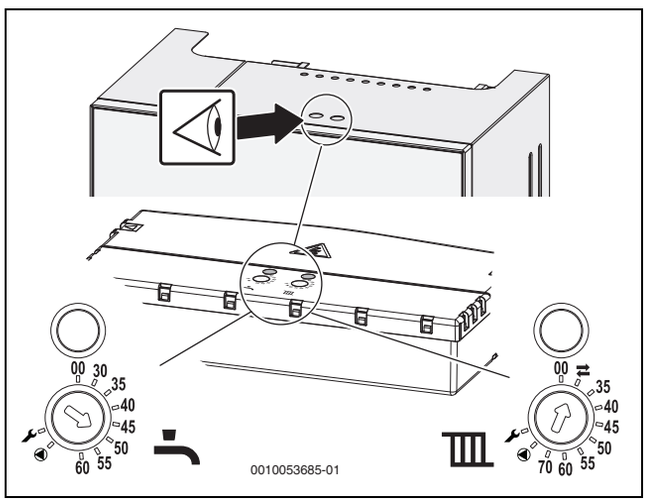

Fig. 27 LED On/Off indicators, rotary selectors on the control unit

If different values are set at the control unit and the room controller (e.g. Sense II), the **lower** value is used for control.

To set the required set DHW temperature, observe the DHW output. CIBSE CP1 recommends for the DHW temperature to be set at 50. (→ Appendix).

Control unit LED display

- ▶ Set the required values at both rotary selectors.

	Description
LED red	→ page 24
LED yellow	Rotary selector at 00 Rotary selector at 30 - 70: → page 24
LED green	Normal mode with set value (30 - 70)
LED flashes red	Invalid position (bypass, heating function deactivated)
LED flashes yellow	Heat interface unit starts
LED flashes green	Calibration or Service mode (/)
	Calibration and test mode of the control valve (once 10 seconds have elapsed, the valve is opened for 10 minutes).
	Service mode of DHW circulation pump
	The rotary selector **must** be at this position!
00	Function off

Table 11 LED displays and positions on rotary selectors

Calibration of the control valves is **not** required during commissioning - only when a control valve fault is displayed (→ Troubleshooting).

7.3 Control valve status indicators

To be able to see the On/Off indicators of the control valves:

▶ Remove the enclosure, insulation and control unit.

LED power-saving mode: if the position of the valves does not change for 15 seconds, the LED displays are not visible.

Indicators	Description
Orange, blue, green	Valve in start up mode. Calibration in progress.
Green	Valve is completely open.
Green and blue	Valve is open between 60 and 99,9 %.
Blue	Valve is open between 40 and 60 %.
Blue and orange	Valve is open between 0.1 and 40 %.
Orange	Valve is completely closed.

Table 12 Control valve status indicators

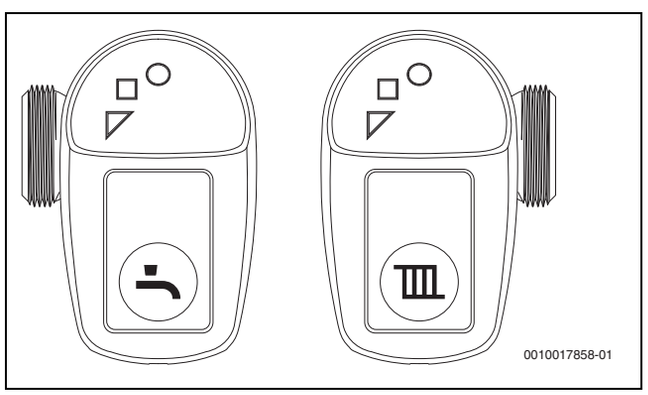

Fig. 28 Circle = green, square = blue, triangle = orange

7.4 Heat meter (optional)

The energy meter uses an ultrasonic flow sensor to record all billing-relevant data for measuring the energy consumed by heating and hot water. The data read out is displayed on different loops in the display.

The seal on the energy meter **must not be damaged!** A damaged seal will result in immediate invalidation of the factory warranty and verification. The cables supplied with the meter must neither be shortened, extended nor changed in any other way.

Legal regulations and operating instructions for the use of energy meters must be observed! The installation must only be carried out by a specialist energy meter installation and electrical company. The personnel must be trained in the installation and handling of energy meters and electrical devices as well as the applicable guidelines. Medium: Water, according to CEN/TR 16911. If water additives are used (e.g. corrosion protection), the user must make sure that the corrosion resistance is adequate.

If the flow sensor is insulated with the pipeline, the calculator must be accessible.

Sensor

The connecting cables must not be shortened or extended!

Communication general

Communication modules must be secured so that opening of meters is only possible by destroying the securing points (e.g. with locking varnish).

Communication via radio

The integrated radio function is for communication via 868 MHz or 434 MHz OMS/M-Bus (Open Metering System) and has the following specifications:

- The module transmits every 8 -256 s (send period max. 0.1 % of duty cycle (min. 8s); variable, depending on protocol length and programming).
- The communication always transfers the currently measured data.
- Transmission frequencies: 434 MHz, transmission power (EN 300 220-2 V3.2.1): 10mW e.r.p. 868 MHz, transmission power (EN 300 220-2 V3.2.1): 25mW e.r.p.
- Encrypted protocol: Real Data Radio or Open Metering Standard.
- Reading modes: Walk-By, Drive-By, Fixed-Network
- For problematic radio installations (shielding) the external wireless module set can also be used.

M-Bus Communication module

The wired M-Bus communication module is a serial interface for communication with external M-Bus monitoring devices and billing systems supporting connection via the M-Bus standard.

- The connection is not polarity-sensitive and is electrically isolated. M-Bus protocol standardised according to EN 1434;
- 300 or 2400 baud (auto baud detect).
- Connection for 2 x 2.5 mm².Power consumption: One M-Bus load

▶ Connect the heat meter M-Bus cable and cable used to connect to the M-Bus compatible external equipment into the connector block [1] in the control unit.

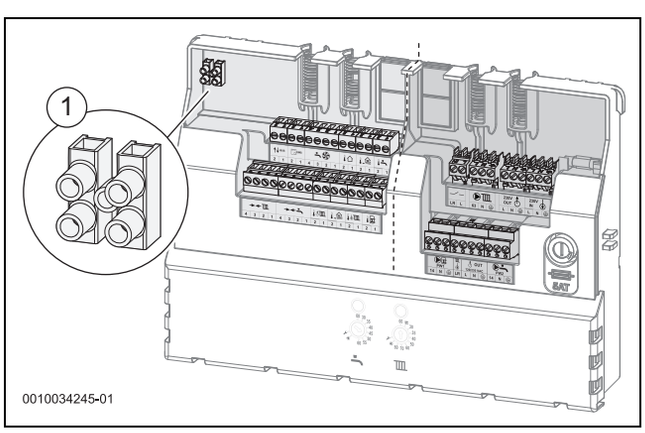

Fig. 29 M-Bus connection

Operation

Pressing the button awakens the meter from power saving mode and activates the display.

- Short button press (< 3 seconds): shift within one loop.
- Long button press (> 3 seconds): switches to the next loop.

- If the button is not pressed for more than 4 minutes, the controller switches off and switches to power save mode.

Display

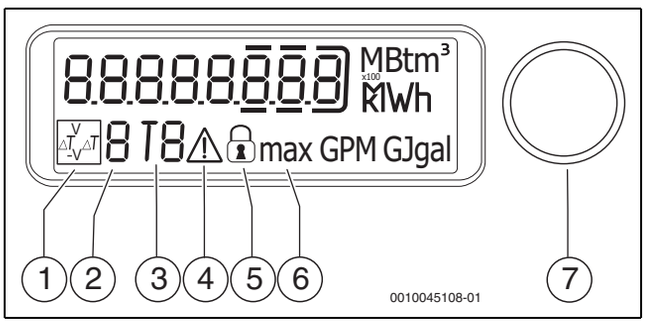

Fig. 30 Display

[1] Quadrant display
[2] Loop number
[3] Tariff loop
[4] Fault symbol
[5] Calibrated value
[6] Maximum value
[7] Button

Menu structure - display sequences

The energy meter has 5 different display sequences (loops). The loops are labelled 1 to 5 in the display.

	Window 1
1.1	Accumulated energy
1.2	Volume
1.3	Accumulated cooling energy (only for cooling tariff)
1.4	Flow
1.5	Power
1.6	Flow/return flow temperature
1.7	Differential temperature
1.8	Operating days
1.9	Error status
1.10	Display test

Table 13 Loop 1- main loop

	Window 1	Window 2	Window 3
2.1	Accounting date 1 Date	Accounting date 1 Energy kWh	Accd 1 A
2.2	Accd. 1	Date of future accounting date 1	
2.3	Accounting date 1 previous year date	Accounting date 1 previous year energy	Accd 1L
2.4	Accounting date 2 date	Accounting date 2 energy	Accd 2A
2.5	Accd 2	Future accounting date	
2.6	Accounting date 2 previous year date	Accounting date 2 previous year energy	Accd 2L
2.7	Accounting date 1	Pulse input 1	Volume pulse input 1

Table 14 Loop 2 - Effective date

	Window 1	Window 2
3.1	Current date	Current time
3.2	Sec_Adr	Secondary address
3.3	Pri_Adr 1	Primary address 1
3.4	Pri_Adr 2	Primary address 2
3.5	Installation position (cold pipe/ return pipe as standard)	(depending on the setting)
3.6	Port 1	0 (no. of installed module in port 1)
3.7	Port 2	1 (no. of installed module in port 2)
3.8	Status of the integrated radio	
3.9	Software version	Check sum

Table 15 Loop 3- Information loop

	Window 1	Window 2	Window3
4.1	Pulse input 1	Cumulative value pulse input 1	Value of pulse (L/P)
4.2	Pulse input 2	Cumulative value pulse input 2	Value of pulse (L/P)
4.3	Pulse output 1	Value of pulse (L/P)	
4.4	Pulse output 2	Value of pulse (L/P)	

Table 16 Loop 4- Pulse loop

	Window 1	Window 2	Window 3	Window 4
6.1	“LOG”	Date-1	Energy	Max. flow rate
6.2	“LOG”	Date-2	Energy	Max. flow rate
....				
6.24	“LOG”	Date-24	Energy	Max. flow rate

Table 17 Loop 6- Month loop

7.5 Setting the control unit Sense II

For information on operating the user interface and the available settings, refer to the instructions for the control unit.

