



Installation and maintenance instructions for specialists

Wall mounted gas condensing boiler

Condens 8300i W

GC8300iW 35/40 C



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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 indicates that severe to life-threatening personal injury will occur.



WARNING indicates a hazardous situation which, if not avoided, could result in serious personal injury or danger to life.



CAUTION indicates a hazardous situation which, if not avoided, could result in minor to moderate personal injury.

NOTICE

ATTENTION 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.

This appliance is not suitable to be used as a pool heater.

⚠ System malfunctions caused by third-party equipment

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

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

Service work required to repair the damage will be invoiced.

⚠ If you smell gas

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

- ▶ Prevent flames or sparks:
 - Do not smoke, do not use a lighter or strike matches.
 - Do not operate any electrical switches or unplug any equipment.
 - Do not use the telephone or ring doorbells.
- ▶ Turn off the gas supply at the main shut-off valve or at the gas meter.
- ▶ Open windows and doors.
- ▶ Warn your neighbours and leave the building.
- ▶ Prevent anyone from entering the building.
- ▶ Move well away from the building: call the emergency services and the gas supplier.

⚠ 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 gas boilers in rooms where there is an increased or permanent ammonia concentration (e.g. livestock stables or storage room for fertilisers).

⚠ 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.

⚠ 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.

⚠ Electrical work

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

Before starting electrical work:

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

⚠ Handover to the user

When handing over, instruct the user how to operate the heating system and inform the user about its operating conditions.

- ▶ Explain how to operate the heating system and draw the user's attention to any safety relevant action.
- ▶ In particular, point out the following:
 - Alterations and repairs must only be carried out by an approved contractor.
 - Safe and environmentally compatible operation requires inspection at least once a year and responsive cleaning and maintenance.
 - The heat generator may only be operated with the casing fitted and closed.
- ▶ Point out the possible consequences (personal injury, including danger to life or material damage) of non-existent or improper inspection, cleaning and maintenance.
- ▶ Point out the dangers of carbon monoxide (CO) and recommend the use of CO detectors.
- ▶ Leave the installation instructions and the operating instructions with the user for safekeeping.

⚠ Warning statements

- ▶ Do not spray aerosols in the vicinity of this appliance while it is in operation.
- ▶ Do not use or store flammable materials in or near this appliance.
- ▶ Do not place articles on or against this appliance.
- ▶ Do not modify this appliance.

2 Product Information

This product complies with the Lead-Free requirements of the National Construction Code Volume 3.

2.1 Information about your product on the Internet

We want to actively provide you with suitable information about your product relevant to your situation. We therefore recommend you use the information provided on our web pages. You can find the Internet address on the back of these instructions.

