



BOSCH

Installation and maintenance instructions for specialists

Wall mounted gas condensing boilers

Condens 7000 WP

GC7000WP 125 23, GC7000WP 145 23

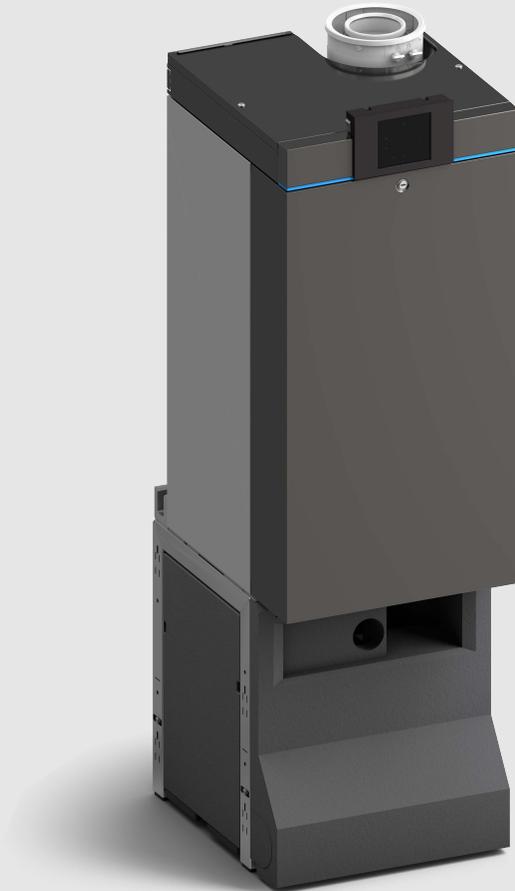


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1 Explanation of symbols and safety instructions

1.1 Explanation of symbols

Warnings

In warnings, signal words at the beginning of a warning are used to indicate the type and seriousness of the ensuing risk if measures for 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 in a domestic situation for the heating of central heating water and for DHW heating in closed-loop DHW and heating systems.

Any other use is considered inappropriate. Any damage that may result from misuse 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.

⚠ 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 Product data for energy consumption

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

2.2 About these instructions

Figures used

The figures in these instructions 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.

2.3 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).

2.4 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 (→ § 16.2, p. 48).

2.5 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.

2.6 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)	<ul style="list-style-type: none"> • Wall-mounted boiler 	Cardboard box
2 (accessories)	<ul style="list-style-type: none"> • Mounting rail • Fixing materials • Siphon • Condensate drain hose • Plug (if not pre-assembled) • Rotary joint + gasket (2x) • Documentation 	Cardboard box

Table 1 Scope of delivery

2.7 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.

2.8 Frost protection

NOTICE

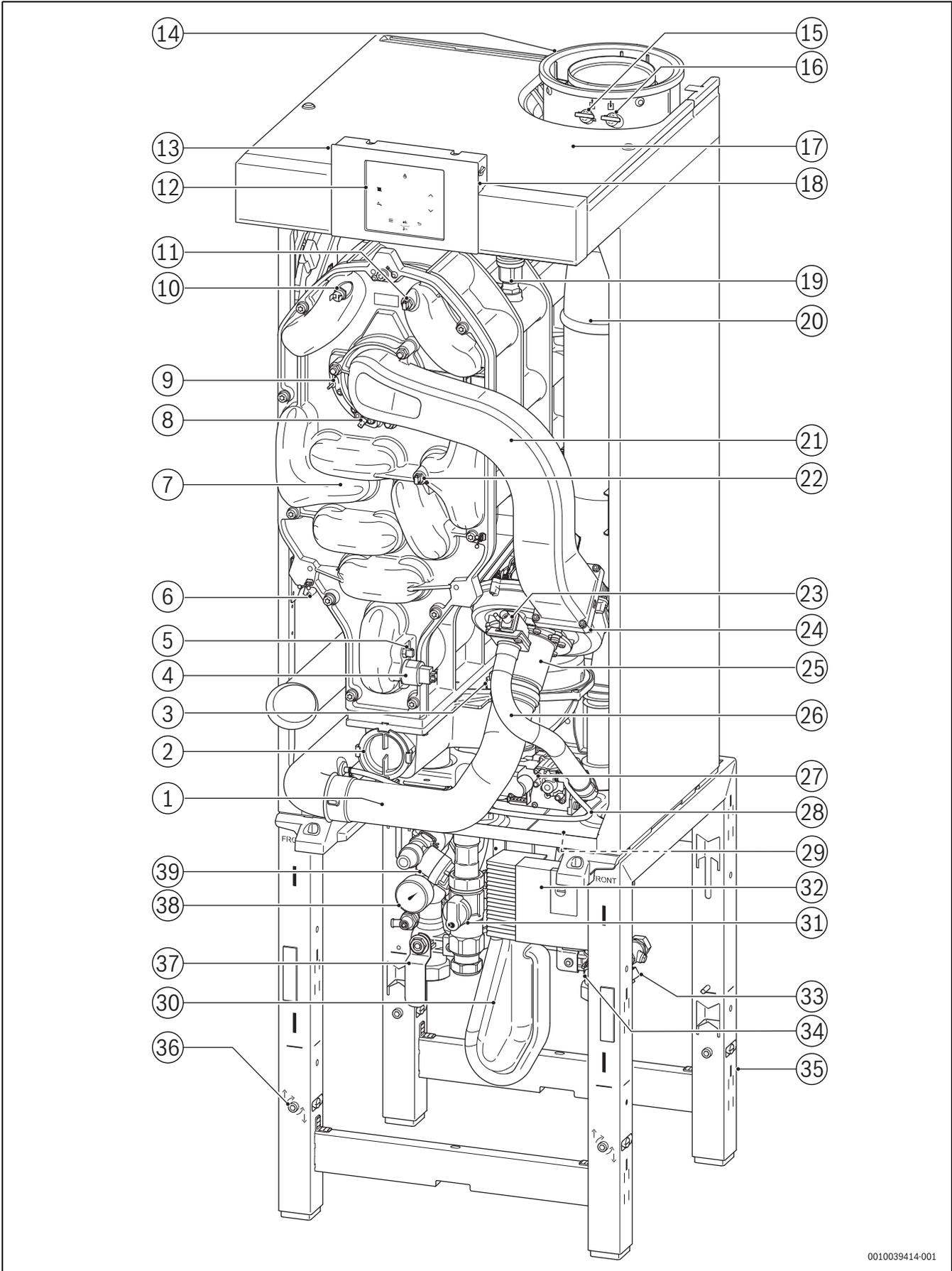
Installation damage due to the effects of frost.

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.

2.9 product overview



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Fig. 1 GC7000WP with connection set on frame

Condensing boiler:

- [1] Air intake pipe
- [2] Cover of condensation catch pan
- [3] Temperature sensor for flue gas routing
- [4] Pressure sensor
- [5] Return temperature sensor
- [6] Transformer
- [7] heat exchanger
- [8] Ignition electrode
- [9] Ionisation electrode
- [10] Safety temperature monitor (105 °C)
- [11] Flow temperature sensor (93 °C)
- [12] Control unit
- [13] On/off switch
- [14] Flue gas routing adaptor
- [15] Test point for flue gas routing
- [16] Test point for air supply
- [17] Upper panel
- [18] Connection point for diagnosis tool
- [19] Automatic air vent
- [20] Internal flue gas routing
- [21] Gas-air mixing pipe
- [22] Safety temperature sensor
- [23] CO₂ adjusting screw
- [24] Fan
- [25] Venturi nozzle
- [26] Gas hose
- [27] Air/gas ratio control valve
- [28] Pressure compensation hose
- [29] Data plate
- [30] Condensate trap

Connection set and frame (accessories):

- [31] Gas isolator
- [32] Pump
- [33] Expansion vessel connecting point
- [34] Service valve return
- [35] Floor frame
- [36] Adjustment fixture
- [37] Service valve flow
- [38] Pressure gauge
- [39] Water pressure relief valve

2.10 Dimensions

Boiler on frame

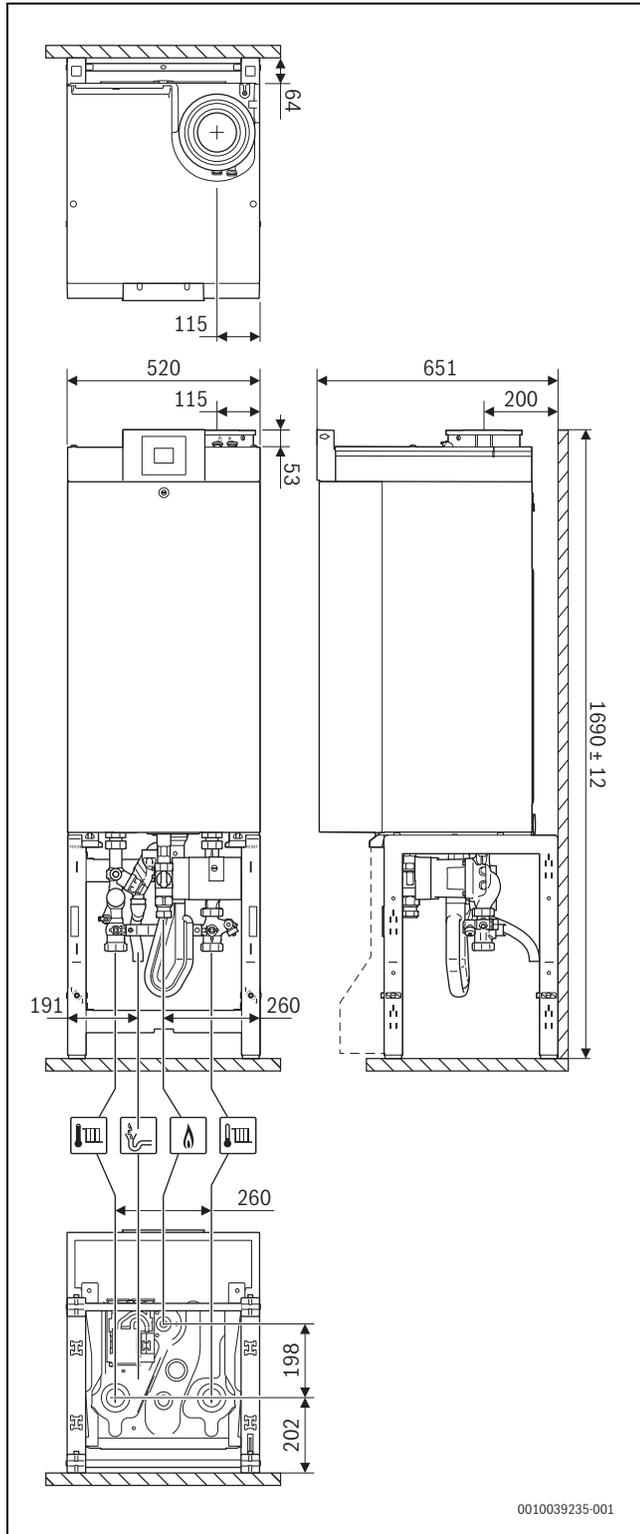


Fig. 2 Dimensions on base frame [mm]

Boiler against the wall

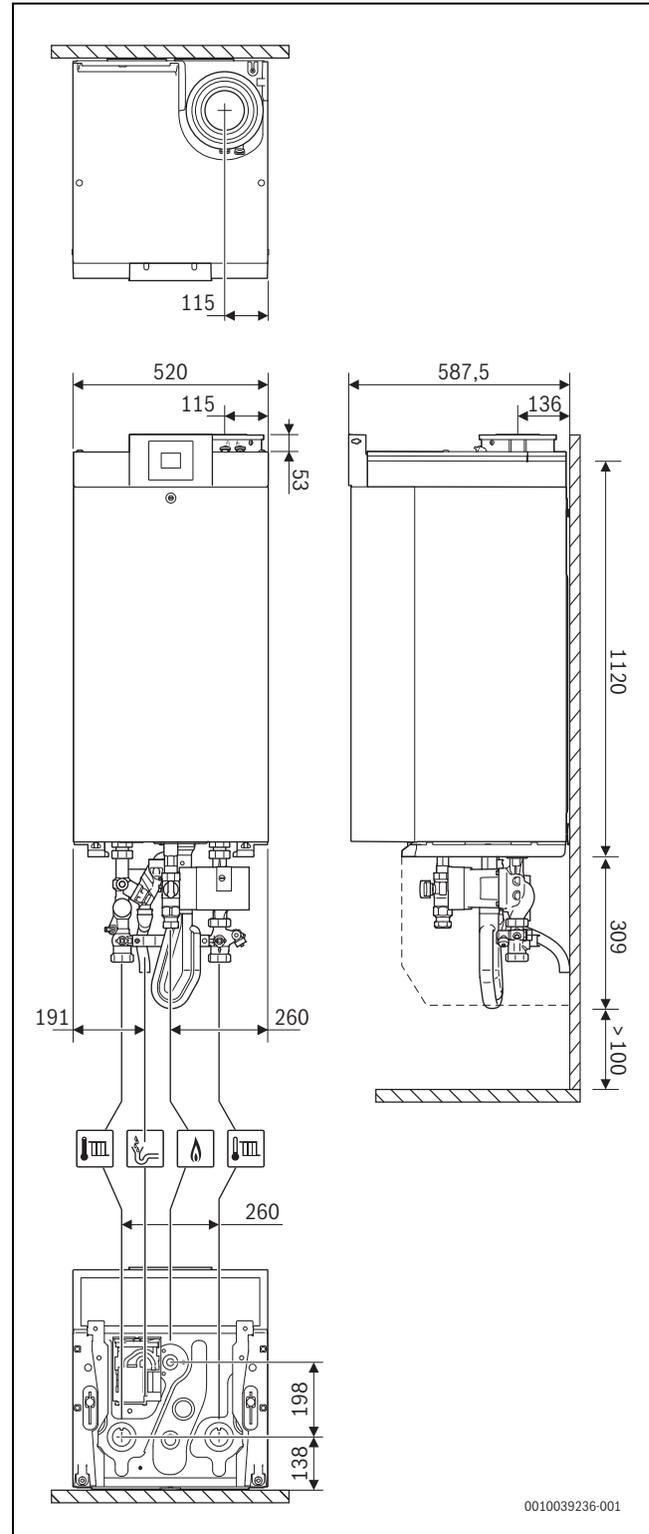


Fig. 3 Dimensions on the wall [mm]

2.11 Minimum clearance



With a horizontal flue outlet, 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 upper panel of the appliance is easy to remove (→§ 7.2, p. 18).
- ▶ There must be a clearance of at least 100 mm directly above the flue bend at the boiler.