	▶ Turn the selector to highlight a menu item.
	▶ Turn the selector to display or activate a menu item.
menu	▶ Hold the menu key pressed to display the service menu.
	▶ Press the Back key to go back to the higher menu level or to discard the changes.

Table 18 Control elements on the control unit

The heat interface unit behaves like a heat generator in the EMS system and is displayed as **"Boiler"** in the menu.

Heating setting: outside temperature or room temperature-dependent control

The control modulates the heating flow temperature via the heating circuit pump and control valve position to control the required flow.

The default setting is "Weather-compensated".

▶ Set the control unit to “Room temperature outlet”

Meu item	Description / settings
Service menu > Heating settings > Heating circuit 1 > Control type > Room-temperature-dependent	• Weather-compensated • Outside temp. with base point • Room-temperature-dependent • Room temperature outlet • Single room-dependent

Table 19

If the setting "Room temperature-dependent" is used, the control functions as an on-off switch. In this case the control valve is fully open or fully closed. This reduces the heating comfort.

7.6 Commissioning checklist

▶ Complete and sign checklist following assembly and commissioning.

User:	
System location:	
Installer:	
Heat interface unit type:	

Table 20 General information on the system

Commissioning checklist	
Mains power supply compliant with standards?	❑
1. System hydraulics / primary circuit	
Heating flushed, filled and checked for leaks?	❑
Vented the system?	❑
Differential pressure and volumetric flow rate of the central primary pump checked?	❑
If fitted, has the flushing valve been closed?	❑
Operating pressure in primary circuit measured?	____ bar
Central pressure-relief valve installed?	❑
Strainer checked and cleaned?	❑
2. Heating / tertiary circuit	
Have radiator flow rates been balanced?	❑
Position of CH rotary selector at Double Arrow?	❑
Does lowering the room thermostat remove the demand for HTG?	❑
Heating flow temperature (at HIU) measured?	_____ °C
Heating return temperature (at HIU) measured?	_____ °C
Have TRV's been mounted horizontally on radiators?	❑
Record the return temperature limiter set point (default 80) if adjusted?	_____ °C
Primary circuit flow temperature measured?	_____ °C
Primary circuit average return temperature measured?	_____ °C

Commissioning checklist	
3. DHW	
Bypass valve installed? Yes/No	_____
DHW over temperature valve installed? Need to be installed if the primary flow is above 70 °C!	_____
Bypass valve setting?	_____
Position of DHW rotary selector?	_____
Cold water temperature at inlet measured?	_____ °C
DHW temperature at outlet measured?	_____ °C
DHW volumetric flow rate measured? ▶ Make sure that the required volumetric flow rate and temperature increase is achieved for each outlet.	___ l/min
Primary circuit average return temperature measured?	_____ °C
Volumetric flow rate of primary circuit?	___ l/min

Table 21 Commissioning checklist

Signature of operator:	
Signature of installer:	
Other:	
Date:	

Table 22

8 Shutdown

NOTICE

Damage due to freezing!

▶ Leave the heating system switched on if there is a risk of frost.

If the heating system is decommissioned for a longer period:

▶ Interrupt the power supply to the HIU.

▶ When there is a risk of frost and the HIU is decommissioned, completely drain it on the heating and on the potable water side.

9 Environment/disposal

Environmental protection is a fundamental corporate strategy of the Bosch Group.
The quality of our products, their economy and environmental safety are all of equal importance to us and all environmental protection legislation and regulations are strictly observed.
We use the best possible technology and materials for protecting the environment taking account of economic considerations.

Packaging

Where packaging is concerned, we participate in country-specific recycling processes that ensure optimum recycling.
All of our packaging materials are environmentally compatible and can be recycled.

Used appliances

Used appliances contain valuable materials that can be recycled.
The various assemblies can be easily dismantled. Synthetic materials are marked accordingly. Assemblies can therefore be sorted by composition and passed on for recycling or disposal.

Old electrical and electronic appliances

This symbol means that the product must not be disposed of with other waste, and instead must be taken to the waste collection points for treatment, collection, recycling and disposal.

The symbol is valid in countries where waste electrical and electronic equipment regulations apply, e.g. "(UK) Waste Electrical and Electronic Equipment Regulations 2013 (as amended)". These regulations define the framework for the return and recycling of old electronic appliances that apply in each country.

As electronic devices may contain hazardous substances, it needs to be recycled responsibly in order to minimize any potential harm to the environment and human health. Furthermore, recycling of electronic scrap helps preserve natural resources.

For additional information on the environmentally compatible disposal of old electrical and electronic appliances, please contact the relevant local authorities, your household waste disposal service or the retailer where you purchased the product.

You can find more information here:
www.bosch-homecomfortgroup.com/en/company/legal-topics/weee/

10 Inspection and service

WARNING

Risk to life from electric shock!

Touching live electrical parts can cause an electric shock.

- ▶ Before working on electrical parts, disconnect all phases of the power supply (fuse/circuit breaker) and lock the isolator switch to prevent unintentional reconnection.

10.1 Inspection and maintenance report

To safeguard the functional reliability of the system and the validity of guarantee claims:

- ▶ Check the system every 3 years (inspection). Immediately remedy all faults (maintenance).
- ▶ Observe instructions for the components!
- ▶ Perform the tasks listed below.
- ▶ Use the table as a template for further documentation.

User:	System location:
Heat interface unit type:	Room controller (if installed):

Table 23 General information on the system

Inspection and maintenance work	Inspection/maintenance					
	1.	2.	3.	4.	5.	6.
Date:						
Average return temperature on primary side	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C
Secondary heating Δ T	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C
Flow temperature on primary side with DHW draw-off	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C
Return temperature on primary side with DHW draw-off	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C
Primary circuit: volumetric flow rate with DHW draw-off (measure or read off at heat meter)	_____l/h	_____l/h	_____l/h	_____l/h	_____l/h	_____l/h
Potable Hot Water outlet temperature	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C	_____ °C
Potable hot water flow rate	_____l/min	_____l/min	_____l/min	_____l/min	_____l/min	_____l/min
Filter checked/cleaned?	❑	❑	❑	❑	❑	❑
Visual inspection and function check carried out?	❑	❑	❑	❑	❑	❑
Comments: Company stamp / date / signature						

Table 24 Inspection and maintenance work

10.2 Cleaning the strainer

Draining the appliance

To drain the primary circuit and the heating system:

- ▶ Disconnect heat interface unit with shut-off valves from the primary circuit and the heating system.
- ▶ Connect hose [3] to the drain valve.

To drain the heat interface unit:

- ▶ Open the air vents at the top of the desired circuit.
- ▶ Close the air vents again after draining!
- ▶ Turn the drain valve [1] anti-clockwise to open [2].

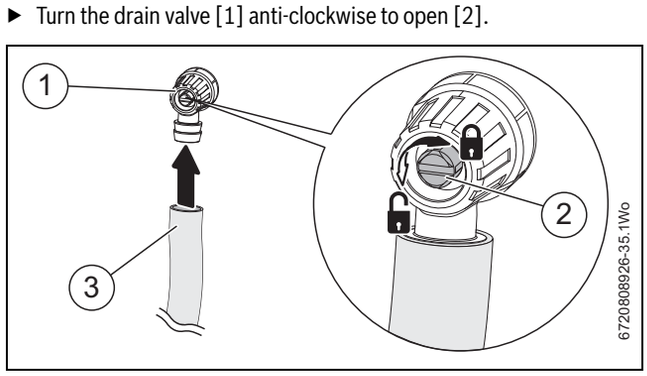

Fig. 31 Drain point connection

Clean the strainer in the primary circuit

- ▶ Remove the drainage assembly from the connection [2].
- ▶ Replace the gasket [3] if required.
- ▶ Clean the strainer [1].

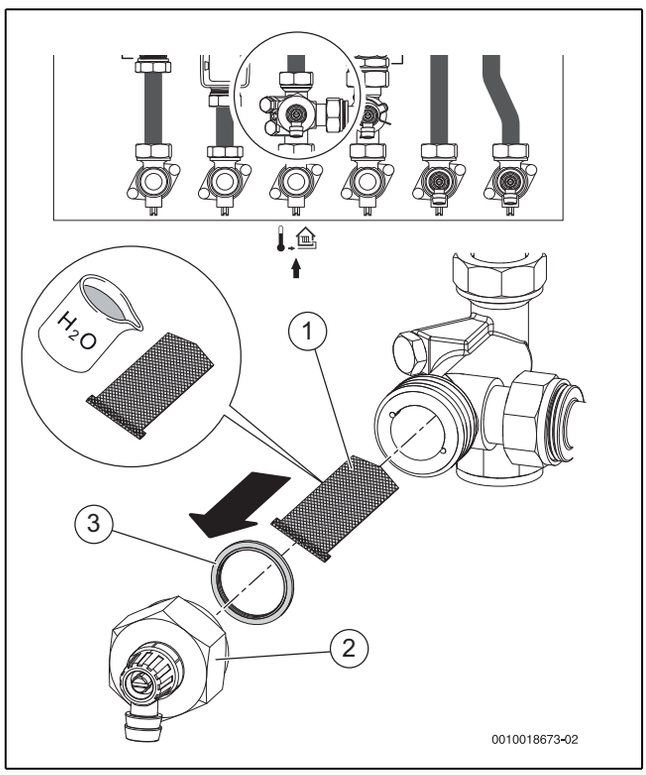

Fig. 32 Remove and clean the strainer

Clean the strainer in the central heating return pipe

- ▶ Loosen the connections at the top [1] and bottom.
- ▶ Remove the connection pipe.
- ▶ Change seals [2] if necessary.
- ▶ Clean the strainer [3].