2.2 Scope of delivery

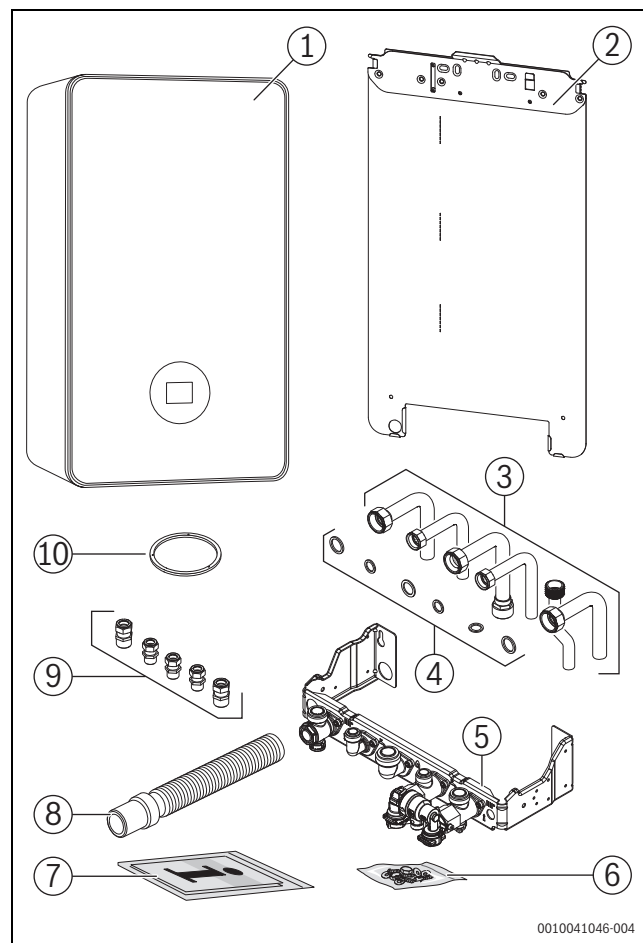


Fig. 1 Scope of delivery

- [1] Wall mounted gas condensing boiler
- [2] Mounting bracket
- [3] Connector pipes
- [4] Gaskets
- [5] Mounting Plate
- [6] Fixing materials (screws with accessories)
- [7] Set of printed documents for product documentation
- [8] Hose for condensate pipe
- [9] Compression fittings for connector pipes
- [10] Gasket for flue accessory

2.3 Product identification

Data plate

The data plate contains performance data, approval data and the serial number of the product.

The position of the data plate can be found in the product overview in this chapter.

Additional type plate

The additional type plate contains information on the product name and the most important product data.

It is located in an easily accessible place on the outside of the product.

2.4 Overview of types

Combi boilers for central DHW heating (domestic hot water) according to the instantaneous water heating principle

Type	Country	Part no.
GC8300iW 35/40 C	AU/NZ	7738101047

Table 1 Overview of types

2.5 Dimensions and minimum clearances

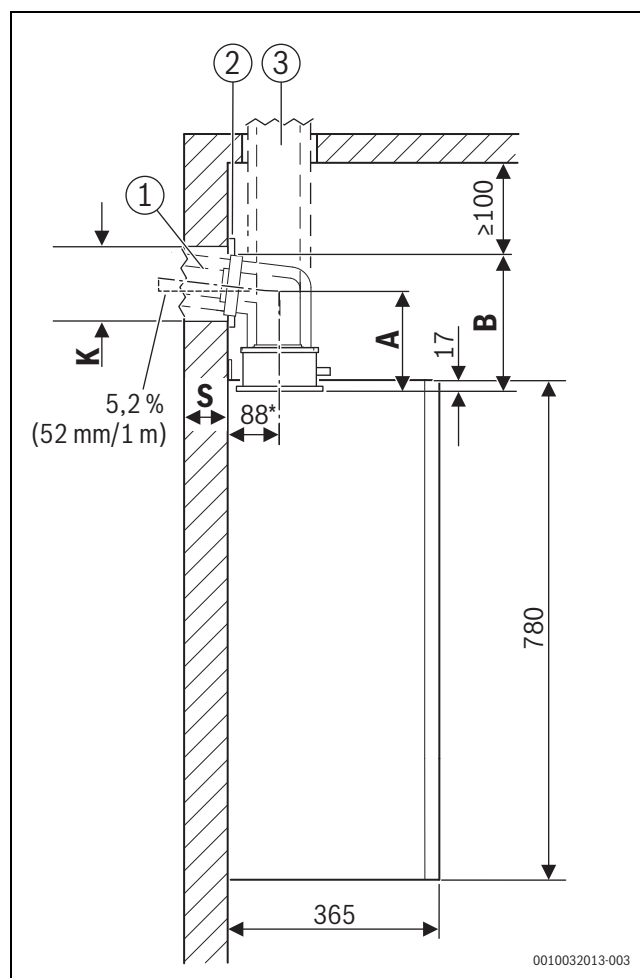


Fig. 2 Side view (mm)

- [1] Flue accessories, horizontal
- [2] Fascia
- [3] Flue accessories, vertical
- A Clearance between top edge of device and centre axis of horizontal flue
- B Clearance between top edge of device and ceiling
- K Hole diameter
- S Wall thickness
- * With mounting rail