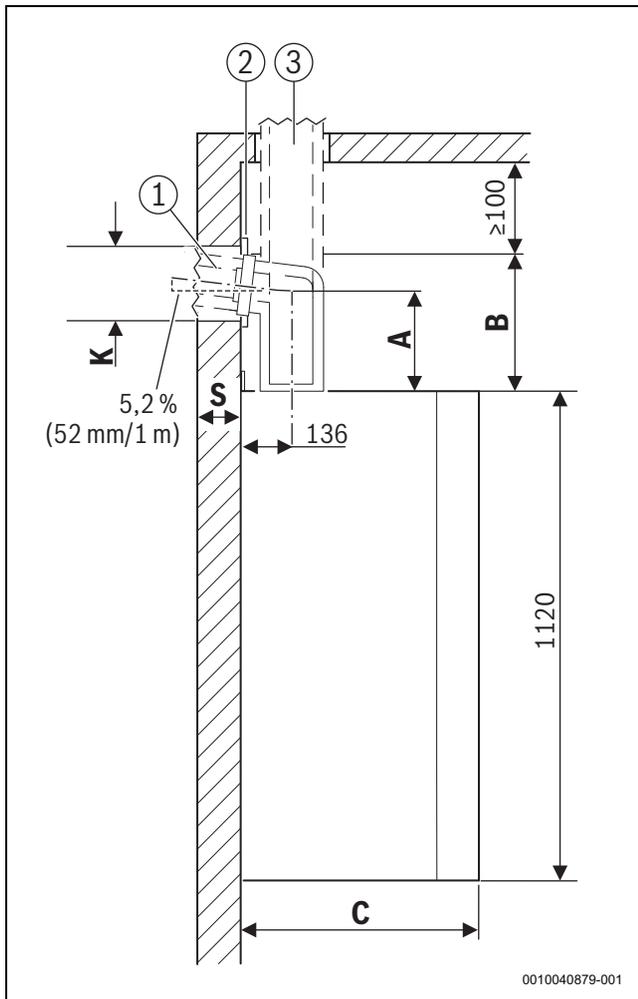


Fig. 4 Side view [mm]

- [1] Horizontal flue outlet
- [2] Collar
- [3] Vertical flue outlet
- A Clearance from top of the boiler - center of hole
- B Clearance from top of the boiler - upper side of hole
- C Depth of the boiler - 587,5 mm
- K Diameter of hole
- S Wall thickness

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 2 Diameter of core drilled hole K

Flue exhaust		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 3 Clearance A and B depending on flue outlet

Calculate the minimum clearance above the boiler.

- ▶ Add dimension B from Table 3 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.

Minimum space required next to the boiler.

- ▶ Maintain an area of at least 5 mm on the either side of the boiler.

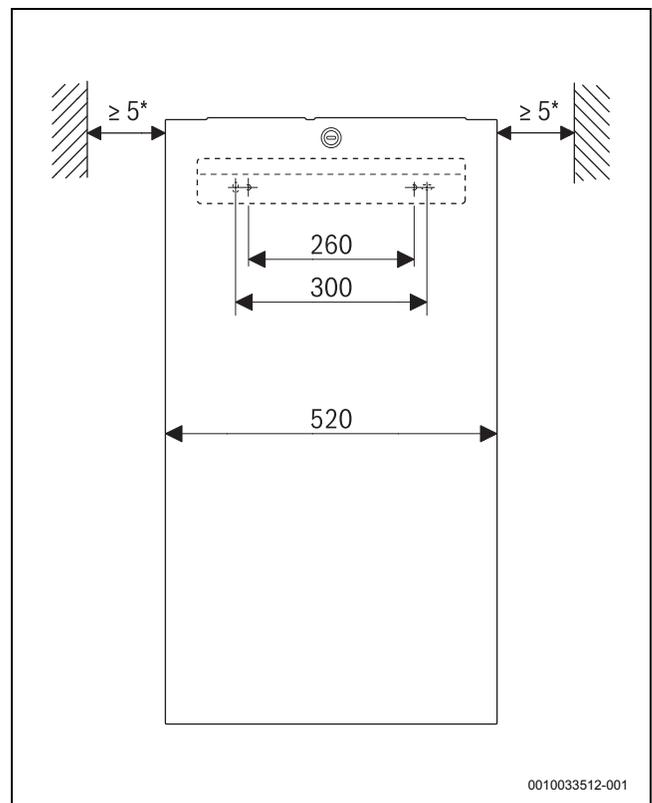


Fig. 5 Front view [mm]

2.12 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 reducing the boiler load (downward modulation).

2.13 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.

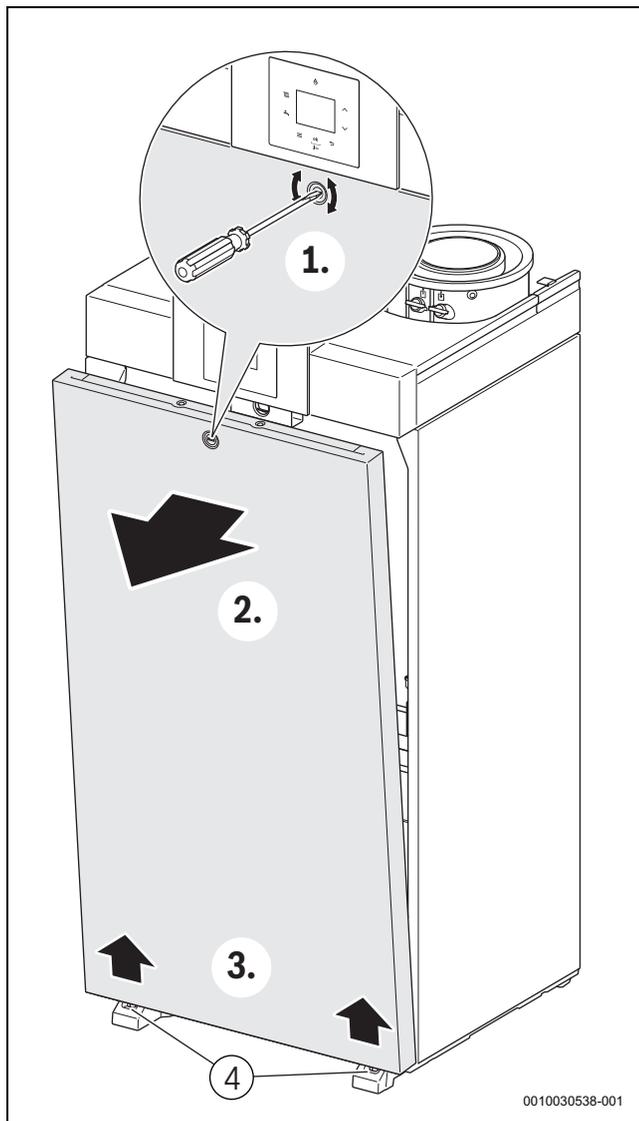


Fig. 6 Opening the front panel

3 Regulations



DANGER

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

- ▶ Comply with all instructions.

NOTICE

System damage due to differing operating conditions!

Faults may arise when deviating from the specified operating conditions. Individual components or the boiler may be destroyed if there are deviations.

- ▶ 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.

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 ammonia 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 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.

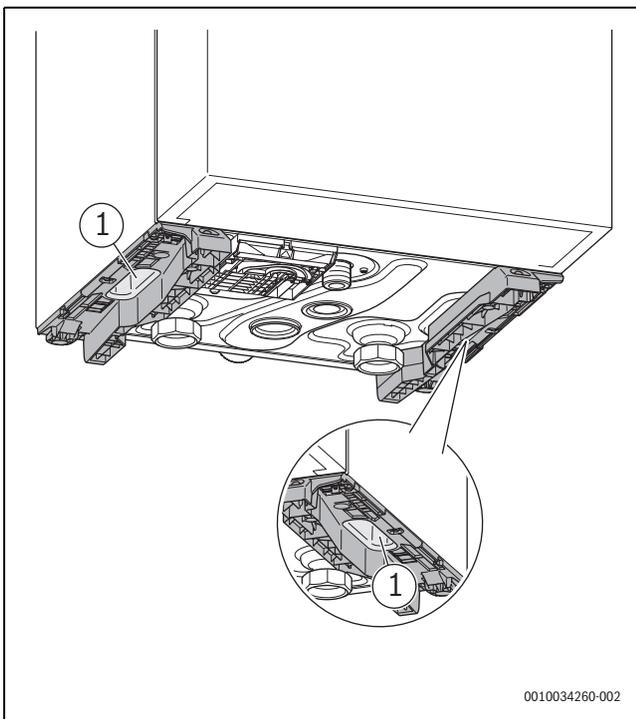


Fig. 7 Position of handle recesses

5.1 Installation location



DANGER

Risk of fire through flammable materials or liquids.

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

NOTICE

Frost damage!

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

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.

NOTICE

The boiler may only be operated up to a maximum installation altitude of 1200 m above sea level!

- ▶ →Table 15 (technical data), see 46.

NOTICE

The boiler may be operated with combustion air up to a certain maximum temperature!

The maximum temperature of the combustion air must not exceed 35 °C.

- ▶ →Table 15 (technical data), see 46.

5.2 Important notices

The boiler must not be operated in open heating systems (open vented systems that could lead to oxygen ingress). 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 4 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, p. 25).

- ▶ 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. (→ § 2.9, 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.

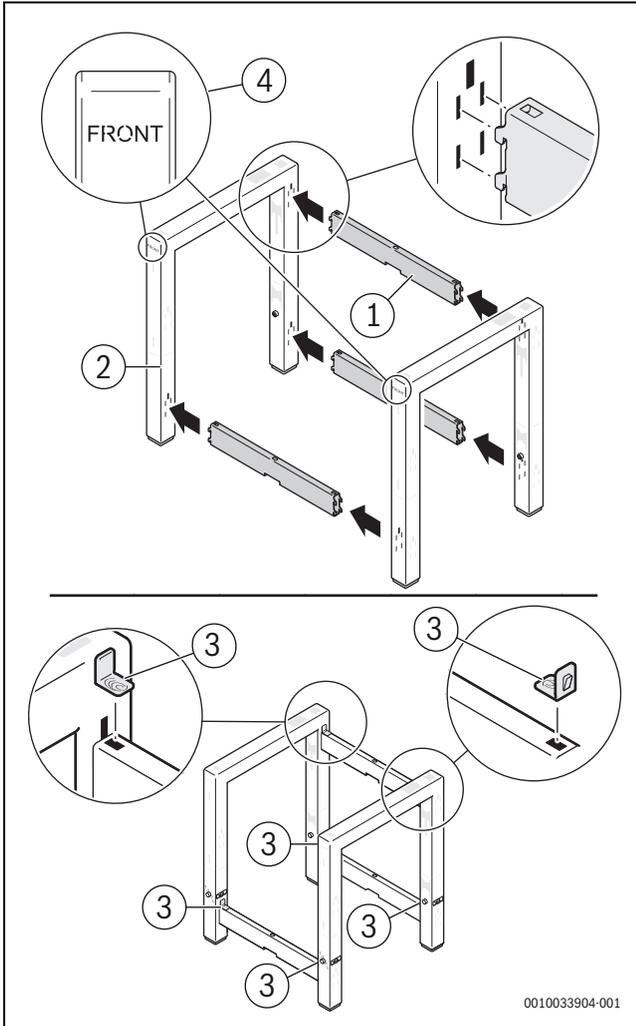


Fig. 8 Installing the frame

- [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.

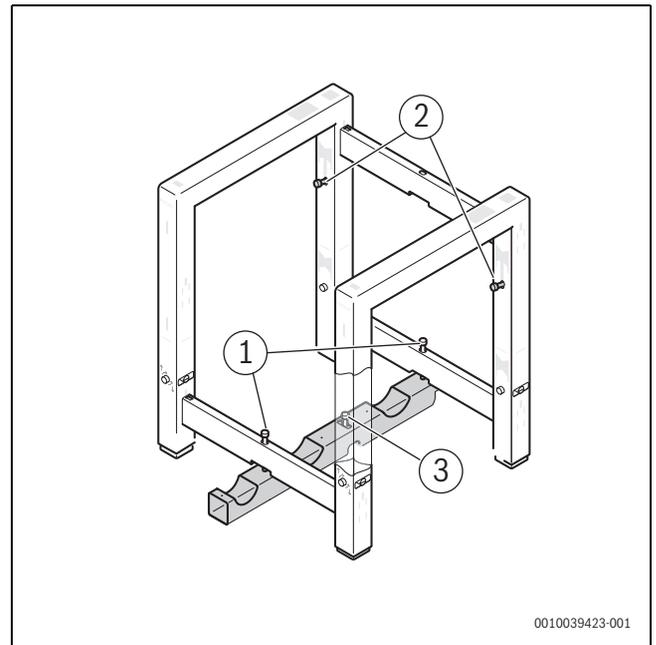


Fig. 9 Secure the frame to the wall or floor

- 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 boiler in the frame using the adjustment option. [1].
- Fully tighten the grub screw in the frame.