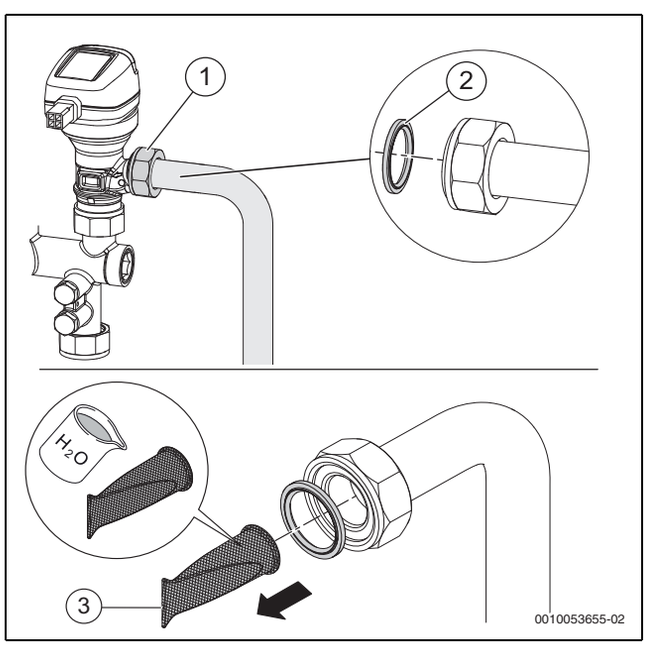

Fig. 33 Clean the strainer

10.3 Replacing components

Draining the appliance

To drain the primary circuit and the heating system:

- ▶ Disconnect heat interface unit with shut-off valves from the primary circuit and the heating system.
- ▶ Connect hose [3] to the drain valve.

To drain the heat interface unit:

- ▶ Open the air vents at the top of the desired circuit.
- ▶ Close the air vents again after draining!
- ▶ Turn the drain valve [1] anti-clockwise to open [2].

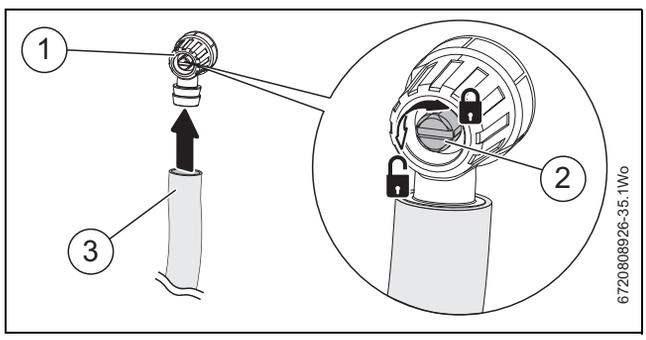

Fig. 34 Drain point connection

To drain the domestic water system:

- ▶ Isolate the cold mains inlet isolation valve.
- ▶ Drain the domestic water system.

Heat exchanger

NOTICE

Material damage and leaks due to incorrect installation!

- ▶ Loosen or tighten the screws on the retention brackets evenly.
- ▶ Do not overtighten. Nominal torque 1.4 N/m.

- ▶ Drain the HIU completely.
- ▶ Loosen the screws on the retention brackets [2] evenly.
- ▶ Pull the retention brackets off the heat exchanger [1].
- ▶ Replace the gaskets [3] of the connecting plates [4, 5] if required.
- ▶ Install the new heat exchanger so the arrow points towards the centre of the appliance.
- ▶ Purge the system correctly and check for leaks.

- Vent water circuits sufficiently (follow the procedure set out in the commissioning instructions).

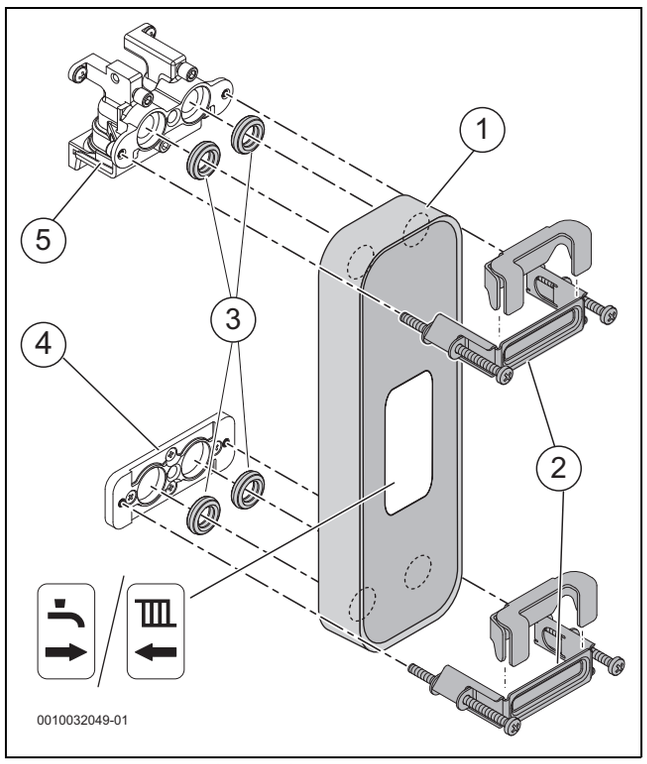

Fig. 35 Removing the heat exchanger

Control valves

- Drain the HIU completely.
- Unplug the connecting lead [2] from the control valve [1].
- Undo screw fittings [3] and remove control valve.
- Install new parts.
- Purge the system correctly and check tightness.
- Vent water circuits sufficiently.

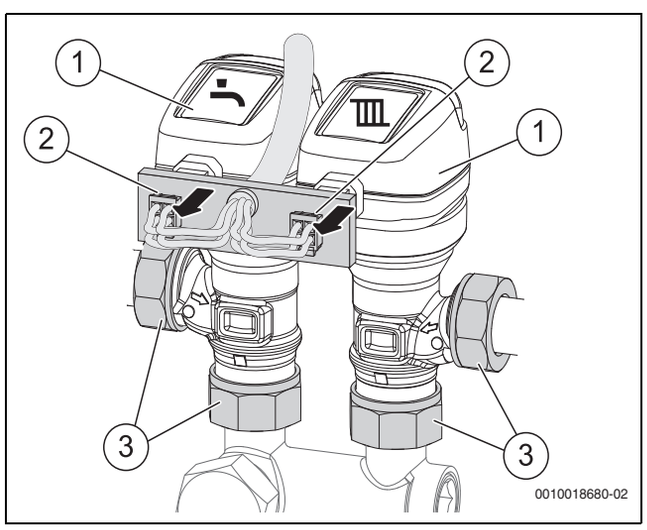

Fig. 36 Control valves

NTC-WW sensor and thermal overload protection (accessory)

NOTICE

Water damage due to ineffective retaining spring.

By removing the retaining spring, the spring loses its tension.

- To remove the temperature sensor, compress the ends of the retaining spring, but do not remove it.

- Drain DHW circuit completely.
- Remove the plug [4].
- Compress the ends of the retaining spring [3] and pull off the sensor [1].

WARNING

Risk of scalding

The thermal overload protection only works if it is correctly installed.

- Install the thermal overload protection so the arrow on the appliance points in the flow direction.

- To replace the thermal overload protection: undo the screw fittings [2] and remove the thermal overload protection.
- Purge the system correctly and check tightness.
- Vent water circuits sufficiently.

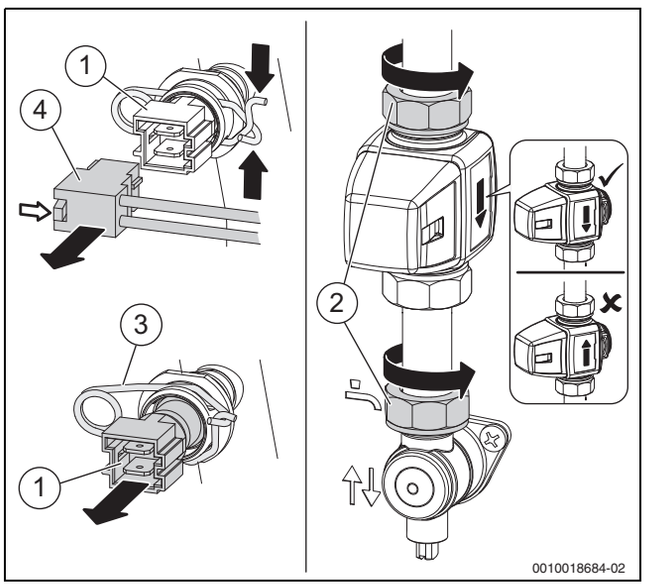

Fig. 37 DHW temperature sensor and thermal overload protection

Thermal bypass (accessory)

- Drain the HIU completely.
- Remove spring clip [2].
- Undo screw fittings [1] and remove bypass [3].
- Install new part.
- Purge the system correctly and check tightness.
- Vent water circuits sufficiently.

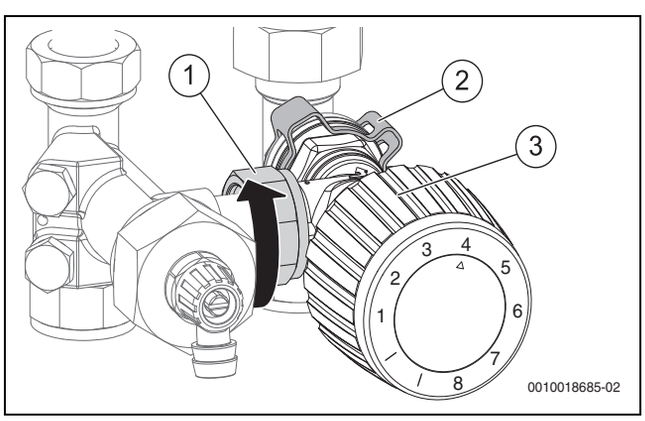

Fig. 38 Thermal bypass

Position	°C	Position	°C	Position	°C
|	10	3	40	6	60
1	20	4	45	7	65
2	30	5	50	8	70

Table 25 Bypass valve positions

Heat meter

- ▶ Drain the HIU completely.
- ▶ Remove the connected sensor (primary circuit flow).

