



BOSCH

Installation and Maintenance Instructions

Wall mounted gas condensing boilers

Condens 7000 WP

GC7000WP 50 23, GC7000WP 65 23, GC7000WP 85 23, GC7000WP 100 23



Table of contents

1	Explanation of symbols and safety instructions	3
1.1	Explanation of symbols	3
1.2	General safety instructions	3
2	Product Information	4
2.1	Declaration of conformity	4
2.2	Product data for energy consumption	4
2.3	About these instructions	4
2.4	Appliance types	5
2.5	Type Plate	5
2.6	Conversion of gas type	5
2.7	Accessories	5
2.8	Scope of delivery	5
2.9	Pump test	5
2.10	Frost protection	5
2.11	product overview	6
2.12	Dimensions	8
2.13	Minimum clearance from walls	9
2.14	Flue gas temperature sensor	9
2.15	Opening and closing the front panel of the appliance	10
3	Regulations	10
3.1	Notes on installation and operation	10
3.2	Regulations	10
4	Flue gas routing	10
5	Preconditions for installation	11
5.1	Installation location	11
5.2	Important notices	11
5.3	Water quality	12
5.3.1	Water conditioning and treatment	12
5.4	Maximum flow temperature	12
6	Installation	12
6.1	Unpacking the boiler	12
6.2	Checking the gas type	12
6.3	Setting up the boiler	12
6.4	Connecting on the heating and gas side	14
6.5	Mounting the connection set (accessories)	14
6.5.1	Installing the gas valve	15
6.5.2	Mounting the connection set	15
6.6	Mounting the siphon	16
6.7	Connecting the condensate pipe	16
6.8	Connecting heating pipes (without connection set)	16
6.8.1	Connecting the gas valve	17
6.8.2	Installing the pump	17
6.9	Installing the low loss header	17
6.10	Connecting an expansion vessel	18
6.11	Installing the insulation (accessory)	18
7	Electrical connection	18
7.1	Handling printed circuit boards	18
7.2	Opening the top cover	18
7.3	Overview of plug-in strip	19
7.4	Connecting electrical components	20
7.5	Connecting the pump of the pump assembly	20
7.6	Connecting the 3-way valve 230 V (accessory)	21
7.7	Mounting the function module (accessory)	21
7.8	Fitting the plug (if not preassembled)	21
8	Commissioning	22
8.1	Commissioning the boiler	22
8.2	Setting the parameters	22
8.3	Setting options for air/gas ratio control valve	23
8.4	Measuring the gas standing pressure (static)	23
8.5	Measuring the gas working pressure (dynamic)	23
8.6	Measuring of CO ₂ and CO (full load)	24
8.7	Measuring the gas/air ratio (minimum load)	24
8.8	Reading off the ionisation current	24
8.9	Check the (flue) gas tightness	25
8.10	Check the function of the boiler	25
8.11	Completion work	25
8.12	Instructing the operator	25
9	Operation	25
9.1	Control panel overview	25
9.2	Switching on the device	25
9.3	Siphon filling program	26
9.4	Settings in the service menu	26
9.4.1	Operating the service menu	26
9.4.2	Service menu	26
9.4.3	Thermal disinfection	32
10	Inspection and maintenance	32
10.1	Important notices	32
10.2	General work	32
10.3	Remove the gas-air unit	33
10.4	Clean the burner	34
10.5	Cleaning the heat exchanger	34
10.6	Cleaning the siphon	34
10.7	Cleaning the condensation catch pan	35
10.8	Resetting the Maintenance type	35
10.9	Measuring the gas pressure	35
10.10	Measuring of CO and CO ₂	35
10.11	Measuring the gas/air ratio	35
10.12	Measuring the ionisation current	35
10.13	Check the flue gas backflow preventer	35
10.14	Check the (flue) gas tightness	35
10.15	Check for correct operation	35
10.16	Replacing components	36
10.16.1	Replacement interval for components	36
10.16.2	Inserting the igniter	36
10.16.3	Replacing the flue gas temperature sensor	36
10.16.4	Replacing the coding plug	37
10.16.5	Replacing the air/gas ratio control valve	37
10.17	Inspection and maintenance protocol (checklist)	38
11	Troubleshooting	39
11.1	Operating and fault displays	39
11.1.1	General information	39
11.1.2	Fault code table	39

11.1.3	Faults that are not displayed	44
12	Shutdown	45
12.1	Standard decommissioning	45
12.2	Decommissioning when there is a risk of frost	45
13	Environmental protection and disposal	45
14	Data Protection Notice	45
15	Technical information and reports	46
15.1	Wiring Diagram	46
15.2	Technical Specifications	47
15.3	Data relating to the gas	48
15.4	Hydraulic resistances	49
15.5	Residual head of pumps	49
15.6	Setting values for heating capacity	49
15.7	Commissioning report for the appliance	50

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 minimizing 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.

1.2 General safety instructions

⚠ Notices for the target group

These installation instructions are intended for gas, plumbing, 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.

⚠ Determined use

The product may only be used for the heating of central heating water in a sealed system and for DHW (Domestic Hot Water) heating in closed-loop DHW and heating systems. Any other use is considered inappropriate. Any damage that may result is excluded from liability.

⚠ System malfunctions caused by third-party equipment

This heat source is designed for operation with our control units.

System malfunctions, malfunctions and defects of system components resulting from the use of third-party equipment are excluded from liability.

Service work required to repair the damage will be invoiced.

⚠ If you smell gas

A gas leak could potentially cause an explosion. If you smell gas, observe the following rules:

- ▶ Prevent flames or sparks:
 - Do not smoke, use a lighter or strike matches.
 - Do not operate any electrical switches or unplug any equipment.
 - Do not use the telephone or ring doorbells.
- ▶ Turn off the gas at the meter or regulator.
- ▶ Open windows and doors.
- ▶ Warn your neighbours and leave the building.
- ▶ Prevent anyone from entering the building.
- ▶ Move well away from the building: call the National Gas Emergency Service on 0800 111 999.
- ▶ L.P.G. boilers: Call the supplier's number on the side of the gas tank.

⚠ Danger to life from poisoning by flue gas

There is a danger to life from escaping flue gas.

- ▶ Ensure that flues and gaskets are not damaged.

⚠ Danger of death from poisoning by flue gas due to inadequate combustion

Danger of death due to flue gas leak. If flues are damaged or leaking, or if you smell flue gas, observe the following rules.

- ▶ Close the fuel infeed.
- ▶ Open doors and windows.
- ▶ If necessary, warn all residents and leave the building.
- ▶ Prevent third parties from entering the building.
- ▶ Rectify any damage to the flue gas pipe immediately.
- ▶ Check the combustion air supply.
- ▶ Do not cover or reduce the size of ventilation openings in doors, windows and walls.
- ▶ Ensure that there is adequate combustion air supply, including for any appliances installed at a later date, e.g. extractor fans, kitchen fans or air conditioning units that discharge air to the outside.
- ▶ Never operate the device if there is insufficient combustion air supply.

⚠ Combustion/room air

- ▶ Keep the combustion/ambient air free of corrosive substances (e.g. halogenated hydrocarbons that contain chlorine or fluorine compounds). This will help to prevent corrosion.
- ▶ Keep the combustion air supply free of dust.

⚠ Installation, commissioning and maintenance

Installation, commissioning and maintenance may be performed only by an approved contractor.

- ▶ In the case of open flue operation: ensure that the installation location meets the ventilation requirements.
- ▶ Do not repair, manipulate or deactivate safety-relevant components.
- ▶ Only install original spare parts.
- ▶ Check for gas tightness after working on gas-carrying components.

⚠ Handover to the user

When handing over, brief the owner in the operation of the heating system and about the operating conditions.

- ▶ 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 an approved contractor.
 - To ensure safe and environmentally compatible operation, an annual inspection, and also

cleaning and maintenance as required, must be carried out within the specified interval.

- ▶ Point out the possible consequences (material damage, personal injury and possible danger to life) of not carrying out inspection, cleaning and maintenance correctly, or omitting it altogether.
- ▶ Draw attention to the dangers associated with carbon monoxide (CO) and recommend the use of CO detectors.
- ▶ Hand over the installation and operating instructions to the user for safekeeping.

⚠ Inspection and maintenance interval

To ensure the wall mounted gas condensing boiler works correctly and safely, the following intervals must be adhered to:

- **Inspection:** annually,
- **Maintenance:** every 2 years or following a burner runtime of 4000 hours (depending on which occurs first).

2 Product Information

2.1 Declaration of conformity

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

 The CE marking declares that the product complies with all the applicable EU legislation, which is stipulated by attaching this marking.

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

2.2 Product data for energy consumption

The product data on energy consumption can be found in the operating instructions for the user.

2.3 About these instructions

Figures used

The figures in these instructions serve to provide general notices regarding correct operation. The figures used serve to provide general notices regarding correct operation. These figures may slightly deviate from the actual situation.

Product types mentioned

These instructions describe all product types of the GC7000WP. Availability may vary depending on the country.

2.4 Appliance types

Appliance type:	Country	Part No.
GC7000WP 50 23	UK, IE	7736 702 194
GC7000WP 65 23	UK, IE	7736 702 195
GC7000WP 85 23	UK, IE	7736 702 196
GC7000WP 100 23	UK, IE	7736 702 197

Table 1 Appliance types

The wall mounted boiler designation comprises the following:

- Condens 7000 WP: product name;
- GC7000WP 50... GC7000WP 100: product type;
- 50 ... 100: heating capacity in kW;
- 23: gas type.

2.5 Type Plate

The data plate contains information on the appliance output, registration data and serial number of the product. The data plate is on the underside of the wall mounted boiler on the right next to the gas connection (→ Fig. 1, p. 6).

2.6 Conversion of gas type

This boiler is suitable for the gas categories specified on the data plate.

If conversion of the boiler to a different gas category is allowed, this is specified in the gas data (→ § 15.3, p. 48).

2.7 Accessories

A wide range of accessories is available for this appliance.

Contact the manufacturer for more information. You will find the relevant addresses on the back of this document.

2.8 Scope of delivery

A range of accessories is supplied with the GC7000WP.

- Check the heating system is intact on delivery.
- Check that all package contents are present.

Packaging unit	Component	Packaging
1 (boiler)	• Wall-mounted boiler	Cardboard box
2 (accessories)	• Mounting rail • Fixing materials • Siphon • Condensate drain hose • Plug (if not pre-assembled) • Rotary joint + gasket (2x) • Documentation	Cardboard box

Table 2 Scope of delivery

2.9 Pump test.

The pump starts automatically for 10 seconds every 24 hours if it is not in use for a longer period. This procedure prevents the pump from seizing.

2.10 Frost protection

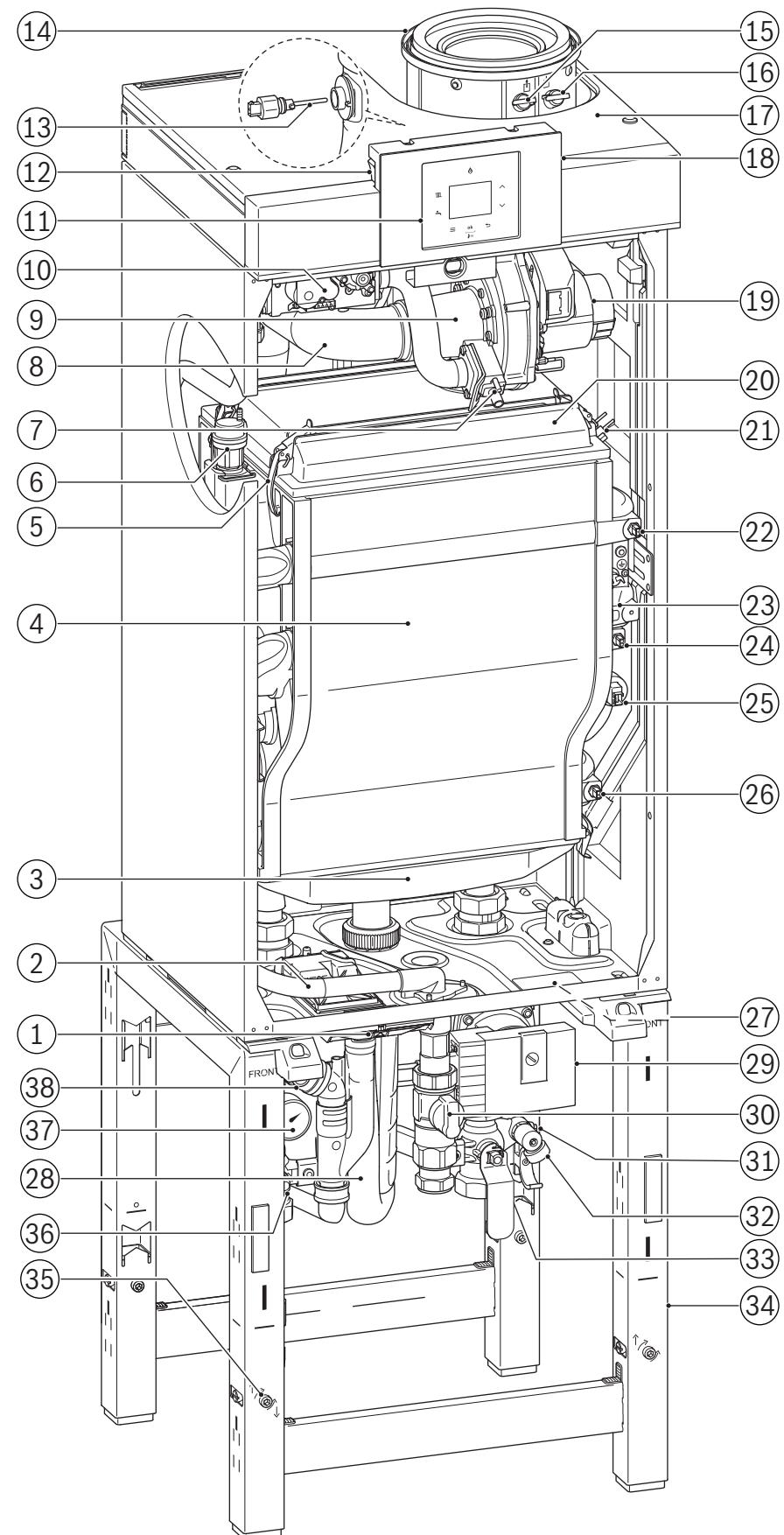
NOTICE

Installation damage due to the effects of frost.

The heating system could freeze during a hard frost due to: mains voltage failure, insufficient gas supply or appliance fault.

- Install the boiler in a frost-proof room.
- Drain the entire heating system if it is to be shut down for a longer period.

The boiler is equipped with integral frost protection. This means that an external frost protection safeguard for the boiler does not have to be installed. The frost protection switches the boiler on at a boiler temperature of 7 °C and switches it off at a boiler temperature of 15 °C. This frost protection does not protect the heating system against frost.

2.11 product overview

0010030188-002

Fig. 1 GC7000WP with connection set on frame

CWallondensing boiler:

- [1] Pump assembly
- [2] Gas line
- [3] Drain pan
- [4] heat exchanger
- [5] Snap fastener
- [6] Automatic air vent valve
- [7] CO₂ adjusting screw¹⁾
- [8] Air intake pipe
- [9] Venturi nozzle
- [10] Air/gas ratio control valve
- [11] Remote control
- [12] On/off switch
- [13] Flue gas temperature sensor
- [14] Connector
- [15] Test point for flue gas routing
- [16] Test point for air supply
- [17] Appliance cover
- [18] Connection point for diagnosis tool
- [19] Fan
- [20] Burner cover
- [21] Igniter
- [22] Flow temperature sensor (93 °C)
- [23] Safety temperature monitor (105 °C)
- [24] High limit safety cut-out
- [25] Pressure sensor
- [26] return temperature sensor
- [27] Type Plate
- [28] Condensate trap

Connection set and frame (accessories):

- [29] Pump
- [30] Gas isolator
- [31] Expansion vessel connection
- [32] Fill and drain valve
- [33] Service valve return
- [34] Base frame
- [35] Adjustment fixture
- [36] Service valve flow
- [37] Pressure gauge
- [38] Water pressure relief valve

1) Reproduced: GC7000WP 100

2.12 Dimensions

Boiler on frame

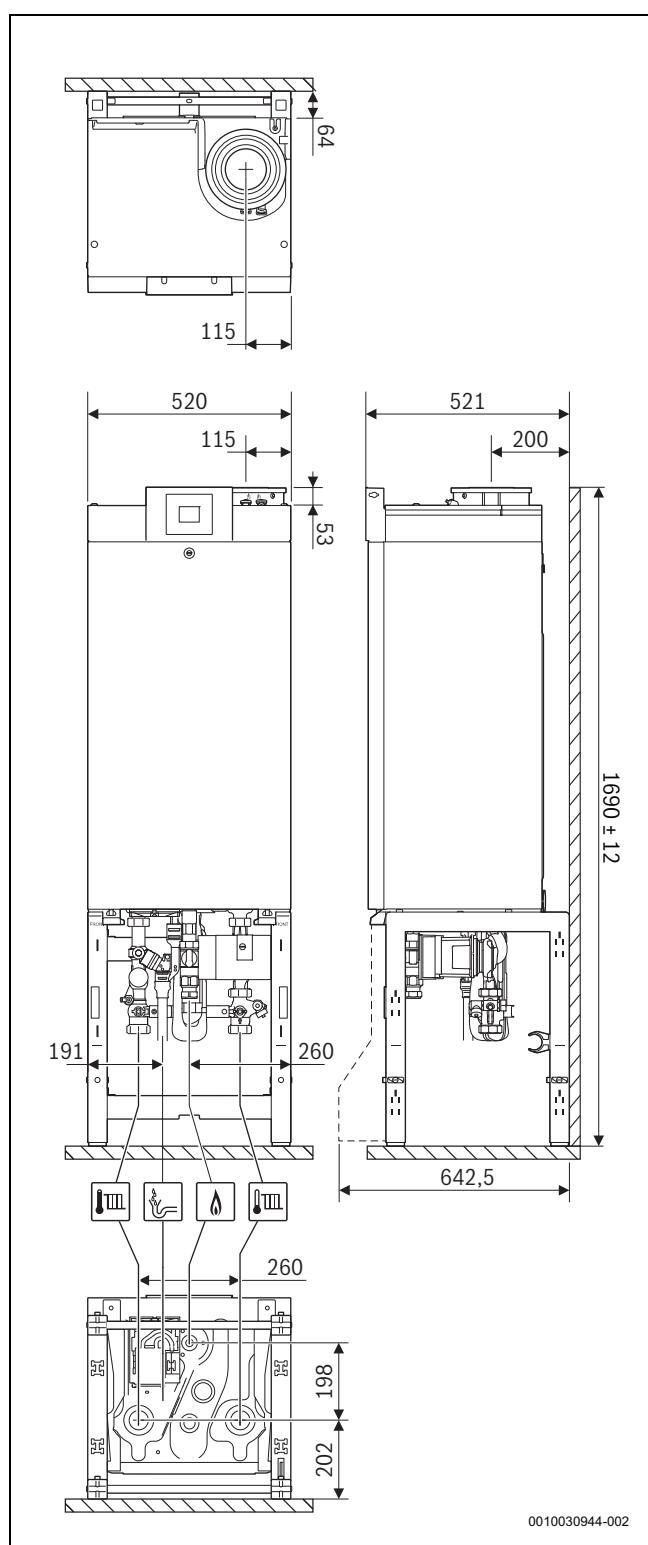


Fig. 2 Dimensions on base frame [mm]

Boiler against the wall

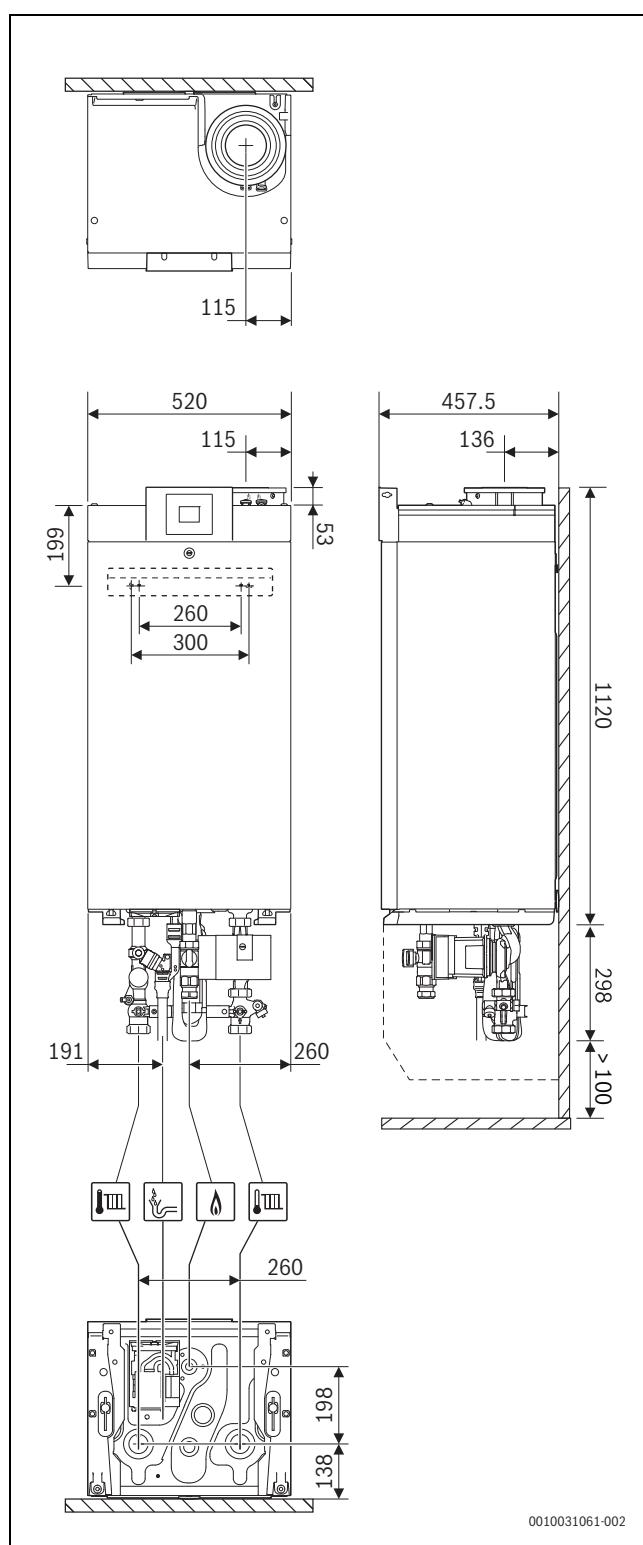


Fig. 3 Dimensions on the wall [mm]

2.13 Minimum clearance from walls



With a horizontal flue gas connection, make sure the electronic components inside the boiler at the top remain accessible when placing an elbow directly on the flue outlet adapter.

- ▶ After fitting the flue bend, check whether the top cover of the appliance is easy to remove (→ § 7.2, p. 18).
- ▶ There must be a clearance of at least 100 mm directly above the bend at the boiler.