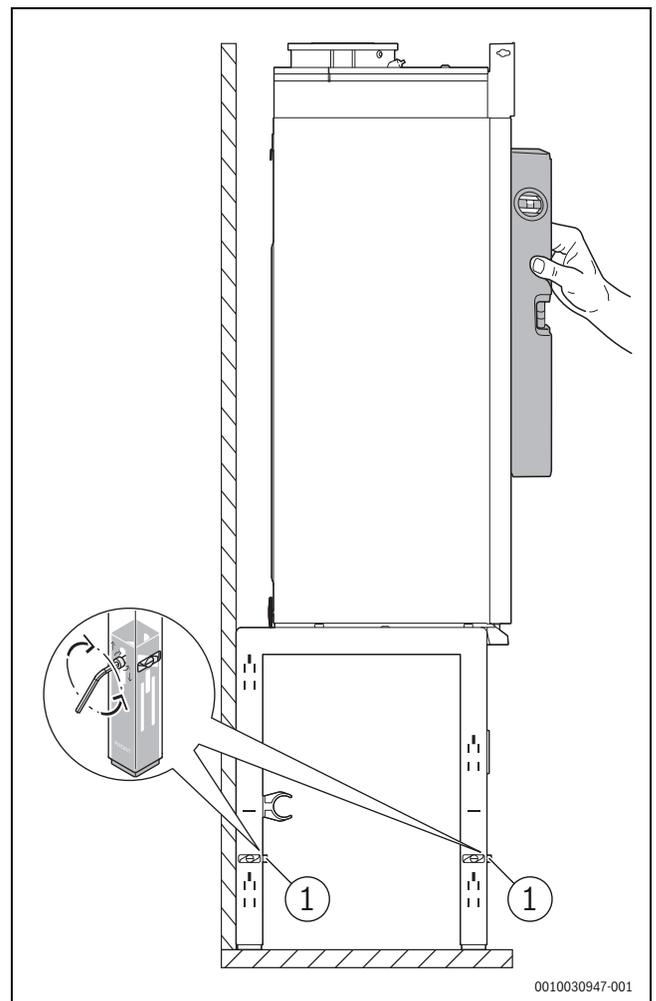


Fig. 10 Align the boiler on the frame

Assembly on the wall

NOTICE

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. (→ § 16, 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. 5).

Wall type	Fixing materials	Minimum load [N]
Concrete	See scope of delivery	≥ 2000 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 5 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].

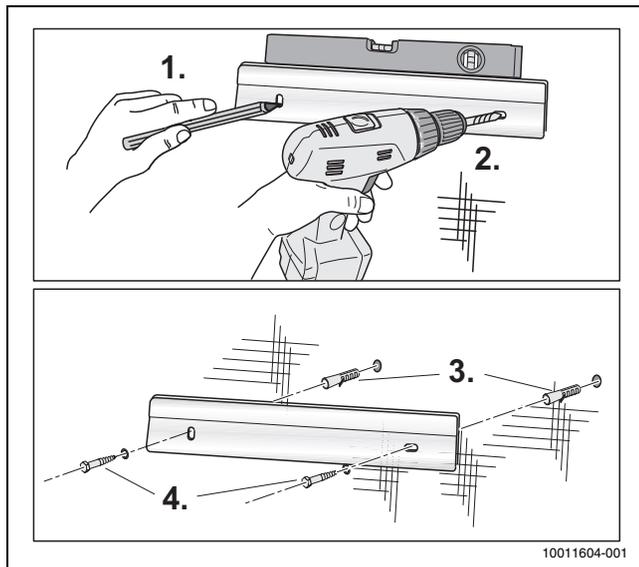


Fig. 11 Installing the mounting rail on a concrete wall

- ▶ Hook the boiler into the mounting rail.

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

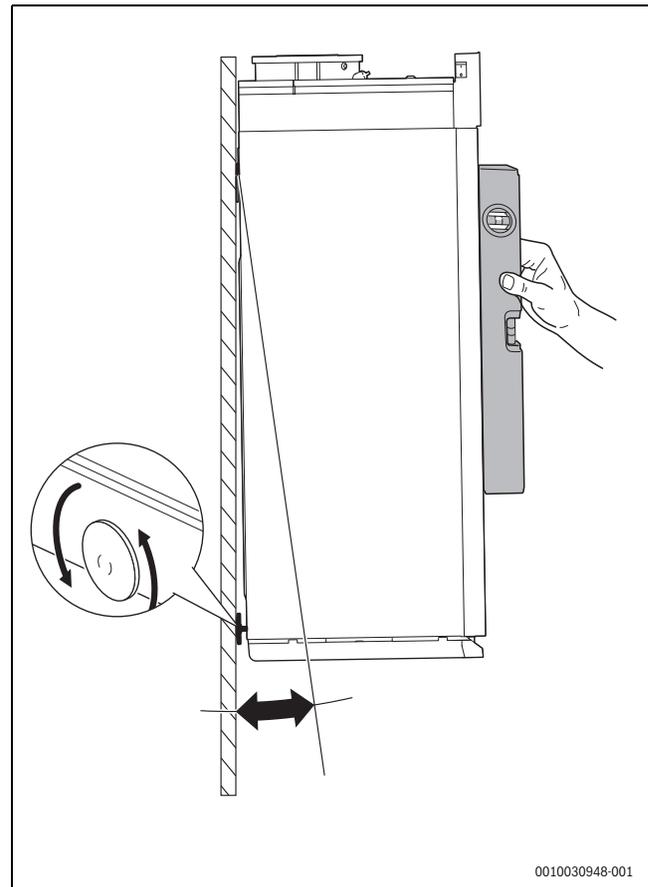


Fig. 12 Aligning the boiler on the wall

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 (→ § 2.9, 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 floor standing 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.

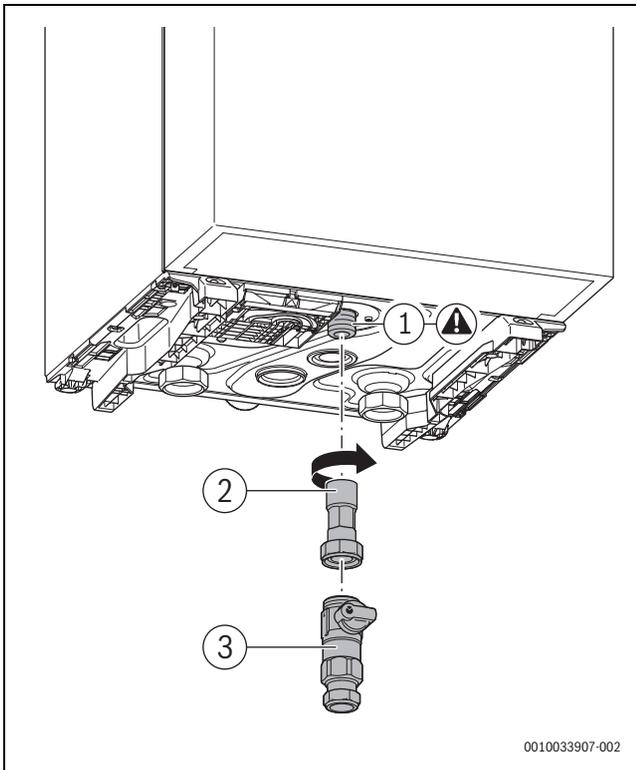


Fig. 13 Installing the gas valve

- [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.

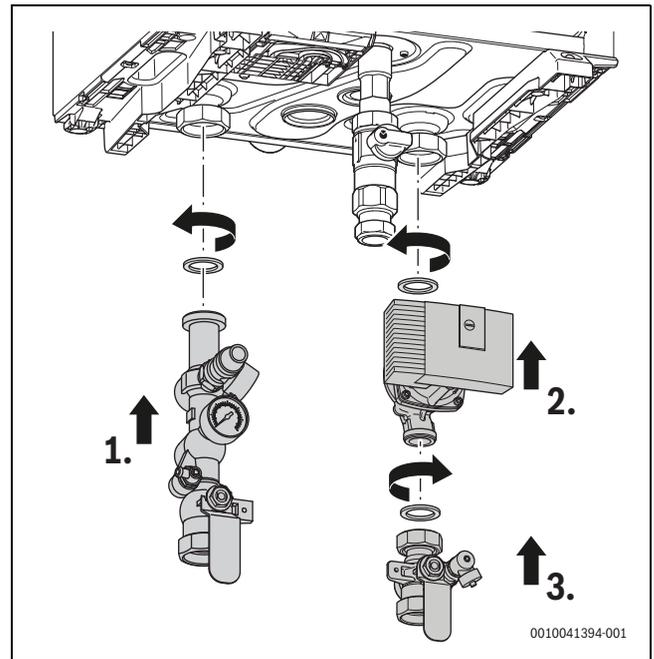


Fig. 14 Mount the flow/return connection

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

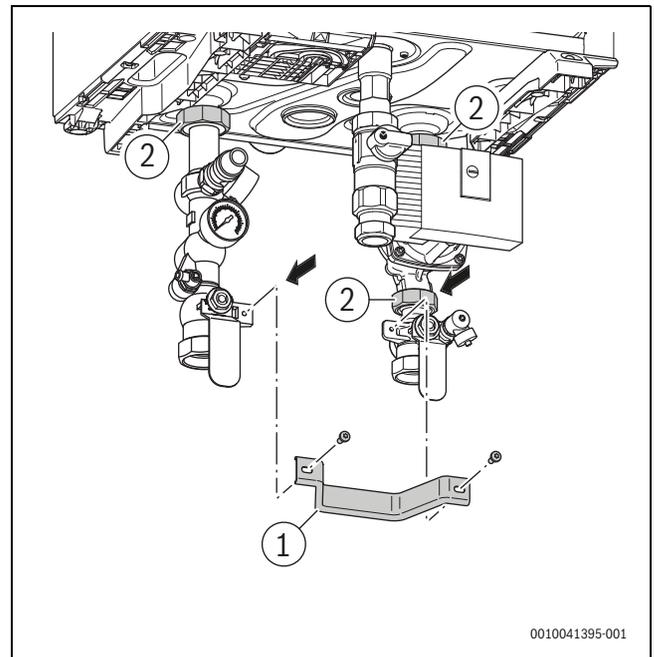


Fig. 15 Mount the brackets

- ▶ 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 1½" (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].

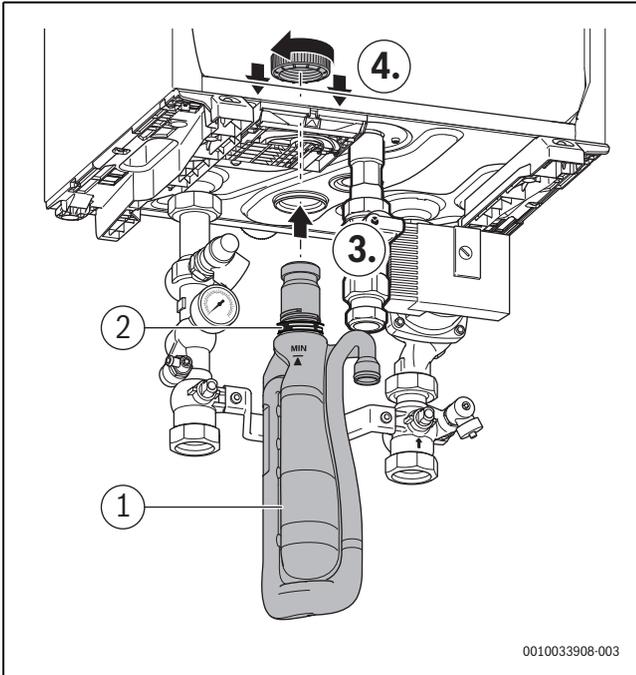


Fig. 16 Mounting the boiler siphon

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.

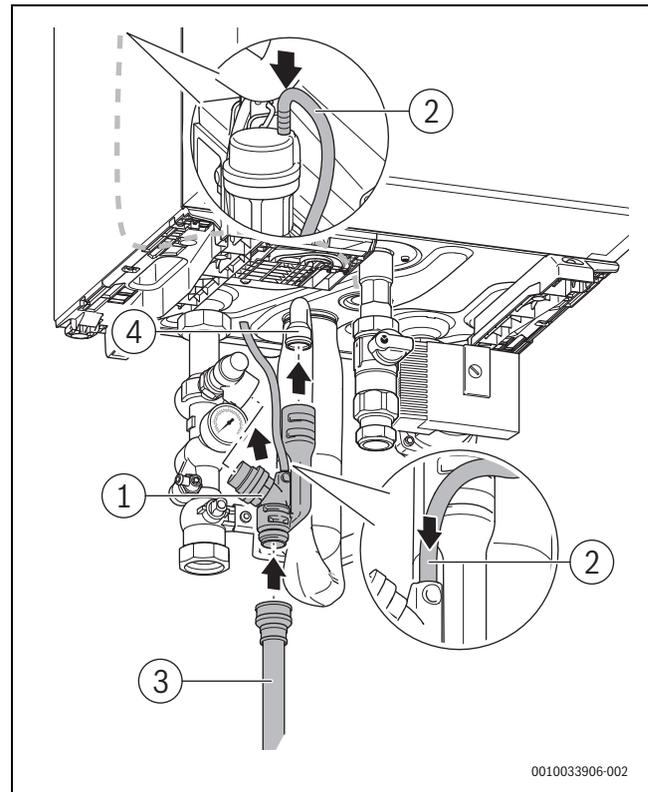


Fig. 17 Mounting the air vent valve hose

- [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 \varnothing 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 1/2" (Ø 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 (→ § 6.5.1, p. 15).

6.8.2 Installing the pump

- ▶ Select the pump using the specifications as the basis (→ Tab. 16.3, p. 49).
- ▶ Take the required volumetric flow rate into consideration (→ Tab. 16.3, 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].

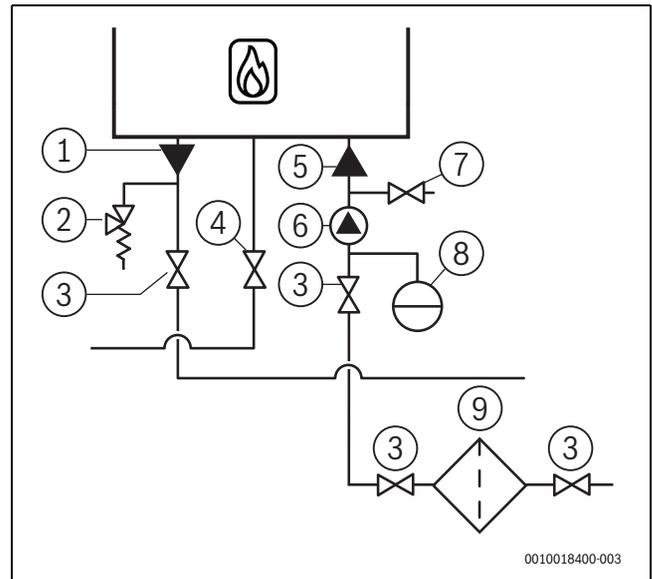


Fig. 18 Connection of heating water pipes

- [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 (→ § 16.3, p. 49).