1. Remove the front cover by pulling forward.
2. Detach heat meter upwards from the holder.
3. Detach the holder from backstage insulation.
4. Unscrew connections.

- ▶ Use the new gaskets.

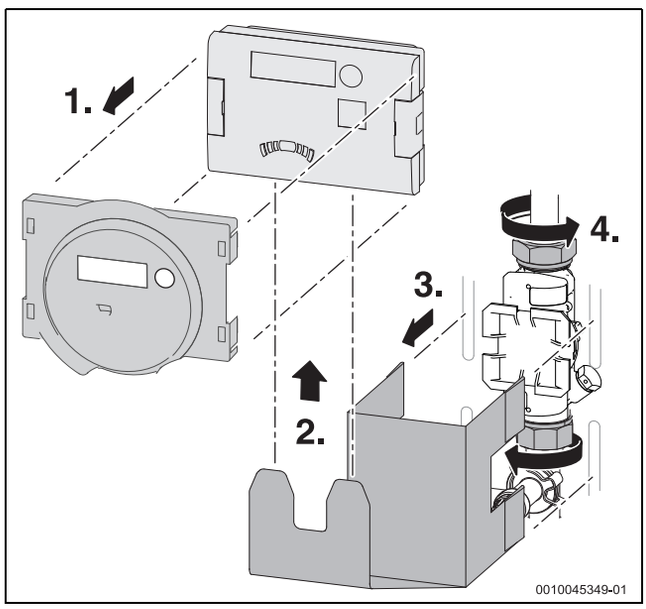

Fig. 39 Heat meter removal

Flow turbine, flow limiter

- ▶ Drain DHW circuit completely.
- ▶ Unplug the connecting lead from the turbine.
- ▶ Undo screw fittings [5].
- ▶ Remove clip [1] and pull off pipe [4].
- ▶ Remove strainer [3], clean thoroughly and re-install.
- ▶ Take flow turbine and limiter out of the enclosure [2].
- ▶ Take flow turbine [8] out of the flow regulator housing [7] and remove from the flow limiter [6].
- ▶ Apply silicone lubricant to the seals to ease assembly.
- ▶ Purge the system correctly and check for leaks.
- ▶ Vent water circuits sufficiently.

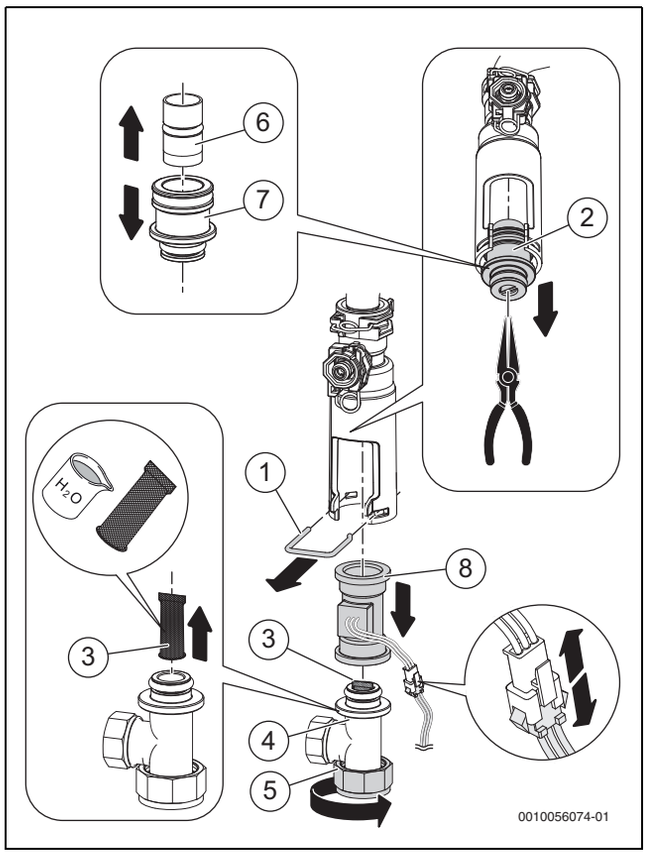

Fig. 40 Flow limiter and flow turbine (flow rate F8000 40: 18 l/min, bottom purple / F8000 50/60: 24 l/min, bottom yellow)

Control unit

DANGER

Risk to life from electric current!

- ▶ Prior to all electrical installation work, isolate all poles of the power supply and secure against unintentional reconnection.

- ▶ Pull control unit [1] out of the insulation and hang on the retention bracket of the heat exchanger [2] by the hook on the rear.
- ▶ Release locking devices [4, 6] with a thin bladed screwdriver.
- ▶ Open the cover [3].

▶ Release the locking devices [5] to remove the cover.

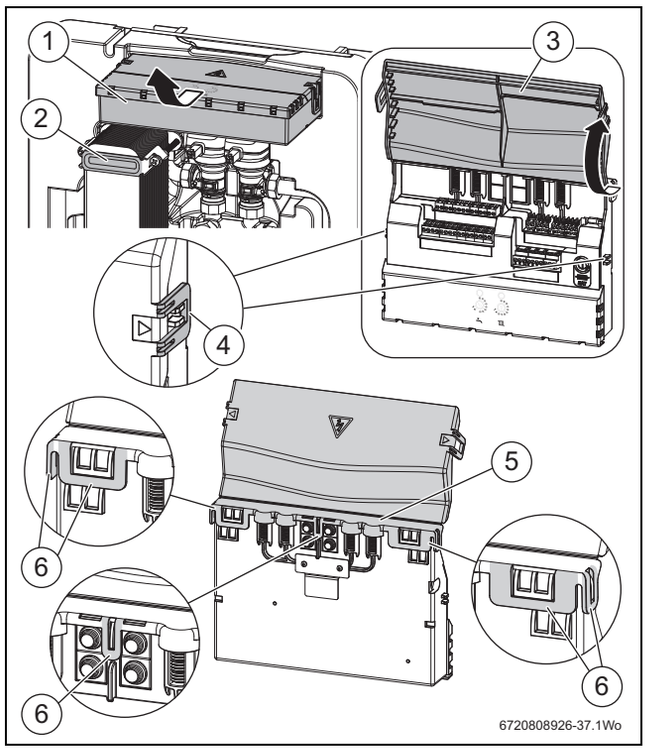

Fig. 41 control unit

▶ Unplug connections from the module.
▶ Remove cable and strain reliefs.

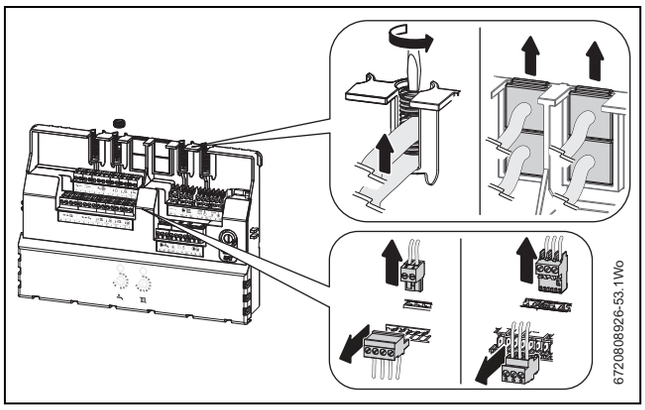

Fig. 42 control unit - unplug connections and release strain reliefs

11 Troubleshooting

11.1 Central Heating trouble shooting guide

Problem	Possible cause	Possible solution/check
No heat output from HIU	Air in the heating system	▶ Vent the heating system fully at the radiator manual air vents. ▶ Vent the HIU fully at the manual air vents. Ensure system pressure is between 1 - 2 bar.
	Primary strainer and/or central heating return strainer blocked	▶ Clean strainer.
	Faulty Central Heating flow sensor	▶ Replace sensor
	Faulty Central Heating return sensor	▶ Replace sensor
	HIU room controller incorrectly set or faulty	▶ Ensure that the rotary selector is set to "arrows"→ section 7.2. ▶ Replace room controller if necessary.
	Room controller incorrectly set or faulty	▶ Check that room controller is set correctly and is calling for heat. ▶ Replace room controller if necessary.
	Faulty Central Heating control valve or dirt inside valve body causing low flow or no flow through Primary supply circuit	▶ Check that the control valve is functioning correctly, → section 7.2. ▶ Perform re-calibration of control valve, → section 7.2. ▶ Open control valve manually using CH rotary selector on HIU control unit, → section 7.2. ▶ Clean valve if necessary. ▶ Replace control valve if necessary.
	Primary supply temperature too low	▶ Check that the Primary supply temperature is correct for the required heat output.
	Primary flow rate is too low	▶ Check that the Primary flow rate is correct for the required heat output.
	Primary supply differential pressure is too low	▶ Check that the supply differential pressure is correct for the required heat output. ▶ Adjust any installed flow regulating valves at the heat interface unit to obtain the correct differential pressure. ▶ Increase the supply differential pressure on the system.
Central Heating flow temperature too low	HIU control unit incorrectly set or faulty	▶ Adjust HIU control unit, → section 7.2. ▶ Replace if necessary.
	Room controller incorrectly set or faulty	▶ Adjust room controller. ▶ Replace if necessary.
	Outdoor sensor positioned incorrectly	▶ Position outdoor sensor correctly.