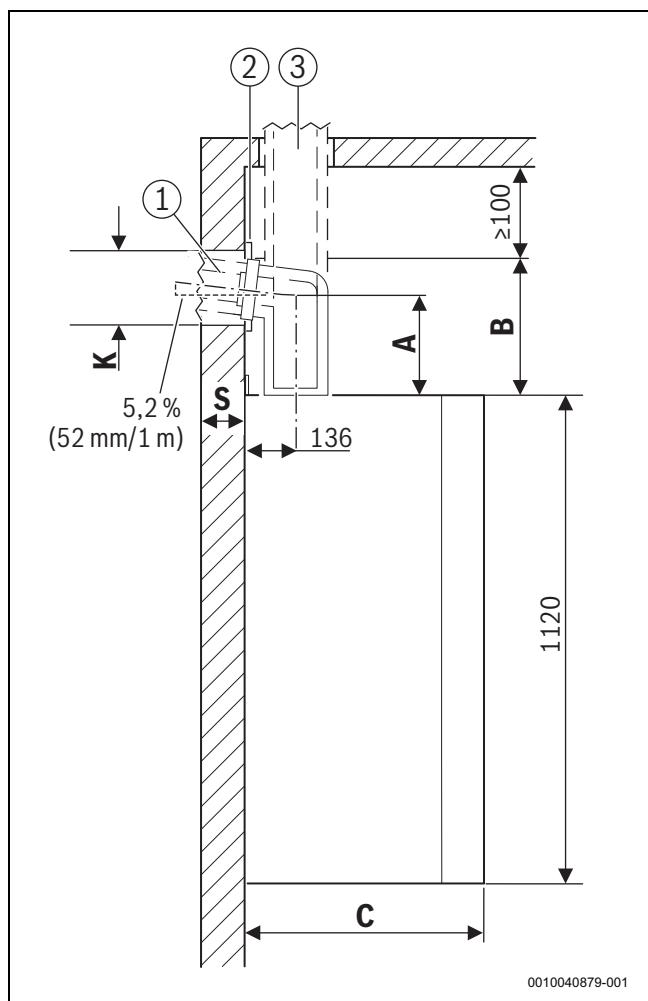


Fig. 4 Side view [mm]

- [1] Horizontal flue outlet
- [2] Collar
- [3] Vertical flue outlet
- A Clearance from top of boiler - hard borehole Clearance
- B from top of boiler - upper side of borehole
Depth of boiler: 365 mm
- C Diameter of borehole
- K Wall thickness
- S

Wall thickness S	K [mm] for Ø flue outlet [mm]	
	Ø 110/160	Ø 110
15 - 24 cm	190	140
24 - 33 cm	195	145
33 - 42 cm	200	150
42 - 50 cm	205	155

Table 3 Diameter of borehole K

Flue gas routing		A [mm]	B [mm]
Ø 110 mm	Connection adapter with elbow, horizontal flue outlet.	165	A + 0.5*K
Ø 110/160 mm		179	A + 0.5*K
Ø 110 mm	Connection adapter, vertical flue outlet	-	0
Ø 110/160 mm		-	0

Table 4 Clearance A and B depending on flue outlet

Determine the minimum clearance above the boiler.

- ▶ Add dimension B from Table 4 to the height of the top of the boiler.
- ▶ With a horizontal flue outlet:
 - Add 52 mm to dimension B for every meter of horizontal flue outlet.
 - In this case also take the diameter of the collar into consideration.
- ▶ With a vertical flue outlet:
 - Maintain a clearance of at least 100 mm above the boiler to allow the electronic components to be accessed and worked on.

Minimum space required for the boiler.

- ▶ Provide an unobstructed space of at least 100 cm for the boiler to allow maintenance and other work to be carried out.

Distance from walls at sides.

- ▶ Maintain a clearance of at least 5 mm on the weather side of the boiler.

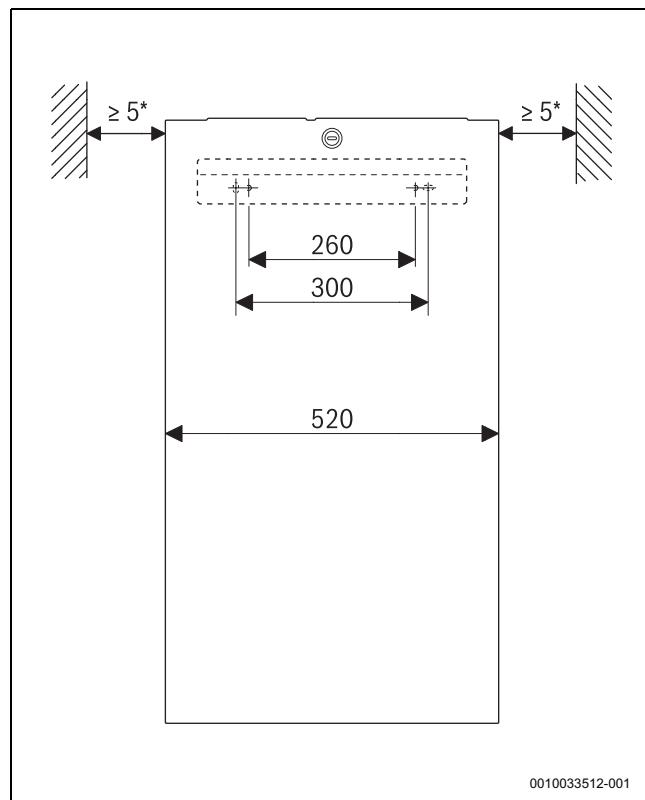


Fig. 5 Front view [mm]

2.14 Flue gas temperature sensor

The boiler is manufactured with a flue outlet sensor as standard (→ Fig. 1, p. 6).

The flue gas temperature sensor protects the boiler and flue system from high flue gas temperatures by setting back the boiler load (downward modulation).

2.15 Opening and closing the front panel of the appliance

The boiler has a rotary lock.

- ▶ Use the designated tool when opening and closing the front panel (ideally a flat-bladed screwdriver).

Opening the front panel

- ▶ Turn the locking screw a quarter turn [1].
- ▶ Tilt the front cover forwards and remove [2 + 3].

Closing the front panel

- ▶ Insert the locating pins on the front cover into the centring holes [4] in the frame.
- ▶ Squeeze the front cover shut at the position of the locking screw.

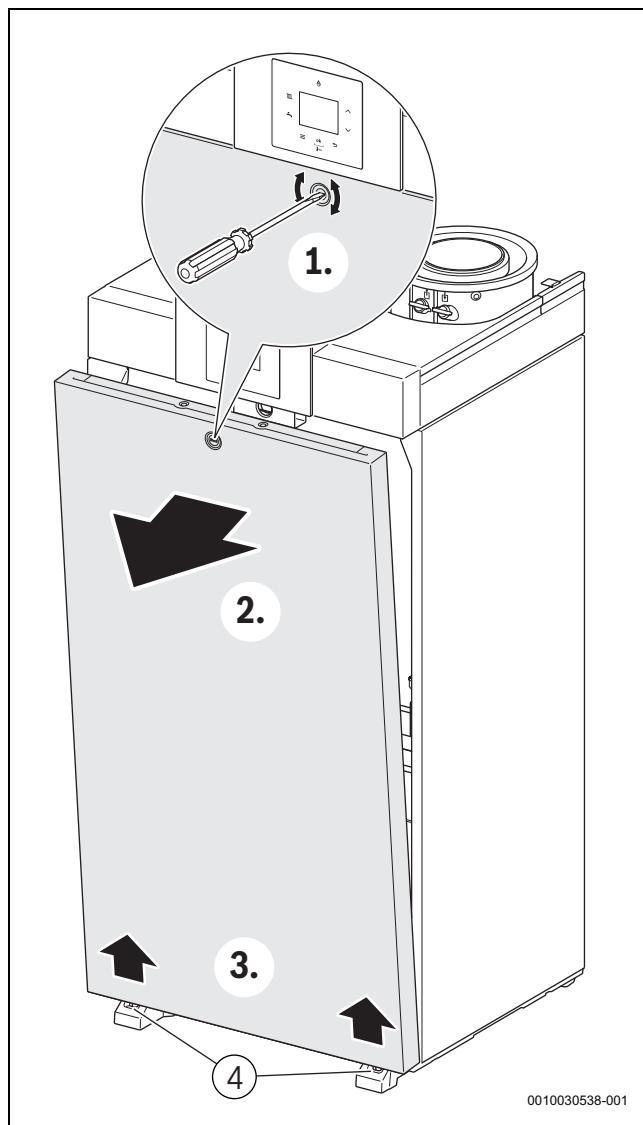


Fig. 6 Opening the front panel

NOTICE

Risk of system damage due to differing operating conditions!

Faults may arise if the specified operating conditions are disregarded. Where there is serious disregard for the stated operating conditions, individual components or the boiler itself may be destroyed.

- ▶ Observe the binding information on the data plate.

3.1 Notes on installation and operation



Use only genuine spare parts from the manufacturer. The manufacturer can assume no liability for damage caused by spare parts not supplied by the manufacturer.

When installing and operating the heating system, observe the following requirements:

- The local building regulations regarding installation conditions.
- The local building regulations regarding the supply and exhaust air systems, and the chimney connection.
- Latest edition of the IEE Wiring regulations governing electrical connection to the mains power supply
- Regulations and standards regarding the safety equipment in water-filled heating systems. For guidance see the ICOM water treatment guide for commercial heating systems.
- Make sure that the regional approvals required for the flue system and condensate connection to the public sewage system have been obtained.

3.2 Regulations

In order to ensure installation and operation of the product in accordance with the regulations, please observe all the applicable national and regional regulations as well as all technical rules and guidelines.

The document 6720807972 contains information about the applicable regulations. You can use the document search on our website to display this. You will find the address of the website on the back of these instructions.

4 Flue gas routing

A supplement for flue gas routing is included with this product. This document describes the flue gas accessories, flue gas classifications and corresponding flue lengths.

- ▶ Install the flue system as described in the supplied documentation.

3 Regulations



DANGER

Failure to comply with instructions may result in material damage and personal injury, including danger to life!

- ▶ Comply with all instructions.

5 Preconditions for installation

! DANGER

Danger to life from explosion!

An increased and permanent ammonia concentration may lead to stress corrosion cracking on brass (e.g. gas valves, union nuts). As a result, there is a risk of explosion from gas escaping.

- ▶ Do not use wall mounted gas boilers in rooms where there is an increased or permanent ammoniac concentration (e.g. livestock stables or storage room for fertilisers).
- ▶ If contact with ammonia is unavoidable, make sure that there are no brass parts installed in the system.

! CAUTION

Personal injury due to lifting incorrectly.

- ▶ Due to the weight and dimensions of the wall mounted boiler, take adequate measures to transport the wall mounted boiler safely in the installation room.
- ▶ The packaged boiler should ideally be transported to the installation room on a sack truck or trolley.

NOTICE

The appliance may be damaged if lifted incorrectly.

Not all parts of the boiler are suitable for lifting and carrying. To lift the boiler correctly, handles are attached to the underside.

- ▶ Use these handles to move the boiler [1].
- ▶ Hold the boiler at the side and base and not at the basic controller or flue connection.

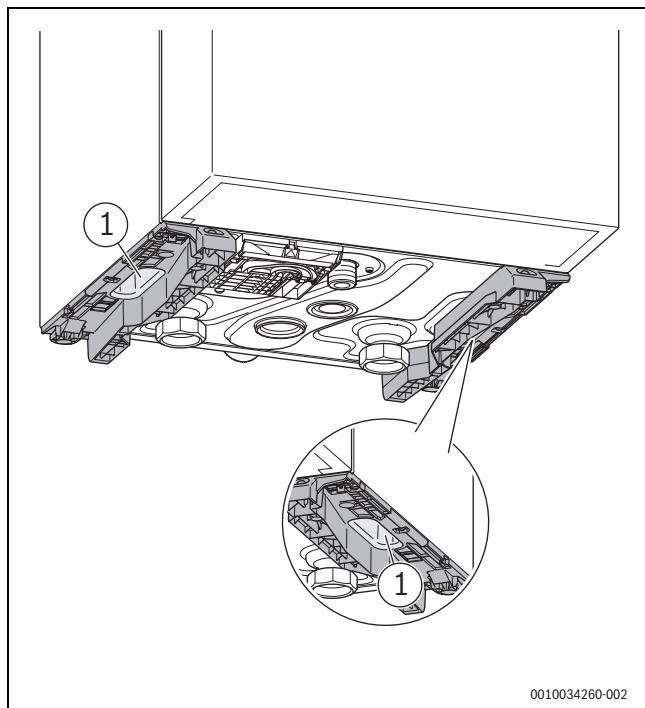


Fig. 7 Position of handle recesses

5.1 Installation location

NOTICE

Frost damage!

- ▶ Install the heating system in a frost-free room.

! DANGER

Risk of fire through flammable materials or liquids.

- ▶ Never store flammable materials or liquids in the immediate vicinity of the boiler.

NOTICE

Boiler damage through contaminated combustion air or contaminated air in the vicinity of the boiler!

- ▶ Never operate the boiler under dusty conditions or where the atmosphere is contaminated with corrosive substances. These might be, for example, paint shops, hairdressing salons and agricultural operations involving the production of manure.
- ▶ Never operate boilers in locations where trichloroethene, halogenated hydrocarbons or other corrosive chemical substances are used or stored. Certain adhesives, solvents, cleaning agents and paints, for example, contain these substances.
- ▶ Choose or prepare a suitable installation location.

5.2 Important notices

The wall mounted boiler must not be operated in open heating systems (oxygen permeation). The heating system must then be converted to a sealed system according to EN12828 or a system separation must be installed:

- ▶ Mount a separation (a plate heat exchanger for example) between the boiler and the heating system.

When plastic pipes are used in the heating system

If plastic pipes are used in the heating system, in an underfloor heating system for example:

- ▶ Use plastic pipes with oxygen diffusion resistance to DIN 4726/4729
- or-
- ▶ Mount a separation (a plate heat exchanger for example) between the boiler and the heating system.

When using a room thermostat/room temperature-dependent controller

- ▶ Do not mount thermostatic radiator valves in the reference room.

Surface temperature

The maximum surface temperature of the appliance is below 85 °C. Therefore no special safety measures are required to protect flammable materials and fitted furniture. Country-specific regulations must be observed.

5.3 Water quality

Unsuitable or contaminated heating and tap water can lead to faults in the boiler and can damage the heat exchanger or DHW supply among other things due to sludge formation, corrosion or calcification. Please get in touch with the manufacturer if you require additional information on the water quality. You will find the relevant addresses on the back of this document.

- Using the supplied "Water quality operator's log" determine the water volume V_{\max} :

If the amount of fill and top-up water is already greater than the calculated water volume V_{\max} :

- Use the water treatment as specified in the "Water quality operator's log".

If the amount of fill and top-up water is less than the calculated water volume V_{\max} :

- Purge and clean the heating system if required.
- Only use untreated potable water.
- Do not use chemical additives (e.g. inhibitors or agents that increase or reduce the pH), apart from as specified in § 5.3.1.

5.3.1 Water conditioning and treatment

NOTICE

Damage to appliance due to sealing agent in the heating water.

- Addition of sealing agent to the heating water is not permitted.



Conditioned water is water that has been softened or desalinated and to which **no** chemicals have been added. Treated water is unconditioned or conditioned water to which chemicals have been added.

The following water conditioning and water treatment measures have been approved for use by Bosch:

Application	Product name	Max. concentration [%]
Demineralisation	Demineralisation/ desalination with mixed bed cartridges	In accordance with the supplied "Manual for water quality"
Inhibitor/antifreeze	Fernox Alpha 11	40
Antifreeze	Noburst AL	40

Table 5 Additives

- For information on concentrations and applications, contact the supplier of the additive.

5.4 Maximum flow temperature

NOTICE

Too much chloride in the heating water can damage the appliance.

If the chloride content in the heating water exceeds 150 ppm, the boiler may be damaged if the heating water temperature is higher than 80 °C. If the maximum flow temperature is set higher than 80 °C, the water treatment must be adapted in order to reduce the chloride content.

- If the chloride content is more than 150 ppm, carry out a water treatment as described in the supplied "Manual for water quality".

The boiler is supplied with a set maximum flow temperature of 80 °C as standard. Under standard conditions, this maximum boiler temperature

is sufficient to cover the heating load and also guarantee the service life of the boiler.

A higher maximum flow temperature may however be required for certain installations. In these cases, the chloride content of the heating water must be checked and reduced if necessary.

- With the chloride content of the heating water.
- If the chloride content is more than 150 ppm, perform water treatment as described in the supplied "Manual for water quality".
- Set the maximum flow temperature to the required value (→ § 9.4.2, p. 26).
- Contact the manufacturer for more information. You will find the relevant addresses on the back of this document.

6 Installation

WARNING

Risk of explosion

- Close the gas valve before working on gas-carrying components.
- After completing the work, check the tightness of all gas-carrying components.

6.1 Unpacking the boiler



The packaging material is fully recyclable.

- Dispose of the boiler packaging after installing the boiler at a recycling point.
- Remove the outer packaging by setting the boiler upright and pulling it up and off.
- Avoid damaging the connections on the boiler at the top and bottom.
- Cover the flue outlet adapter of the boiler during assembly.

6.2 Checking the gas type

- Check whether the gas type to be connected to the appliance corresponds to the gas type specified on the data plate. (→ § 2.11, p. 6).

6.3 Setting up the boiler

The boiler can be installed in two ways:

- Installation on a frame (accessory).
- Installation on the wall.

To make full use of the modular design of the system, it is advisable to install the boiler in combination with the frame.

Installation on the frame (accessory)

WARNING

Physical injury due to tipping of the boiler.

The frame must be securely attached to the floor or wall so that the boiler cannot tip over.

- Use fixing materials that are suitable for the subsurface or wall and offer a sufficient hold.
- Fasten the frame to the floor with the bracket (included).
- If drilling in the floor is not permitted fasten the frame to the wall.
- Mount the cross bars [1] to the stands [2].
- Secure the cross bars with the brackets [3] (included).
- Place the frame at the required location in the installation room.

- ▶ Set up the frame so the marking [4] points forwards.

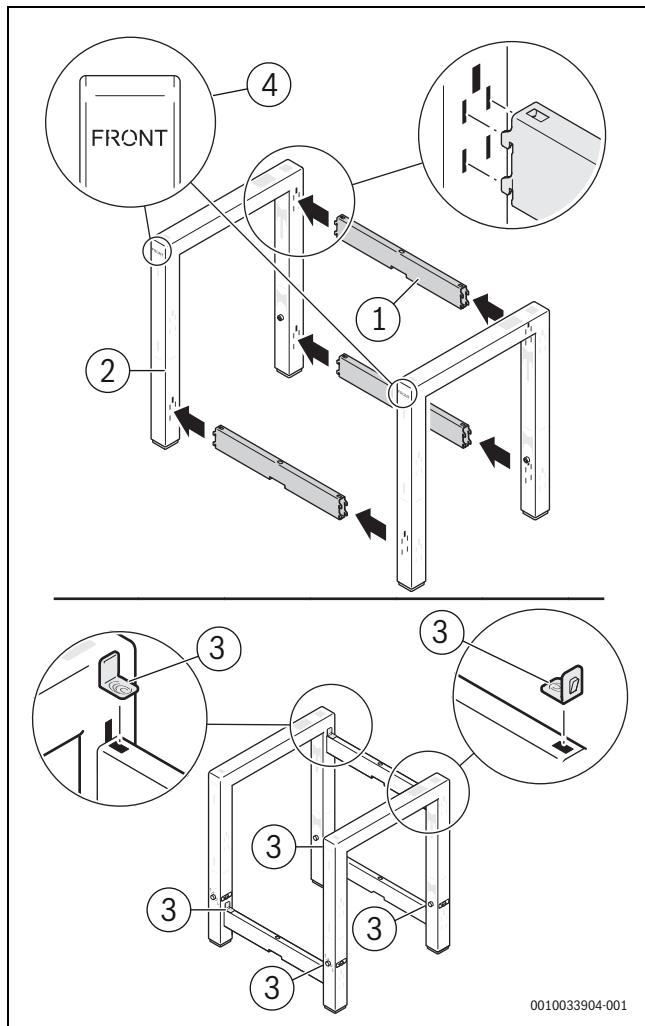


Fig. 8 *Installing the frame*

- [1] Cross bar
- [2] Stand
- [3] Angle
- [4] Marking

- ▶ Fasten the brackets [1] to the frame.
- ▶ Fasten the brackets to the floor [3].
- or-
- ▶ Fasten the frame to the wall [2].
- ▶ As the boiler subsequently needs to be adjusted, do not fully tighten the screw.

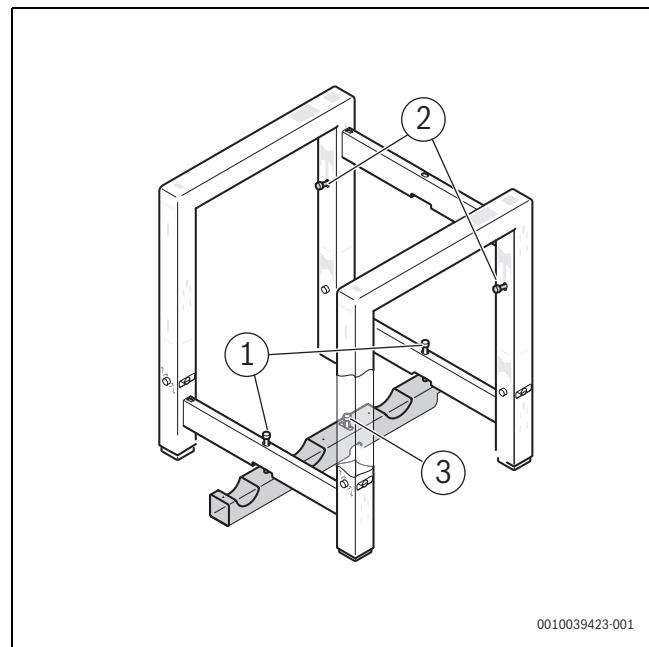


Fig. 9 *Secure the frame to the wall or floor*

- ▶ Push the boiler onto the frame.
- The boiler is secured to the frame at the rear. If it has been secured correctly a "click" will be audible.
- ▶ Align the in the frame using the adjustment option. [1].
- ▶ Fully tighten the grub screw in the frame.

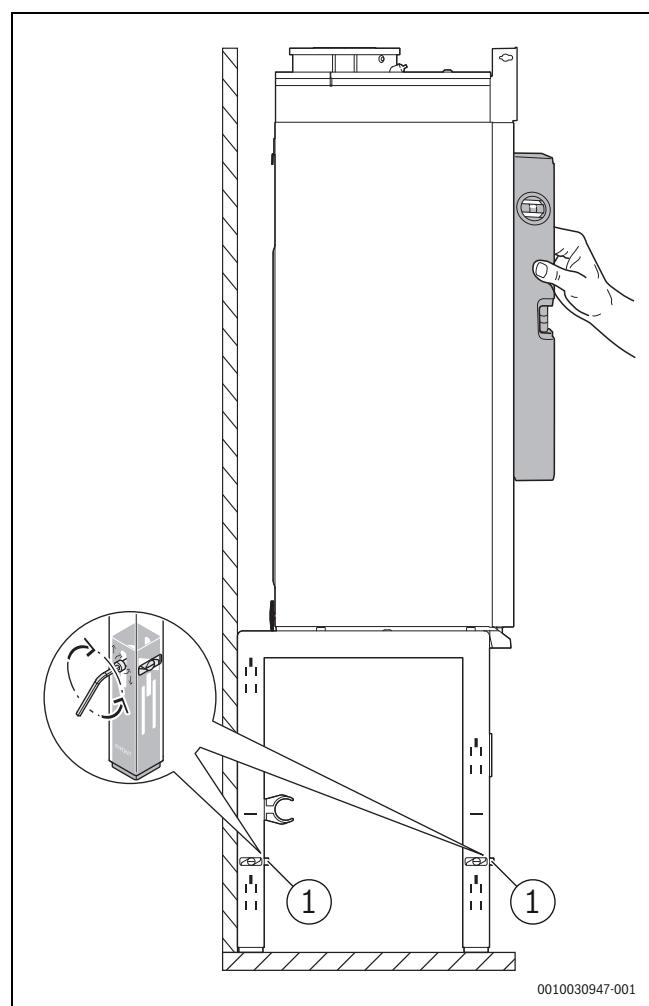


Fig. 10 *Align the boiler on the frame*

Assembly on the wall

NOTICE

If the boiler may be damaged if attached incorrectly.

Use suitable fixing materials for the condition of the masonry and weight of the boiler. The fixing materials provided are only suitable for installation on concrete walls.

- ▶ Only use fixing materials that are suitable for the construction which will be supporting the boiler.
- ▶ Check whether the wall has sufficient load-bearing capacity based on the dimensions and weight of the boiler. (→ § 15.2, p. 47).
- ▶ Mount a fastening structure if required.
- ▶ Only use fixing materials that are suitable for the structure to which the boiler is to be attached. (→ Tab. 6).

Wall type	Fixing materials	Minimum load [N]
Concrete	See scope of delivery	≥ 1000 ¹⁾ Per fixing point.
Solid lime sandstone		
Others	Not included: to be decided by the installer.	