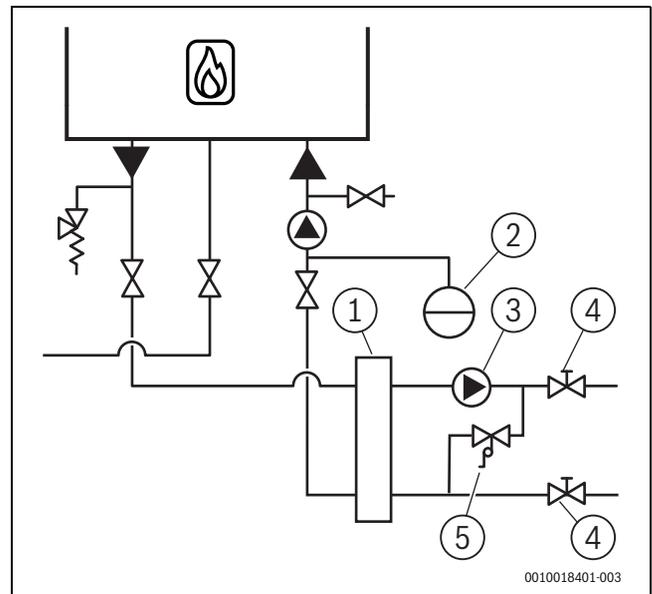


Fig. 19 Setup with low loss header

- [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.

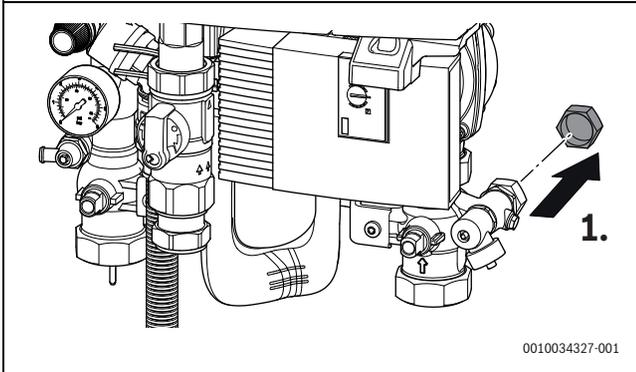


Fig. 20 Connecting an expansion vessel

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 H05VV-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 (→§ 16.1, p. 47).

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.

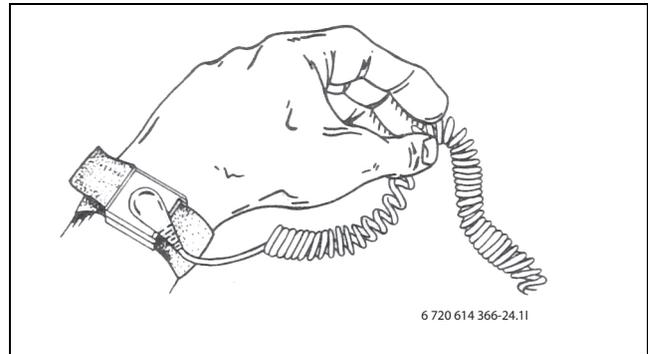


Fig. 21 Wrist strap

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/package 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].

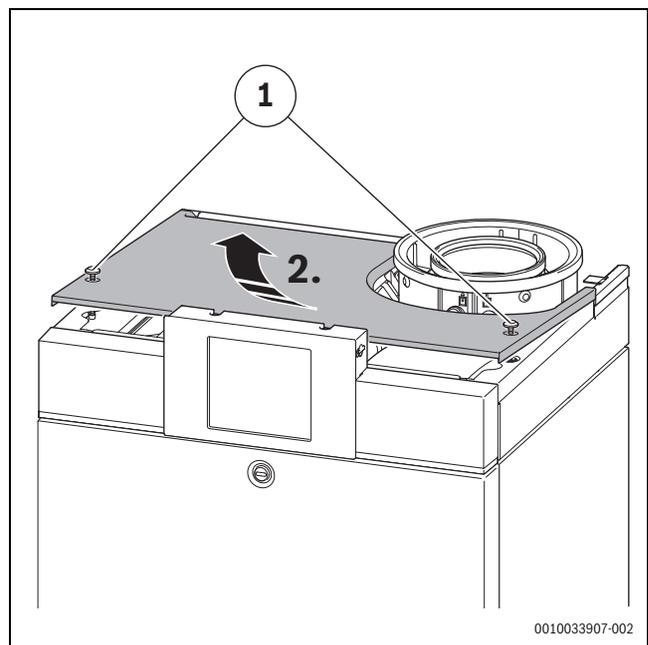


Fig. 22 Opening the top cover

7.3 Overview of plug-in strip



Fig. 23 Overview of plug-in strip

Symbol	Function	Description
	On/Off temperature control (volt free)	▶ Connect an On/Off temperature control. (do not connect 230V directly to these terminals)
	Modulation-controlled control unit and EMS BUS	▶ Connect modulating temperature controller (EMS bus).
	External safety interlock contact (volt free). This connection contains a link as standard.	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 one of the safety components are interrupted, the heating load to the wall mounted boiler is interrupted. ▶ Remove wire link. ▶ Connect safety components (in series). Attention! 230 V components must only be connected via a relay.
	Outside temperature sensor	▶ Connect the outside temperature sensor.
	Storage cylinder temperature sensor	▶ Connect cylinder temperature sensor.
	Temperature sensor of low loss header	▶ 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	▶ 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. 20).
	Mains voltage	▶ Connect the 230 V power supply for the function module. Attention! The total power consumption of the connected components must not exceed 725 W.
	Hot water circulation pump	If a DHW circulation line is used, a secondary circulation pump can be connected. ▶ Connect to the secondary circulation pump.
	Mains voltage	Mains plug 230 V _{AC} ▶ Connect the mains plug, if not pre-assembled (→ § 7.8, p. 21).
	Cylinder pump	▶ Connect the cylinder primary pump.
	Fine-wire fuse of the burner control unit	There is a replacement fuse under the cover flap on the burner control unit.

Table 6 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].

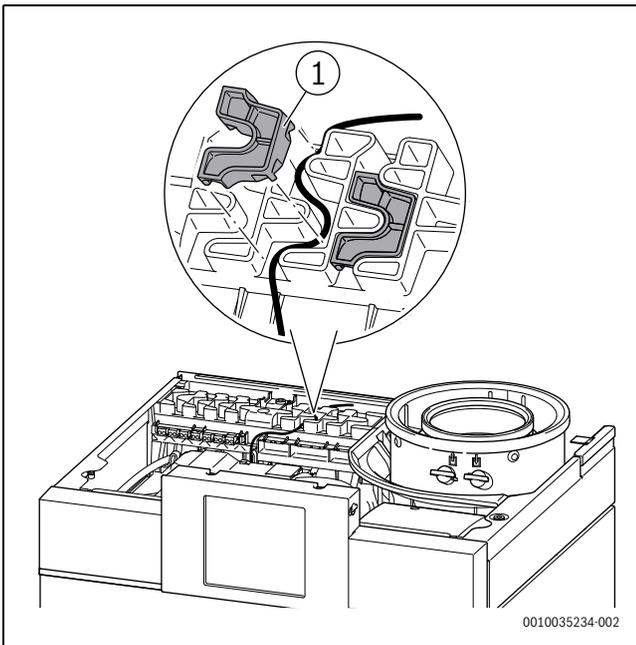


Fig. 24 Positioning the connecting lead and cable conduit

7.5 Connecting the pump of the pump assembly

- ▶ Open the pump terminal unit.
- ▶ Use the right screwdriver for this.

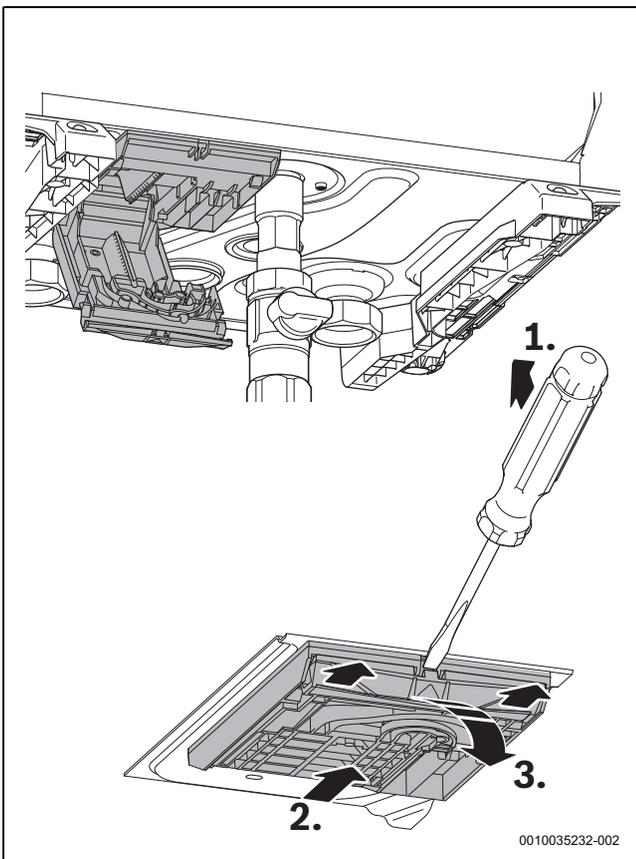


Fig. 25 Opening the pump terminal unit

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.

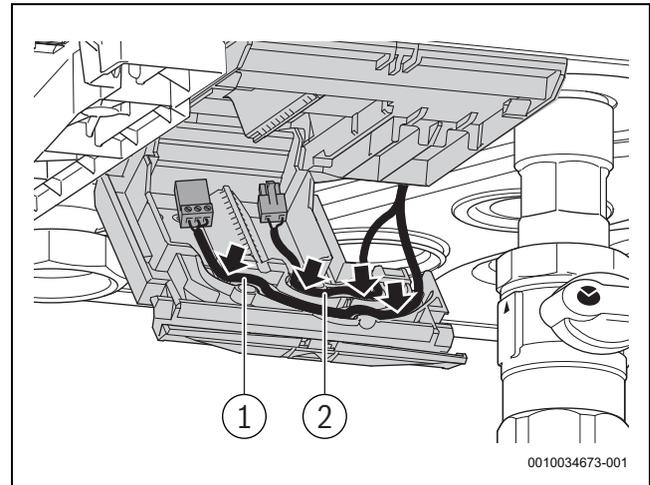


Fig. 26 Connecting the pump

- [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.

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 boiler.

- ▶ 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.

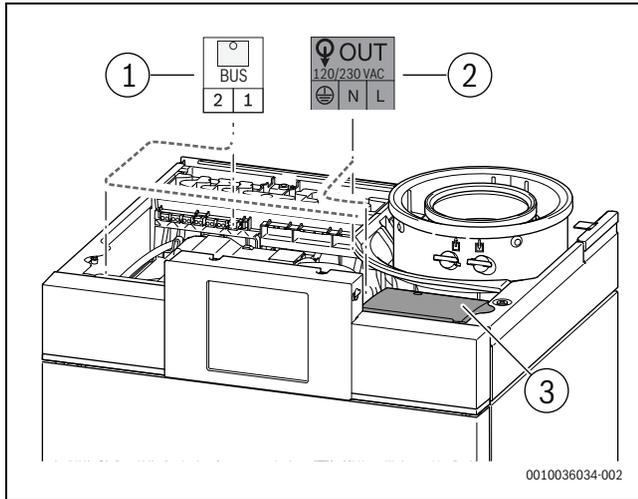


Fig. 27 Mounting the function module

- [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.

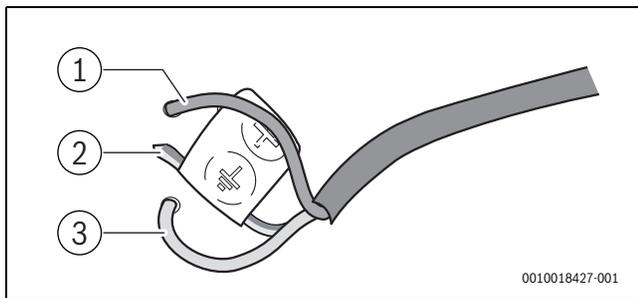


Fig. 28 Fitting the plug

- [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 (→ § 16.6, p. 49).

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. 11).

i

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. (→ § 2.9, 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. 25).
- ▶ Adjust the parameters if required.
- ▶ Make a note of which parameters have been modified in the commissioning report (→ § 16.6, p. 49).

Setting Maintenance type

With a full strip down 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 7 Maintenance interval parameters

8.3 Air/gas ratio control valve switch-off options

Air/gas ratio control valve overview

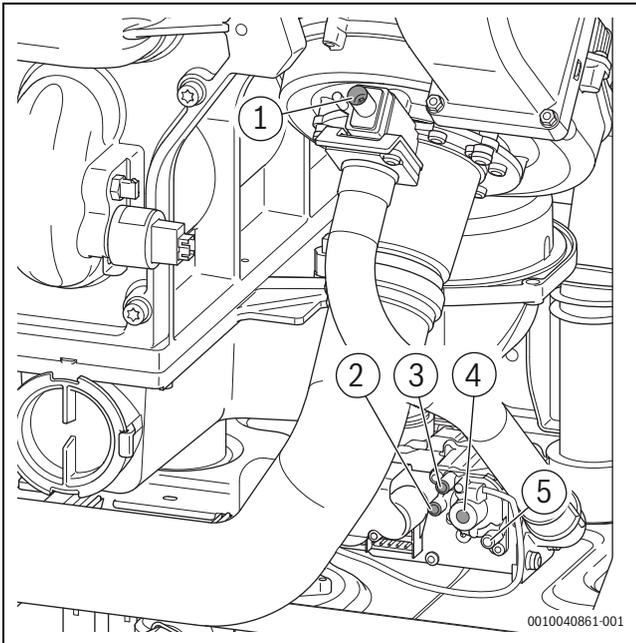


Fig. 29 Test port and adjusting screw overview

- [1] Adjusting screw CO₂/O₂ (full load)
- [2] Gas inlet pressure test port
- [3] Gas/air ratio test port
- [4] Adjusting screw CO₂/O₂ (low load)
- [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 floor standing 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 (→ § 8.3, p. 22).
- ▶ 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 (→ § 16.6, p. 49).
- ▶ Close the inlet pressure test port.