Problem	Possible cause	Possible solution/check
	Primary supply temperature too low	▶ Check that the Primary supply temperature is correct for the required heat output.
	Primary flow rate is too low	▶ Check that the Primary flow rate is correct for the required heat output.
	Primary supply differential pressure is too low	▶ Check that the supply differential pressure is correct for the required heat output. ▶ Adjust any installed flow regulating valves at the heat interface unit to obtain the correct differential pressure. ▶ Increase the supply differential pressure on the system.
Central Heating flow temperature too high	HIU control unit incorrectly set or faulty	▶ Adjust HIU control unit. Ensure that the rotary selector is set to "arrows", → section 7.2. ▶ Replace if necessary.
	Room controller incorrectly set or faulty	▶ Adjust room controller. ▶ Replace if necessary.
	Central heating flow sensor out of position or faulty	▶ Ensure sensor is in correct position. ▶ Replace sensor
	Faulty central heating control valve or dirt inside valve body causing valve to seize.	▶ Check that the control valve is functioning correctly, → section 7.2. ▶ Perform re-calibration of control valve, → section 7.2. ▶ Open the control valve manually using CH rotary selector on HIU control unit, → section 7.2. ▶ Clean valve if necessary. ▶ Replace control valve if necessary

Table 26 Central Heating trouble shooting

11.2 Domestic Hot Water trouble shooting guide

Problem	Possible cause	Possible solution/check
No hot water output from HIU	Potable cold water inlet strainer blocked	▶ Ensure minimum inlet water pressure is 1.5-2 bar ▶ Clean strainer.
	Inlet water pressure too low	▶ Increase domestic cold water supply pressure into HIU by consulting the water supply company. ▶ Clean plate heat exchanger if there are signs of calcification.
	DHW over temperature safety valve has closed due to a seized DHW control valve	▶ Check that control valve is functioning correctly, → section 7.3. ▶ Perform re-calibration of control valve, → section 7.2. ▶ Open control valve manually using DHW rotary switch on HIU control unit, → section 7.2. ▶ Clean valve if necessary. ▶ Replace control valve if necessary.
Hot Water flow temperature too low	HIU control unit incorrectly set or faulty	▶ Ensure that the DHW temperature set-point is set correctly on the HIU controller, → section 7.2. ▶ Replace control unit if necessary.
	DHW flow turbine faulty	▶ Check electrical connections to flow turbine. ▶ Replace if necessary
	Faulty DHW control valve or dirt inside valve body causing low flow or no flow though district supply circuit	▶ Check that the control valve is functioning correctly, → section 7.3. ▶ Perform re-calibration of control valve, → section 7.2. ▶ Open control valve manually using DHW rotary switch on HIU room controller, → section 7.2. ▶ Clean valve if necessary. ▶ Replace control valve if necessary.
	District supply temperature too low	▶ Check that the District supply temperature is correct for the required heat output, → section 13.1 "Tech data".
	District flow rate is too low	▶ Check that the District flow rate is correct for the required heat output, → section 13.1 "Tech data".
	District supply differential pressure is too low	▶ Check that the supply differential pressure is correct for the required heat output, → section 13.1 "Tech data". ▶ Adjust any installed flow regulating valves at the heat interface unit to obtain the correct differential pressure. ▶ Increase the supply differential pressure on the system.
	Calcified plate DHW heat exchanger	▶ Check heat exchanger. ▶ Replace heat exchanger.
	Cross leaking DHW plate heat exchanger	▶ Replace heat exchanger.

Problem	Possible cause	Possible solution/check
DHW temperature too high at the tap	HIU control unit incorrectly set or faulty	▶ Ensure that the DHW temperature set-point is set correctly on the HIU room controller, → section 7.2. ▶ Replace if necessary
	DHW over temperature valve not installed (need to be installed, if the primary flow is above 70 °C)	▶ Install DHW over temperature valve.
Time taken to get hot water at the tap is too long	Mechanical by-pass valve has dirt inside valve body	▶ Clean valve if necessary.
	Mechanical by-pass valve is set incorrectly, or is faulty	▶ Adjust by-pass valve. ▶ Replace if necessary
	Electronic keep warm function	▶ Adjust by-pass valve. ▶ Replace if necessary
	Faulty DHW control valve or dirt inside valve body causing low flow or no flow though district supply circuit	▶ Check that control valve is functioning correctly, → section 7.3. ▶ Perform re-calibration of control valve, → section 7.2. ▶ Open control valve manually using DHW rotary switch on HIU control unit, → section 7.2. ▶ Clean valve if necessary. ▶ Replace control valve if necessary.
	District supply temperature too low	▶ Check that the District supply temperature is correct for the required heat output, → section 13.1 "Tech data".
	District flow rate is too low	▶ Check that the District flow rate is correct for the required heat output, → section 13.1 "Tech data".
	District supply differential pressure is too low	▶ Check that the supply differential pressure is correct for the required heat output, → section 13.1 "Tech data". ▶ Adjust any intalled flow regulating valves at the heat interface unit to obtain the correct differential pressure. ▶ Increase the supply differential pressure on the system.
DHW over temperature safety valve closed	DHW control valve stuck in open position	▶ Check that control valve is functioning correctly, → section 7.3. ▶ Perform re-calibration of control valve, → section 7.2. ▶ Open control valve manually using DHW rotary switch on HIU control unit, → section 7.2. ▶ Replace control valve if necessary.
	Faulty DHW over temperature safety valve	▶ Replace DHW over temperature safety valve.
	Cross leaking DHW plate heat exchanger	▶ Replace DHW plate heat exchanger.
Bypass temperature higher than 41°C (+ 5 K)	Wrong setting point by room controller Bypass temperature higher than 41°C (+ 5 K)	▶ Use the room controller and reset the temperature setting to 41°C (default value) and/ or choose "off" for the bypass function.

Table 27 Domestic Hot Water trouble shooting

11.3 LED displays at the control unit

Left LED	Right LED	Cause	Conclusions
Off	Off	Outdoor temperature sensor error	No set value has been specified for weather-compensated control. The heating function is not detecting a heating load.
--	Red	Heating flow temperature sensor fault	Heating and frost protection functions are disabled
--	Red	If the HIU detects a heating module, a low loss header must be installed and its temperature sent to the HIU.	Heating function is deactivated.
--	Red	PWM signal indicates a heating control valve fault	Heating and frost protection functions are disabled
Red	--	DHW volumetric flow rate sensor fault	DHW pump functions are disabled.
Red	--	Supply flow temperature sensor error	Bypass and DHW functions are disabled.
Red	--	PWM signal indicates a DHW control valve fault	Bypass and DHW functions are disabled
--	Yellow	Supply return temperature sensor error	Return temperature limit function is not working.
Yellow	Yellow	Flow temperature on primary side is lower than heating or set DHW temperatures	Fault only detected, HIU will keep on trying to supply heat.
Red	Red	Flow temperature on primary side higher than allowed (95°C)	Control valves will be kept closed and so no function except heating pump operation can be executed.

Left LED	Right LED	Cause	Conclusions
--	Flashes red	Invalid position of the heating rotary selector	Heating function is deactivated.
Flashes red	--	Invalid position of DHW rotary selector	Bypass, DHW and DHW circulation pump functions are disabled

Table 28

11.4 Fault display control valves

To access the On/Off indicators of the control valves:

▶ Remove the enclosure, insulation and EMS module.

LED power-saving mode: if the position of the valves does not change for 15 seconds, the LED displays are not visible.

Dsiplay	Remedy
Green flashing	Valve is stuck completely open.
Green and Blue flashing	Valve is stuck open between 60 and 99,9 %.
Blue flashing	Valve is stuck open between 40 and 60 %.
Blue and Orange flashing	Valve is stuck open between 0.1 and 40 %.
Green and orange	Input signal fault. Valve is completely closed.
Green, Blue and Orange flashing	Valve fault.

Table 29 Fault displays

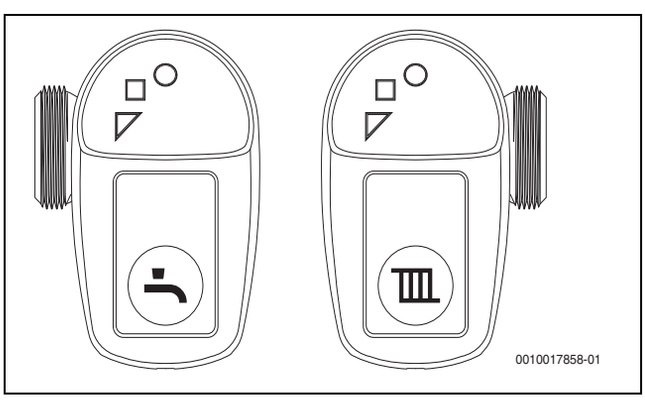

Fig. 43 Control valve displays

[1] Circle - Green
[2] Square - Blue
[3] Triangle - Orange

Action of control valve during an error

In the event of a fault, the affected valve independently attempts a recovery in order to unlock the fault.

Calibrating the control valves

▶ Manually set the rotary selector for the control valve on the EMS module to the calibration position .

- Valve initially moves to fully closed position.
- Valve then moves to fully open position.
- Valve then moves back to normal mode.

▶ Set the rotary selector for the control valve on the EMS module to the required value.

11.5 Display Error codes heat meter

The error message disappears automatically as soon as the source of the error is corrected.

Error code	Description
C - 1	Basic parameter error in flash or RAM - meter must be replaced.
E 1	Temperature range outside (-19.9 °C...199.9 °C) e.g. sensor short-circuit, sensor fault.
E 3[1)]	Flow/return temperature sensor reversed.
E 4	Hardware error flow measurement, e.g. transducer or control defective or short circuit.
E 5	Communication not possible (too frequent read-out).
E 6[1)]	Flow direction incorrect.
E 7	Unstable ultrasonic signal, e. g. air in the measuring path.
E 8	No primary power supply (only with power supply unit); supply via backup battery.
E 9	Battery nearly discharged, design lifetime reached.
E A[2)]	Leak: leak detected in pipework.
E b[2)]	Leak: leak detected in energy meter.
E C[2)]	Leak: Leakage pulse input 1
E d[2)]	Leak: Leakage pulse input 2

1) Application dependent
2) Optional

Table 30

11.6 Sense II diagnosis functions

For detailed information on menu guidance, refer to the instructions for the room controller.