1) The load applies for tensile and shear loads.

Table 6 Specification of the fixing materials

- ▶ Determine the position of the boiler on the wall.
- ▶ Mark the boreholes using the enclosed mounting rail [1].
- ▶ Install the mounting rail on the wall using a spirit level to make sure it is level [2 + 3 + 4].

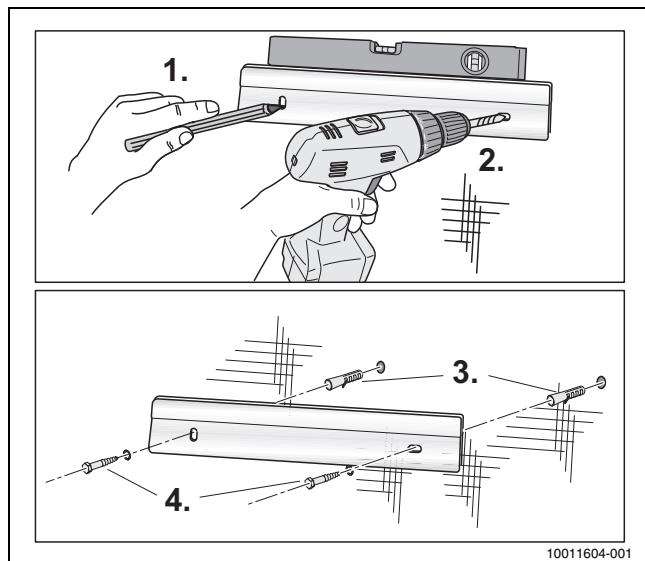


Fig. 11 Installing the mounting rail on a concrete wall

- ▶ Hook the boiler into the mounting rail.

- ▶ Align the boiler using a spirit level and adjusting screw on the rear.

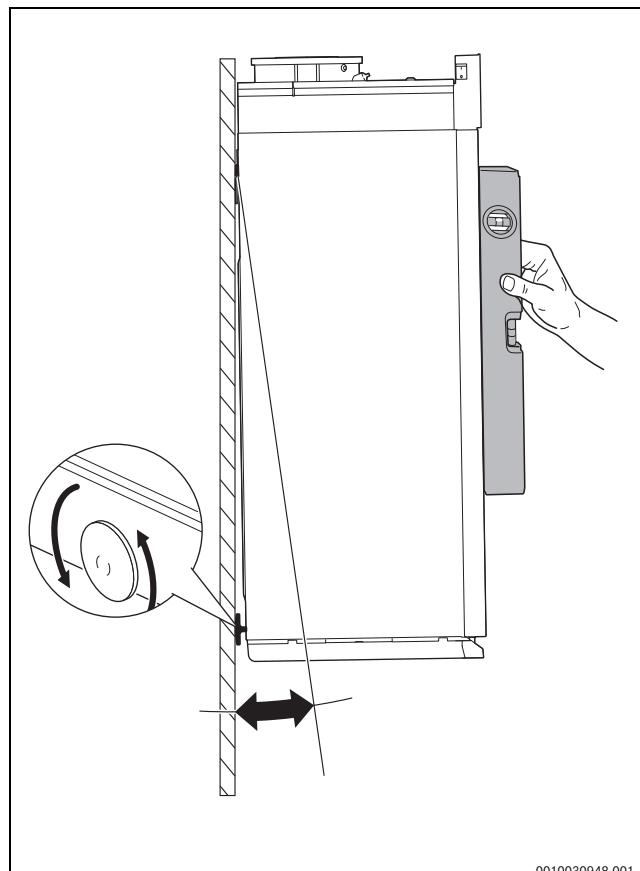


Fig. 12 Aligning the boiler on the wall

6.4 Connecting on the heating and gas side

The boiler can be connected on the heating and gas side in 2 ways:

- using a connection set (accessory, → § 6.5, p. 14),
- without connection set (→ § 6.8, S. 16).

6.5 Mounting the connection set (accessories)

NOTICE

Installation damage due to incorrect excess pressure of the safety valve.

The connection set must be equipped with a safety valve.

- ▶ Check whether the excess pressure of the safety valve is suitable for the required operating pressure and the components in the heating system.
- ▶ Replace the pre-installed safety valve with a safety valve with a suitable excess pressure (accessory).

The following components have been incorporated into the connection set:

- Gas valve;
- Service shut-off valves;
- Pressure gauge
- Safety valve;
- Pump;
- Fill and drain valve.

These components can be found in the overview drawing (→ § 2.11, p. 6).

6.5.1 Installing the gas valve



WARNING

If the sealing is not carried out correctly gas may escape.

The thread of the gas connection under the boiler must not be roughened. This could cause gas to escape.

- Comply with the country-specific regulations and standards in relation to the sealing agent used.

NOTICE

Boiler damage due to dirt.

Pollution in old gas lines, including rust, can damage the air/gas ratio control valve or block the gas supply.

- Install a gas filter in the gas line in accordance with the specifications if required.
- Seal the gas connection [1] using an approved sealing agent.
- Mount the coupling (two parts) [2].
- Install the gas valve [3].
- Connect the gas line without stress to the gas valve.
- Install a gas filter in the gas line if required.

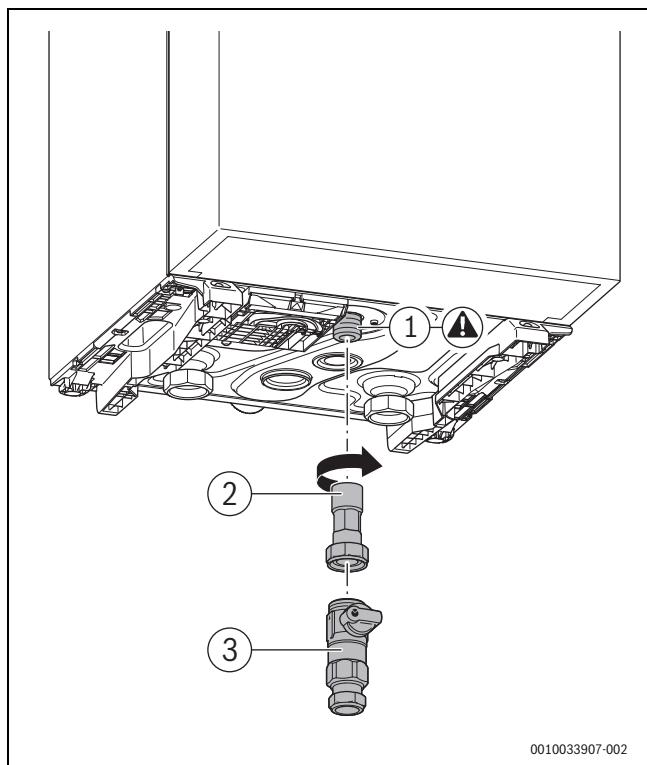


Fig. 13 Installing the gas valve

- [1] Gas connection
- [2] Two-part coupling
- [3] Gas isolator

6.5.2 Mounting the connection set

- Mount the flow connection with the flat gasket [1].
- Mount the pump with the flat gasket [2].
- Mount the return connection with the flat gasket [3].
- Tighten the rotary joints handtight.

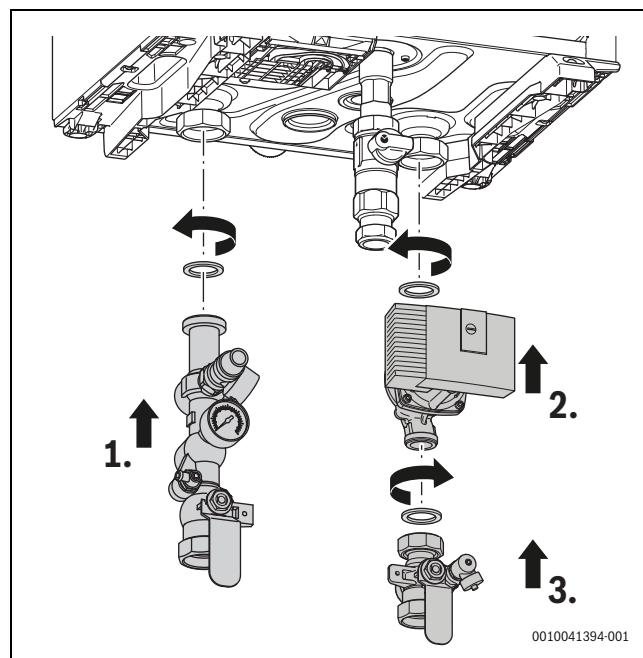


Fig. 14 Mount the flow/return connection

- Screw down the bracket with the screws [1].
- Fully tighten all rotary joints [2].

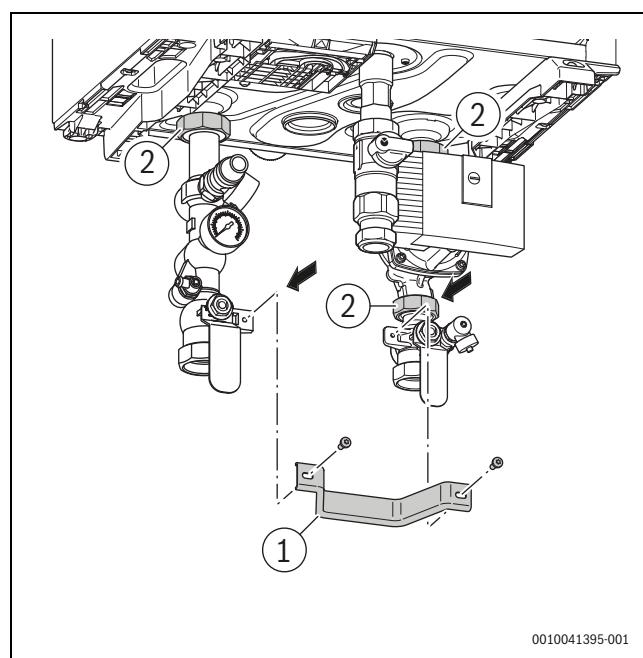


Fig. 15 Mount the brackets

- Connect the flow and return line to the connection set, making sure they are free of stress. The minimum diameter of the flow and return line must be 1 1/2" (Ø 35 mm).

6.6 Mounting the siphon

- ▶ Fill the boiler siphon with water.
- ▶ Mount the boiler siphon [1] with gasket [2].
- ▶ Check whether the neck of the siphon is properly connected to the condensation catch pan.
- ▶ Tighten the union nut hand tight [4].

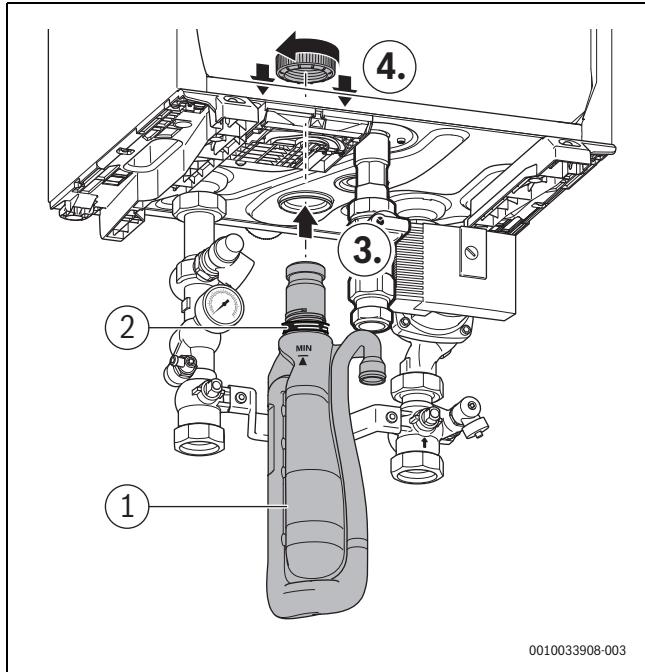


Fig. 16 Mounting the boiler siphon

With pump assembly

- ▶ Mount the tee [1] between the diaphragm safety valve and the siphon.
- ▶ Connect the hose [2] from the automatic air vent valve to the tee [1].
- ▶ Do not insert the hose into the tee by more than 10 cm.
- ▶ Shorten the hose if required.
- ▶ Install the corrugated hose [3].

Without pump assembly

- ▶ Mount the corrugated hose [3] directly on the siphon [4].
- ▶ Connect the hose [2] from the automatic air vent valve to the waste water system.

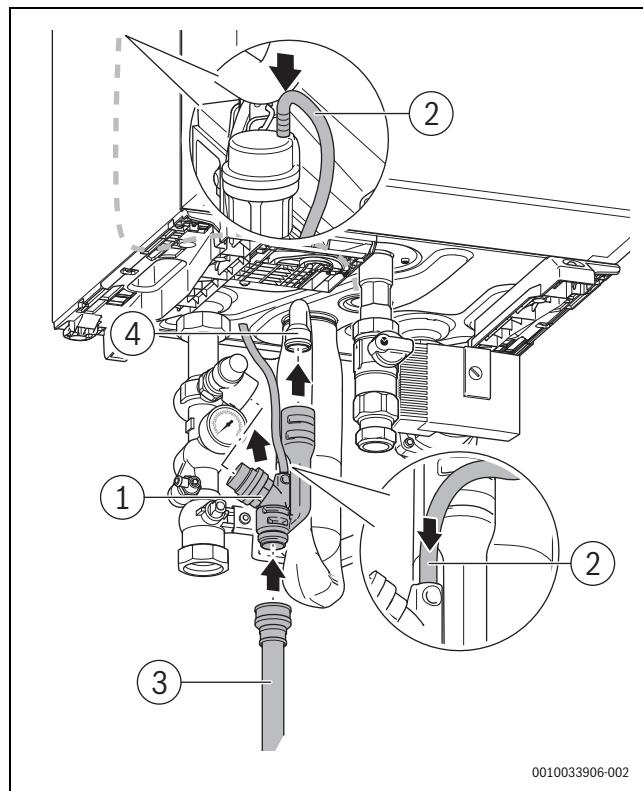


Fig. 17 Mounting the air vent valve hose

- [1] T-piece
- [2] Air vent valve hose
- [3] Corrugated hose
- [4] Condensate trap

6.7 Connecting the condensate pipe

NOTICE

If the waste water pipe is blocked, this can damage the boiler.

A blockage in the waste water pipe can prevent the removal of condensate from the boiler if the condensate drain line is permanently connected to the waste water pipe.

- ▶ Make sure that the connection between the condensate pipes of the boiler and the waste water pipe connection is unobstructed.
- ▶ Use a waste water pipe made of plastic material with a diameter of at least Ø 40 mm to remove the condensate.
- ▶ Install a siphon in the waste water pipe.
- ▶ Install horizontal pipe sections so they slope towards the downpipe. The maximum length of the horizontal pipe section in this case is 5 m.
- ▶ Fill siphon in the waste water pipe.

6.8 Connecting heating pipes (without connection set)

NOTICE

If the operating pressure is too high, this can damage the boiler.

- ▶ Install a diaphragm safety valve between the boiler and the service shut-off valve.

NOTICE**Damage to appliance due to incorrect connection of safety equipment.**

When using service valves, all safety equipment must remain in operation when the service valves are closed.

- ▶ Mount the connection for the expansion vessel and safety valve directly under the boiler and above the service valves. (→ Fig. 18, p. 17).

NOTICE**Appliance fault due to insufficient cooling.**

If the boiler is installed on a frame, the internal overtemperature protection of the pump may be triggered if the cooling is insufficient when an On/Off pump was selected.

- ▶ When using insulating parts, ensure sufficient ventilation by not mounting the rear panel.

- ▶ Connect the flow and return pipe without stress to the boiler.
- ▶ The diameter of the flow and return pipe must be no less than 1 ½" (35 mm).

To make maintenance work easier:

- ▶ Install a service valve in the flow and return pipe (→ Fig. 18, p. 17).

6.8.1 Connecting the gas valve

- ▶ Connect the gas valve (→ § 6.4, p. 14).

6.8.2 Installing the pump

- ▶ Select the pump using the specifications as the basis (→ Tab. 15.2, p. 47).
- ▶ Take the required volumetric flow rate into consideration (→ Tab. 15.4, p. 49).

If a low loss header is not used:

- ▶ Select a pump with a residual head of at least 200 mbar at the required volumetric flow rate.
- ▶ Install the pump [6] in the return line [5].

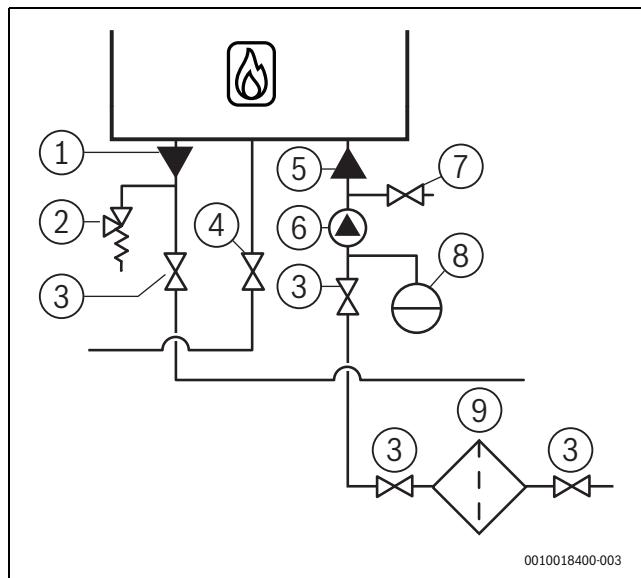


Fig. 18 Connection of heating water pipes

- [1] Flow line
- [2] Water pressure relief valve
- [3] Service valve
- [4] Gas isolator
- [5] Return line
- [6] Pump
- [7] Fill and drain valve
- [8] Expansion Vessel
- [9] Dirt trap

6.9 Installing the low loss header

If the remaining head is insufficient at the required volumetric flow rate, a low loss header [1] must be set up.

- ▶ Check the specifications to find out whether it is necessary to set up a low loss header (→ § 15.4, p. 49).

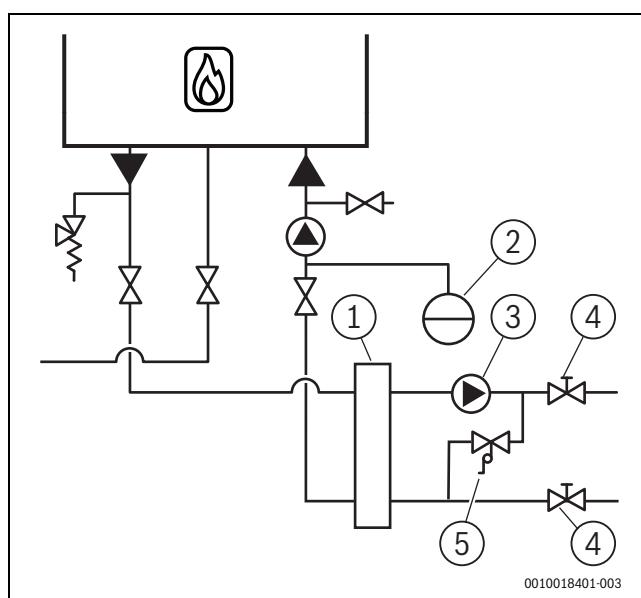


Fig. 19 Setup with low loss header

- [1] Low-loss header
- [2] Expansion Vessel
- [3] Pump
- [4] Service valve
- [5] Differential pressure regulator

6.10 Connecting an expansion vessel



For the boiler and the system to function correctly, the right expansion vessel must be selected.

- ▶ Determine the size and pre-charge pressure of the expansion vessel by referring to EN 12828.
- ▶ Remove the cap from the connection point [1].
- ▶ Connect the connecting pipework of the expansion vessel to the connection point.

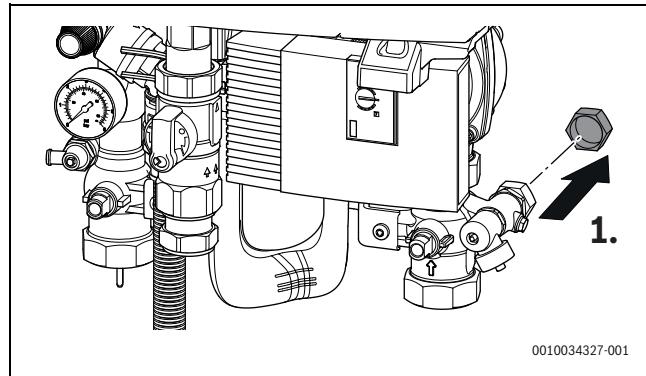


Fig. 20 Connecting an expansion vessel

6.11 Installing the insulation (accessory)

Insulating parts are available for the connection set of this boiler.

If the boiler is placed on the base frame, the insulation consists of several panels. In the case of wall-mounted installation, the insulation consists of 1 piece which is fastened underneath the boiler.

- ▶ For more information, refer to worcester-bosch.co.uk or you will find the relevant addresses on the rear of this document.

7 Electrical connection



CAUTION

Electric shock.

- ▶ Disconnect the boiler from the power supply before working on electrical parts.

NOTICE

Electrical short circuit due to incorrect cabling.

- ▶ Only use original cables if they need to be replaced.
- ▶ All 230 VAC connections in the boiler must be established using the cable type HO5VV-F 3 x 0.75 mm² or NYM-J 3 x 1.5 mm².
- ▶ All 24 VAC connections in the boiler must be established using a 2-wire power cable with 0.4 – 0.8 mm² cross-section.



It must be possible to reach mains plug and therefore also the socket (230 V AC, 50 Hz) at all times for commissioning of the boiler. The socket must be earthed.

- ▶ When establishing the electrical connection, also refer to the documentation of the accessory to be connected and the wiring diagram (→§ 15.1, p. 46).

7.1 Handling printed circuit boards

Printed circuit boards with control electronics are very sensitive to electrostatic discharge (ESD). To prevent damage to the components, exercise utmost caution.



CAUTION

Damage due to electrostatic charge!

- ▶ Wear an earthed wristband when handling unenclosed PCBs.

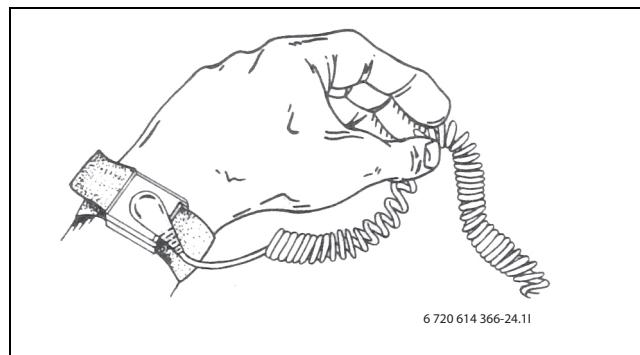


Fig. 21 Wrist strap

The damage is not normally immediately apparent. A PCB may function perfectly during commissioning and problems often only arise later on. Charged objects are only a problem if they are in the vicinity of the electronics. Before starting work, ensure a safe distance of at least 1 m from foam rubber, protective film and other packaging materials, clothing made of synthetic fibres (e.g. fleece pullovers) and similar items.

An earthed wrist strap offers good ESD protection when working with electronics. This wrist strap must be worn when opening the screened metallic bag/packaging or prior to exposing a fitted PCB. The wrist strap must be worn until the PCB has been placed inside its screened packaging or has been connected inside the closed control cabinet. Replaced PCBs that are returned must be handled in this way.

7.2 Opening the top cover

The burner control unit and terminal strip for electrical components are located under the top cover.

- ▶ Open the top cover by unfastening the retaining screws [1].