8.5 Measuring the gas dynamic working pressure

The gas pre-charge 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 pre-charge pressure may be reduced due to the pressure drop between the gas valve and air/gas ratio control valve.

Example: GC7000WP 145 to natural gas H, G20.

- Permissible gas pre-pressure: min. 17 mbar – max. 25 mbar (→ Tab. 26, p. 48).
- The pressure drop between gas isolation valve and air/gas ratio control valve is 2.4 mbar (→ Tab. 8).

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

Min. 17 mbar – 2.4 mbar = **14.6 mbar**.

Max. 25 mbar – 2.4 mbar = **22.6 mbar**.

Type	Max. pressure drop for each gas type [mbar]	
	G20	G25 / G25.3
GC7000WP 125	2.2	3.0
GC7000WP 145	2.4	3.3

Table 8 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 pre-charge pressure test port by turning the adjusting screw through 2 revolutions (→ § 8.3, S. 22).
- ▶ 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 (→ § 16.6, p. 49).
- ▶ Deactivate **Function check**.
- ▶ Close the pre-charge pressure test port.

8.6 Measure CO₂ and CO



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.

To guarantee the correct setting of the air/gas ratio control valve, first a CO₂ test is carried out at full load. Then a second measurement is carried out at low load. Both measurements are carried out in direct succession.

CO₂ test at full load

- ▶ Switch off the appliance.

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

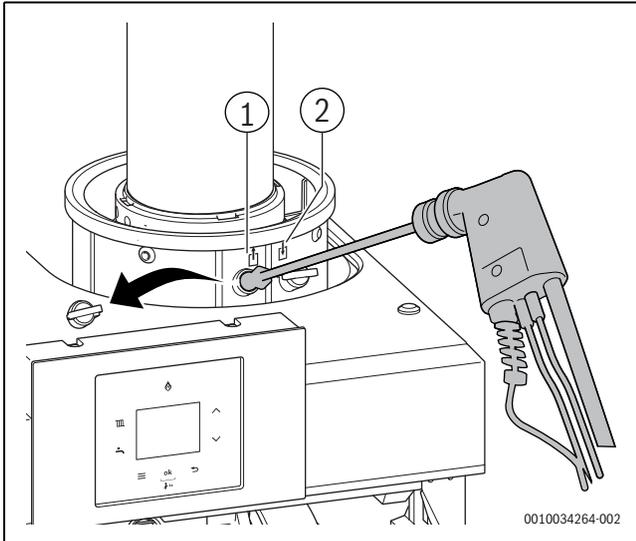


Fig. 30 Remove the plug on the flue outlet

- [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 (→ § 16.6, p. 49).
- ▶ Measure the CO₂ percentage.
- ▶ Check the measured value (→ Tab. 9, p. 23).
- ▶ Only modify the CO₂ level if the measurement is outside the specified range.
- ▶ Make a note of the measured CO₂ level in the commissioning report (→ § 16.6, p. 49).
- ▶ Deactivate **Function check**.
- ▶ Remove the flue gas analyser.
- ▶ Fit the plug on the test point for flue gas.

CO₂ test at low load load

- ▶ Open the menu **Function check > Burner**.
- ▶ Start **Function check** by setting the smallest possible value.
- ▶ Measure the CO₂ percentage.
- ▶ Check the measured value (→ Tab. 9, p. 23).
- ▶ Only modify the CO₂ level if the measurement is outside the specified range.
- ▶ Make a note of the measured CO₂ level in the commissioning report (→ § 16.6, p. 49).
- ▶ Deactivate **Function check**.
- ▶ Remove the flue gas analyser.
- ▶ Fit the plug on the test point for flue gas.

Setting data

Type	Gas type	CO ₂ percentage [%]	
		Full Load	Low load
GC7000WP 125	Natural gas	8.9 ± 0.3	8.3 ± 0.3
	Propane	10.0 ± 0.3	9.5 ± 0.3
GC7000WP 145	Natural gas	8.9 ± 0.3	8.3 ± 0.3
	Propane	10.0 ± 0.3	9.5 ± 0.3

Table 9 Setting data CO₂

8.7 Measure the of the heat exchanger air resistance [R₀]

The degree of contamination can be determined by measuring the air resistance via the heat exchanger. During the initial commissioning, the air resistance measured must be used as reference value [R₀]. During the subsequent inspection or maintenance, the measurement [R_x] should be used as an indication of the contamination.

- ▶ Switch off the appliance.
- ▶ Remove the front panel.
- ▶ Remove the cover of the condensation catch pan (→ Fig. 38, p. 34).
- ▶ Open the gas/air ratio test port by turning the adjusting screw through 2 revolutions (→ § 8.3, p. 22).
- ▶ Set the pressure gauge to "0".
- ▶ Connect the pressure gauge to the gas/air ratio test port.
- ▶ Operate the appliance.
- ▶ Open the menu **Function check > Fan**.
- ▶ Start the **Function check**.
Now the fan is switched on. The burner remains switched off during this function check.
- ▶ The air resistance is read-off in Pascal [Pa].
- ▶ Note the measurement in the measurement report (→ § 10.18, p. 38).
- ▶ Stop the **Function check**.
- ▶ Close the gas/air ratio test port.
- ▶ Reattach the cover of the condensation catch pan.

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 (→ § 16.6, p. 49).
- ▶ Deactivate **Function check**.

8.9 Check the (flue) gas tightness

NOTICE

Damage to 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.

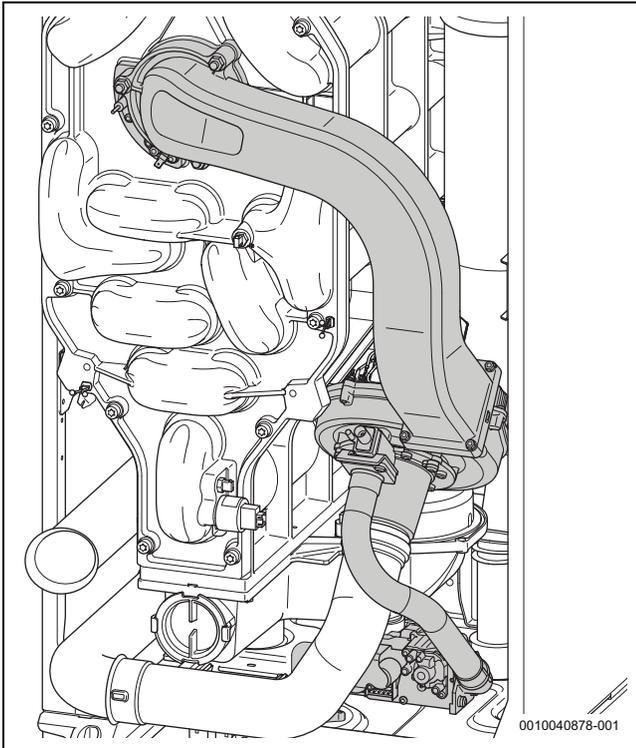


Fig. 31 Inspecting the gas path

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

8.10 Check the function of the boiler

- ▶ Lower the temperature at 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 (→ § 16.6, p. 49).

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

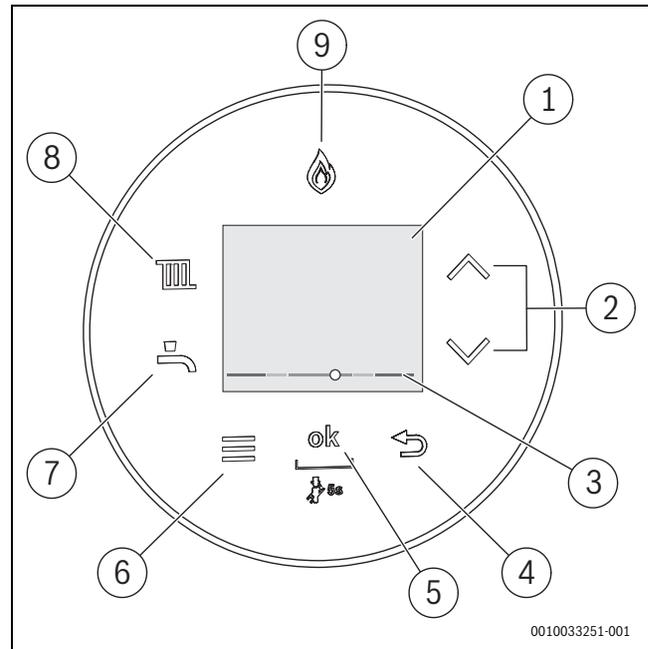


Fig. 32 Control panel

- [1] Display
- [2] ▲ and ▼ keys
- [3] Heating water pressure display
- [4] ← and → 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. 1, 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 24).

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 15).

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

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

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.

- 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
 - Ionizat.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 10 Menu Info

Settings menu



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

Meu item	Settings/adjustment range	Remark/restriction
Hydraulics		
Low-loss header	<ul style="list-style-type: none"> • Off 	<ul style="list-style-type: none"> • Connection of temperature sensor on the low loss header • Low loss header not installed in the system
	<ul style="list-style-type: none"> • NTC on device 	<ul style="list-style-type: none"> • Low loss header installed, temperature sensor connected to wall mounted boiler
	<ul style="list-style-type: none"> • NTC on module 	<ul style="list-style-type: none"> • Low loss header installed, temperature sensor connected to heating circuit module
	<ul style="list-style-type: none"> • NTC off 	<ul style="list-style-type: none"> • Low loss header installed, but no temperature sensor connected
DHW configuration	<ul style="list-style-type: none"> • Not installed • 3-way valve installed • Cyl. prim. pump inst. after low loss hdr. • Cyl. primary pump installed 	
HC1 configuration	<ul style="list-style-type: none"> • Not installed • Dedicated pump inst. after low loss hdr. 	
Pump config.	<ul style="list-style-type: none"> • Heating pump 	
Heating		
Max. heat output	<ul style="list-style-type: none"> • 50 100% 	Maximum released heat output [%]. On natural gas devices: <ul style="list-style-type: none"> ▶ Measure the gas rate. ▶ Compare the measurement obtained with the setting tables (→ Chapter 16.5, page 49). ▶ Correct deviations.
Standby time	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • -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	<ul style="list-style-type: none"> • 50 100% 	Maximum approved DHW output [%].
DHW circ. pump	<ul style="list-style-type: none"> • Off • On 	
Cycle circ. pump	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 60 70 ... 80 °C 	DHW temperature during thermal disinfection.
Start TD	<ul style="list-style-type: none"> • Start now? 	Start thermal disinfection.
Stop TD	<ul style="list-style-type: none"> • Cancel now? 	Cancel thermal disinfection.
Pump		
Pump ctr. mode	<ul style="list-style-type: none"> • Energy saving • Heat demand 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.
Frost prot.	• Yes • No	
Frost temp. limit	• 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 11 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 pump operation (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 12 Menu Function check

Menu Reset

Menu 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 13 Menu Reset

Menu Demo mode

Menu item	Settings/adjustment range	Remark/restriction
Demo mode	<ul style="list-style-type: none"> • Yes • No 	▶ To exit Demo mode: switch the device off and back on at the ON/OFF switch.

Table 14 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 § 10.10	--	▪
Check measurements	→ § 10.11 to § 10.15	▪	▪

Table 15 Work to be carried out

10.2 General work

The following work is not described in any further detail in this document. However, they should be carried out:

- ▶ Check the general condition of the heating system.
- ▶ Perform a visual inspection and function check of the heating system.
- ▶ Check the supply air and flue gas routing for function and safety.
- ▶ Check all pipes in contact with gas and water for corrosion.
- ▶ Replace any corroded pipework.
- ▶ Check the pre-charge pressure of the expansion vessel.
- ▶ Check the concentration of antifreeze / additives that may be used in the heating water annually.
- ▶ If necessary, check installed water treatment cartridges (in the backfeed section) to ensure they are functioning correctly and for wear.
- ▶ During the annual inspection, check the correct function of all regulating, control and safety equipment 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. 21).

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 electrical plug from the fan.

- ▶ Remove the gas hose between the air/gas ratio control valve venturi nozzle.

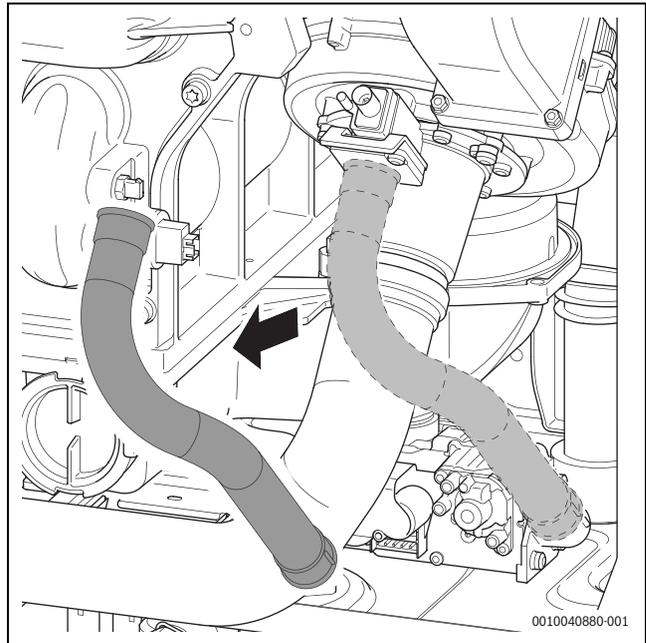


Fig. 33 Remove the gas hose

- ▶ Remove the air collector from the venturi nozzle [1].
Attention! The air collector is connected with the air/gas ratio control valve via an pressure compensation hose [2].
- ▶ Leave the air collector in the boiler and the pressure compensation hose connected with the gas train and the air collector.