Diagnosis functions of the heat interface unit

▶ Select menu: Service > Diagnosis > Monitor values > Heat interface unit.

The following data may be shown:

- **Status**: shows the current status of the heat interface unit (test operation, screed drying, DHW mode, heating mode, frost protection, no demand).
- **DHW volumetric flow rate**: in litres per minute
- **Supply temperature (primary side)**: in °C
- **Return temperature (on the heat source side)**: in °C
- **DHW control valve opening**: 0 % (valve closed) up to 100 % (fully open)
- **Htg. control valve opening**: 0 % (valve closed) up to 100 % (fully open)

Menu "Function check" of heat interface unit

▶ Select menu: Service > Diagnosis > Function check > Heat interface unit.

The following data may be shown:

- **TWS**: set DHW control valve (0 %: closed, 100 %: fully open)
- **Heating**: set heating control valve (0 %: closed, 100 %: fully open)

12 Data Protection Notice

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13 Appendix

13.1 Tech data

F8000		40	50	60
Weight excluding packaging	kg	21	23	23
Weight including packaging	kg	23	25	25
Minimum inlet pressure to achieve nominal DHW flow rate (with DHW over temperature valve)	bar	1.2	2.0	2.2
Minimum inlet pressure to achieve nominal DHW flow rate (without DHW over temperature valve)	bar	0.9	1.55	1.7
Heating output	kW	1 - 15		
Maximum flow temperature of primary circuit	°C	90		
Maximum flow temperature of heating circuit	°C	90		
Maximum DHW temperature	°C	60		
Maximum operating pressure	bar	10		
pH value range, approx. (heating)		6 – 9.5		
Maximum primary differential pressure (with internal DPCV)	bar	4 (without internal DPCV: 0,8)		
Maximum DHW volumetric flow rate	l/min	15	21	21
Maximum volumetric flow rate of primary circuit (primary side head <50kPa)	l/s	0.27	0.28	0.25
Maximum volumetric flow rate of primary circuit (primary side head <70kPa)	l/s	0.32	0.33	0.30
Max. ambient temperature	°C	35		
Electric				
Electrical power supply voltage	AC V	230		
Frequency	Hz	50		
Maximum power consumption	W	25.3		
Standby power consumption	W	3.1		
Appliance protection rating	IP	X4D		

Table 31 Heat interface unit specifications

Primary Temp	DHW Flow Rate	Primary Flow Rate	Primary Return Temp	Primary Pressure drop	kW
F8000 40, DHW Temp 50 °C					
55 °C	9 l/min	15,8 l/min	32 °C	49 kPa	25
55 °C	10,3 l/min	19,1 l/min	33 °C	71 kPa	28
60 °C	9 l/min	10,8 l/min	26 °C	23 kPa	25
60 °C	12 l/min	15,7 l/min	29 °C	48 kPa	33
60 °C	14 l/min	19,1 l/min	30 °C	71 kPa	39
70 °C	9 l/min	7,4 l/min	20 °C	11 kPa	25
70 °C	12 l/min	10,3 l/min	22 °C	21 kPa	33
70 °C	15 l/min	13,4 l/min	24 °C	35 kPa	42
80 °C	9 l/min	5,9 l/min	17 °C	7 kPa	25
80 °C	12 l/min	8,1 l/min	19 °C	13 kPa	33
80 °C	15 l/min	10,4 l/min	20 °C	21 kPa	42
F8000 40, DHW Temp 55 °C					
60 °C	9 l/min	16,55 l/min	35 °C	53 kPa	28
60 °C	9,7 l/min	19,1 l/min	36 °C	71 kPa	30
70 °C	9 l/min	9,23 l/min	25 °C	23 kPa	28
70 °C	12 l/min	13 l/min	28 °C	23 kPa	37
70 °C	15 l/min	17,21 l/min	30 °C	23 kPa	47
80 °C	9 l/min	7 l/min	20 °C	10 kPa	28
80 °C	12 l/min	9,7 l/min	23 °C	18 kPa	37
80 °C	15 l/min	12,5 l/min	24 °C	30 kPa	47
F8000 40, DHW Temp 60 °C					
70 °C	9 l/min	12 l/min	31 °C	28 kPa	31
70 °C	11,4 l/min	16,2 l/min	34 °C	51 kPa	39
80 °C	9 l/min	8,3 l/min	24 °C	13 kPa	31
80 °C	12 l/min	11,7 l/min	27 °C	27 kPa	42
80 °C	15 l/min	15,2 l/min	29 °C	29 kPa	52

Table 32 Performance data F8000 40

Primary Temp	DHW Flow Rate	Primary Flow Rate	Primary Return Temp	Primary Pressure drop	kW
F8000 50, DHW Temp 50 °C					
55 °C	9 l/min	12,9 l/min	27 °C	30 kPa	25
55 °C	12 l/min	18,9 l/min	29 °C	64 kPa	33
55 °C	12,3 l/min	19,6 l/min	29 °C	69 kPa	34
60 °C	9 l/min	9,4 l/min	21 °C	16 kPa	25
60 °C	12 l/min	13,5 l/min	24 °C	33 kPa	33
60 °C	15 l/min	17,7 l/min	25 °C	57 kPa	42
60 °C	16,2 l/min	19,6 l/min	26 °C	69 kPa	45
70 °C	9 l/min	6,8 l/min	16 °C	8 kPa	25
70 °C	12 l/min	9,4 l/min	18 °C	16 kPa	33
70 °C	15 l/min	12,2 l/min	20 °C	27 kPa	42
70 °C	18 l/min	15,1 l/min	21 °C	41 kPa	50
70 °C	21 l/min	18,1 l/min	22 °C	58 kPa	58
80 °C	9 l/min	5,6 l/min	13 °C	7 kPa	25
80 °C	12 l/min	7,6 l/min	15 °C	13 kPa	33
80 °C	15 l/min	9,7 l/min	16 °C	13 kPa	42
80 °C	18 l/min	11,9 l/min	18 °C	13 kPa	50
80 °C	21 l/min	14,1 l/min	19 °C	21 kPa	58
F8000 50, DHW Temp 55 °C					
60 °C	9 l/min	13,5 l/min	29 °C	33 kPa	28
60 °C	12 l/min	19,7 l/min	32 °C	69 kPa	37
70 °C	9 l/min	8,2 l/min	20 °C	12 kPa	28
70 °C	12 l/min	11,6 l/min	22 °C	24 kPa	37
70 °C	15 l/min	15,1 l/min	24 °C	41 kPa	47
70 °C	18 l/min	18,8 l/min	26 °C	64 kPa	56
70 °C	18,6 l/min	19,6 l/min	26 °C	69 kPa	58
80 °C	9 l/min	6,5 l/min	16 °C	8 kPa	28
80 °C	12 l/min	8,9 l/min	18 °C	14 kPa	37
80 °C	15 l/min	11,5 l/min	20 °C	24 kPa	47
80 °C	18 l/min	14,2 l/min	21 °C	36 kPa	56
80 °C	21 l/min	16,9 l/min	22 °C	51 kPa	66
F8000 50, DHW Temp 60 °C					
70 °C	9 l/min	10,4 l/min	25 °C	19 kPa	31
70 °C	12 l/min	14,8 l/min	28 °C	39 kPa	42
70 °C	15 l/min	19,6 l/min	31 °C	69 kPa	52
80 °C	9 l/min	7,6 l/min	19 °C	10 kPa	31
80 °C	12 l/min	10,6 l/min	21 °C	20 kPa	42
80 °C	15 l/min	13,7 l/min	24 °C	34 kPa	52
80 °C	18 l/min	16,9 l/min	25 °C	51 kPa	63
80 °C	20 l/min	19,6 l/min	26 °C	69 kPa	71

Table 33 Performance data F8000 50

Primary Temp	DHW Flow Rate	Primary Flow Rate	Primary Return Temp	Primary Pressure drop	kW
F8000 60, DHW Temp 50 °C					
55 °C	9 l/min	10,4 l/min	20 °C	24 kPa	25
55 °C	10 l/min	14,5 l/min	21 °C	47 kPa	33
55 °C	14,3 l/min	17,9 l/min	22 °C	71 kPa	40
60 °C	9 l/min	8,2 l/min	16 °C	15 kPa	25
60 °C	12 l/min	11,3 l/min	17 °C	28 kPa	33
60 °C	15 l/min	14,5 l/min	18 °C	46 kPa	42
60 °C	18 l/min	17,8 l/min	19 °C	70 kPa	50
70 °C	9 l/min	6,3 l/min	12 °C	9 kPa	25
70 °C	12 l/min	8,5 l/min	13 °C	16 kPa	33
70 °C	15 l/min	10,8 l/min	14 °C	26 kPa	42
70 °C	18 l/min	13,2 l/min	14 °C	38 kPa	50
70 °C	21 l/min	15,5 l/min	15 °C	53 kPa	58
80 °C	9 l/min	5,3 l/min	11 °C	6 kPa	25
80 °C	12 l/min	7,1 l/min	12 °C	11 kPa	33
80 °C	15 l/min	9 l/min	12 °C	18 kPa	42
80 °C	18 l/min	10,9 l/min	13 °C	26 kPa	50
80 °C	21 l/min	12,7 l/min	13 °C	36 kPa	58
F8000 60, DHW Temp 55 °C					
60 °C	9 l/min	10,7 l/min	22 °C	25 kPa	28
60 °C	12 l/min	15 l/min	23 °C	50 kPa	37
60 °C	14 l/min	17,9 l/min	24 °C	70 kPa	44
70 °C	9 l/min	7,4 l/min	15 °C	12 kPa	28
70 °C	12 l/min	10,1 l/min	16 °C	23 kPa	37
70 °C	15 l/min	12,8 l/min	17 °C	36 kPa	47
70 °C	18 l/min	15,7 l/min	17 °C	54 kPa	56
70 °C	20,3 l/min	17,9 l/min	18 °C	70 kPa	63
80 °C	9 l/min	6,1 l/min	12 °C	8 kPa	28
80 °C	12 l/min	8,2 l/min	13 °C	15 kPa	37
80 °C	15 l/min	10,3 l/min	14 °C	23 kPa	47
80 °C	18 l/min	12,5 l/min	14 °C	34 kPa	56
80 °C	21 l/min	14,8 l/min	15 °C	48 kPa	66
F8000 60, DHW Temp 60 °C					
70 °C	9 l/min	8,9 l/min	18 °C	17 kPa	31
70 °C	12 l/min	12,1 l/min	20 °C	32 kPa	42
70 °C	15 l/min	15,6 l/min	21 °C	53 kPa	52
70 °C	17 l/min	17,9 l/min	22 °C	70 kPa	59
80 °C	9 l/min	6,9 l/min	14 °C	10 kPa	31
80 °C	12 l/min	9,4 l/min	15 °C	19 kPa	42
80 °C	15 l/min	11,9 l/min	16 °C	31 kPa	52
80 °C	18 l/min	14,5 l/min	17 °C	46 kPa	63
80 °C	21 l/min	17,1 l/min	17 °C	64 kPa	73