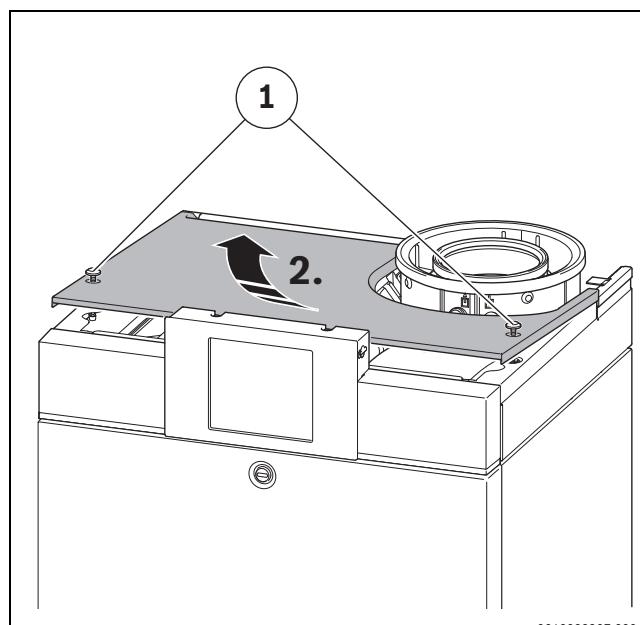


Fig. 22 Opening the top cover

7.3 Overview of plug-in strip

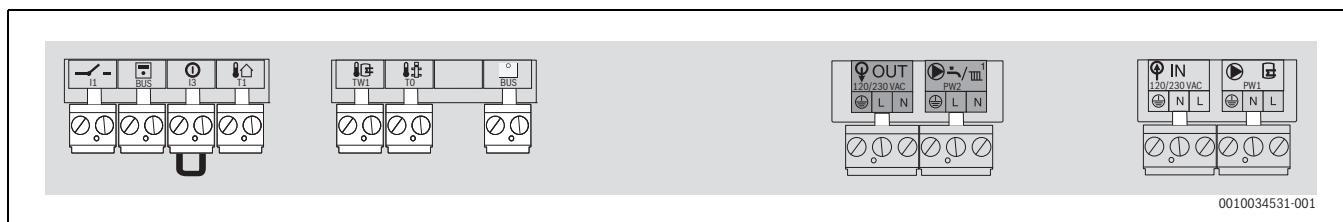


Fig. 23 Overview of plug-in strip

Symbol	Function	Description
	On/Off temperature control (volt free)	<ul style="list-style-type: none"> Connect an On/Off temperature control. Request for heat via volt-free contact, closed = on, open = off.
	Modulation-controlled control unit and EMS-BUS	<ul style="list-style-type: none"> Connect modulating temperature controller (EMS bus).
	External switching contact (volt free). This connection is short-circuited as standard.	<ul style="list-style-type: none"> If it is necessary to connect several safety components, e.g. a condensate pump and a thermal cut out for the underfloor heating system, they must be connected in series. If a break occurs due to one of the safety components, the heating load to the boiler is interrupted. Remove short circuit. Connect safety components (in series). <p>Attention! 230 V components must only be connected via a relay.</p>
	outside temperature sensor	<ul style="list-style-type: none"> Connect the outside temperature sensor.
	Storage cylinder temperature sensor	<ul style="list-style-type: none"> Connect cylinder temperature sensor.
	Temperature sensor of low loss header	<ul style="list-style-type: none"> Connect the temperature sensor of a low loss header. Set the use of the low loss header in the service menu: Settings > Hydraulics > Low-loss header.
	Function modules	<ul style="list-style-type: none"> Connect the Bus cable of the function module. If installed in the boiler, install the function module as described in the instructions (→ § 7.7, p. 21).
	Mains voltage	<ul style="list-style-type: none"> Connect the 230 V power supply for the function module. -or- Connect the 3-way valve according to the instructions (→ § 7.6, p. 21). <p>Attention! The total power consumption of the connected components must not exceed 725 W.</p>
	Circulating pump	<ul style="list-style-type: none"> If a DHW circulation line is used, a sanitary pump can be connected. Connect the 230 V power supply for the sanitary pump.
	Mains voltage	<ul style="list-style-type: none"> Mains plug 230 V_{AC} Connect the mains plug, if not pre-assembled (→ § 7.8, p. 21).
	Cylinder primary pump	<ul style="list-style-type: none"> Connect the cylinder pump. -or- Connect the 3-way valve according to the instructions (→ § 7.6, p. 21).
	Fine-wire fuse of the burner control unit	There is a replacement fuse under the cover flap on the burner control unit.

Table 7 Plug-in strip symbols

7.4 Connecting electrical components

All cables from electrical components outside the boiler that are connected to the plug-in strip must be routed to the inside via the strain relief.

- ▶ Connect the connecting leads of the components to the plug-in strip without tension.
- ▶ Route the connecting lead through the strain relief.
- ▶ Position the cable conduit [1].

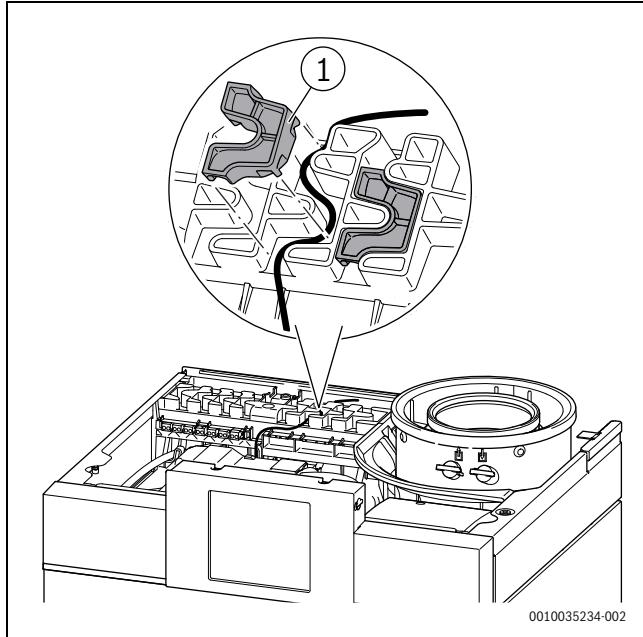


Fig. 24 Positioning the connecting lead and cable conduit

7.5 Connecting the pump of the pump assembly

- ▶ Open the pump terminal unit.

- ▶ Use the right screwdriver for this.

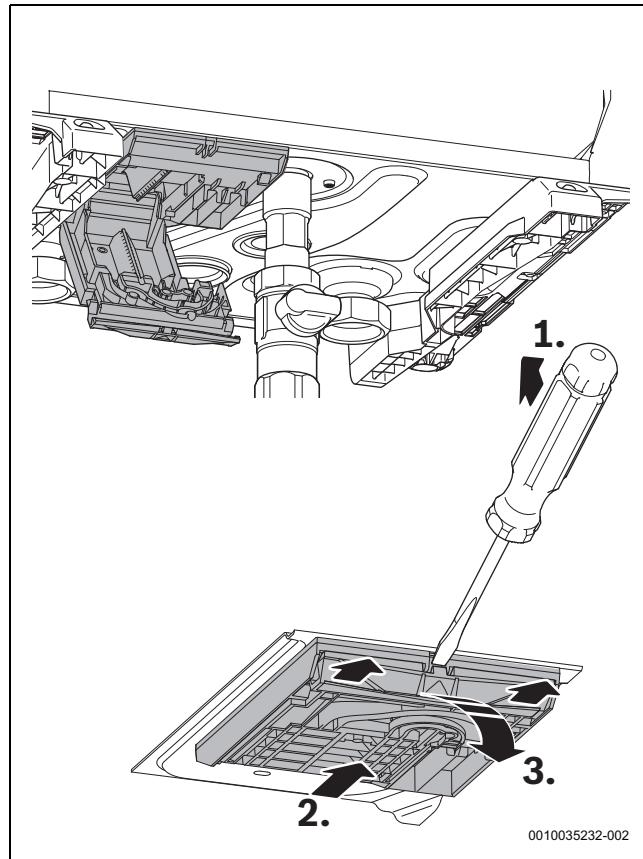


Fig. 25 Opening the pump terminal unit

With pump assembly:

- ▶ Connect the 230 V mains cable [1] of the pump to the 3-pin plug.
- ▶ Connect the PWM signal cable [2] of the pump to the 2-pin plug.
- ▶ Guide both cables through the strain relief.
- ▶ Connect the pump terminal unit: fold the pump terminal unit up and press horizontally until it snaps into place.

Without pump assembly:



When using pump types other than those available from Bosch as accessories, the PWM signal cannot be used. The PWM connection in the pump terminal unit is then not used. On/Off operation applies for these pumps.

- ▶ Connect the 230 V mains cable of the pump to the 3-pin plug [1].
- ▶ Guide the 230 V mains voltage cable through the strain relief.

- ▶ Close the pump terminal box: fold the pump terminal box up and press horizontally until it snaps into place.

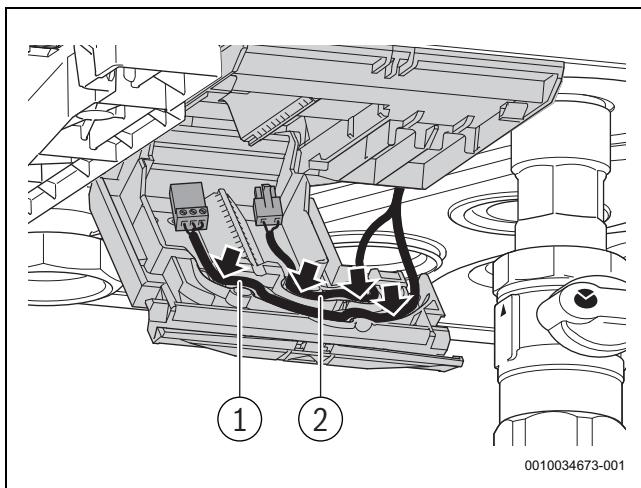


Fig. 26 Connecting the pump

- [1] 230 V cable
- [2] PWM signal cable

7.6 Connecting the 3-way valve 230 V (accessory)



A 3-way valve can only be connected to the plug-in strip of the boiler if the output of the boiler is ≤ 100 kW.

An appropriate accessory 230 V 3-way valve can be connected to the plug-in strip. Use the plug for the boiler pump for this [B].

- ▶ Carefully read the instructions for the 230 V 3-way valve.
- ▶ Connect the neutral wire (N) to the plug [A].
- ▶ Connect the phase wire (L), switching neutral wire (N) and earth wire to the plug [B].

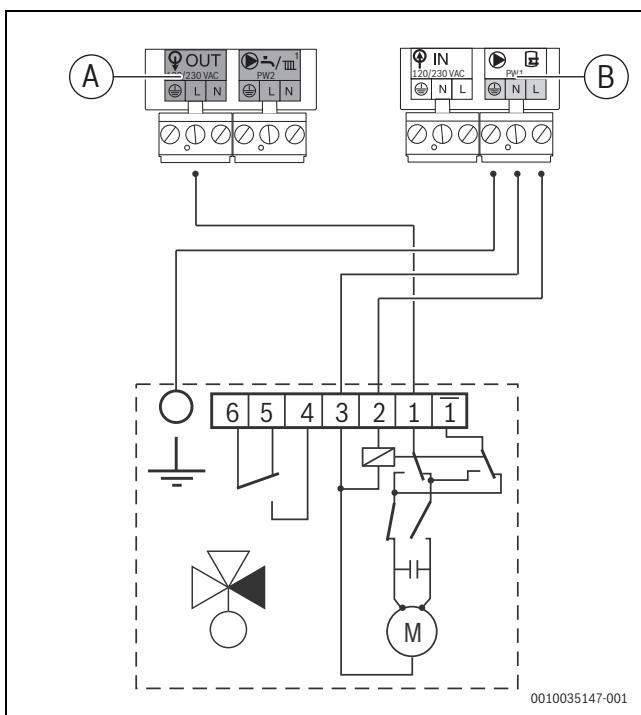


Fig. 27 Connection diagram for 230 V 3-way valve

- [1] Phase cable L, continuous 230 V
- [2] Phase cable L, discontinuous 230 V
- [3] Neutral cable N

7.7 Mounting the function module (accessory)

NOTICE

EMC fault due to incorrect cable routing.

If bus cables and power cables are routed in parallel there is a risk of EMC faults occurring.

- ▶ Route bus cables and power supply cables separately.

1 function module [3] can be installed in the oiler.

- ▶ Carefully read the instructions for the function module when carrying out the installation.
- ▶ Install the BUS cable on the plug [1] according to the specified cable routing.
- ▶ Install the 230 V power supply cable on the plug [2] according to the specified cable routing.

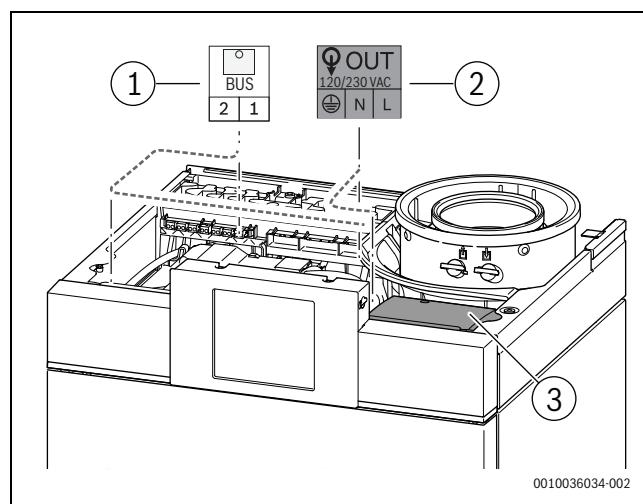


Fig. 28 Mounting the function module

- [1] BUS system connection EMS
- [2] 230 V mains voltage cable
- [3] Function modules

7.8 Fitting the plug (if not preassembled)

- ▶ Fit the plug to the power cable of the boiler.

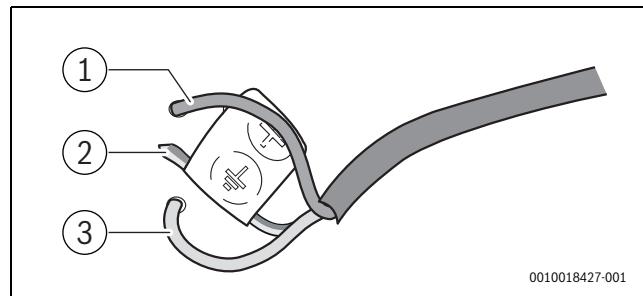


Fig. 29 Fitting the plug

- [1] Neutral conductor N (blue)
- [2] Protective conductor (green/yellow)
- [3] Phase L (brown)

8 Commissioning

WARNING

Escaping gas.

- ▶ After completing the work, check the tightness of all gas-carrying components.

CAUTION

Flue gas spillage.

- ▶ Check the tightness of all flue gas routing parts once the work is complete.
- ▶ Complete the commissioning report during the commissioning procedure (→ § 15.7, p. 50).

8.1 Commissioning the boiler

NOTICE

Risk of boiler damage due to unsuitable fill water.

- ▶ Check the chloride content of the fill water, if the maximum heating water temperature is set higher than 80 °C (→ § 5.4, p. 12).
- ▶ Check whether the fill water satisfies the water quality requirements (→ § 5.3, p. 12).



The boiler starts as soon as the operating pressure exceeds 0.8 bar. If the operating pressure is lower than 0.2 bar, the appliance no longer goes into operation.

- ▶ Open all radiator valves.
- ▶ Check whether the service shut-off valves of the connection sets are open.
- ▶ Use an appropriate filling method in line with Water Regulations. (→ § 2.11, p. 6).
- ▶ Fill the heating system to a pressure of 2 bar and close the filling valve.
- ▶ Vent the radiators.
- ▶ Fill the heating system again to a pressure of 2 bar.
- ▶ Open the gas cock.
- ▶ Venting the gas line.
- ▶ Operate the appliance.
- ▶ Start up the boiler.

8.2 Setting the parameters

Different parameters can be set in the settings menu so the boiler can be adapted to the heating system.

- ▶ Go through the parameters in the menu **Settings** (→ § 9.4, p. 26).
- ▶ Adjust the parameters if required.
- ▶ Make a note of which parameters have been modified in the commissioning report (→ § 15.7, p. 50).

Setting Maintenance type

With a maintenance period of 2 years, normal operation is considered to be a maximum burner runtime of 4000 hours (every 2 years). During commissioning, the anticipated burner runtime must be estimated in order to set the right Maintenance type. During the initial inspection or maintenance the burner runtime can be read out via the service menu and the burner runtime Maintenance type modified if required.

- ▶ Open the menu **Maintenance** > Maintenance type.
- ▶ Based on the operation, estimate whether the maximum burner runtime of 4000 hours will be exceeded in 2 years.

If the maximum burner runtime of 4000 hours in 2 years is likely to be exceeded:

- ▶ Set Burner run time to 4000 hours.

If the maximum burner runtime is likely to be less than 4000 hours:

- ▶ Set Boiler run time to 24 months.

-or-

- ▶ Set Service date: 24 months after installation date.

Setting Maintenance type	Burner run time	Boiler run time	Service date
Standard operation	4000 hours	24 months	Date: 24 months after installation

Table 8 Maintenance interval parameters

Setting Min. boiler outp.

If the boiler is installed in a positive pressure cascade system, the minimum load must be increased.

- ▶ Open the menu **Limit values** > Min. boiler outp..
- ▶ Increase the setting Min. boiler outp. (→ table 9).

Appliance type:	Factory [%]	Raised value with positive pressure cascade [%]
GC7000WP 50	28	36
GC7000WP 65	20	26
GC7000WP 85	24	28
GC7000WP 100	20	23

Table 9 Setting the Min. boiler outp. with positive pressure cascade systems

8.3 Setting options for air/gas ratio control valve

Different air/gas ratio control valves are used depending on the rating of the boiler. The positions of the various test ports and adjusting screws vary accordingly.

Overview of air/gas ratio control valve GC7000WP 50, GC7000WP 65

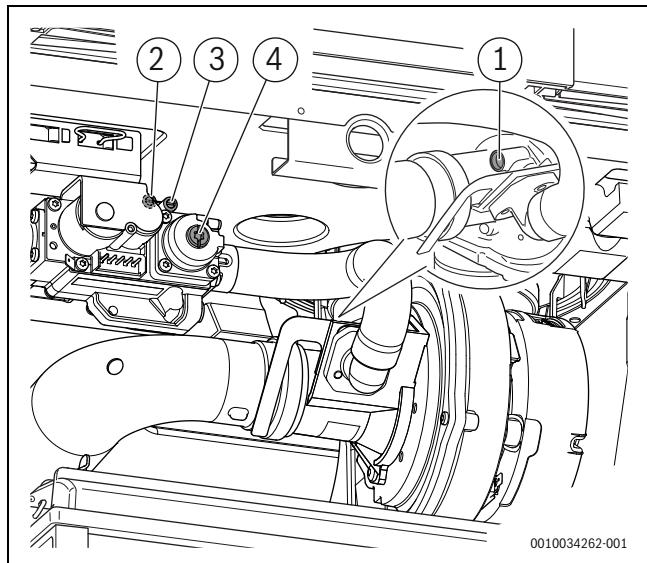


Fig. 30 Overview of test ports and adjusting screws $\leq 70\text{ kW}$

- [1] Adjusting screw CO₂/O₂
- [2] Gas pre-charge pressure test port
- [3] Gas/air ratio test port
- [4] Gas/air ratio adjusting screw

Overview of air/gas ratio control valve GC7000WP 85, GC7000WP 100

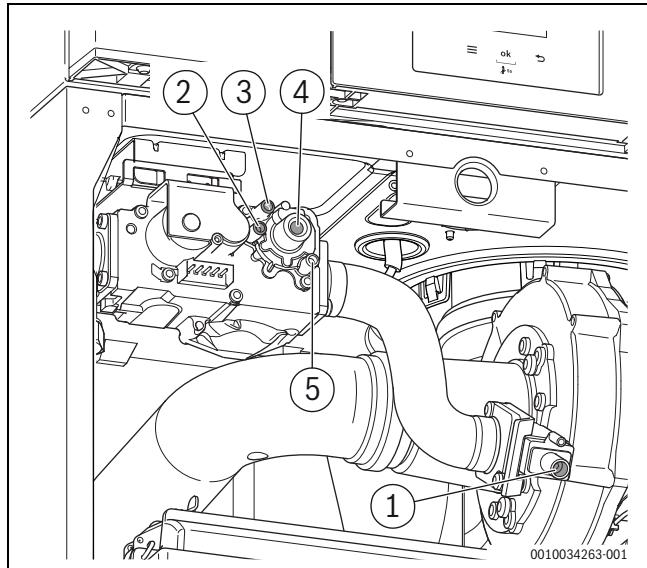


Fig. 31 Overview of test ports and adjusting screws $\geq 85\text{ kW}$

- [1] Adjusting screw CO₂/O₂
- [2] Gas pre-charge pressure test port
- [3] Gas/air ratio test port
- [4] Gas/air ratio adjusting screw
- [5] Without function

8.4 Measuring the gas standing pressure (static)

The gas standing pressure must be stable to guarantee correct operation of the boiler. The measurement is carried out when the boiler is switched off.

- Switch off the appliance.
- Remove the front panel.
- Open the gas standing pressure test port by turning the adjusting screw through 2 revolutions (\rightarrow § 8.3, p. 23).
- Set the pressure gauge to "0".
- Connect the pressure gauge to the test port.
- Measure the static gas standing pressure.
- Make a note of the value in the commissioning report (\rightarrow § 15.7, p. 50).
- Close the inlet pressure test port.

8.5 Measuring the gas working pressure (dynamic)

The gas working pressure must be stable to guarantee correct operation of the boiler. The measurement is performed at full load.

As the measurement is taken at the air/gas ratio control valve and not the gas valve, the permissible gas working pressure may be reduced due to the pressure drop between the gas valve and air/gas ratio control valve.

Example: GC7000WP 100 to natural gas H, G20.

- Permissible gas pre-pressure: min. 17 mbar – max. 25 mbar (\rightarrow Tab. 24, p. 48).
- Pressure drop between gas valve and air/gas ratio control valve is 2.7 mbar (\rightarrow Tab. 10).

Permissible limit values on the air/gas ratio control valve:

Min. 17 mbar – 2.7 mbar = **14.3 mbar**.

Max. 25 mbar – 2.7 mbar = **22.3 mbar**.

Type	Max. pressure drop for each gas type [mbar]	
	G20	G25 / G25.3
GC7000WP 50	1.5	2.0
GC7000WP 65	2.5	2.8
GC7000WP 85	2.6	3.3
GC7000WP 100	2.7	3.7

Table 10 Pressure drop between gas valve and air/gas ratio control valve

- Calculate the permissible minimum and maximum gas pre-pressure.
- Switch off the appliance.
- Remove the front panel.
- Open the gas inlet pressure test port by turning the adjusting screw through 2 revolutions (\rightarrow § 8.3, S. 23).
- Set the pressure gauge to "0".
- Connect the pressure gauge to the test port.
- Make sure the heating system can release its heat.
- Operate the appliance.
- Open the menu **Function check > Burner**.
- Start the **Function check** by setting the value to 100%.
- Check whether the measured value lies within the calculated limit values.



If the measured value lies outside the calculated limit values, do not commission the boiler. The cause must be established and the fault rectified. If this is not possible, shut off the gas supply to the system and contact the gas supplier.

- Make a note of the measured value [mBar] after 1 minute in the commissioning report (\rightarrow § 15.7, p. 50).
- Deactivate **Function check**.
- Close the working pressure test port.

8.6 Measuring of CO₂ and CO (full load)



The CO content in the flue gases must be less than 250 ppm (0.025 % by volume) during combustion without excess air. If the CO content exceeds 250 ppm, this will be due to pollution of the burner, malfunction of the burner or recirculation of the flue gases.

- ▶ Switch off the appliance.
- ▶ Remove the plug on the test point for flue gas [1].