Wall thickness S	K [mm] for Ø flue accessories [mm]		
	Ø 60/100	Ø 80	Ø 80/125
15–24 cm	130	110	155
24–33 cm	135	115	160
33–42 cm	140	120	165
42–50 cm	145	125	170

Table 2 Wall thickness S depending on the diameter of the flue accessories

Flue accessories		A / mm	B / mm
Ø 80/125 mm			
	Connection adapter Ø 80/125 mm	–	≥ 500
	Connection elbow 87° with test port without inspection aperture	115	185
Ø 60/100 mm			
	Connection adapter Ø 60/100 mm	–	≥ 500
	Concentric connection elbow, 87° with test port without inspection aperture	85	135

Table 3 Clearance A and B depending on flue accessories

Calculate minimum height of the installation room

- ▶ Add dimension B of the accessory used from tab. 3 to height of top edge of device.
- ▶ With horizontal flue accessories:
 - Add 52 mm for each metre of horizontal length of the flue pipe.
 - If necessary, add dimension of the fascia ([2] in Fig. 2).



With horizontal flue gas routing, the elbow must be kept in a free space of 100 mm.

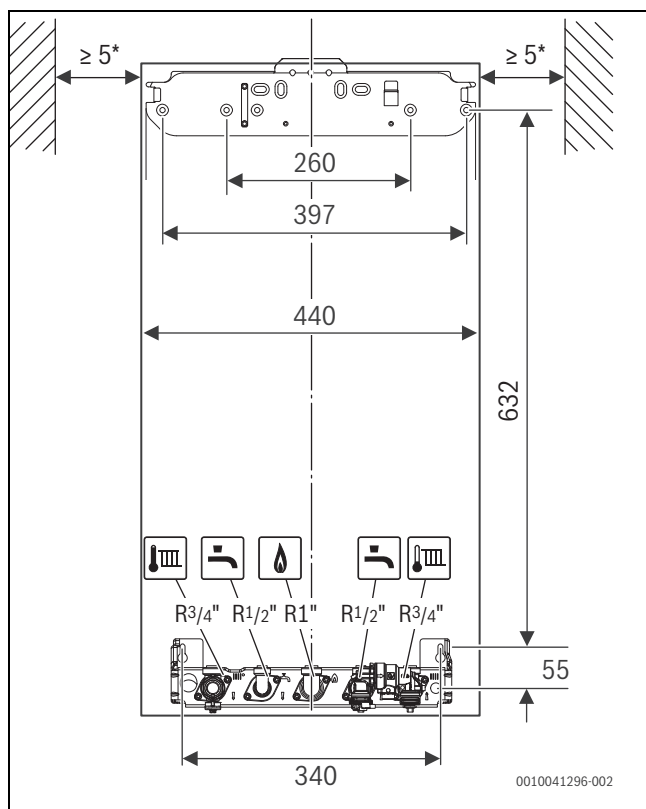
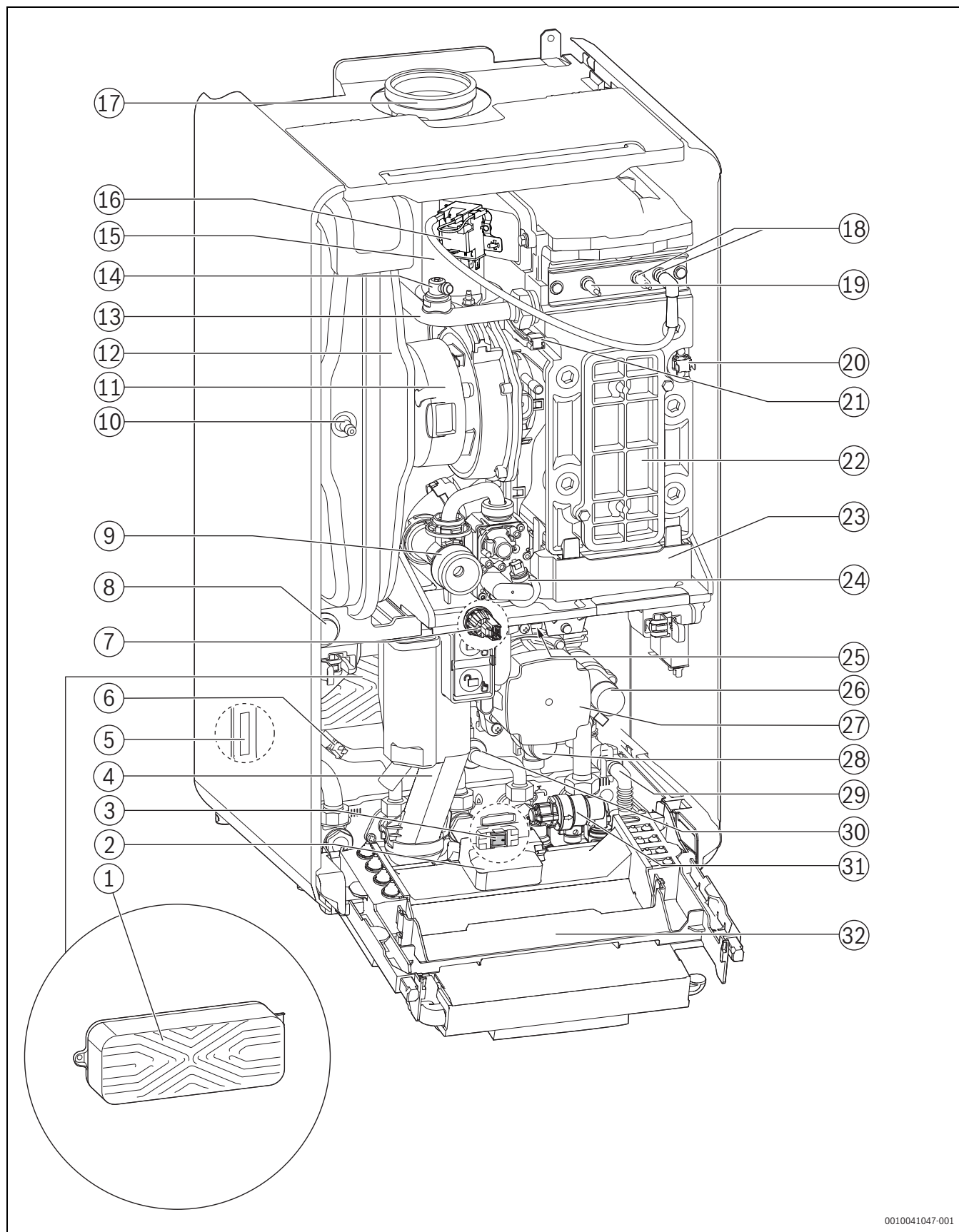


Fig. 3 Front view (mm)

* Recommended 100 mm

2.6 Product overview



0010041047-001

Fig. 4 Product overview

- [1] Plate heat exchanger
- [2] Key slot (wireless gateway)
- [3] On/Off-switch
- [4] Condensate trap
- [5] Data plate 1
- [6] DHW temperature sensor
- [7] Pressure sensor
- [8] Pressure gauge
- [9] Adjustable nozzle
- [10] Valve for filling with nitrogen
- [11] Fan
- [12] Expansion Vessel
- [13] CH flow
- [14] De-aerator
- [15] Mixing device with exhaust gas check valve (non-return valve)
- [16] Ignition transformer
- [17] Flue gas pipe
- [18] Ignition electrodes
- [19] Flame sense electrode
- [20] Heating block temperature limiter
- [21] Flow temperature sensor at heating block
- [22] Inspection aperture cover
- [23] Condensate sump
- [24] Air/gas ratio control valve
- [25] Data plate 2
- [26] 3-way valve
- [27] Heating system circulation pump
- [28] Pressure relief valve (heating circuit)
- [29] Drain cock
- [30] Turbine
- [31] Filling facility
- [32] Control box

3 Regulations

- Observe all regulations and standards applicable to the system in your country prior to installation and commissioning.
- Make sure the entire system satisfies the following standards, regulations and directives.