Table 34 Performance data F8000 60

Integrator	
Temperature Sensor	
Temperature sensors	PT500
Diameter	Ø 5.2 mm
Cable length	1.5 m
Temperature range	5…130 °C
Starting temperature differential Δθ	0.125 K
Flow measurement cycle with mains supply	1/8 s; with D-cell battery: 1 s
Permissible temperature	
Operation (<35 °C has a positive effect on lifetime)	5…55 °C
Storage (>35 °C max. 4 weeks)	-25…60 °C
Min. temperature difference Δθ min	3 K
Max. temperature difference Δθ max	177K

Table 35 Heat meter integrator technical data

DHW flow rate at 50 °C

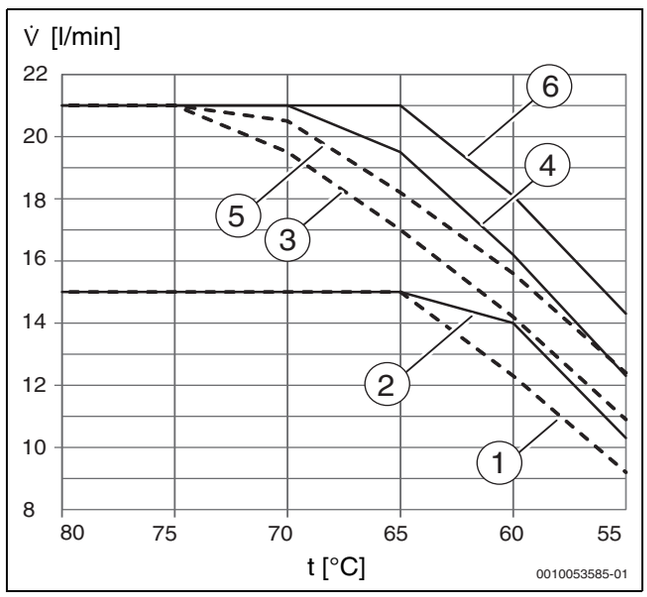

Fig. 44 DHW Flow Rate over primary temperature at 50 °C DHW temperature

[1] F8000 40, 50 kPa pressure loss
[2] F8000 40, 70 kPa pressure loss
[3] F8000 50, 50 kPa pressure loss
[4] F8000 50, 70 kPa pressure loss
[5] F8000 60, 50 kPa pressure loss
[6] F8000 60, 70 kPa pressure loss

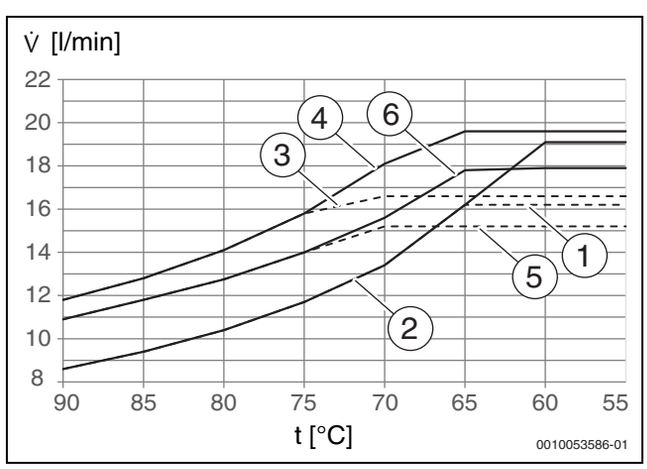

Fig. 45 Primary Flow Rate over primary temperature at 50 °C DHW temperature

[1] F8000 40, 50 kPa pressure loss
[2] F8000 40, 70 kPa pressure loss
[3] F8000 50, 50 kPa pressure loss
[4] F8000 50, 70 kPa pressure loss
[5] F8000 60, 50 kPa pressure loss
[6] F8000 60, 70 kPa pressure loss

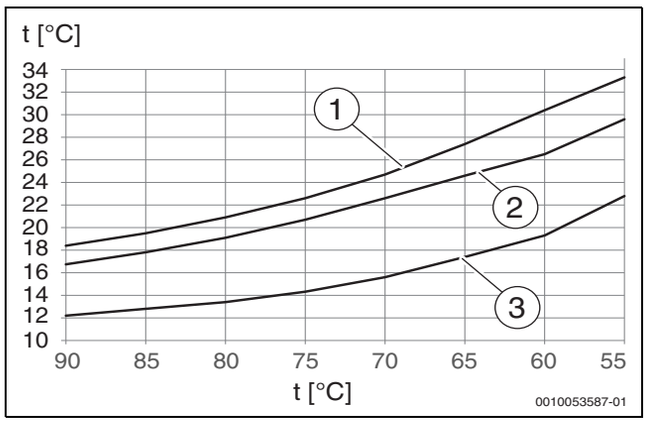

Fig. 46 Maximum return temperature over primary temperature 50 °C

[1] F8000 40
[2] F8000 50
[3] F8000 60

DHW flow rate at 55 °C

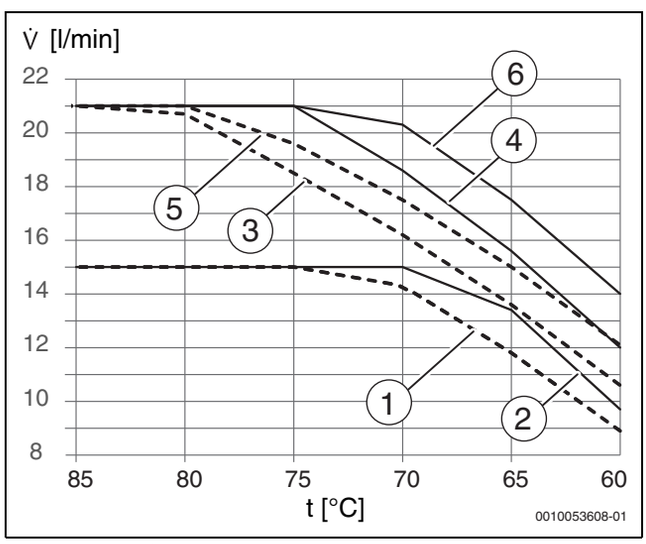

Fig. 47 DHW Flow Rate over primary temperature at 55 °C DHW temperature

[1] F8000 40, 50 kPa pressure loss
[2] F8000 40, 70 kPa pressure loss
[3] F8000 50, 50 kPa pressure loss
[4] F8000 50, 70 kPa pressure loss
[5] F8000 60, 50 kPa pressure loss
[6] F8000 60, 70 kPa pressure loss

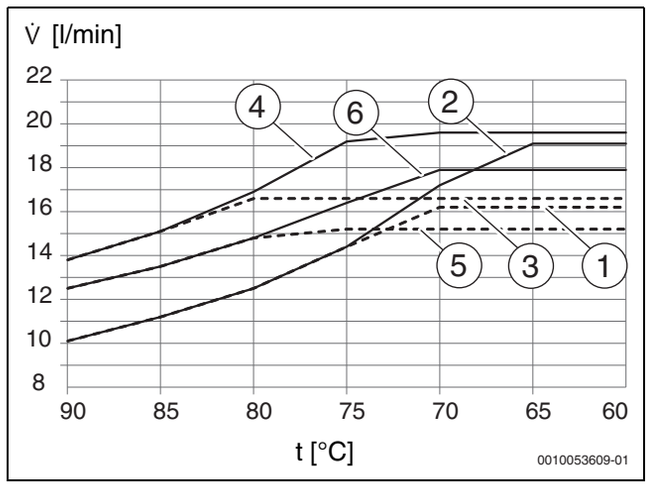

Fig. 48 Primary Flow Rate over primary temperature at 55 °C DHW temperature

[1] F8000 40, 50 kPa pressure loss
[2] F8000 40, 70 kPa pressure loss
[3] F8000 50, 50 kPa pressure loss
[4] F8000 50, 70 kPa pressure loss
[5] F8000 60, 50 kPa pressure loss
[6] F8000 60, 70 kPa pressure loss