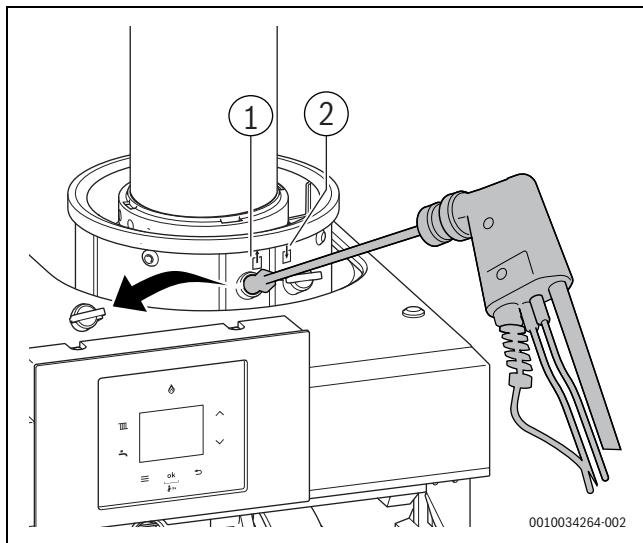


Fig. 32 Remove the plug on the flue outlet

[1] Test point for flue gas
 [2] Test point for air supply

- ▶ Make sure that the boiler can release its heat.
- ▶ Insert the lance of the flue gas analyser 10 cm into the test point.
- ▶ Operate the appliance.
- ▶ Open the menu **Function check > Burner**.
- ▶ Start the **Function check** by setting the value to 100%.
- ▶ Measure the CO content.
- ▶ Determine and eliminate the cause of the potentially high CO content.
- ▶ Make a note of the CO content in the commissioning report (→ § 15.7, p. 50).
- ▶ Measure the CO percentage.²
- ▶ Check the measured value (→ table 11, p. 24).
- ▶ Only modify the CO level if the measurement is outside the specified range.
- ▶ Make a note of the measured CO₂ level in the commissioning report

☎ § 15.7, p. 50).

- ▶ Deactivate **Function check**.
- ▶ Remove the flue gas analyser.
- ▶ Fit the plug on the test point for flue gas.

Appliance type:	Gas type	CO ₂ percentage [%]	Gas/air ratio [Pa]
GC7000WP 50	Natural gas H (G20)	9.3 ± 0.3	-5 ± 4
	Natural gas L (G25)	9.1 ± 0.3	
	Propane L (G31)	10.0 ± 0.3	
GC7000WP 85	Natural gas H (G20)	9.1 ± 0.3	-5 ± 4
	Natural gas L (G25)	9.1 ± 0.3	
	Propane L (G31)	10.0 ± 0.3	
GC7000WP 100	Natural gas H (G20)	9.1 ± 0.3	-5 ± 4
	Natural gas L (G25)	9.1 ± 0.3	
	Propane L (G31)	10.0 ± 0.3	

Appliance type:	Gas type	CO ₂ percentage [%]	Gas/air ratio [Pa]
GC7000WP 65	Natural gas H (G20)	9.3 ± 0.3	-5 ± 4
	Natural gas L (G25)	9.1 ± 0.3	
	Propane L (G31)	10.0 ± 0.3	
GC7000WP 85	Natural gas H (G20)	9.1 ± 0.3	-5 ± 4
	Natural gas L (G25)	9.1 ± 0.3	
	Propane L (G31)	10.0 ± 0.3	
GC7000WP 100	Natural gas H (G20)	9.1 ± 0.3	-5 ± 4
	Natural gas L (G25)	9.1 ± 0.3	
	Propane L (G31)	10.0 ± 0.3	

Table 11 Setting data

8.7 Measuring the gas/air ratio (minimum load)

- ▶ Switch off the appliance.
- ▶ Make sure the heating system can release its heat.
- ▶ Open the gas/air ratio test port by turning the adjusting screw through 2 revolutions (→ § 8.3, p. 23).
- ▶ Set the pressure gauge to "0".
- ▶ Connect the pressure gauge to the test port.
- ▶ Open the menu **Function check > Burner**.
- ▶ Start **Function check** by setting the smallest possible value.
- ▶ Check the measured value (→ table 11, p. 24).
- ▶ Only modify the gas/air ratio if the measurement is outside the specified range.
 The gas/air ratio adjusting screw is underneath the cover.
- ▶ Make a note of the measured value [Pa] in the commissioning report (→ § 15.7, p. 50).
- ▶ Deactivate **Function check**.
- ▶ Close with the gas/air ratio test port.

8.8 Reading off the ionisation current

- ▶ Open the menu **Function check > Burner**.
- ▶ Start **Function check** by setting the smallest possible value.
- ▶ Open the menu **Info > Ionisation current**.
- ▶ Reading off the ionisation current.



The ionisation current must be at least 2 µA.

- ▶ If the value is lower, check the gas/air ratio and the igniter.

- ▶ Make a note of the value that has been read off [µA] in the commissioning report (→ § 15.7, p. 50).
- ▶ Deactivate **Function check**.

8.9 Check the (flue) gas tightness

NOTICE

Damage to wall mounted boiler due to short circuit.

- ▶ Cover plugs, cables and components when using gas leak detection spray.

- ▶ Make sure that the boiler can release its heat.
- ▶ Operate the appliance.
- ▶ Open the menu **Function check > Burner**.
- ▶ Start the **Function check** by setting the value to 50%.
- ▶ Check all gas-carrying components using an approved leak detecting agent or device.
- ▶ Check the tightness and installation/brackets of the flue system.

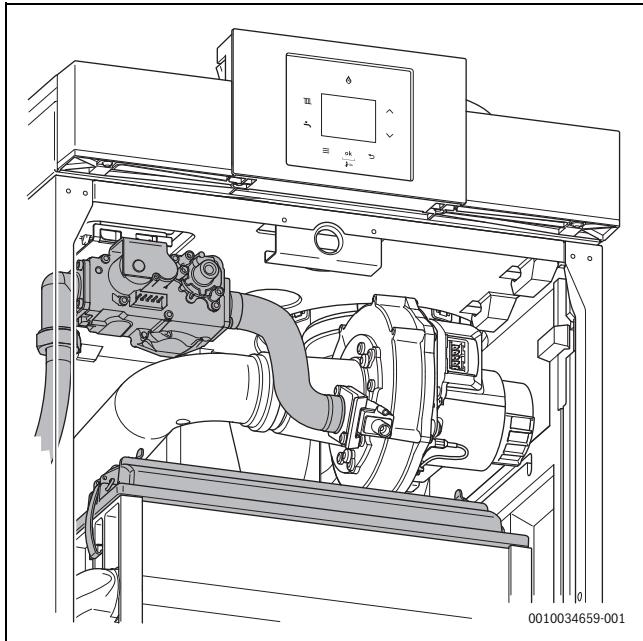


Fig. 33 Inspecting the gas path

- ▶ Determine and rectify the cause of a possible leak.
- ▶ Deactivate **Function check**.

8.10 Check the function of the boiler

- ▶ Freeze the connected control and check whether the boiler starts burning after several minutes to support the boiler operation.
- ▶ If applicable: open a DHW tap, check the DHW temperature and draw-off quantity.

8.11 Completion work

- ▶ Mount the front cover.
- ▶ Complete the commissioning report (→ § 15.7, p. 50).

8.12 Instructing the operator

- ▶ Familiarise the user with the heating system and operation of the boiler.
- ▶ Point out to the operator that if heating water frequently needs to be refilled this is a sign that the system is faulty and/or leaking (ensure required water quality according to the operator's log).
- ▶ Inform operator about the required water quality and point out where the heating water must be refilled.
- ▶ Inform the operator that he or she must not carry out any modifications or repairs.
- ▶ Point out the possible consequences (material damage, personal injury or danger to life) of not carrying out inspection, cleaning and maintenance correctly, or omitting it altogether.

- ▶ Draw attention to the dangers associated with carbon monoxide (CO) and recommend the use of CO detectors.
- ▶ Hand over the technical documents to the operator.

9 Operation

9.1 Control panel overview

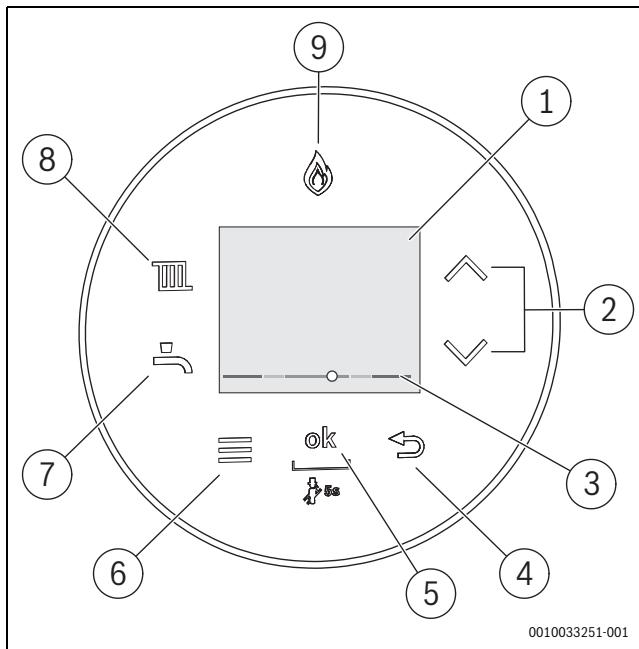


Fig. 34 Control panel

- [1] Display
- [2] ▲ and ▼ keys
- [3] Heating water pressure display
- [4] ↵ key
- [5] OK key
- [6] Menu key
- [7] Hot water key
- [8] Heating key
- [9] Burner display



See the operating instructions for a description of the user menus.

9.2 Switching on the device

- ▶ Switch on the appliance at the On/Off switch (→ Fig. 2.11, page 6). Set the language the first time the device is turned on.
- ▶ To scroll through the languages, press the ▲ or ▼ key.
- ▶ To select the desired language, press the OK key.



When the display shows **Siphon fill. prog.**, the trap filling program is active. The condensate trap in the appliance is filled (→ Chapter 9.3, page 26).

9.3 Siphon filling program

The siphon filling program is activated automatically, manually by the installer on the device or on the controller. Before starting, fill the condensate siphon (→ Page 16).

The siphon filling program is activated in the service menu under > **Settings > Special function > Siphon fill. prog.**

While the siphon filling program is active, access to the **Hot water** menu, the **Heating** menu and the service menu is possible.

The siphon filling program is activated automatically in the following cases:

- The device is switched on using the On/Off switch.
- The burner was not in use for at least 28 days.
- After conversion from summer to winter mode.

The next time there is a heat demand for heating, the device is held at low thermal output for 15 minutes. The siphon filling program remains active until the device has completed 15 minutes of operation with increased min. capacity.

During the siphon filling program, **Siphon fill. prog.** appears on the display.

The siphon filling program is interrupted when the chimney sweep mode is called up.

9.4 Settings in the service menu

Many device functions can be set and checked in the service menu. It includes:

- **Info:** viewing information
- **Settings:** general and device-specific settings
- **Function check:** settings for function checks and start of function checks
- **Reset:** restoring the factory settings, resetting the maintenance intervals

9.4.1 Operating the service menu

Opening the service menu

- ▶ Press the DHW key and the Heating key simultaneously until the service menu appears.

Closing the service menu

- ▶ Press the DHW key or the Heating key.
- or-
- ▶ Press the **⬅** key.

Navigating through the menu

- ▶ To highlight a menu or a menu item, press the **▲** key or the **▼** key.
- ▶ Press the **OK** key.
The menu or the menu item is displayed.
- ▶ To return to the next higher menu level, press the **⬅** key.

Changing the setting values

- ▶ Select the menu item with the **OK** key.
- ▶ To select the desired value, press the **▲** or the **▼** key.
- ▶ Press the **OK** key.
The new value is saved.

Exiting the menu item without saving values

- ▶ Press the **⬅** key.
The value is not saved.

9.4.2 Service menu

Overview of the service menu

Info

- Current status
- Current fault
- Fault history
- Boiler
 - Max. heat output
 - Flow temp.
 - Set flow temp.
 - Low-loss hdr.tmp
 - Act. burner mod.
 - Burner output
 - Ionisation current
 - Pump mod.
 - Outside temp.
 - Burner starts
 - Hours run
 - System pressure
- Hot water
 - Max. output
 - DHW flow rate
 - DHW act. temp.
 - Hot water temp.
 - Inlet temp.
 - DHW set temp.
- Autom. filling
 - System pressure
 - No. of refills
 - Last refill dur.
 - Refilling active
- System
 - Contr.device ver.
 - Progr. unit ver.
 - Code plug no.
 - Code plug ver.
- Solar
 - Collector temp.
 - Cyl.temp.bottom
 - Collector pump
 - Solar fault

Settings

- Hydraulics
 - Low-loss header
 - DHW configuration
 - HC1 configuration
 - Pump config.
- Heating
 - Max. heat output
 - Standby time
 - Anticyc. temp. off
 - Anticycle temp. on
- Hot water
 - Max. DHW output
 - DHW circ. pump
 - Cycle circ. pump
 - TD-Temperature
 - Start TD
 - Stop TD

- Pump
 - Pump ctr. mode
 - Min. output
 - Pump overrun
 - Min. Sys. Pres.
 - Target Sys. Pres.
- Special function
 - Ventilation func.
 - Siphon fill. prog.
 - 3-WV mid. pos.
 - Autom. filling
 - System Fill
 - Min. Sys. Pres.
 - Target Sys. Pres.
 - Max. refill time
 - Blocking time
 - Max. refills
 - Reset refilling
- Maintenance
 - Maintenance type
 - Without
 - Burner run time
 - Boiler run time
 - Service date¹⁾
- Limit values
 - Max. flow temp.
 - Max. DHW temp.
 - Min. boiler outp.
- Heating curve
 - Enable
 - Htg. curve base
 - Htg. curve end
 - Summer mode
 - Frost prot.
 - Frost temp. limit

Function check

- Activate test
 - Burner
 - Ignition
 - Fan
 - Pump
 - Cyl. prim. pump
 - 3-way valve
 - HC1 pump
 - DHW circ. pump
 - Ionisat.oscill.

Reset

- Default setting
- Service display
- Fault history

Demo mode

- Yes
- No

¹⁾ With heating controller

Menu Info

Meu item	Settings/adjustment range	Remark/restriction
Current status	–	→ Tab. 11.1.2, page 39
Current fault	–	→ Tab. 11.1.2, page 39
Fault history	–	
Boiler		
Max. heat output	–	
Flow temp.	–	Internal appliance temperature
Set flow temp.	–	
HEx temperature	–	
Low-loss hdr.tmp	–	Temperature in low loss header
Return temp.	–	Current return temperature in °C
Heating mod.	–	
Act. burner mod.	–	Current burner modulation
Burner output	–	Current burner output in kW
Ionisation current	–	Current ionisation current in µA
Pump mod.	–	
Outside temp.	–	Current outside temperature in °C
HC1 pump	–	Own pump installed downstream of low loss header
Burner starts	–	Number of burner starts since commissioning
Hours run	–	Run time of the system since commissioning
System pressure	–	Current operating pressure in bar
Hot water		
Max. output	–	
DHW act. temp.	–	
Act.DHWtmp.cyl.	–	Current water temperature in the cylinder
DHW set temp.	–	DHW temperature setting value
System		
Progr. unit ver.		Software version of the control unit
Contr.device ver.	–	Software version of the control device
SW sub-ver.	–	Software subversion of the control device
Code plug no.	–	Coding plug number
Code plug ver.	–	Coding plug version

Table 12 Menu Info

Settings menu


The factory settings are **highlighted** in the following table.

Meu item	Settings/adjustment range	Remark/restriction
Hydraulics		
Low-loss header		Connection of temperature sensor on the low loss header
	• Off	• Low loss header not installed in the system
	• NTC on device	• Low loss header installed, temperature sensor connected to wall mounted boiler
	• NTC on module	• Low loss header installed, temperature sensor connected to heating circuit module
DHW configuration	• NTC off	• Low loss header installed, but no temperature sensor connected
	• Not installed	
	• 3-way valve installed	
	• Cyl. prim. pump inst. after low loss hdr.	
HC1 configuration	• Cyl. primary pump installed	
	• Not installed	
Pump config.	• Dedicated pump inst. after low loss hdr.	
	• Heating pump	
Heating		
Max. heat output	• 50 100 %	Maximum released heat output [%]. On natural gas devices: ► Measure the gas rate. ► Compare the measurement obtained with the setting tables (→ Chapter 15.6, page 49). ► Correct deviations.
Standby time	• 5 ... 10 ... 60 min	The time interval specifies the minimum waiting time between switching on the burner and switching it on again.
Anticyc. temp. off	• 2 ... 6 ... 15 K	The difference between the current flow temperature and the set flow temperature until the burner is switched off.
Anticycle temp. on	• -15 - 6 ... 2 K	The difference between the current flow temperature and the set flow temperature until the burner is switched on.
Hot water		
Max. DHW output	• 50 100 %	Maximum approved DHW output [%].
DHW circ. pump	• Off • On	
Cycle circ. pump	• 1 x 3 minutes/h • 2 x 3 minutes/h • 3 x 3 minutes/h • 4 x 3 minutes/h • 5 x 3 minutes/h • 6 x 3 minutes/h • Permanent	The DHW circulation pump goes into operation 1 ... 6 times per hour for 3 minutes, or into continuous operation.
TD-Temperature	• 60 70 ... 80 °C	DHW temperature during thermal disinfection.
Start TD	• Start now?	Start thermal disinfection.
Stop TD	• Cancel now?	Cancel thermal disinfection.
Pump		
Pump ctr. mode	• Energy saving • Heat demand	• Save energy: intelligent shutdown of heat pump for heating systems with weather-compensated controller. The heating pump is only switched on if required. • With heat demand: the flow temperature controller switches the heating pump. If there is heat energy demand, the heating pump starts up with the burner.
Min. output	• 10 ... 100 %	Pump output at minimum heat output. Only available if Pump range map is set to 0.

Meu item	Settings/adjustment range	Remark/restriction
Max. output	<ul style="list-style-type: none"> 10 ... 100 % 	Pump output at maximum heat output. Only available if Pump range map is set to 0.
Pump block time	<ul style="list-style-type: none"> 0 ... 24 × 10 seconds 	The internal pump is locked until the external 3-way valve has reached its end position.
Pump overrun	<ul style="list-style-type: none"> 1 2 ... 60 min, 24 h 	Overrun time of the heating pump: pump overrun begins when heat demand ends.
Ventilation func.	<ul style="list-style-type: none"> Off Auto On 	<p>The venting function can be switched on after maintenance work.</p> <p>During ventilation, the following appears in the info area of the standard display Ventilation func.</p>
Siphon fill. prog.	<ul style="list-style-type: none"> Off (only permitted when maintenance is in progress) On, boiler min. On, heating min. 	<p>The siphon filling program is activated in the following cases:</p> <ul style="list-style-type: none"> Once the device is switched on using the On/Off switch Once the burner was not in operation for at least 28 days Once the operating mode is switched from summer to winter mode Once the factory settings of the device have been restored <p>The next time there is a heat demand for heating, the appliance is held at low heat output for 15 minutes. The siphon filling program remains active until the device was in operation with low heat output for 15 minutes.</p> <p>When the trap filling program is running, the following appears in the info area of the standard display Siphon fill. prog.</p>
3-WV mid. pos.	<ul style="list-style-type: none"> No Yes 	The function ensures that the system is fully drained and that the motor can be easily removed. The 3-way valve remains at the middle position for approx. 15 minutes.
Min. Sys. Pres.	<ul style="list-style-type: none"> 0.6 0.8 bar 	
Target Sys. Pres.	<ul style="list-style-type: none"> 1.0 ... 1.3 ... 1.7 bar 	
Maintenance		
Maintenance type	<ul style="list-style-type: none"> Without Burner run time: 1000 ... 6000 h Service date¹⁾ Boiler run time: 1 ... 72 months 	
Limit values		
Max. flow temp.	<ul style="list-style-type: none"> 30 ... 85 °C 	Limits the adjustment range for the flow temperature.
Max. DHW temp.	<ul style="list-style-type: none"> 35 ... 60 ... 80 °C 	Limits the adjustment range for the domestic hot water temperature.
Min. boiler outp.	<ul style="list-style-type: none"> 14 ... 50% 	Minimum heat output. Minimum setting value may vary depending on appliance output.
Heating curve		
Enable	<ul style="list-style-type: none"> Yes No 	When connecting a weather-compensated control unit, no adjustment at the device is required. The system control unit optimises this setting. This service function activates a simple, weather-compensated controller with a linear heating curve. Depending on the on/off input, the heating is switched on or off.
Htg. curve base	<ul style="list-style-type: none"> 20 ... 90 °C 	This is only displayed if the control unit was activated. This can be used to set the base point of the heating curve, which corresponds to an outside temperature of +20 °C.
Htg. curve end	<ul style="list-style-type: none"> 20 ... 90 °C 	This is only displayed if the control unit was activated. This can be used to set the base point of the heating curve, which corresponds to an outside temperature of -10 °C.

Meu item	Settings/adjustment range	Remark/restriction
Summer mode	• 0 ... 16 ... 30 °C	This is only displayed if the control unit was activated. This can be used to set the outside temperature threshold at which the heating system switches to summer mode.
	• Yes • No	
	• 0 ... 5 ... 10 °C	Temperature value for the system frost protection. This service function is only available if the frost protection function was activated. If the outside temperature does not exceed the frost threshold temperature, then the heating pump in the heating circuit switches on.

1) With heating controller

Table 13 Settings menu

Menu Function check

Meu item	Settings/adjustment range	Remark/restriction
Activate test		
Burner	• Off ...100 %	This service function enables you to test the burner by adjusting the appliance output.
Ignition	• On • Off	Permanent ignition. Testing the ignition by means of permanent ignition without gas supply. ► To prevent damage to the ignition transformer: leave the function switched on for a maximum of 2 minutes.
Fan	• On • Off	Permanent ignition. Fan running without gas supply or ignition.
Pump	• On • Off	Permanent pump run (internal or external pumps).
Cyl. prim. pump	• On • Off	Permanent pump operation of cylinder primary pump
3-way valve	• Heating • Hot water	Permanent position of the 3-way valve.
HC1 pump	• On • Off	Permanent HC1 pumpoperation (downstream of low loss header), if HC1 pump is installed.
DHW circ. pump	• On • Off	Permanent DHW circulation pump.
Ionisat.oscill.	• On • Off	Check the ionisation measurement function at the flame.

Table 14 Menu Function check

Menu Reset

Meu item	Settings/adjustment range	Remark/restriction
Default setting	Restore?	All settings of the heat source, and the control unit if applicable, are reset to the respective default setting. The system needs to be re-commissioned following this reset.
Service display	Reset?	Resetting the maintenance
Fault history	Delete?	Reset the maintenance first. The fault history of the heat generator, and control unit if applicable, is deleted. If currently a fault is present, it is immediately entered again.

Table 15 Menu Reset

Menu Demo mode

Meu item	Settings/adjustment range	Remark/restriction
Demo mode	• Yes • No	► To exit Demo mode: switch the device off and back on at the ON/OFF switch.

Table 16 Menu Demo mode

9.4.3 Thermal disinfection

To prevent hot water from becoming contaminated by bacteria such as legionella, we recommend thermal disinfection after long downtimes.



CAUTION

Risk of scalding.

During thermal disinfection, discharging unmixed hot water can cause serious scalding.

- ▶ Only use the maximum adjustable hot water temperature for thermal disinfection.
- ▶ Inform occupants of the premises of the risk of scalding.
- ▶ Perform thermal disinfection outside of the normal operating times.
- ▶ Do not discharge DHW unmixed.

Proper thermal disinfection involves the DHW system including the draw-off points.

- ▶ Set the thermal disinfection in the hot water program of the heating controller (→ heating controller operating instructions).
- ▶ Close DHW draw-off points.
- ▶ Set any DHW circulation pump to continuous operation.
- ▶ Wait until the maximum temperature is reached.
- ▶ Open all DHW draw-off points, from the nearest to the one furthest away, and draw off hot water until hot water at a minimum of 70 °C has flown from all draw-off points for at least 3 minutes.
- ▶ Restore the original settings.

10 Inspection and maintenance



WARNING

Risk of explosion

- ▶ Close the gas valve before working on gas-carrying components.
- ▶ After completing the work, check the tightness of all gas-carrying components.



CAUTION

Flue gas poisoning

- ▶ Check the tightness of all flue gas routing parts once the work is complete.



CAUTION

Electric shock

- ▶ Avoid contact with the burner control unit, fan or pump when measuring and adjusting the boiler. These are 230 V parts.
- ▶ Switch off the boiler before working on electrical parts.



CAUTION

Malfunctioning safety sensors

The function of the safety sensors in the installation room (such as CO, CO₂, and gas detectors) must be regularly checked.

- ▶ Check the function of relevant safety sensors during inspection or maintenance.
- ▶ You can read about how to perform the check in the instructions for the safety sensor.
- ▶ Defects at relevant safety sensors must be rectified immediately.