Where no specific instruction is given, reference should be made to the following standards:

- AS 1596 LPG storage and handling
- AS 1697 Installation and maintenance of steel pipe systems for gas
- AS 1910 Water supply - float control valves for use in hot and cold water
- AS 3498 Authorization requirements for plumbing products - water heaters and hot water storage tanks
- AS 3500 National plumbing and drainage code
- AS 4032 Water supply - valves for the control of hot water supply temperatures
- AS/NZS5263.1.2 Gas fired water heaters for hot water supply and/or central heating
- AS/NZS 5601 Gas Installations
- AS/NZS 3000 Electrical Installations

Number	Description
92/42/EEC	Efficiency Directive
98/83/EC	Directive in relation to the quality of water for human consumption
2004/108/EC	EMC Directive
2006/96/EC	Low-voltage guideline
2009/142/EC	EC Gas Appliances Directive
DIN 4726/4729	Oxygen diffusion resistance
EN 437	Test gases, test pressures, appliance categories
EN 12828	Heating systems in buildings - planning hot water heating systems
EN 12831	Heating systems in buildings – process for calculating the standard heat energy demand
EN 13384	Flue systems, heat and fault calculation models
EN 50201-1	Boiler for gaseous fuels - Part 1: General requirements and tests
EN 50201-2-1	Boilers for gaseous fuels - Part 2-1: Type C boilers and Type B2, B3 and B5 boilers with a rated heat input no greater than 1000 kW

Table 4 Regulations, standards and guidelines

4 Flue gas routing

4.1 Approved flue accessories

The flue accessories for the flue gas systems described in these instructions are an integral part of the heat source CE approval.

This is why we recommend using Bosch original accessories.

You can find designations and part numbers in the main catalogue.

4.2 Installation instructions



DANGER

Risk of poisoning due to carbon monoxide!

Leaking flue gas gives rise to high carbon monoxide values in the breathing air that pose a risk to life

- ▶ Ensure that flue pipes and gaskets are not damaged.
 - ▶ When installing the flue system only use the lubricating paste approved by the system manufacturer.
-
- ▶ Check flue accessories are intact when unpacking.
 - ▶ Observe the installation instructions for the accessories.
 - ▶ Crop accessories to the required length.
Make the cut at a right angle and deburr the cut surface.
 - ▶ Apply supplied lubricating paste to the gaskets.
 - ▶ Push the accessory as far as it will go into the female connection.
 - ▶ Install horizontal sections with 3 ° slope (= 5.2 % or 5.2 cm per metre) in the direction of flue gas flow.
 - ▶ Secure the entire flue with pipe clips:
 - Keep a maximum clearance of ≤ 2 m between two pipe clips.
 - Attach a pipe clip to each elbow.
 - ▶ Check tightness once work is complete.

Flue gas routing over several storeys

If the flue gas routing passes through several storeys, it must be in a duct.

Requirements for installation in an existing duct

- ▶ If the flue is installed in an existing duct, tightly seal any existing connection openings using appropriate materials.