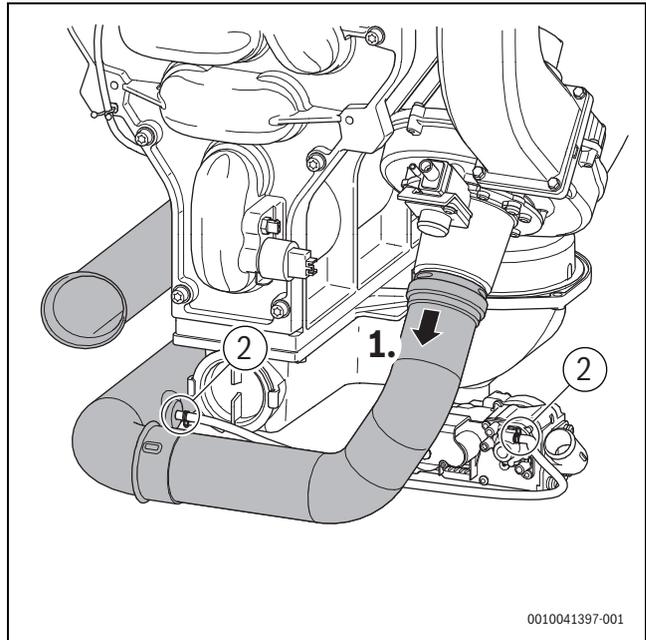


Fig. 34 Removing the air collector

- ▶ Unscrew the nuts on the gas-air mixing pipe [1].
- ▶ Remove the gas-air mixing pipe with fan [2].

► Removing the burner gasket [3].

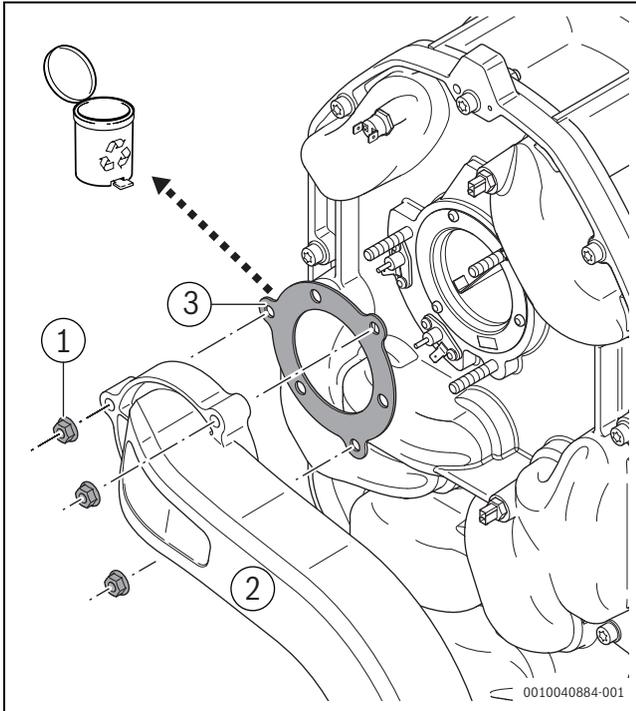


Fig. 35 Disassemble the gas-air mixing pipe

- [1] Gas-air mixing pipe nuts
- [2] Gas-air mixing pipe
- [3] Burner gasket



The burner is equipped with a removal handle. The burner can be easily removed from the heat exchanger [1] by reaching in and grasping on the removal handle.

- Unscrew the screws of the burner [2].
- Take the burner out of the heat exchanger.
- Put down the burner in a vertical position.

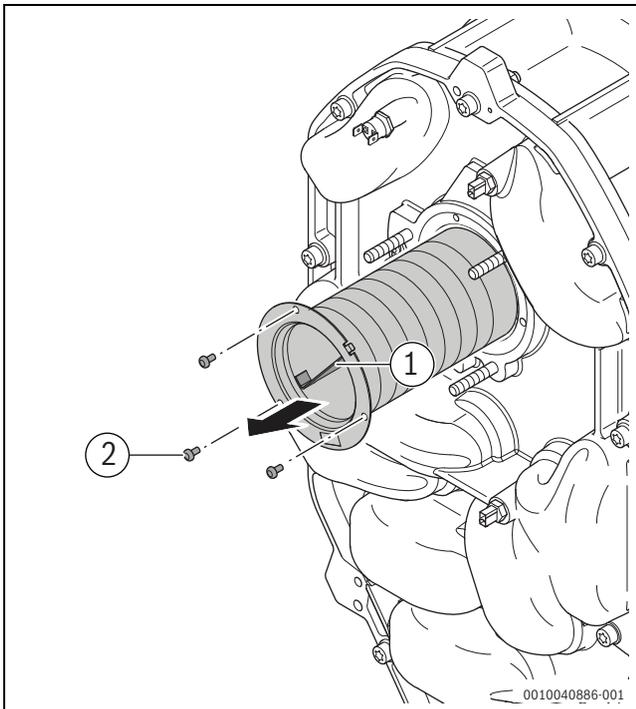


Fig. 36 Disassembly of the burner

10.4 Clean the burner

NOTICE

Risk of damage to the burner due to improper cleaning

Contact with a hard brush or a vacuum cleaner may damage the surface of the burner.

- Clean the burner only using compressed air.
- Clean the burner using compressed air.

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 brushes with plastic bristles for cleaning.

- 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.

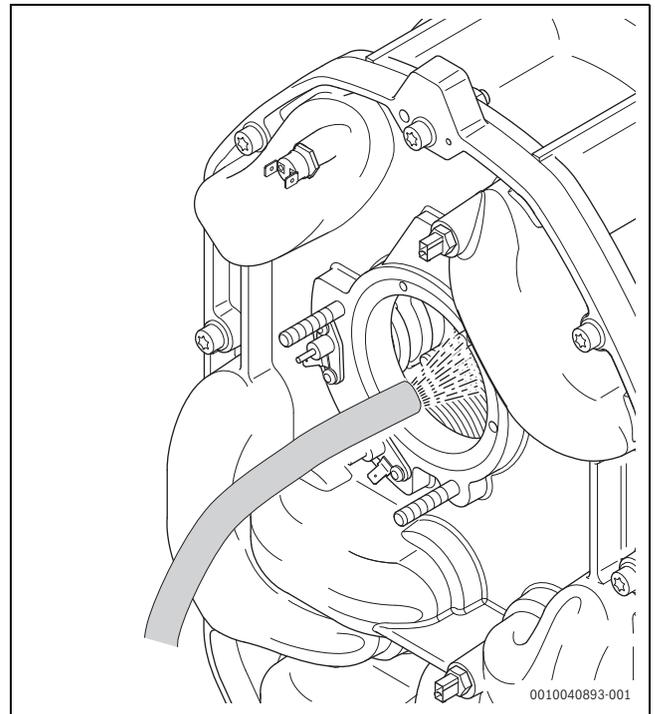


Fig. 37 Purging the heat exchanger

10.6 Cleaning the condensation catch pan

After cleaning the heat exchanger, always check the condensation catch pan for contamination.

- Remove the cover of the condensation catch pan [1 + 2].

- ▶ Where required, clean the condensation catch pan with water.

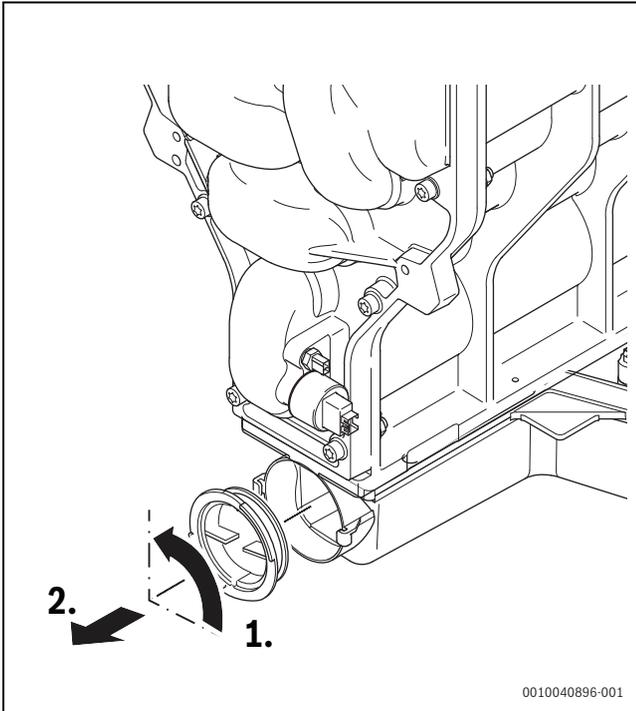


Fig. 38 Open the cover of the condensation catch pan.

10.7 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].

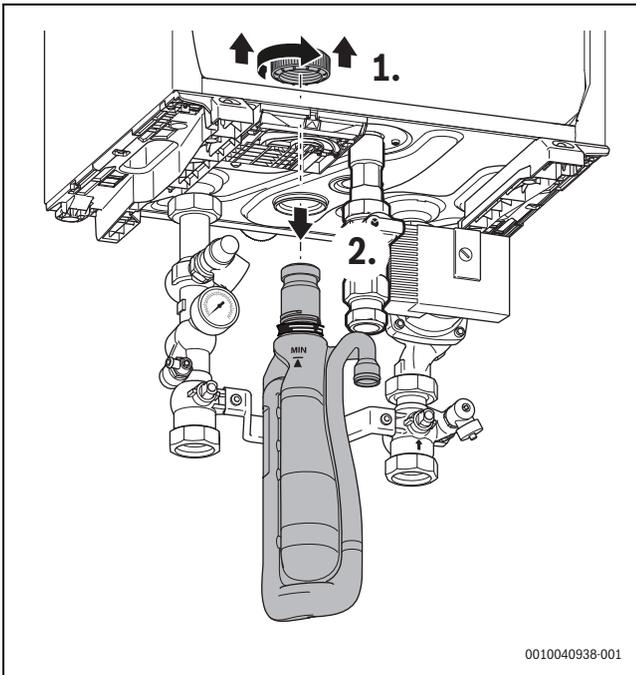


Fig. 39 Remove the boiler siphon

- ▶ 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.

10.8 Installing the gas-air unit.

- ▶ Clean the contact surfaces of the heat exchanger.
- ▶ Reinsert the burner back into the heat exchanger
- ▶ When reinserting, observe the position of the centring axis [1].
- ▶ Tighten the screws (3 Nm) [2].

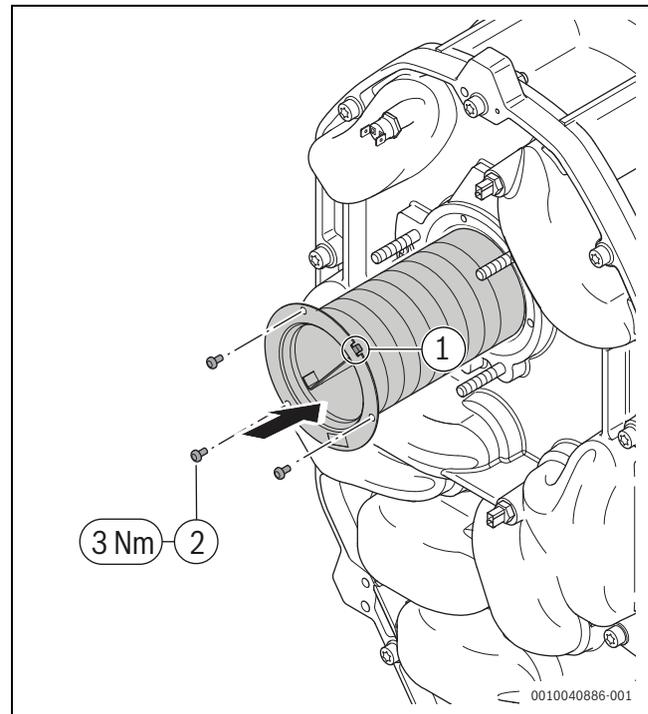


Fig. 40 Installing of the burner

- ▶ Install the new burner gasket [1].
- ▶ Position the gas-air mixing pipe.
- ▶ Tighten the nuts on the gas-air mixing pipe (17 Nm) [2].

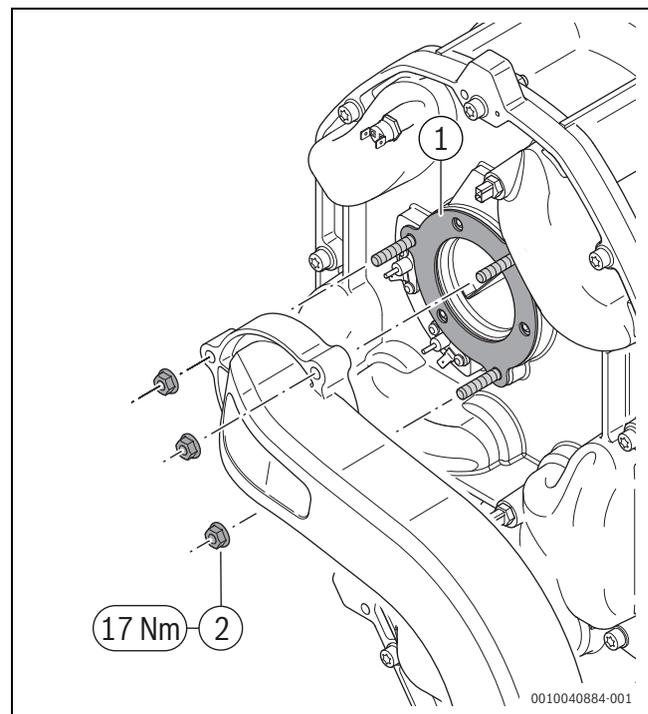


Fig. 41 Installing the gas-air mixing pipe

- ▶ Connect the plug on the fan.
- ▶ Install the air collector [1].

- ▶ Check if the pressure compensation hose [2] is connected correctly with the gas valve and air collector.