10.1 Important notices

You will need the following measuring devices and tools:

- Pressure gauge with a measurement accuracy of 0.01 mbar.
- Flue gas analysis measurement device.
- Cleaning brush with plastic bristles.
- ▶ Only install original spare parts.
- ▶ Replace all loose gaskets when carrying out the work.

Inspection and maintenance interval

To ensure the wall mounted gas condensing boiler works correctly and safely, the following intervals must be adhered to:

- **Inspection:** annually,
- **Maintenance:** every 2 years or following a burner runtime of 4000 hours (depending on which occurs first).

The following tasks must be performed when carrying out an inspection or maintenance:

		Inspection	Maintenance
General work	→ § 10.2	▪	▪
Cleaning	→ § 10.3 to § 10.8	–	▪
Check measurements	→ § 10.9 to § 10.15	▪	▪

Table 17 Work to be carried out

10.2 General work

The following work is not described in any further detail in this document. It must, nevertheless, still be carried out:

- ▶ Check the general condition of the heating system.
- ▶ Visual inspection and function check of the heating system.
- ▶ Check the supply air and flue gas routing for function and safety.
- ▶ Check all gas and water pipes for signs of corrosion.
- ▶ Replace any corroded pipes.
- ▶ Check the pre-charge pressure of the expansion vessel.
- ▶ Check the concentration of any antifreeze/additives that may be used in the system fill/top-up water annually.
- ▶ If necessary, check installed water treatment cartridges (in the backfeed section) to ensure they are functioning correctly and for wear.
- ▶ During commissioning and the annual inspection, check all regulating, control and safety equipment for correct function and, where applicable, for correct settings.

Reading out Hours run

The number of **Hours run** that have elapsed since initial commissioning is displayed in the menu. The number of **Hours run** specifies whether:

- Components need to be replaced as a preventative measure.
- The Maintenance type needs to be modified.
- ▶ Open the menu **Info > Boiler > Hours run**.
- ▶ Read out the number of **Hours run**.
- ▶ Check based on the value read out whether components need to be replaced (→ § 10.16.1, p. 36).
- ▶ Make a note of the value in the maintenance protocol (→ § 10.17, p. 38).
- ▶ Establish the difference between the value most recently read out and the previous value from the maintenance protocol.
- ▶ Check the setting Maintenance type based on this difference and adjust if required (→ § 8.2, p. 22).

Reading out Burner starts

The number of **Burner starts** that have elapsed since initial commissioning is displayed in the menu. The number of **Burner starts** specifies whether:

- Components need to be replaced as a preventative measure.
- Open the menu **Info > Boiler > Burner starts**.
- Read out the number of **Burner starts**.
- Check based on the value read out whether components need to be replaced (→ § 10.16.1, p. 36).
- Make a note of the value in the maintenance protocol (→ § 10.17, p. 38).

10.3 Remove the gas-air unit

- Remove the plug from the fan.
- Remove the gas hose between the air/gas ratio control valve venturi nozzle.

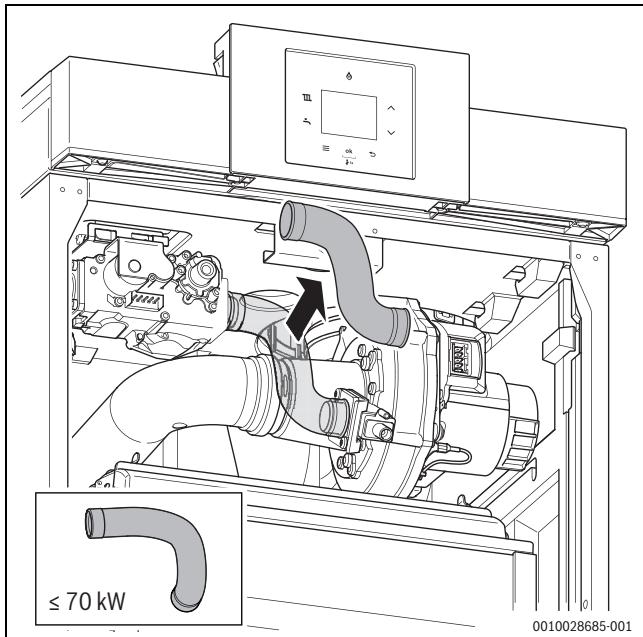


Fig. 35 Remove the gas hose $\geq 85 \text{ kW}$

- Remove the air intake pipe from the venturi nozzle.

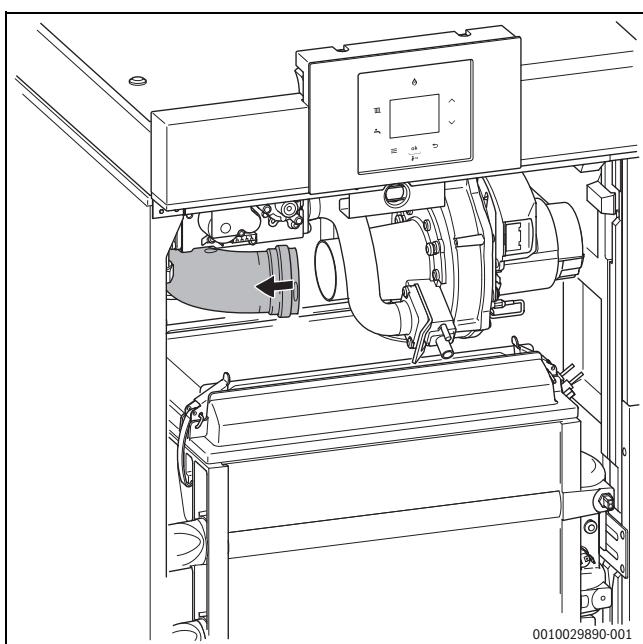


Fig. 36 Removing the air intake pipe

- Open the 4 snap fasteners on the burner cover.

Attention! The snap fasteners are under tension.

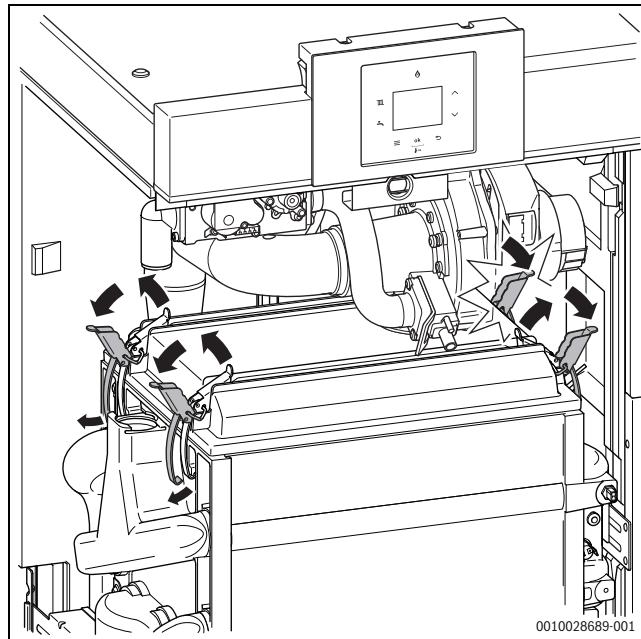


Fig. 37 Open the snap fasteners

- Remove the gas-air unit together with the burner cover.

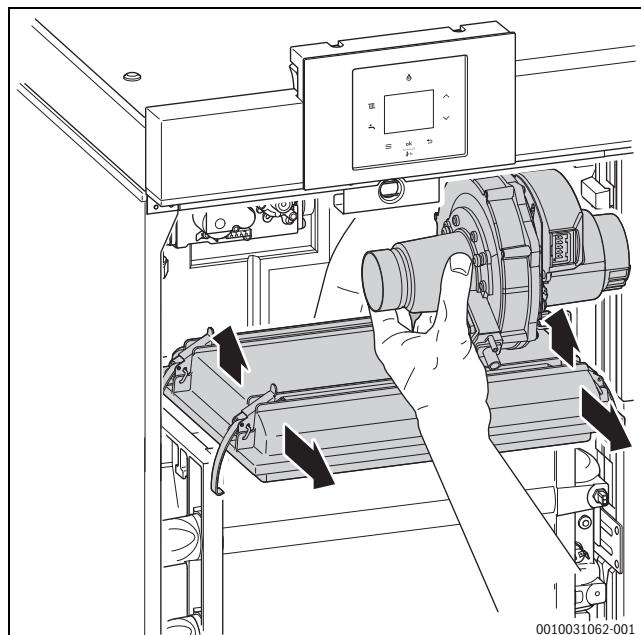


Fig. 38 Remove the gas-air unit together with the burner cover.

10.4 Clean the burner

- ▶ Removing the burner gasket.

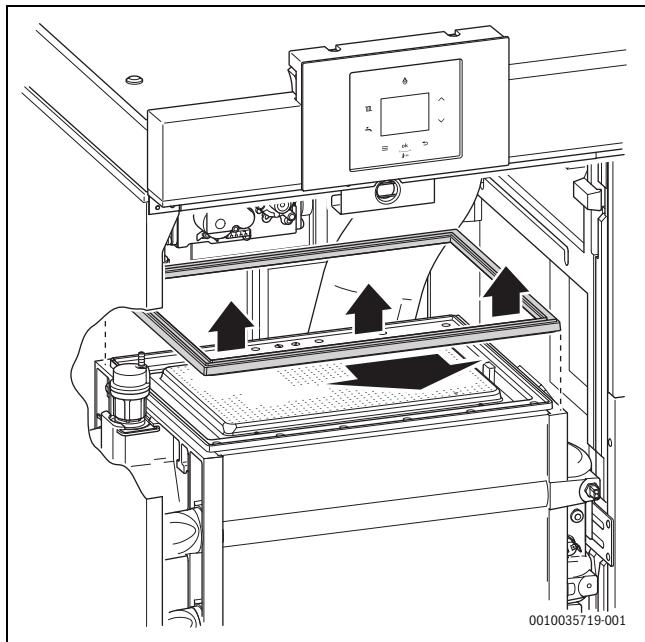


Fig. 39 Removing the burner gasket

- ▶ Removing the burner.

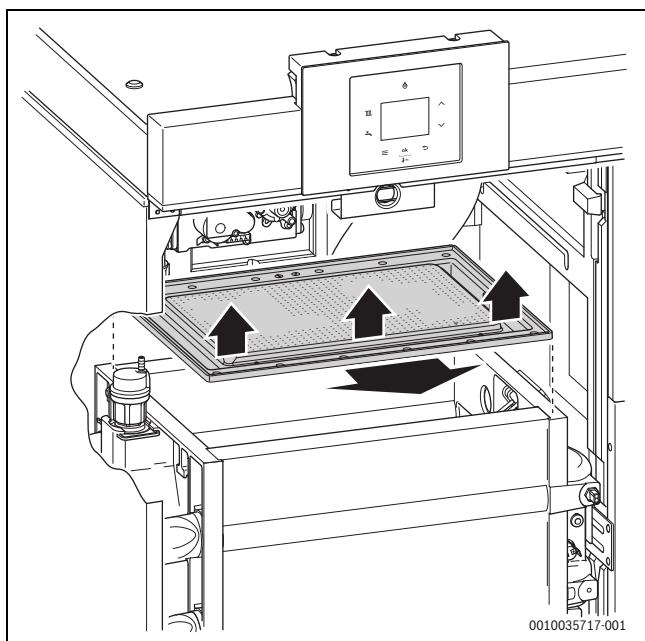


Fig. 40 Removing the burner

- ▶ Check the burner and gas distributor plate for pollution and cracking.
- ▶ Clean the burner with compressed air or a soft brush if necessary.

10.5 Cleaning the heat exchanger

NOTICE

Risk of damage to the heat exchanger due to improper cleaning.

- ▶ Do not use chemical agents to clean the heat exchanger.
- ▶ Only use one brush with plastic bristles for cleaning.
- ▶ Cover ignition unit [1].
- ▶ Remove loose dirt with a vacuum cleaner.
- ▶ Loosen any other dirt with a brush and remove it with a vacuum cleaner.

- ▶ Purge the heat exchanger with water [2].

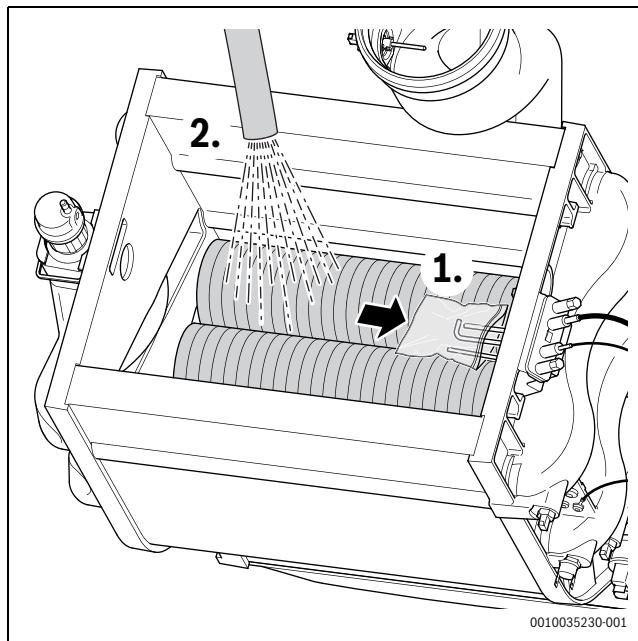


Fig. 41 Cleaning the heat exchanger

10.6 Cleaning the siphon

- ▶ Remove the flexible hose, and possibly the tee, from the siphon.
- ▶ Unscrew the union nut of the siphon in the boiler and completely screw open [1].
- ▶ Remove siphon [2].

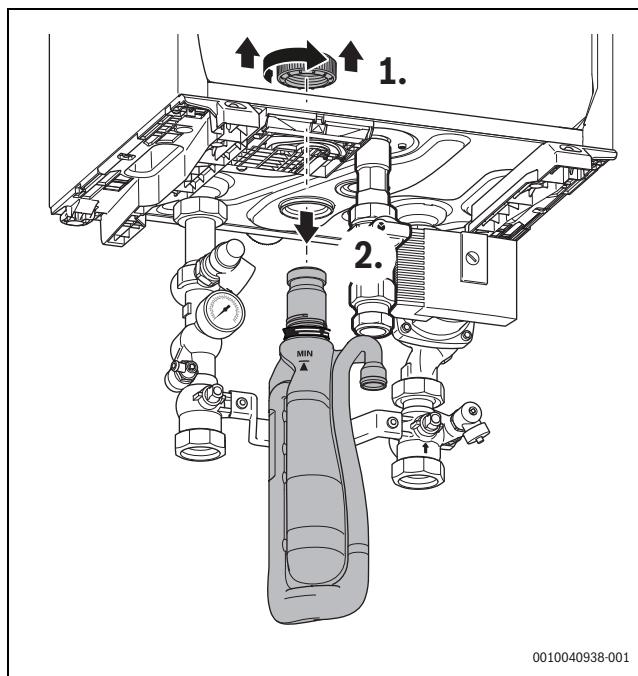


Fig. 42 Remove the boiler siphon

- ▶ Flush the siphon.
- ▶ Fill the siphon completely with water.
- ▶ Reattach the siphon.
- ▶ Check whether the neck of the siphon is properly connected to the condensation catch pan.
- ▶ Tighten the union nut hand tight.

10.7 Cleaning the condensation catch pan

If the siphon is soiled, check and clean the condensation catch pan as necessary.

- ▶ Open the 2 quick-release fasteners.

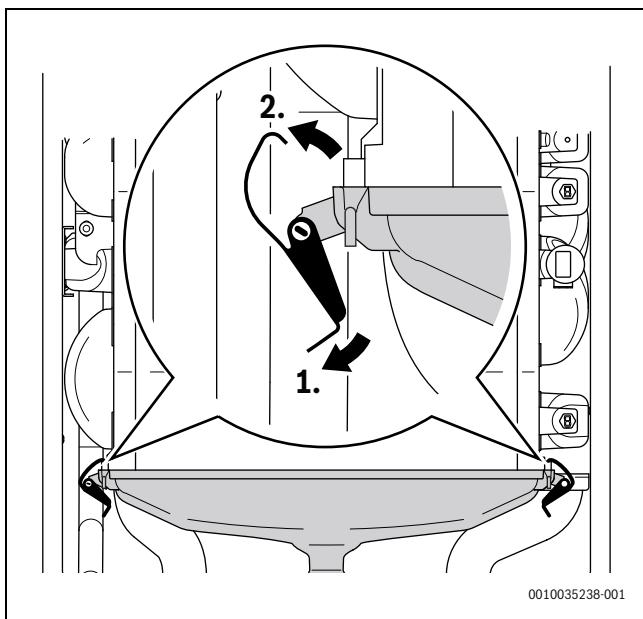


Fig. 43 Open the snap fasteners of the condensation catch pan

- ▶ Remove the condensation catch pan.

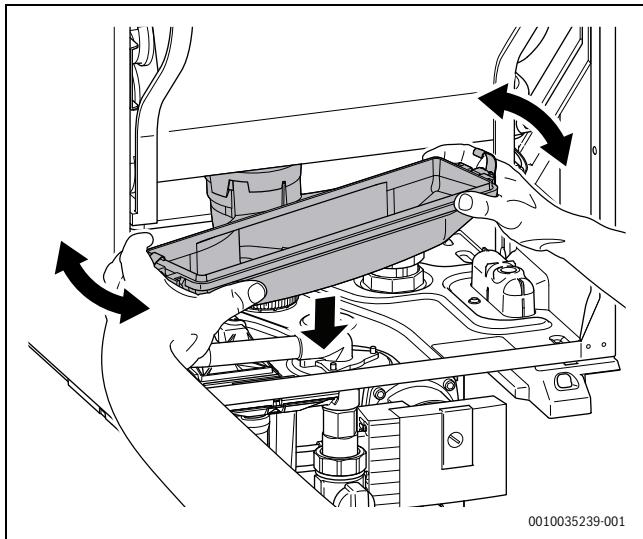


Fig. 44 Remove the condensation catch pan.

- ▶ Clean the condensation catch pan.
- ▶ Insert new gasket in the condensation catch pan.
- ▶ Place the condensation catch pan under the heat exchanger.
- ▶ Push the condensation catch pan so it rests seamlessly against the exchanger.
- ▶ Close the snap fasteners.
- ▶ Reassemble all parts in reverse order.
- ▶ Start up the boiler.

10.8 Resetting the Maintenance type

Resetting the set Maintenance type starts the new maintenance interval.

- ▶ Open the menu **Reset** (→ table 15, p. 31).
- ▶ Reset the parameter Service display.

10.9 Measuring the gas pressure

- ▶ Measure the gas working pressure (→ § 8.5, p. 23).

- ▶ Make a note of the value in the maintenance protocol (→ § 10.17, p. 38).

10.10 Measuring of CO and CO₂

- ▶ Measure the CO content and the CO₂ percentage (→ § 8.6, p. 24).
- ▶ Make a note of the values in the maintenance protocol (→ § 10.17, p. 38).

10.11 Measuring the gas/air ratio

- ▶ Measure the gas/air ratio (→ § 8.7, p. 24).
- ▶ Make a note of the value in the maintenance protocol (→ § 10.17, p. 38).

10.12 Measuring the ionisation current

- ▶ Read off the ionisation current on the display (→ § 8.8, p. 24).
- ▶ Make a note of the value in the maintenance protocol (→ § 10.17, p. 38).
- or-
- ▶ If the value is less than 2 µA: replace the ignition and flame sense electrode (→ § 10.16.2, p. 36).

10.13 Check the flue gas backflow preventer

If a positive pressure cascade system has been mounted on the boiler, the backflow preventer must be checked.

- ▶ Open the inspection aperture via the backflow preventer.
- ▶ Check the backflow preventer for wear, damage or pollution and replace if necessary.
- ▶ Fill the backflow preventer with water if necessary.
- ▶ Close the inspection aperture of the backflow preventer.

10.14 Check the (flue) gas tightness

- ▶ Check the tightness of all gas-carrying components (→ § 8.9, p. 25).
- ▶ Visually inspect the supply air and flue gas routing and check for tightness and correct installation/brackets.
- ▶ Check whether the siphon is filled with water and fill if required (→ § 10.6, p. 34).

10.15 Check for correct operation

- ▶ Check the tightness of all couplings.
- ▶ Check the operating pressure and top up if required. In doing so, take the water quality into consideration (→ § 5.3, p. 12).
- ▶ Check the settings of the boiler (→ § 9.4.2, p. 26).
- ▶ Complete the inspection and maintenance protocol (→ § 10.17, p. 38).
- ▶ Close the front panel.

10.16 Replacing components

10.16.1 Replacement interval for components

The following components must be replaced after expiry of the specified service life.

Replace according to specification, depending on what occurs first.

Component	Service life [Year]	Burner runtime [Hours]	Burner starts [Number]
Gaskets and O-rings	Remove gaskets and always replace O-rings.		
Ignition and flame sense electrode	2	4000	25,000
Burner gasket	2	4000	--
Gasket of condensate catch pan	2	4000	--
Air/gas ratio control valve	10	--	500,000
Gas hose	10	20,000	-- ¹⁾

1) When replacing the air/gas ratio control valve it is advisable also to replace the gas hose.

Table 18 Replacement interval for each component

- Document replacement of components in the maintenance protocol (→ § 15.7, p. 50).

10.16.2 Inserting the igniter

NOTICE

Damage to the appliance by applying an excessively high torque when tightening the screws.

The threaded bolts of the ignition unit are mounted in an aluminium heat exchanger. Using a graphite seal ensures tightness when tightening the threaded bolts hand-tight (using hand tools).

- Tighten both threaded bolts of the igniter (**3 Nm**).



Take the replacement interval of the air/gas ratio control valve into account.

- Replace the igniter, depending on the service life (→ Tab. 18, p. 36).
- Switch off the appliance.
- Undo both threaded bolts [1] of the igniter.

- Remove igniter [3] and seal [2].

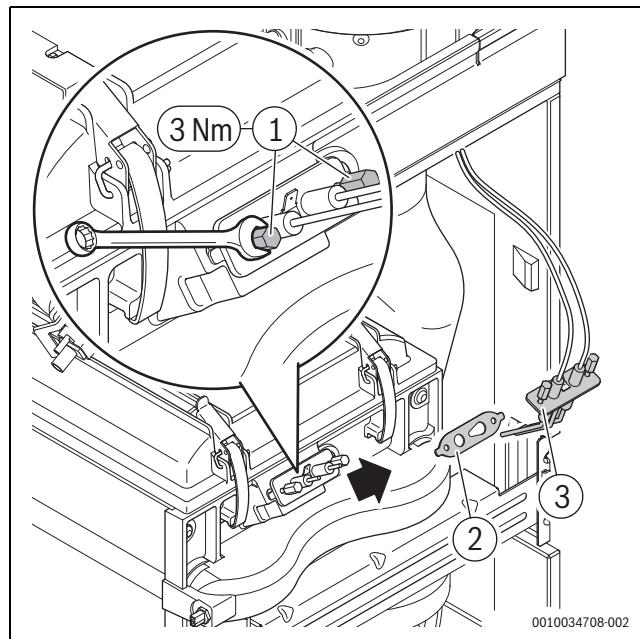


Fig. 45 Inserting the igniter

- Detach connections from the igniter.
- Clean the contact surface on the heat exchanger.
- Position the new seal and igniter.
- Tighten both threaded bolts of the igniter (3 Nm).
- Mount the plug of the igniter.
- Start up the boiler.
- Check the flue gas tightness of the removed parts.
- Carry out a check by measuring the ionisation current (→ § 8.8, p. 24).

10.16.3 Replacing the flue gas temperature sensor

The flue gas temperature sensor is equipped with a bayonet connection.

- Switch off the appliance.
- Turn the flue gas temperature sensor anticlockwise by a quarter turn.
- Take the flue gas temperature sensor out of the flue pipe.
- Detach the plug from the flue gas temperature sensor.
- Fit the new O-ring on the new flue gas temperature sensor before inserting it.
- Connect the plug at the new sensor.
- Insert the flue gas temperature sensor with the cam [1] pointing to the right in the flue pipe.
- Turn the flue gas temperature sensor clockwise by a quarter turn.