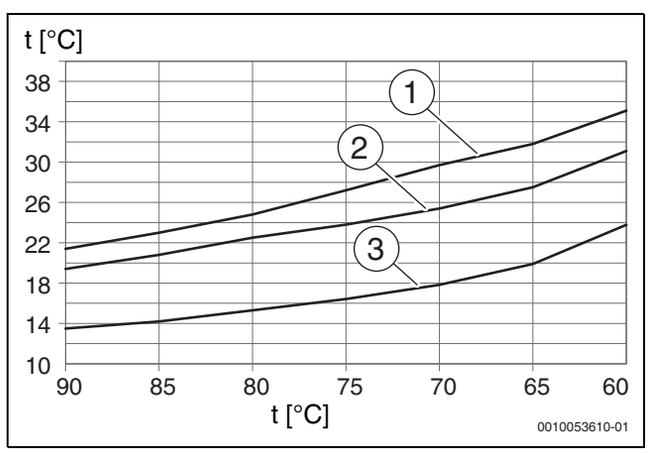

Fig. 49 Maximum return temperature over primary temperature 55 °C

[1] F8000 40
[2] F8000 50
[3] F8000 60

DHW flow rate at 60 °C

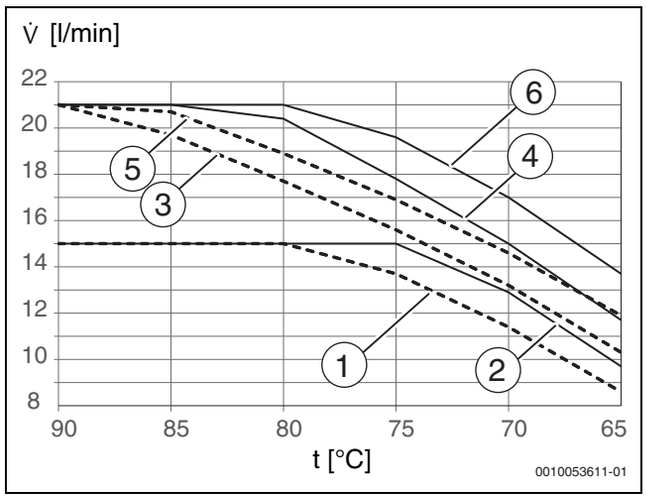

Fig. 50 DHW Flow Rate over primary temperature at 60 °C DHW temperature

[1] F8000 40, 50 kPa pressure loss
[2] F8000 40, 70 kPa pressure loss
[3] F8000 50, 50 kPa pressure loss
[4] F8000 50, 70 kPa pressure loss
[5] F8000 60, 50 kPa pressure loss
[6] F8000 60, 70 kPa pressure loss

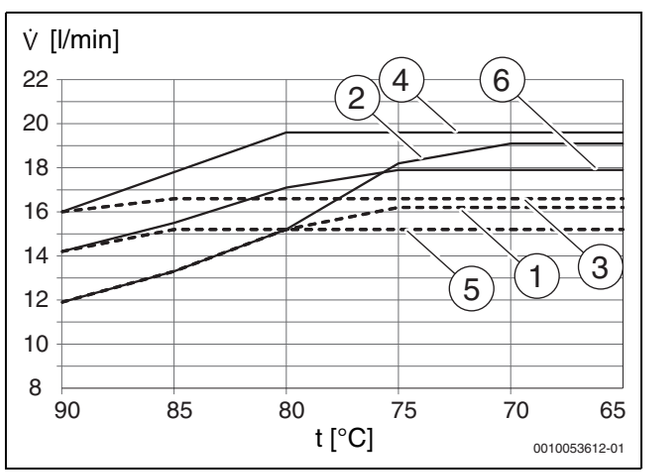

Fig. 51 Primary Flow Rate over primary temperature at 60 °C DHW temperature

[1] F8000 40, 50 kPa pressure loss
[2] F8000 40, 70 kPa pressure loss
[3] F8000 50, 50 kPa pressure loss
[4] F8000 50, 70 kPa pressure loss
[5] F8000 60, 50 kPa pressure loss
[6] F8000 60, 70 kPa pressure loss

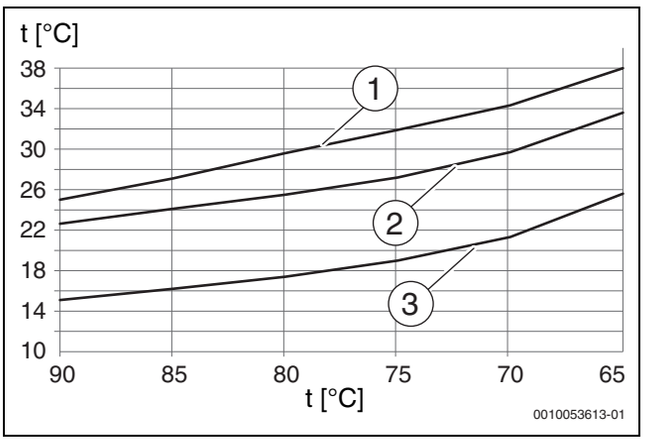

Fig. 52 Maximum return temperature over primary temperature 60 °C

[1] F8000 40
[2] F8000 50
[3] F8000 60

Temperature Sensor

Resistance Ω	Temperature °C	Resistance Ω	Temperature °C
29529	0	8186	30
18787	10	5586	40
12257	20	3889	50

Table 36 Primary circuit NTC central heating flow and return temperature sensor

Resistance Ω	Temperature °C	Resistance Ω	Temperature °C
14772	20	2744	65
11981	25	2322	70
9786	30	1990	75
8047	35	1704	80
6653	40	1464	85
5523	45	1262	90
4608	50	1093	95
3856	55	950	100
3243	60		

Table 37 DHW temperature sensor NTC in sensor pocket

Resistance Ω	Temperature °C	Resistance Ω	Temperature °C
95893	-20	19860	10
72228	-15	15693	15
54889	-10	12486	20
42069	-5	10000	25
32506	0	8060	30
25313	5	8060	35

Table 38 Outdoor ambient temperature sensor

13.2 Circuit diagram

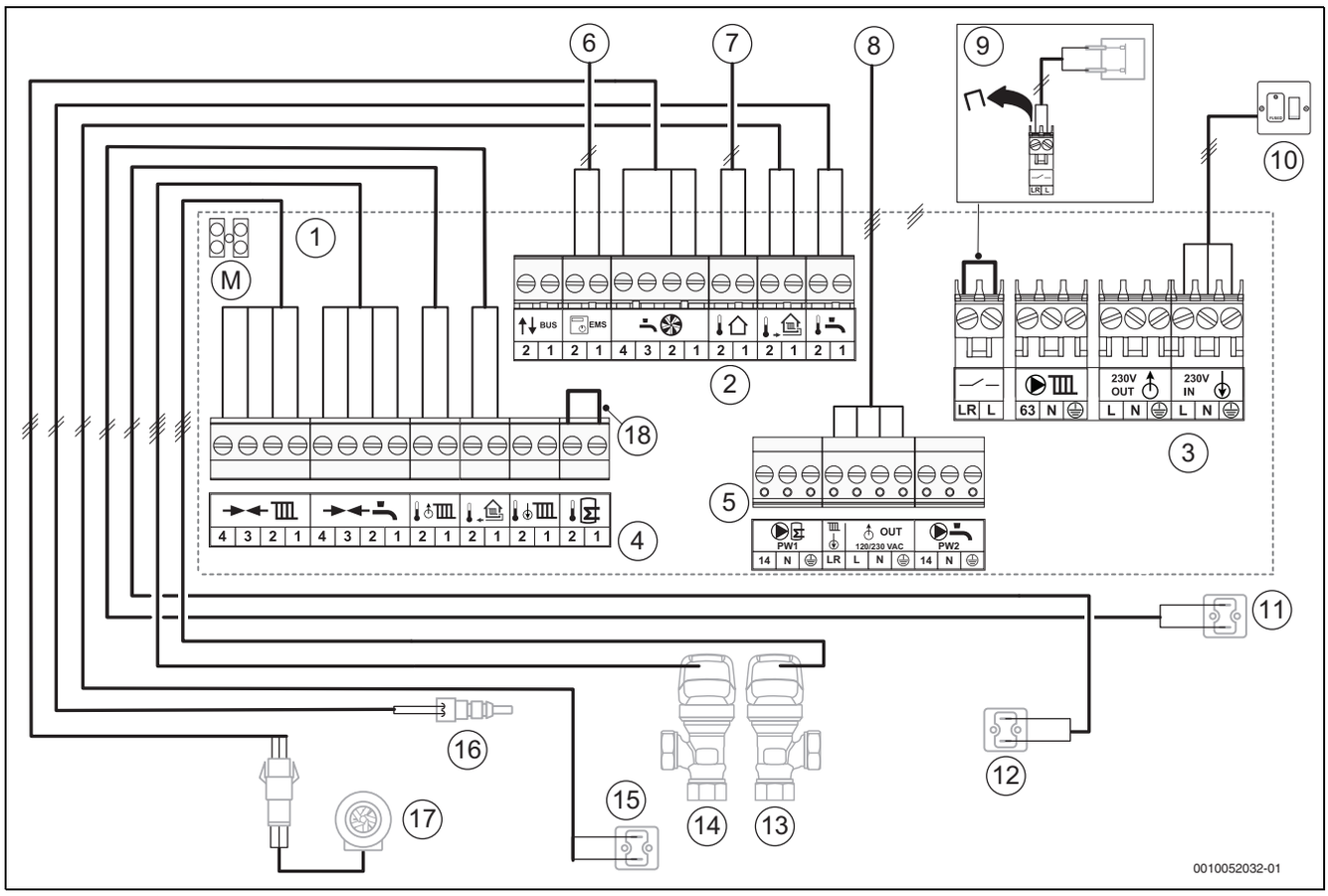

Fig. 53 Circuit diagram

[1] Control unit
[2] Low voltage connections
[3] Mains power supplies
[4] Low voltage connections
[5] Mains power supplies
[6] EMS-BUS controller connection
[7] Temperature sensor NTC outside temperature
[8] 230V external control system
[9] Limiter thermostat (only for station with integrated pump) remove jumper to connect the high limit safety cut-out (for underfloor heating circuit protection)
[10] Mains 230V supply
[11] Flow temperature sensor NTC primary circuit
[12] Flow temperature sensor NTC heating circuit
[13] Heating control valve
[14] DHW control valve
[15] Return temperature sensor NTC heating circuit
[16] Domestic Hot Water outlet sensor NTC
[17] Flow turbine
[18] Jumper (electronic summer bypass function)

[M] M-Bus connection for heat meter

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