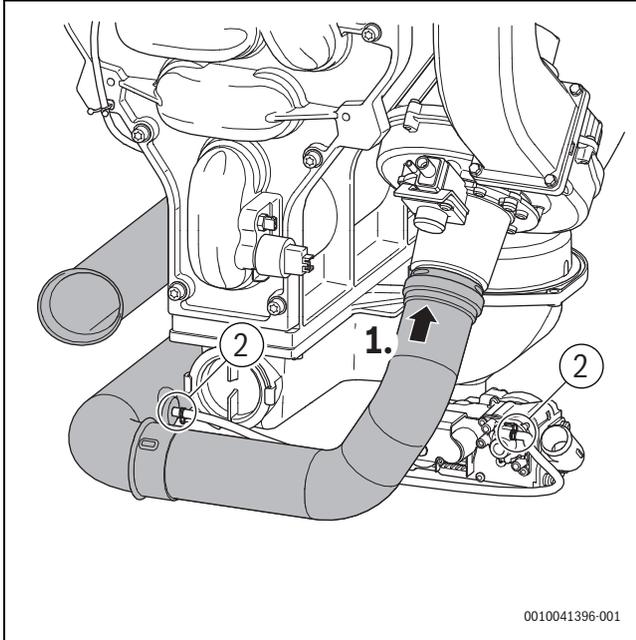


Fig. 42 Check the connections of the pressure compensation hose

- ▶ Install the gas hose.

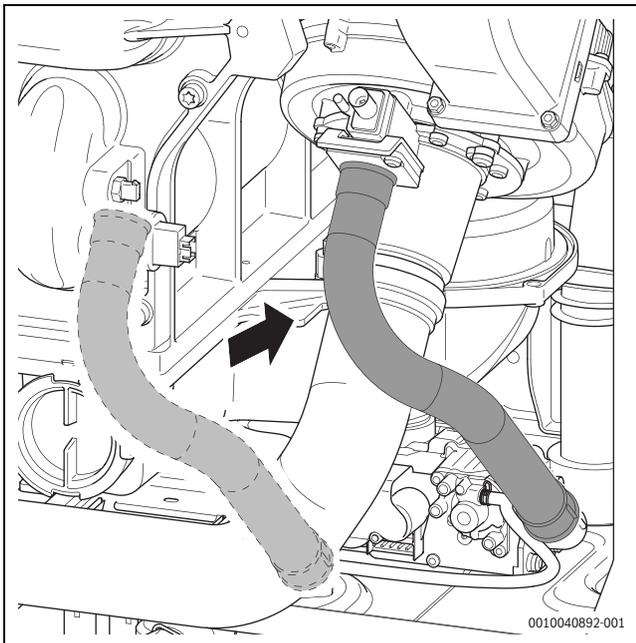


Fig. 43 Installing the gas hose

10.9 Measure the heat exchanger air resistance [R_x]

By measuring the air resistance [R_x], it can be determined if the heat exchanger has been sufficiently cleaned. For this purpose, the measurement is compared with the measurement of the initial commissioning. [R₀] (→ § 10.18, p. 38).

10.9.1 Preparation

To ensure a correct measurement, remove the soiling that has been released during cleaning as well as the remaining rinsing water by temporarily putting the boiler into operation.

- ▶ Make sure that the boiler can release its heat to the system.
- ▶ Open the menu **Function check > Burner**.
- ▶ Start the **Function check** by setting the value to at least 50 %.
- ▶ Run the appliance 2 to 3 minutes.
- ▶ Deactivate **Function check**.

- ▶ Switch off the appliance.

10.9.2 Measure the air resistance [R_x]

- ▶ Remove the cover of the condensation catch pan (→ § 38, p. 34).
- ▶ Open the gas/air ratio test port by turning the adjusting screw through 2 revolutions (→ § 8.3, p. 22).
- ▶ Set the pressure gauge to "0".
- ▶ Connect the pressure gauge to the gas/air ratio test port.
- ▶ Operate the appliance.
- ▶ Open the menu **Function check > Fan**.
- ▶ Start the **Function check**.
Now the fan is switched on. The burner remains switched off during this function check.
- ▶ The air resistance is read-off in Pascal [Pa].
Attention! During the measurement, the air resistance is displayed as negative value.
- ▶ Stop the **Function check**.
- ▶ Close the gas/air ratio test port.
- ▶ Reattach the cover of the condensation catch pan.

10.9.3 Assess the air resistance [R_Δ]

For the assessment of the air resistance above the heat exchanger, the following applies: **R₀ - R_x = R_Δ**

The maximum decrease in the air resistance [R_Δ] differs depending on the product type, and must not be exceeded.

Product type	Max. R _Δ
GC7000WP 125	400 Pa
GC7000WP 145	500 Pa

Table 16 Maximum decrease of the air resistance depending on the product type

Example 1: with an GC7000WP 145, an air resistance was measured during commissioning [R₀] = -2083. The resistance measurement is carried out during the third maintenance visit [R₃]. According to the calculation, the difference was less than 500 Pa.

R ₀	R ₃	R _Δ	Action
-2083	-1857	226	No action required

Table 17 Example 1: assessment of the air resistance at R₃

- ▶ Make a note of the value in the maintenance protocol (→ § 10.18, p. 38).

Example 2: with an GC7000WP 145, an air resistance was measured during commissioning [R₀] = -2083. The resistance measurement is carried out during the fifth maintenance visit [R₅]. According to the calculation, the difference was more than 500 Pa.

R ₀	R ₅	R _Δ	Action
-2083	-1519	564	Find out and eliminate the cause for the high value.

Table 18 Example 2: assessment of the air resistance at R₅

This could be caused by:

- Flue gas check valve clogged.
- The pollution degree in the heat exchanger is too high.
- ▶ Check the flue gas check valve for defects (→ § 10.16.3, p. 37)
- ▶ Clean the heat exchanger again (→ § 10.5, p. 33).
- ▶ If the air resistance is still high: contact the Bosch customer services.

10.10 Resetting the Maintenance type

Resetting the set Maintenance type starts the new maintenance interval.

- ▶ Open the menu **Reset** (→ table 13, p. 31).
- ▶ Reset the parameter Service display.

10.11 Measuring the gas pressure

- ▶ Measure the gas working pressure (→ § 8.5, p. 22).
- ▶ Make a note of the value in the maintenance protocol (→ § 16.6, p. 49).

10.12 Measuring of CO and CO₂

- ▶ Measure the CO content and the CO₂ percentage (→ § 8.6, p. 22).
- ▶ Make a note of the values in the maintenance protocol (→ § 16.6, p. 49).

10.13 Measuring the ionisation current

- ▶ Read off the ionisation current on the display (→ § 8.8, p. 23).
- ▶ 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).

10.14 Check the (flue) gas tightness

- ▶ Check the tightness of all gas-carrying components (→ § 8.9, p. 23).
- ▶ 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 (→ § 10.7, 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. 11).
- ▶ Check the settings of the boiler (→ § 9.4, p. 25).
- ▶ 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.		
Ionisation and ignition electrode	2	4000	25,000
Burner gasket	2	4000	--
Gasket of condensate catch pan	2	4000	--
Flue gas check valve ¹⁾	2	4000	--
Air/gas ratio control valve	10	--	500,000
Gas hose	10	20,000	..2)

1) Use only with cascade system.

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

Table 19 Replacement interval for each component

- ▶ Document replacement of components in the maintenance protocol (→ § 10.17, p. 38).

10.16.2 Replacement of the ionisation and ignition electrode

NOTICE

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

The screws of the ionisation and ignition electrode are installed in an aluminium heat exchanger. Using a graphite seal ensures tightness when tightening the screws hand-tight (using hand tools).

- ▶ Tighten the 4 screws of the ionisation and ignition electrode by hand (**3 Nm**).



Observe the replacement period for the ionisation and ignition electrode.

- ▶ Replace the ionisation and firing pin according to the service life (→ Tab. 19, p. 36).

- ▶ Switch off the appliance.
- ▶ Undo the screws [1] of the ionisation and ignition electrode.
- ▶ Remove the ionisation and ignition electrode [2 + 3].
- ▶ Remove the plug of the ionisation and ignition electrode.
- ▶ Remove both gaskets [4].

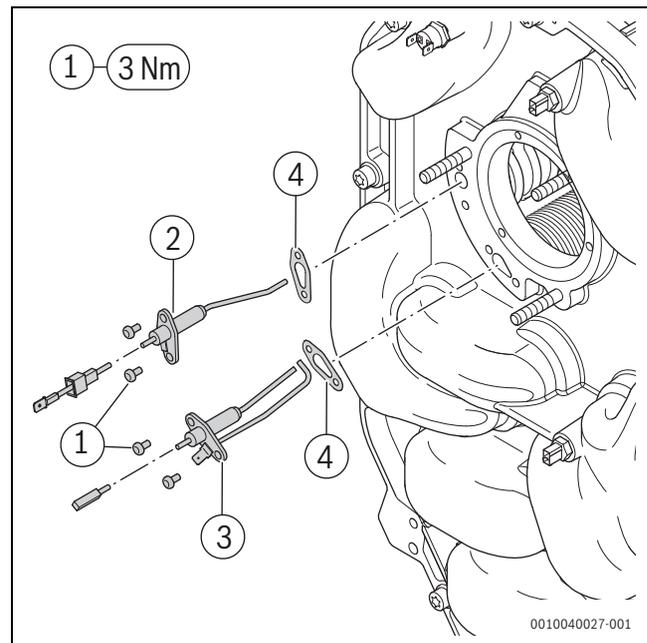


Fig. 44 Replacement of the ionisation and ignition electrode

- [1] Screws
- [2] Ionisation electrode
- [3] Ignition electrode
- [4] Gasket

- ▶ Clean the contact surface on the heat exchanger.
- ▶ Fit the new gasket and the new ionisation and ignition electrode.
- ▶ Tighten the screws of the ionisation and ignition electrode (3 Nm).
- ▶ Install the plug of the ionisation and ignition electrode.
- ▶ Start up the boiler.
- ▶ Check the flue gas tightness of the removed parts.

- ▶ Carry out a check by measuring the ionisation current (→ § 10.13, p. 36).

10.16.3 Replacement of the gas/air check valve



Observe the replacement period for the flue gas check valve.

- ▶ Replace the gas/air check valve, depending on the service life (→ Tab. 19, p. 36).

- ▶ Switch off the appliance.
- ▶ Undo the 4 screws [1] of the gas-air mixing hose.
- ▶ Replace the gas/air check valve [2].

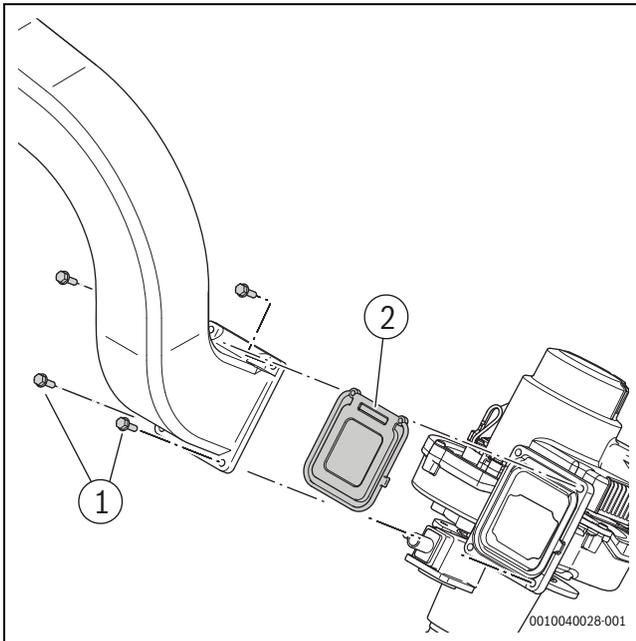


Fig. 45 Replacement of the flue gas check valve

- ▶ Clean the contact surfaces of the gas-air mixing hose and the fan.
- ▶ Install the new flue gas check valve.
- ▶ Uniformly tighten the screws hand-tight.
- ▶ Start up the boiler.
- ▶ Check the gas tightness of the removed parts.
- ▶ Test the function of the valve by measuring the air resistance on the heat exchanger. (→ § 10.9, p. 35).

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.

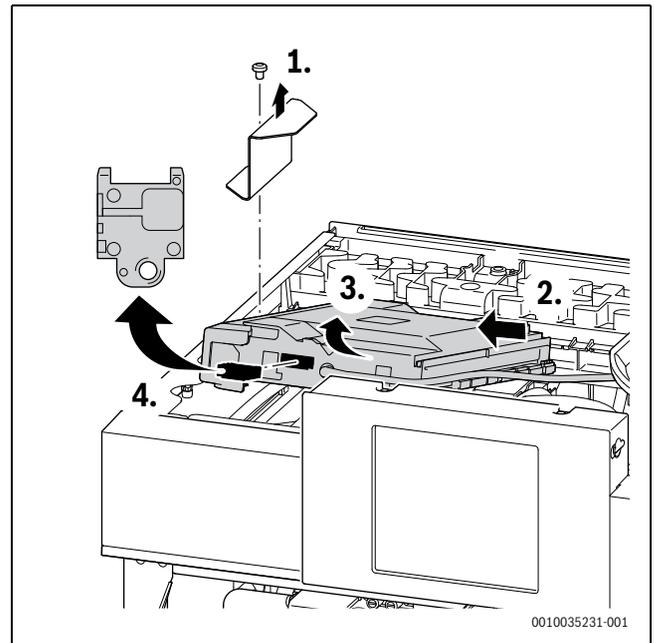


Fig. 46 Replacing the coding plug

- ▶ 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 19, 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 CO content.	ppm					
7	Check CO ₂ content (full load)	%					
8	Check CO ₂ content (low load)	%					
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	Resistance of heat exchanger	Pa					
16	Check non-return valve.						
17	Check the pre-charge pressure of the expansion vessel for the static head of the heating system.	bar					
18	Check the heating system pressure.	bar					
19	Check the sacrificial anode of the cylinder.	mA					
20	Check the electrical wiring for damage.						
21	Check settings of the heating control.						
22	Reset maintenance.						

Table 20 Inspection and maintenance record

10.18 Air resistance measurement report

Measurement report for the air resistance measurement above the heat exchanger (→ § 10.9, p. 35).