- ▶ Operate the appliance.

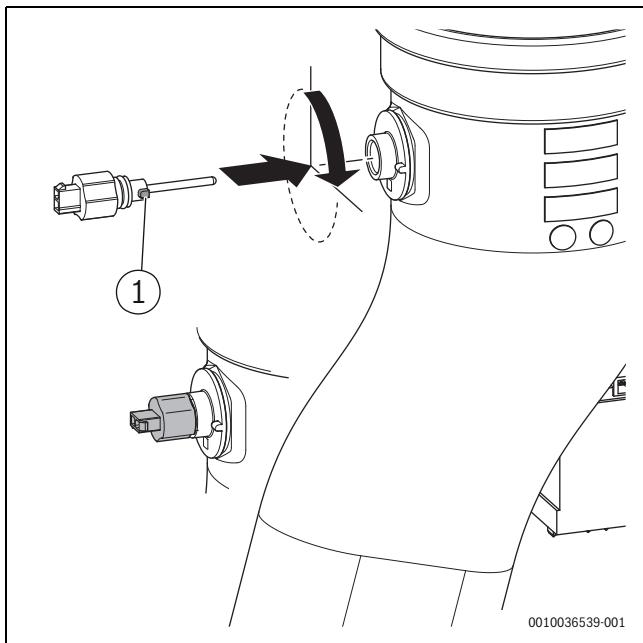


Fig. 46 Replacing the flue gas temperature sensor

10.16.4 Replacing the coding plug

NOTICE

Damage due to electrostatic charge

Printed circuit boards in electronic components are susceptible to electrostatic charge (ESD).

- ▶ Wear an earthed wrist strap when working on electronic components (→ § 7.1, p. 18).

- ▶ Switch off the appliance.
- ▶ Open the top appliance cover (→ § 7.2, p. 18).
- ▶ Detach the bracket of the burner control unit [1].
- ▶ Push the burner control unit to the left [2].
- ▶ Lift the front of the burner control unit so the coding plug is easily accessible [3].
- ▶ Remove the coding plug [4].
- ▶ Attach new coding plug.

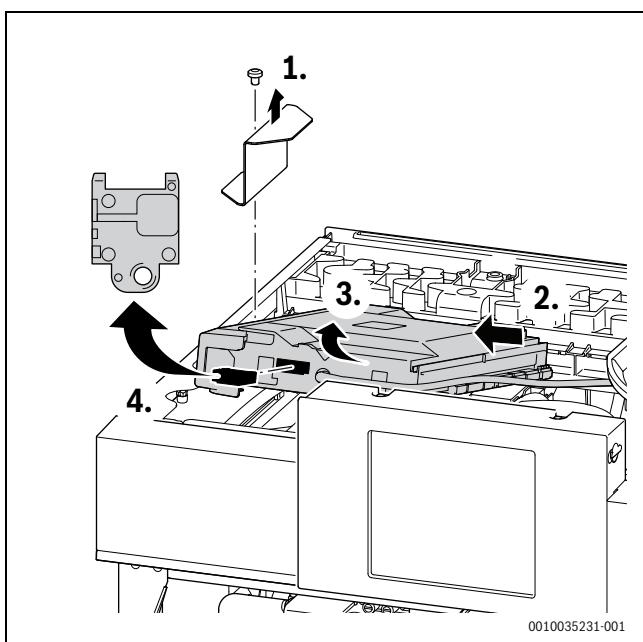


Fig. 47 Replacing the coding plug

- ▶ Mount the burner control unit again by following the above steps in reverse order.
- ▶ Screw down the bracket of the burner control unit.
- ▶ Close and secure the top panel.
- ▶ Operate the appliance.

10.16.5 Replacing the air/gas ratio control valve



Take the replacement interval of the air/gas ratio control valve into account.

- ▶ If the air/gas ratio control valve is defective or depending on the service life, replace it (→ table 18, page 36).

- ▶ Switch off the appliance.
- ▶ Close gas isolator.
- ▶ Follow the replacement instructions provided when replacing the air/gas ratio control valve.
- ▶ Open the gas cock.
- ▶ Operate the appliance.
- ▶ Check the tightness of all gas-carrying components.

10.17 Inspection and maintenance protocol (checklist)

Date							
1	Call up the last fault saved in the service menu.						
2	Call up the burner starts in the service menu.						
3	Call up the operating hours in the service menu.						
4	Inspect the flue system visually to make sure it has been installed correctly. If there are any noticeable problems, ensure tightness and mechanical stability.						
5	Check the gas supply pressure.	mbar					
6	Check the gas/air ratio.	Pa					
7	Check CO content.	ppm					
8	Check CO ₂ content.	%					
9	Check tightness on the gas and water side.						
10	Check the electrodes.						
11	Check the burner.						
12	Check the heating block.						
13	Check ionisation current.	µA					
14	Clean dirt trap.						
15	Check non-return valve.						
16	Check the pre-charge pressure of the expansion vessel for the static head of the heating system.	bar					
17	Check the heating system pressure.	bar					
18	Check the sacrificial anode of the cylinder.	mA					
19	Check the electrical wiring for damage.						
20	Check settings of the heating control.						
21	Reset maintenance.						

Table 19 Inspection and maintenance record

11 Troubleshooting

11.1 Operating and fault displays

11.1.1 General information

- **Fault code:** indicates which fault is present.
- **Fault category:** indicates what kind of fault is present and its effects.

Fault category O (operating code)

Operating codes indicate the operating conditions in normal operation.

Fault category B (blocking faults)

Blocking faults result in the heating system being shut down temporarily. The heating system restarts automatically as soon as the blocking fault is removed.

11.1.2 Fault code table

Fault code	Fault category	Fault text on the display, description	Remedy
200	O	Boiler in heating mode	–
201	O	Boiler in hot water mode	–
202	O	Boiler in anti-cycle mode	–
203	O	Boiler in standby, no heat energy demand	–
204	O	Current prim. water temp. higher than set val.	–
208	O	Chimney sweep demand	–
214	V	Fan shut down during safety time	<ol style="list-style-type: none"> 1. Check the plug on the fan. 2. Check the connecting lead to the fan.
224	V	Maximal flue gas thermostat or heat exchanger maximal thermostat has activated	<p>Heating circuit:</p> <ol style="list-style-type: none"> 1. Check that the heating water is circulating correctly. 2. Open the closed valve in the heating circuit. 3. Top up water until the preset pressure is reached. 4. Connect the plug to the heating block temperature limiter correctly. 5. Check heating block temperature limiter, replace if required. <p>Potable water circuit:</p> <p>Check that the potable water in the cylinder circuit is circulating correctly.</p>
227	V	No flame signal after ignition	<ol style="list-style-type: none"> 1. Open the main shut-off valve. 2. Open the device shut-off valve. 3. Interrupt the power supply of the appliance and check the gas line. 4. Check the supply pressure of the gas line. 5. Check that the burner is working correctly, adjust burner if necessary. 6. Check CO₂ content of combustion air, adjust if necessary. 7. Establish protective conductor connection (PE) in the control device. 8. Carry out function check for ignition. 9. Carry out function check for ionisation. 10. Connect the plug for the ionisation and ignition sections correctly. 11. Connect the plug for the air/gas ratio control valve correctly. 12. Check condensate pipes. 13. Check flue gas side of heat exchanger for pollution. 14. Check flame sense electrode, replace if necessary. 15. Check ignition electrode, replace if necessary. 16. Check ignition electrode connecting lead, replace if necessary. 17. Check flame sense electrode connecting lead, replace if necessary. 18. Check air/gas ratio control valve, replace if necessary. 19. Check control device/burner control unit, replace if necessary.
228	V	Flame signal without flame present	<ol style="list-style-type: none"> 1. Check ionisation cable, replace if necessary. 2. Check electrode set, replace if necessary. 3. Replace the control device.

Fault code	Fault category	Fault text on the display, description	Remedy
229	B	Flame failed during burner operation	<ol style="list-style-type: none"> 1. Open the main shut-off valve. 2. Open the device shut-off valve. 3. Shut down the device and check the gas line. 4. Signal evaluation on printed circuit board defective. 5. Replace flame sense electrode. 6. Establish protective conductor connection (PE) in the control device. 7. Replace ignition cable. 8. Replace the connecting lead to the flame sense electrode. 9. Replace air/gas ratio control valve. 10. Set the burner correctly or replace the burner nozzles. 11. Set the burner at minimum rated load. 12. Convert the flue system. 13. The interconnected combustion air supply is too low or the ventilation opening is too small. 14. Clean the heating block on the flue gas side. 15. Replace control device/burner control unit.
232	B	Boiler locked by external switching contact	<ol style="list-style-type: none"> 1. Connect the plug for the external switching contact. 2. Install jumper/check condensate pump according to manufacturer's specifications. 3. Adapt switching point of the external temperature switch to the system. 4. Replace connecting lead to the external temperature switch. 5. Replace external temperature switch.
233	V	Boiler identification module or device electronics faulty	<ol style="list-style-type: none"> 1. Install boiler identification module/coding plug. 2. Connect plug to boiler identification module/coding plug. 3. Replace boiler identification module/coding plug (Bosch contact customer service).
234	V	Gas valve electrical fault	<ol style="list-style-type: none"> 1. Replace connecting lead and reset once replacement is complete. 2. Replace air/gas ratio control valve and reset once replacement is complete.
235	V	Conflicting versions of boiler electr. and boiler identification	<ol style="list-style-type: none"> 1. Check boiler identification module/coding plug. 2. Install valid combination of control device/burner control unit.
237	V	System fault	<ol style="list-style-type: none"> 1. Replace boiler identification module/coding plug. 2. Replace control device/burner control unit.
238	V	Boiler electronics faulty	Replace control device.
242 - 263	V	System fault boiler electronics / basic controller	<ol style="list-style-type: none"> 1. Remedy contact problem. 2. If necessary, replace control device or boiler identification module/coding plug (Bosch contact customer service).
265	O	Heat demand lower than energy supplied	-
268	O	Component test activated	-
269	V	Flame monitoring	Replace control device/burner control unit.
273	B	Operation interrupted following 24 hours of continuous operation	The fan and burner start automatically after the safety check.
281	B	Pump stuck or running in air	<ol style="list-style-type: none"> 1. Check whether the pump is blocked, unblock or replace if necessary. 2. Ensure that the heating water can circulate correctly. 3. Vent the pump.
306	V	Flame signal after closing the fuel supply	<ol style="list-style-type: none"> 1. Replace the air/gas ratio control valve. 2. Replace the ionisation cable. 3. Replace the control device/burner control unit.
316	V	Flue gas temp. too high during sensor test	<ol style="list-style-type: none"> 1. Replace flue gas temperature sensor. 2. Replace the connecting lead to the flue gas temperature sensor. 3. Replace the control device/burner control unit.
317	V	Short-circuit at flue gas temp. sensor	<ol style="list-style-type: none"> 1. Replace flue gas temperature sensor. 2. Replace the connecting lead to the flue gas temperature sensor. 3. Replace the control device/burner control unit.
318	V	Flue gas temperature sensor interrupted	<ol style="list-style-type: none"> 1. Connect the plug to the flue gas temperature sensor. 2. Check the connecting lead to the flue gas temperature sensor. 3. Replace flue gas temperature sensor. 4. Replace the control device/burner control unit.

Fault code	Fault category	Fault text on the display, description	Remedy
349	B	Difference between flow and return temperature too high	<ol style="list-style-type: none"> 1. Open the shut-off valves. 2. If the water pressure is too low, top up with water and vent the system. 3. Open a thermostat valve. 4. Replace flow or return sensor if required. 5. Replace the pump if required.
357	O	Ventilation program	–
358	O	Anti-seizing functn. active	–
360	V	System fault boiler electronics / basic controller	<ol style="list-style-type: none"> 1. Install boiler identification module/coding plug. 2. Connect plug to boiler identification module/coding plug. 3. Replace boiler identification module/coding plug (Bosch contact customer service).
362	V	Boiler identification module or boiler electronics faulty	Replace boiler identification module/coding plug (Bosch contact customer service).
363	V	System fault boiler electronics / basic controller	Replace control device/burner control unit.
811	A	Hot water heating: thermal disinfection failed	<ol style="list-style-type: none"> 1. If water is being drawn constantly, take action to stop this. 2. Position the DHW temperature sensor correctly. 3. Check that there is contact between the DHW cylinder temperature sensor and the cylinder. 4. Vent the cylinder circuit. 5. Set DHW heating to "priority". 6. Check plate heat exchanger for calcification. 7. Check sizing of DHW circulation line and heat loss.
815	W	Low loss header temp. sensor faulty	<ol style="list-style-type: none"> 1. Check hydraulic configuration, correct if necessary. 2. Check sensor for breaks or short circuits, replace if necessary.
1010	O	No communication via EMS BUS connection	<ol style="list-style-type: none"> 1. Rectify wiring fault and switch the control unit off and on again. 2. Repair the BUS cable or replace it. 3. Replace faulty EMS-BUS node.
1013	W	Max. combustion point reached	<ol style="list-style-type: none"> 1. Carry out maintenance. 2. Reset service display.
1017	W	System pressure too low	<ol style="list-style-type: none"> 1. Top up water and vent the system. 2. Check the pressure sensor, replace if necessary.
1018	W	Maintenance interval expired	<ol style="list-style-type: none"> 1. Carry out maintenance. 2. Reset service display.
1019	W	Incorrect pump type detected	<ol style="list-style-type: none"> 1. Check pump cabling. 2. Check that the correct heating pump type is in the appliance, replace if necessary.
1022	W	Cylinder temp. sensor faulty or contact problems	<ol style="list-style-type: none"> 1. Connect the plug to the temperature sensor correctly. 2. Connect the plug to the control device correctly. 3. Check the temperature sensor, replace if necessary. 4. Check temperature sensor connecting lead, replace if necessary.
1023		Maximum run time including standby time reached	<ol style="list-style-type: none"> 1. Carry out maintenance. 2. Reset service display.
1025	W	Return temp. sensor is faulty	<ol style="list-style-type: none"> 1. Connect the plug to the return temperature sensor correctly. 2. Replace return temperature sensor. 3. Replace connecting lead to return temperature sensor. 4. Replace control device.
1037	W	Outside temp. sensor faulty - heating back-up operation active	<ol style="list-style-type: none"> 1. If an outside temperature sensor is not desired. Select the room temperature-dependent configuration in the control device. 2. If there is no continuity, rectify the fault. 3. Clean corroded terminals in the outside sensor housing. 4. If values do not match, replace the sensor. 5. If the sensor values matched, but the voltage values do not match, replace the control unit.
1065	W	System pressure sensor faulty or not connected	<ol style="list-style-type: none"> 1. Connect the plug to the pressure sensor correctly. 2. Check pressure sensor connecting lead, replace if necessary. 3. Check the pressure sensor, replace if necessary.

Fault code	Fault category	Fault text on the display, description	Remedy
1068	W	Outside temp. sensor or lambda probe faulty.	<ol style="list-style-type: none"> 1. Connect the plug to the temperature sensor correctly. 2. Connect the plug to the control device correctly. 3. Attach the temperature sensor correctly. 4. Check the temperature sensor, replace if necessary. 5. Check temperature sensor connecting lead, replace if necessary.
1070		Maintenance is due on <dd.mm.yyyy> please call your service engineer	–
1071		Maintenance is now due please call your service engineer	–
1072		Maintenance is overdue please call your service engineer	–
1074		No signal from flow temperature sensor	–
1075	W	Heat exchanger temp sensor short circuit	<ol style="list-style-type: none"> 1. Connect the plug to the temperature sensor correctly. 2. Check the temperature sensor, replace if necessary. 3. Check temperature sensor connecting lead, replace if necessary.
1076	W	Heat exchanger temp sensor disconnected	<ol style="list-style-type: none"> 1. Connect the plug to the temperature sensor correctly. 2. Check the temperature sensor, replace if necessary. 3. Check temperature sensor connecting lead, replace if necessary.
2085	V	Internal fault	<ol style="list-style-type: none"> 1. Unlock. 2. Disconnect power from the system for 30 seconds. 3. Replace the burner control unit.
2908	V	System fault boiler electronics / basic controller	If the fault persists following a reset, the burner control unit is faulty and must be replaced.
2910	V	Fault in flue system	<ol style="list-style-type: none"> 1. Install the flue system. 2. Remove any deposits from the flue system.
2914- 2916	V	Boiler electr. system fault	If the fault persists following a reset, the control device is faulty and must be replaced.
2920	V	Fault in flame monitoring	Check control device, replace if necessary.
2923- 2926	V	Boiler electr. system fault	<ol style="list-style-type: none"> 1. Check air/gas ratio control valve cabling. 2. Check air/gas ratio control valve. <p>If the fault persists following a reset, the control device or the air/gas ratio control valve is faulty and must be replaced.</p>
2927	B	No flame detected after ignition	<ol style="list-style-type: none"> 1. Open the main shut-off valve. 2. Open the device shut-off valve. 3. Interrupt the power supply of the appliance and check the gas line. 4. Carry out function check for ignition. 5. Carry out function check for ionisation. 6. Connect the plug for the ionisation and ignition sections correctly. 7. Establish protective conductor connection (PE) in the control device. 8. Check flame sense electrode, replace if necessary. 9. Check ignition electrode, replace if necessary. 10. Check ignition electrode connecting lead, replace if necessary. 11. Replace the connecting lead to the flame sense electrode. 12. Set the burner correctly/replace the burner nozzles. 13. Set the burner at minimum rated load. 14. Check air/gas ratio control valve, replace if necessary. 15. Check the flue system and repair if necessary. 16. The interconnected room air supply is too small or the size of the ventilation opening is too small. 17. Clean the heating block on the flue gas side. 18. Check control device/burner control unit, replace if necessary.
2928	V	Internal fault	<ol style="list-style-type: none"> 1. Perform reset. 2. Replace control device/burner control unit.
2931	V	System fault boiler electronics / basic controller	<ol style="list-style-type: none"> 1. Perform reset. 2. Replace control device/burner control unit.
2940	V	System fault burner control unit	<ol style="list-style-type: none"> 1. Perform reset. 2. Replace control device/burner control unit.

Fault code	Fault category	Fault text on the display, description	Remedy
2946	V	Incorrect code plug detected	Replace boiler identification module/coding plug (Bosch contact customer service).
2948	B	No flame signal with low output	Burner starts automatically after purging. If this fault occurs frequently, check CO ₂ setting.
2949	B	No flame signal with high output	The burner is automatically restarted following purging. 1. Check burner gaskets, replace if required. 2. Reduce output.
2950	B	No flame signal following starting procedure	Burner starts automatically after purging. Set gas/air ratio correctly.
2951	V	Loss of flame too many times	1. Open the main shut-off valve. 2. Open the device shut-off valve. 3. Interrupt the power supply of the appliance and check the gas line. 4. Carry out function check for ionisation. 5. Connect the plug for the ionisation and ignition sections correctly. 6. Establish protective conductor connection (PE) in the control device. 7. Check flame sense electrode, replace if necessary. 8. Check ignition electrode, replace if necessary. 9. Check ignition electrode connecting lead, replace if necessary. 10. Check flame sense electrode connecting lead, replace if necessary. 11. Set the burner correctly/replace the burner nozzles. 12. Set the burner at minimum rated load. 13. Check air/gas ratio control valve, replace if necessary. 14. Check the flue system and repair if necessary. 15. The interconnected room air supply is too small or the size of the ventilation opening is too small. 16. Clean the heating block on the flue gas side. 17. Check control device/burner control unit, replace if necessary.
2952	V	Internal fault when testing the ionisation signal	1. Perform reset. 2. Replace control device/burner control unit.
2955	B	Boiler does not support the parameters set for the hydraulic configuration	Check hydraulic settings, change if necessary. <ul style="list-style-type: none">• Low-loss header• Internal DHW circuit (cylinder charging circuit)• Heating circuit 1• Heating pump in appliance
2956	O	Hydraulic configuration at the boiler activated	–
2957	V	Boiler electr. system fault	1. Reset control device / burner control unit. 2. Reconnect electrical connections at control device / burner control unit correctly. 3. Replace the control device/burner control unit.
2961	V	No fan signal available	1. Check fan and connecting lead. 2. Check mains voltage.
2962			–
2963	B	The heat exchanger sensor or both supply and heat exchanger sensors are defect	1. Connect the plug to the temperature sensor correctly. 2. Connect the plug to the control device correctly. 3. Attach the temperature sensor correctly. 4. Check the temperature sensor, replace if necessary. 5. Check temperature sensor connecting lead, replace if necessary.
2964		Flow rate in heat exchanger too low	–
2965	B	Flow temperature too high	1. Ensure that the heating circulation is working correctly. 2. Check pump setting, adjust to match heating system if necessary. 3. Connect the plug to the temperature sensor correctly. 4. Connect the plug to the control device correctly. 5. Attach the temperature sensor correctly. 6. Check the temperature sensor, replace if necessary. 7. Check temperature sensor connecting lead, replace if necessary.

Fault code	Fault category	Fault text on the display, description	Remedy
2966	B	Flow temperature rise in heat exchanger too rapid	<ol style="list-style-type: none"> 1. Ensure that the heating circulation is working correctly. 2. Check pump setting, adjust to match heating system if necessary. 3. Connect the plug to the temperature sensor correctly. 4. Connect the plug to the control device correctly. 5. Attach the temperature sensor correctly. 6. Check the temperature sensor, replace if necessary. 7. Check temperature sensor connecting lead, replace if necessary.
2967		The temperature difference between supply temperature sensor and temperature sensor at heat exchanger is too large	-
2968		Refilling system pressure	-
2970		Pressure drop in heating system too rapid	-
2971	B	System pressure too low	<ol style="list-style-type: none"> 1. Vent the heating system. 2. Check the heating system for tightness. 3. Top up water until the target pressure is reached. 4. Check the pressure sensor, replace if necessary. 5. Check the pressure sensor cable, replace if necessary.
2972		Mains voltage too low	<ol style="list-style-type: none"> 1. Establish supply voltage of at least 196 VAC. 2. Replace burner control unit.
3071		No communication with remote control	<ol style="list-style-type: none"> 1. Check configuration. 2. Check cabling.

Table 20 Indicators and fault displays

11.1.3 Faults that are not displayed

Device faults	Remedy
Combustion noises too loud, rumbling noises	<ul style="list-style-type: none"> ► Check the gas type. ► Check the gas supply pressure. ► Check the flue system, clean or repair as necessary. ► Check the gas/air ratio. ► Check the air/gas ratio control valve, replace if required.
Flow noises	<ul style="list-style-type: none"> ► Set the pump rate or pump characteristic map correctly and match to the maximum output.
Heat-up takes too long.	<ul style="list-style-type: none"> ► Set the pump rate or pump characteristic map correctly and match to the maximum output.
Flue gas values incorrect, CO content too high.	<ul style="list-style-type: none"> ► Check the gas type. ► Check the gas supply pressure. ► Check the flue system, clean or repair as necessary. ► Check the gas/air ratio. ► Check the air/gas ratio control valve, replace if required.
Violent ignition, poor ignition.	<ul style="list-style-type: none"> ► Check the ignition transformer with service function t01 for misfiring, replace if required. ► Check the gas type. ► Check the gas supply pressure. ► Check the power supply. ► Check the electrodes with cable, replace if required. ► Check the flue system, clean or repair as necessary. ► Check the gas/air ratio. ► For natural gas: check the external gas flow monitor, replace if required. ► Check the burner, replace if required. ► Check the air/gas ratio control valve, replace if required.
No function, the display remains dark.	<ul style="list-style-type: none"> ► Check the electrical wiring for damage. ► Replace defective cables. ► Check the fuse, replace if required.

Table 21 Faults that are not shown on the display

Fault display: System pressure too low

If the system pressure in the heating system falls below the minimum pressure that has been set, the display shows the message **LoPr => L0.X**

bar. The system pressure is too low.

- Fill the heating system.

If the system pressure in the heating system drops below 0.3 bar, the display shows the message **LoPr** alternating with the operating pressure. The heating system is then blocked.

- Fill the heating system.

12 Shutdown

12.1 Standard decommissioning

- Switch off the boiler via the on/off switch (→ § 2.11, p. 6).
- Close gas isolator.
- Close the service valves.

12.2 Decommissioning when there is a risk of frost

If the boiler remains switched off.

- Set the pump overrun time to 24 hours (→ § , p. 29).
- Make sure that a sufficient flow rate is possible at all radiators.

If the boiler is switched off:

- Switch off the boiler via the on/off switch (→ § 2.11, p. 6).
- Drain the entire heating system.
- If installed, drain the entire potable water system.

13 Environmental protection and 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. "European Directive 2012/19/EC on old electronic and electrical appliances". 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.weee.bosch-thermotechnology.com/

14 Data Protection Notice



We, **Bosch Thermotechnology Ltd., Cotswold Way, Warndon, Worcester WR4 9SW, United Kingdom**

process product and installation information, technical and connection data, communication data, product registration and client history data to provide product functionality (art. 6 (1) sentence 1 (b)

GDPR), to fulfil our duty of product surveillance and for product safety and security reasons (art. 6 (1) sentence 1 (f) GDPR), to safeguard our rights in connection with warranty and product registration questions (art. 6 (1) sentence 1 (f) GDPR) and to analyze the distribution of our products and to provide individualized information and offers related to the product (art. 6 (1) sentence 1 (f) GDPR). To provide services such as sales and marketing services, contract management, payment handling, programming, data hosting and hotline services we can commission and transfer data to external service providers and/or Bosch affiliated enterprises. In some cases, but only if appropriate data protection is ensured, personal data might be transferred to recipients located outside of the European Economic Area. Further information are provided on request. You can contact our Data Protection Officer under: Data Protection Officer, Information Security and Privacy (C/ISP), Robert Bosch GmbH, Postfach 30 02 20, 70442 Stuttgart, GERMANY.

You have the right to object, on grounds relating to your particular situation or where personal data are processed for direct marketing purposes, at any time to processing of your personal data which is based on art. 6 (1) sentence 1 (f) GDPR. To exercise your rights, please contact us via privacy.ttgb@bosch.com To find further information, please follow the QR-Code.

15 Technical information and reports

15.1 Wiring Diagram

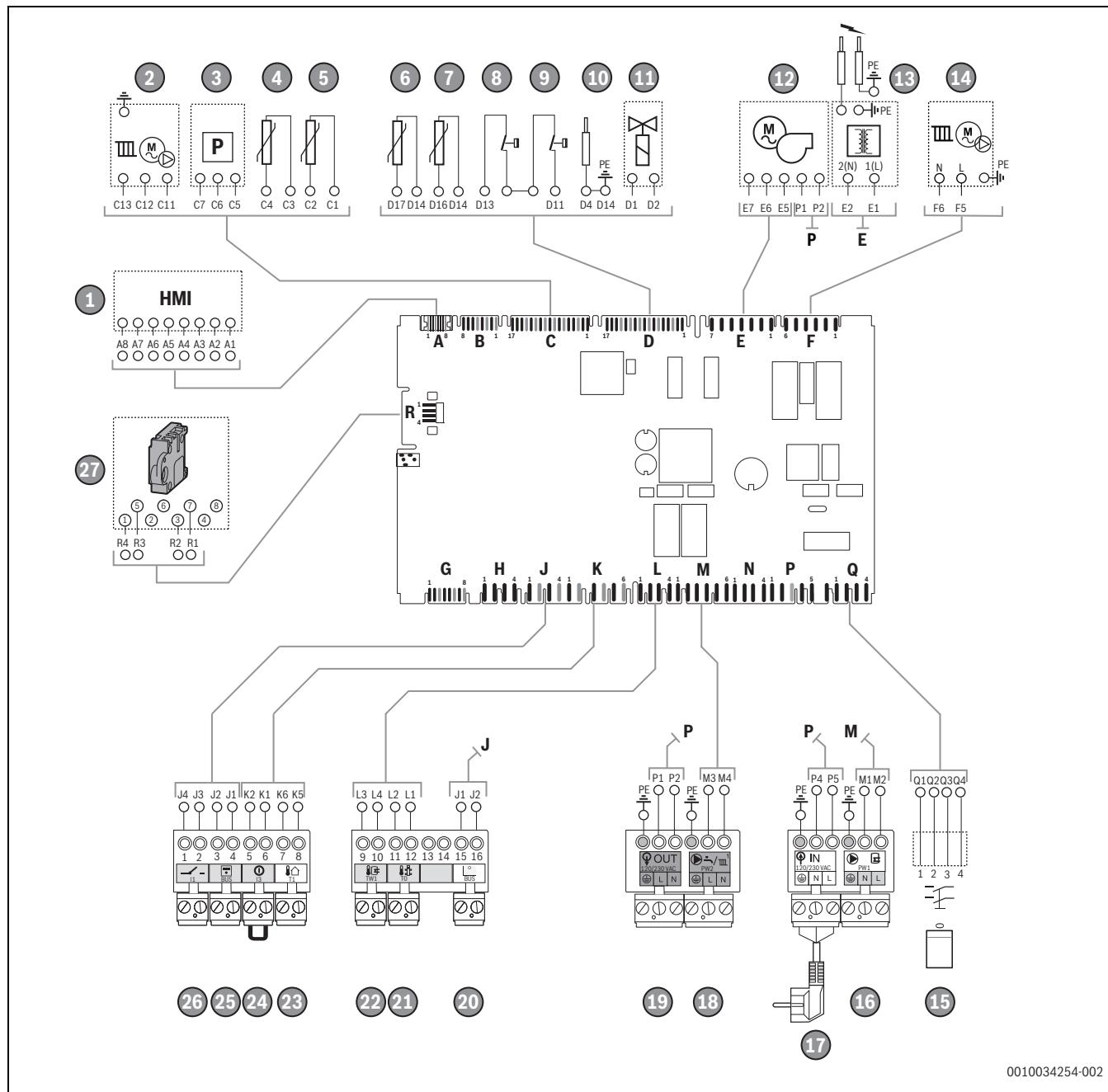


Fig. 48 Wiring Diagram

- [1] Control panel, HMI 700
- [2] PWM signal, pump
- [3] Pressure sensor
- [4] Return temperature sensor
- [5] Flue gas temperature sensor
- [6] Safety temperature sensor
- [7] flow temperature sensor
- [8] High limit safety cut-out STB, heat exchanger
- [9] Maximum temperature limiter STB
- [10] Monitoring electrode
- [11] Air/gas ratio control valve
- [12] Fan
- [13] Ignition and flame sense electrode
- [14] Boiler circulation pump 230V_{AC}
- [15] On/off switch
- [16] Cylinder primary pump 230V_{AC}
- [17] Mains plug 230V_{AC}
- [18] DHW circulation pump 230V_{AC}
- [19] Mains voltage 230V_{AC}
- [20] EMS-bus
- [21] Temperature sensor of low loss header
- [22] Storage cylinder temperature sensor
- [23] Outdoor ambient temperature sensor
- [24] External switching contact, volt free
- [25] EMS-bus
- [26] Volt-free contact
- [27] Coding plug

15.2 Technical Specifications

Condens 7000 WP GC7000WP		GC7000WP 50	GC7000WP 65	GC7000WP 85	GC7000WP 100
General information	Unit				
Rated heat output (50/30 °C) [P _n cond]	kW	14.3 – 49.9	14.3 – 69.5	20.8 – 84.5	20.8 – 99.5
Rated heat output (80/60 °C) [P _n]	kW	13.0 – 46.5	13.0 – 62.6	18.9 – 80.0	19.0 – 94.5
Rated thermal load G20, G25, G25.3 (UW) [Q _n (Hi)]	kW	13.3 – 47.5	13.3 – 64.3	19.3 – 82.0	19.3 – 96.5
Rated thermal load G31 (UW) [Q _n (Hi)]	kW	13.3 – 47.5	13.3 – 64.3	19.3 – 82.0	19.3 – 96.5
Efficiency (37/30 °C) partial load 30% in accordance with EN 15502	%	108.4	108.7	109.1	108.7
Efficiency (80/60 °C) full load	%	98.5	98.9	98.7	98.6
Standby loss in accordance with EN 15502.	%	0.24	0.18	0.14	0.12
Standard efficiency of heating curve (75/60 °C)	%	106.0	106.9	106.7	106.8
Standard efficiency of heating curve (40/30 °C)	%	109.7	110.4	110.2	110.3
Pump overrun	min		2		
IP classification [IP rating]			IP XOD		
Appliance class in accordance with EN 15502.		B _{23(p)} , B _{53(p)} , C _{13(x)} , C _{33(x)} , C _{43(x)} , C _{53(x)} , C _{63(x)} , C _{83(x)} , C _{93(x)}			
Product ID no.			CE-0085DL0480		
Temperature classification in accordance with EN 14471.			T120		
Appliance fuse			230 V, 5AF		
Mains voltage, frequency [U]			230 V, 50 Hz		
Power input (without pump), standby / partial load / full load	W	2/8/31	2/8/65	2/10/88	2/10/133
Maximum possible installation altitude of boiler	m		1200		
Permissible ambient temperature	°C		0 - 40		
Maximum flow temperature [T _{max}]	°C		85		
Maximum permissible water pressure [PMS]	bar		6		
Maximum condensate accumulation rate	l/h	6.0	7.6	9.3	11.0
Connections					
Flue gas connection/concentric air supply	mm		110/160		
Heating flow/return pipe (wall mounted gas condensing boiler)	inch		G1½		
Gas connection (wall mounted gas condensing boiler)	inch		R1		
Condensate drain (flexible drain hose)	mm		24		
Emission values in accordance with EN 13384					
CO ₂ content with natural gas G20, partial load/full load	%	8.4 / 9.3	8.4 / 9.3	8.2 / 9.1	8.1 / 9.1
CO ₂ content with natural gas G25, partial load/full load	%	8.3 / 9.1	8.4 / 9.1	8.2 / 9.1	8.1 / 9.1
CO ₂ content with natural gas G25.3, partial load/full load	%	8.4 / 9.1	8.4 / 9.1	8.2 / 9.1	8.1 / 9.1
CO ₂ content with propane G31, partial load/full load	%	9.5 / 10.0	9.5 / 10.0	9.1 / 10.0	9.0 / 10.0
O ₂ content with natural gas G25.3, partial load/full load	%	5.7 / 4.4	5.7 / 4.4	6.1 / 4.4	6.3 / 4.4
O ₂ content with propane G31, partial load/full load	%	6.5 / 5.7	6.5 / 5.7	7.1 / 5.7	7.3 / 5.7
CO output G20 at full load (n = 1)	ppm	31	63	70	81
Standard emission factor (EN15502) CO	mg/m ³	2.7	10.8	17.2	23.4
Standard emission factor (EN15502) NOx G20 (average)	mg/kWh	25	34	34	38
NO _x class			6		
Flue gas mass flow rate at min./max. rated heat output	g/s	6.5/21.6	6.5/29.2	9.8/38.0	9.8/44.7
Flue gas temperature at 80/60 °C, partial load/full load	°C	56 / 59	56 / 61	56 / 66	56 / 73
Flue gas temperature at 50/30 °C, partial load/full load	°C	32 / 39	32 / 43	34 / 50	34 / 53
Differential pressure gas/air (with partial load)	Pa		-5		
Flue gas class for LAS (Germany only)			G61		
Fan discharge pressure					
Residual head of fan (p _{max})	Pa	71	130	162	226
DN110/185, B _{23p} , partial load/full load	Pa	50 / 83	50 / 148	50 / 177	50 / 241
DN110/185, with overpressure flap, B _{23p} , partial load/full load	Pa	41 / 41	50 / 100	50 / 108	50 / 148
DN110/160, C _{x3x} , partial load/full load	Pa	50 / 71	50 / 130	50 / 162	50 / 226
DN110-110, C _{x3x} , partial load/full load	Pa	50 / 71	50 / 130	50 / 162	50 / 226
Dimensions and weight					

Condens 7000 WP GC7000WP			GC7000WP 50	GC7000WP 65	GC7000WP 85	GC7000WP 100
Height x Width x Length			mm	1120 x 520 x 457		
Weight			kg	74		
Connection set						
Heating flow pipe			inch	G1½		
Heating return pipe			inch	G1½		
Gas line			inch	G 1		
Power input Wilo-Para STG 25/8, min./max.			W	4 / 74		
Power input Wilo-Stratos Para 25/1-8, min./max.			W			27 / 138

Table 22 Technical Specifications

15.3 Data relating to the gas

Gas consumption

Gas type	Maximum gas consumption [m³/h]			
	GC7000 WP 50	GC7000 WP 65	GC7000 WP 85	GC7000 WP 100
Natural gas E, H, E _s (G20)	5.03	6.80	8.68	10.21
Natural gas LL, L, E _i , (G25)	5.85	7.91	10.09	11.88
Natural gas K (G25.3)	XX	XX	XX	XX
Propane 3P (G31)	1.94	2.62	3.34	3.93

Table 23 Gas consumption

Gasaansluitdruk

Land	Gasfamilie	Gasaansluitdruk [mbar]		
		Min. ¹⁾	Nom.	Max.
AT, AU, AZ, BA, BG, BY, CH, CZ, DK, EE, ES, GB, GR, HR, IE, IT, KZ, LT, LV, MD, NO, PT, RO, RS, RU, SE, SI, SK, TR, UA	Aardgas H, G20	17	20	25
HU	Aardgas H, G20	17	20	25
DE, LU, NL, PL	Aardgas E, G20	17	20	25
FR	Bereik E _s Aardgas E (G20)	17	20	25
FR	Bereik E _i Aardgas E (G20)	20	25	30
BE	Bereik E _s Aardgas E (G25)	20	25	30
NL	Aardgas K, G25.3	20	25	30
DE	Aardgas LL, G25	18	20	25
DK, NL, NO, SE	Propaan L, G31	25	30	35
AZ, BA, BE, BG, CH, CZ, ES, FR, GB, GR, IE, PT, IT, MD, PL, RO, RS, TR, PL, SK	Propaan L, G31	25	37	45
AT, AU, BG, CH, DE, ES, EE, HR, HU, LT, LV, LU, NL, SI, SK, RS, UA	Propaan L, G31	42,5	50	57,5

1) De minimale gasvoordruk gemeten op het gasregelblok waarbij de maximale belasting van het cv-toestel gewaarborgd blijft is 10 mbar.

Table 24 Gasaansluitdrukken

Natural gas

Country	Standard gas pressure [mbar]	Gas category	Gas type	Default setting [mbar]
DE	20	2ELL	2E, G20	20
DE	25	2ELL	2LL, G25	25
AT, AU AZ, BA, BG, BY, CH, CZ, DK, EE, ES, GB, GR, HR, IE, IT, KZ, LT, LV, MD, NO, PT, RO, RS, RU, SE, SI, SK, TR, UA	20	2H	2H, G20	20
FR	20/25	2E _s	2E _s , G20	20
FR	20/26	2E _i	2E _i , G20	--
BE	20/25	2E	2E _s , G20/G25	20
LU, PL	20	2E	2E, G20	20
NL	20	2E	2E, G20	--
HU	25	2H	2H, G20	25
NL	25	2K	2K, G25.3	25

Table 25 Natural gas

Propane

Country	Standard gas pressure [mbar]	Gas category	Gas type	Conversion required
DK, NO, SE	30	3P	G31	Yes
AZ, BA, BE, FR, GB, GR, IE, IT, MD, PL, PT, RO, TR	37	3P	G31	Yes
AT, DE, EE, HR, HU, LT, LU, LV, RS, SI, UA	50	3P	G31	Yes
NL	30, 50	3P	G31	Yes
BG, CH, CZ, ES, RS, SK	37, 50	3P	G31	Yes

Table 26 Propane

15.4 Hydraulic resistances

	Unité	GC7000 WP 50	GC7000 WP 65	GC7000 WP 85	GC7000 WP 100
Required volumetric flow rate at $\Delta T = 20$ K	l/h	2200	3000	3600	4300
Max. volumetric flow rate	l/h	5000			
Resistance of boiler	mbar	75	130	170	240

Table 27 Hydraulic resistances

15.5 Residual head of pumps

Changing the pump output

The standard setting for the pump output is sufficient under normal conditions or with the heating circuit distributor. With a measured ΔT of more than 20 K an adjustment of the pump output is desirable.

- Increase the pump output until ΔT is 20 K (\rightarrow § 9.4, 26).
- or-
- Reduce the installation resistance by installing a low loss header.

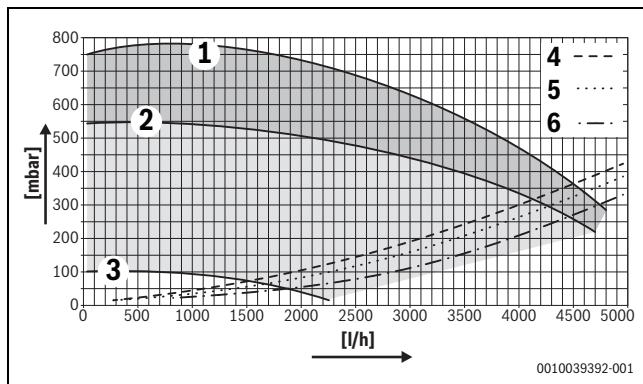


Fig. 49 Residual head of pump GC7000WP 100

Legend next to pump graphics:

- [1] Maximum adjustable discharge head of pump
- [2] Standard setting of discharge head
- [3] Minimum pump discharge head
- [4] Resistance of heat exchanger + connection + non-return valve
- [5] Resistance of heat exchanger + connection set
- [6] Resistance of heat exchanger

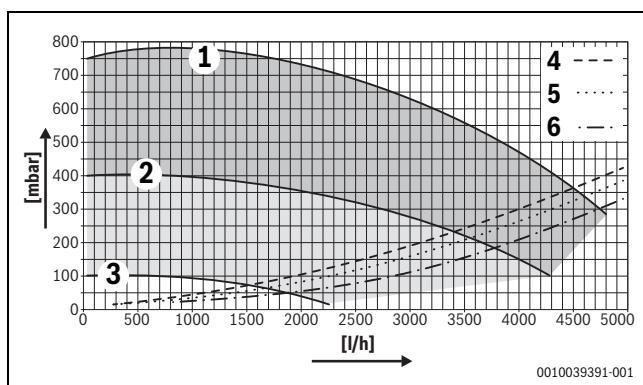


Fig. 50 Residual head of pump GC7000WP 85

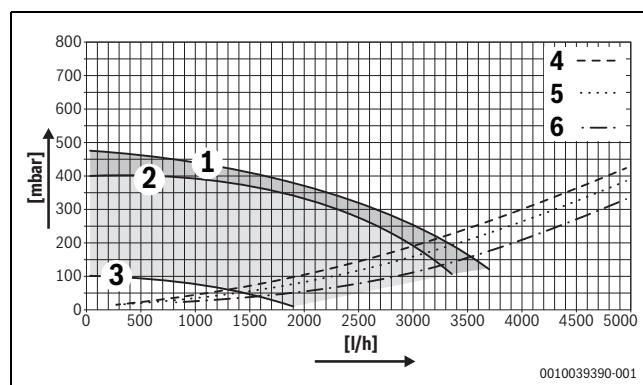


Fig. 51 Residual head of pump GC7000WP 65

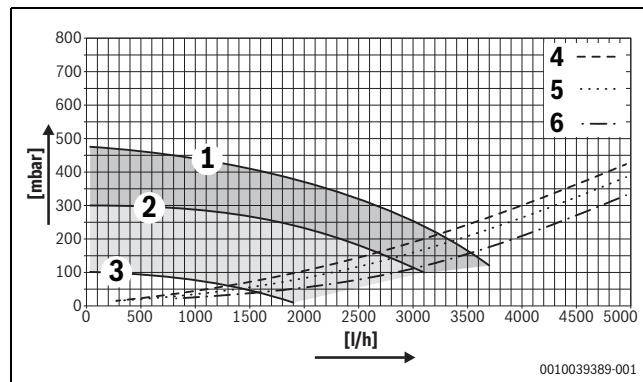


Fig. 52 Residual head of pump GC7000WP 50

15.6 Setting values for heating capacity

Power [kW]	Display GC7000WP 50 [%]	Display GC7000WP 65 [%]	Display GC7000WP 85 [%]	Display GC7000WP 100 [%]
13	28	20	--	--
20	40	28	24	20
25	50	36	29	25
30	60	43	35	30
35	70	50	41	35
40	80	57	47	40
45	90	64	53	45
50	100	71	59	50
55	--	79	65	55
60	--	86	71	60
65	--	93	76	65
70	--	100	82	70
75	--	--	88	75
80	--	--	94	80
85	--	--	100	85
90	--	--	--	90
95	--	--	--	95
100	--	--	--	100

Table 28 Setting values for heating capacity

15.7 Commissioning report for the appliance

Customer/system user:			
Surname, first name	Street, house number		
Telephone/fax	Postcode, town		
System installer:			
Order number:			
Appliance type:	(Complete a separate report for every appliance!)		
Serial number:			
Date of commissioning:			
<input type="checkbox"/> Individual appliance <input type="checkbox"/> Cascade, number of devices:			
Installation location:	<input type="checkbox"/> Cellar <input type="checkbox"/> Attic <input type="checkbox"/> Other:		
Ventilation apertures: Number:, Size: approx. cm²			
Flue gas routing:	<input type="checkbox"/> Twin pipe system <input type="checkbox"/> LAS <input type="checkbox"/> Duct <input type="checkbox"/> Separate pipe routing <input type="checkbox"/> Plastic <input type="checkbox"/> Aluminium <input type="checkbox"/> Stainless steel Total length: approx. m Elbow 87°: pce Elbow 15 - 45°: pce Leak check of the flue with a countercurrent: <input type="checkbox"/> Yes <input type="checkbox"/> No CO ₂ value in the combustion air at maximum rated output: % O ₂ value in the combustion air at maximum rated output: %		
Notes regarding underpressure or overpressure operation:			
Gas setting and flue gas test:			
Set gas type:			
Gas supply pressure:	mbar	Gas static supply pressure:	mbar
Set maximum rated output:	kW	Set minimum rated output:	kW
Gas flow rate at maximum rated output:	l/min	Gas flow rate at minimum rated output:	l/min
Net calorific value H _{IB} :	kWh/m ³		
CO ₂ at maximum rated output:	%	CO ₂ at minimum rated output:	%
O ₂ at maximum rated output:	%	O ₂ at minimum rated output:	%
CO at maximum rated output:	ppm mg/kWh	CO at minimum rated output:	ppm mg/kWh
Flue gas temperature at maximum rated output:	°C	Flue gas temperature at minimum rated output:	°C
Maximum measured flow temperature:	°C	Minimum measured flow temperature:	°C
System Hydraulic:			
<input type="checkbox"/> Low loss header, type: <input type="checkbox"/> Heating pump: <input type="checkbox"/> DHW cylinder/type/number/heating surface output: <input type="checkbox"/> System hydraulics checked, Notes:		<input type="checkbox"/> Additional expansion vessel Size/pre-charge pressure: Automatic air vent valve present? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Changed service functions

Read off the changed service functions and enter the values here.

Label with "settings in the service menu" filled out and affixed.

Heating controls:

Weather-compensated control Room temperature-dependent control

Remote control x pce., heating circuit(s) coding:

Room temperature-dependent control x pce., heating circuit(s) coding:

Module x pce., heating circuit(s) coding:

Miscellaneous:

Heating controls set, Notes:

Changed settings for the heating controls documented in the operating/installation instructions for the control unit

The following work has been carried out:

Electrical connections checked, Notes:

Condensate trap filled

Carry out a combustion air/flue gas test

Function check carried out

Leak test carried out on the gas and water sides

Commissioning includes checking the setting values, a visual leak test on the appliance and a function check of both the device and its control. The system installer conducts a test of the heating system.

The system named above has been checked to the extent described.

The documents have been handed over to the user. The user has been made aware of the safety instructions and operation of the above-mentioned wall mounted boiler, including accessories. Attention has been drawn to the requirement for regular maintenance of the above-mentioned heating system.

Name of service engineer

Date, user's signature

Date, system installer's signature

Affix the test report here.

Table 29 Commissioning report

Bosch Thermotechnik GmbH
Junkersstrasse 20-24
D-73249 Wernau

www.bosch-thermotechnology.com