Inspection or maintenance	Measurement R_X	$R_0 - R_X = R_\Delta$
R_0 - initial commissioning		--
R_1		

Inspection or maintenance	Measurement R_X	$R_0 - R_X = R_\Delta$
R_2		
R_3		
R_4		
R_5		
R_6		

Inspection or maintenance	Measurement R_x	$R_0 - R_x = R_\Delta$
R₇		
R₈		
R₉		
R₁₀		
R₁₁		
R₁₂		
R₁₃		
R₁₄		
R₁₅		

Table 21

- **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.

Fault category V (locking faults)

Locking faults result in the heating system being shut down, and the system can only be restarted after a reset.

- ▶ Press the ▲ and ▼ keys, until **Reset** is displayed. The appliance resumes operation.

If a fault persists:

- ▶ Rectify the fault according to 10.1.2 Fault code table

Fault category W (service displays)

Service displays indicate that a maintenance or repair has to be carried out. The device is still in operation. If the service display has been caused by a defect, under certain circumstances, it may continue running with restricted functions.

11 Troubleshooting

11.1 Operating and fault displays

11.1.1 General information

- **Fault code:** indicates which fault is present.

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	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	Heating circuit: 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. Potable water circuit: Check that the potable water in the cylinder circuit is circulating correctly.

Fault code	Fault category	Fault text on the display, description	Remedy
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.
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	-

Fault code	Fault category	Fault text on the display, description	Remedy
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.
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.

Fault code	Fault category	Fault text on the display, description	Remedy
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.
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>

Fault code	Fault category	Fault text on the display, description	Remedy
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.
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. <ol style="list-style-type: none"> 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	<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 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	<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
2955	B	Boiler does not support the parameters set for the hydraulic configuration	<p>Check hydraulic settings, change if necessary.</p> <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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<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.
2964		Flow rate in heat exchanger too low	–
2965	B	Flow temperature too high	<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.
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 22 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.

Device faults	Remedy
Heat-up takes too long.	▶ Set the pump rate or pump characteristic map correctly and match to the maximum output.
Flue gas values incorrect, CO content too high.	▶ 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.	▶ 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.	▶ Check the electrical wiring for damage. ▶ Replace defective cables. ▶ Check the fuse, replace if required.

Table 23 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 => LO.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 (→ § 2.9, 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 (→ § 9.4, p. 25).
- ▶ 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 (→ § 2.9, 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-thermotechnologie.com/

14 Data Protection Notice



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15 Technical data

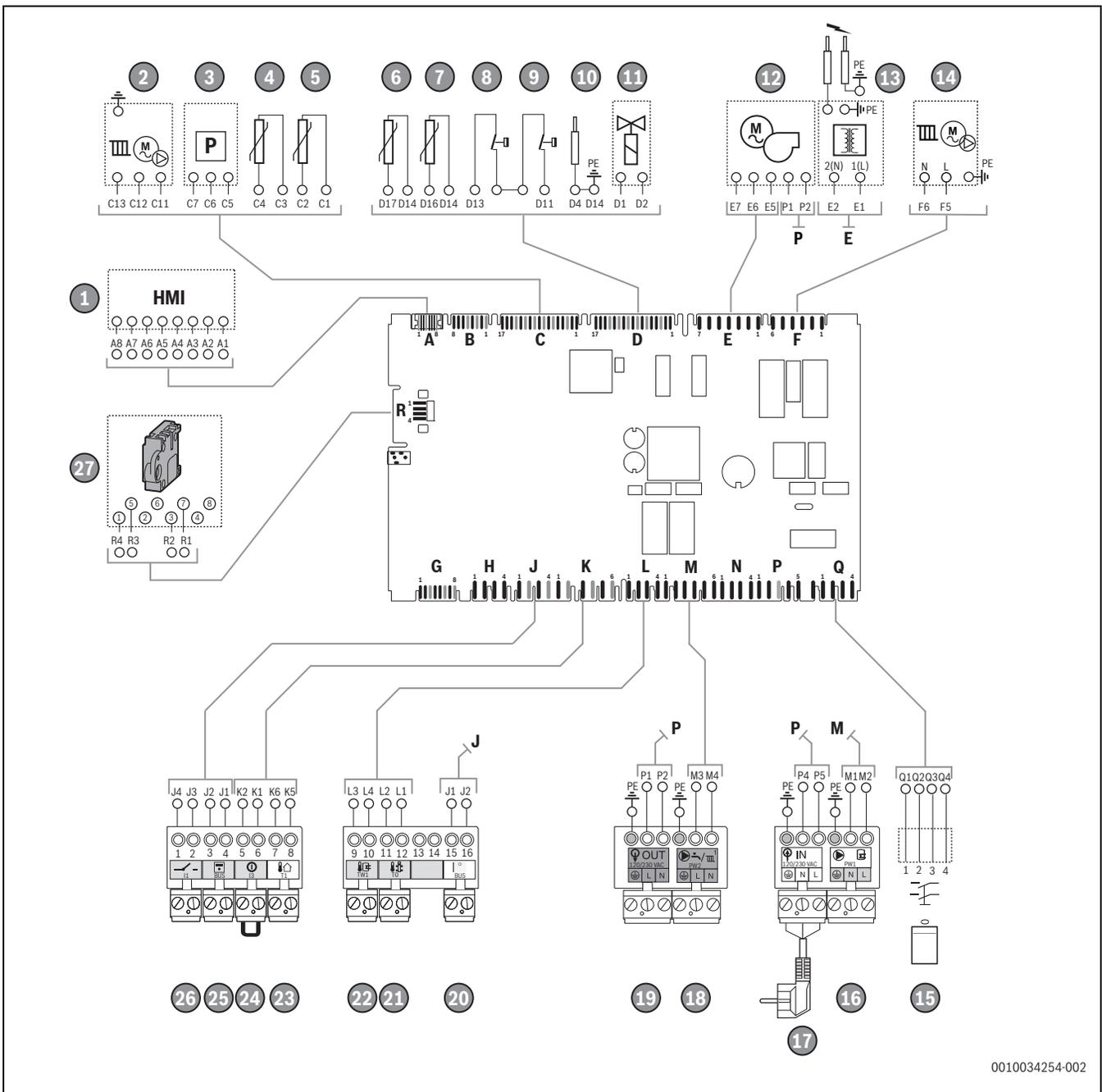
Condens 7000 WP GC7000WP		GC7000WP 125	GC7000WP 145
General information	Unit		
Rated heat output (50/30 °C) [P _{n cond}]	kW	26.2 – 124.4	26.2 – 143.1
Rated heat output (80/60 °C) [P _n]	kW	24.1 – 116.9	24.1 – 138.8
Rated heat input G20, G25, G25.3 [Q _{n (Hi)}]	kW	24.5 – 118.1	24.5 – 140.1
Rated heat input G31 [Q _{n (Hi)}]	kW	24.5 – 118.1	24.5 – 140.1
Efficiency (37/30 °C) partial load 30% in accordance with EN 15502	%	109.3	109.6
Efficiency (80/60 °C) full load	%	99.0	99.1
Standby loss in accordance with EN 15502.	%	0.12	0.15
Standard efficiency of heating curve (75/60 °C)	%	107.2	107.3
Standard efficiency of heating curve (40/30 °C)	%	110.4	110.6
Pump overrun	min	2	2
IP classification [IP rating]		IP X0D	
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 / 15 / 145	2 / 15 / 243
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	13.5	16.0
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, partial load/full load	%	8.3/ 8.8	8.3/ 8.7
CO ₂ content with propane, partial load/full load	%	9.5 / 10.0	9.5 / 10.0
CO output at full load (n = 1)	ppm	76	85
Standard emission factor (EN15502) CO	mg/m ³	31	38
Standard emission factor (EN15502) NO _x (average)	mg/kWh	35	38
NO _x class		6	
Flue gas mass flow rate at min./max. rated heat output	g/s	12.3 / 56.3	12.3 / 67.5
Flue gas temperature at 80/60 °C, partial load/full load	°C	56 / 67	56 / 71
Flue gas temperature at 50/30 °C, full load	°C	50	53
Flue gas class for LAS (Germany only)		G61	
Fan discharge pressure			
Residual head of fan (p _{max})	Pa	145	200
DN110/185, B _{23p} , partial load/full load	Pa	50 / 220	50 / 295
DN110/160, C _{x3x} , partial load/full load	Pa	50 / 145	50 / 200

Condens 7000 WP GC7000WP		GC7000WP 125	GC7000WP 145
DN110-110, C _{x3x} , partial load/full load	Pa	50 / 145	50 / 200
Dimensions and weight			
Height × width × depth	mm	1120 x 520 x 587	
Weight	kg	97	
Connection set			
Heating flow pipe	inch	G1½	
Heating return pipe	inch	G1½	
Gas line	inch	G 1	
Electrical power input Wilo-Stratos Para 25-1/12, min./max.	W	12 / 300	12 / 300

Table 24 Technical data

16 Technical information and reports

16.1 Wiring Diagram



0010034254-002

Fig. 47 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

16.2 Data relating to the gas

Gas consumption

Gas type	Maximum gas consumption [m ³ /h]	
	GC7000WP 125	GC7000WP 145
Natural gas E, H, E _s (G20)	12.63	15.14
Natural gas LL, L, E _i , (G25)	14.68	17.60
Natural gas K (G25.3)	14.35	17.21
Propane 3P (G31)	4.86	5.83

Table 25 Gas consumption

Gas supply pressure:

Country	Gas type	Gas supply pressure [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	Natural gas H, G20	17	20	25
HU	Natural gas H, G20	17	20	25
DE, LU, NL, PL	Natural gas E, G20	17	20	25
Fr	Sub-group E _s Natural gas E (G20)	17	20	25
Fr	Sub-group E _i Natural gas E (G20)	20	25	30
BE	Sub-group E _s Natural gas E (G25)	20	25	30
NL	Natural gas L, G25	20	25	30

Country	Gas type	Gas supply pressure [mbar]		
		Min. ¹⁾	Nom.	Max.
NL	Aardgas K, G25.3	20	25	30
DE	Natural gas LL, G25	18	20	25
DK, NL, NO, SE	Propane 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	Propane L, G31	25	37	25 23, 145
AT, AU, BG, CH, DE, ES, EE, HR, HU, LT, LV, LU, NL, SI, SK, RS, UA	Propane L, G31	42.5	50	57.5

1) The minimum gas supply pressure measured at the gas control block at which that the maximum load of the wall mounted boiler remains guaranteed, is 10 mbar.

Table 26 Gas supply pressures

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 27 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 28 Propane

16.3 Hydraulic resistances

	Unit	GC7000WP 125	GC7000WP 145
Required volumetric flow rate at $\Delta T = 20\text{ K}$	l/h	5300	6300
Max. volumetric flow rate	l/h	7000	
Resistance of the boiler	mbar	312	430

Table 29 Hydraulic resistances

16.4 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 § , 28).

-or-

- ▶ Reduce the installation resistance by installing a low loss header.

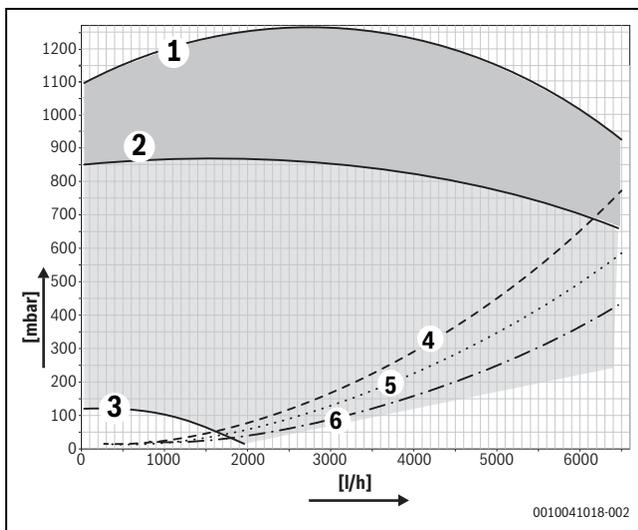


Fig. 48 Residual head of pump GC7000WP 125, GC7000WP 145

- [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

16.6 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:	

16.5 Setting values for heating capacity

Output [kW]	Display GC7000WP 125 [%]	Display GC7000WP 145 [%]
25	20	17
30	24	21
35	28	24
40	32	27
45	36	31
50	40	34
55	44	38
60	48	41
65	52	45
70	56	48
75	60	51
80	64	55
85	68	58
90	72	62
95	76	65
100	80	68
105	84	72
110	88	75
115	92	79
120	96	82
125	100	86
130	--	89
135	--	92
140	--	96
145	--	99
146	--	100

Table 30 Setting values for heating capacity

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 _{ip} : kWh/m³	
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"/> Additional expansion vessel Size/pre-charge pressure: Automatic air vent valve present? <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Heating pump:	
<input type="checkbox"/> DHW cylinder/type/number/heating surface output:	
<input type="checkbox"/> System hydraulics checked, Notes:	

Changed service functions	
Read off the changed service functions and enter the values here.	
<input type="checkbox"/> Label with "settings in the service menu" filled out and affixed.	
Heating controls:	
<input type="checkbox"/> Weather-compensated control	<input type="checkbox"/> Room temperature-dependent control
<input type="checkbox"/> Remote control × pce., heating circuit(s) coding:	
<input type="checkbox"/> Room temperature-dependent control × pce., heating circuit(s) coding:	
<input type="checkbox"/> Module × pce., heating circuit(s) coding:	
Miscellaneous:	
<input type="checkbox"/> Heating controls set, Notes:	
<input type="checkbox"/> Changed settings for the heating controls documented in the operating/installation instructions for the control unit	
The following work has been carried out:	
<input type="checkbox"/> Electrical connections checked, Notes:	
<input type="checkbox"/> Condensate trap filled	<input type="checkbox"/> Carry out a combustion air/flue gas test
<input type="checkbox"/> Function check carried out	<input type="checkbox"/> 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. _____ Name of service engineer	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. _____ Date, user's signature
_____ Date, system installer's signature	Affix the test report here.

Table 31 Commissioning report

Bosch Thermotechnik GmbH
Junkersstrasse 20-24
D-73249 Wernau

www.bosch-thermotechnology.com