4.3 Flue terminal positions

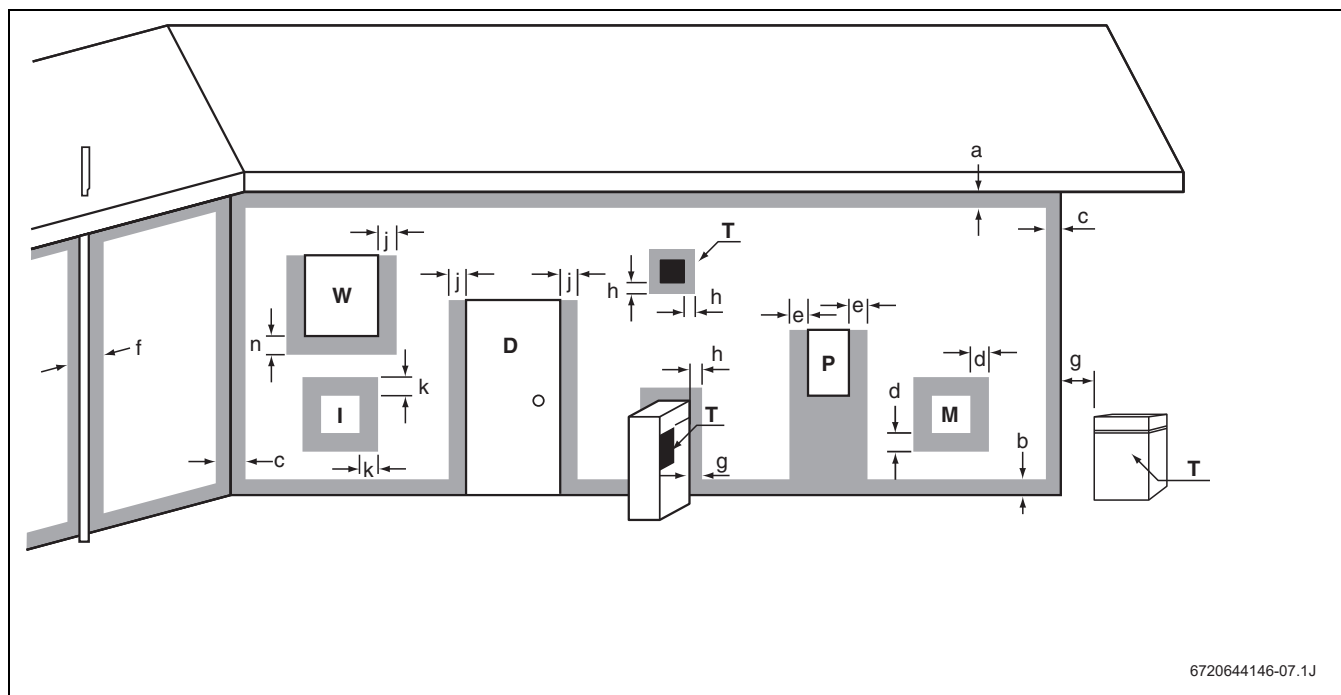


Fig. 5 Flue terminal positions

- D Door
- I Mechanical air inlet
- M Gas meter
- T Flue terminal
- W Window

Ref.	Item	Min. Clearance (in mm)
a	Below eaves, balconies and other projections (Appliances over 50MJ/h)	300
b	From the ground, above a balcony or other surface	300
c	From a return wall or external corner	300
d	From a gas meter	1000
e	From an electricity meter or fusebox/breaker panel	500
f	From a drain pipe or soil pipe	75
g	Horizontally from any building structure or obstruction facing a flue terminal	500
h	From any other flue terminal, cowl or combustion air intake	300
j	Horizontally from any opening window, door, non-mechanical air inlet or other opening into a building with the exception of sub-floor ventilation	300
k	From a mechanical air inlet including a spa blower	1000
n	Vertically below an opening window, non-mechanical air inlet or any other opening into a building with the exception of sub-floor ventilation	1000

Table 5

- The location of the flue terminal must comply with the clearances shown on this page.
If you are unsure about clearances not indicated here, in general refer to AS/NZ 5601 or your local authority.
- All measurements are the minimum clearances required.
- Terminals must be positioned so to avoid combustion products entering the building.

4.4 Inspection apertures

It must be possible to clean flue systems easily and safely. It must be possible:

- to check the cross-section and tightness of the pipework.
 - to check the required cross-section between the flue and duct (secondary ventilation) for safe operation of the combustion system, and to clean it.
- Observe local standards and regulations.

4.5 Vertical flue gas routing through the roof

Installation location and flue system

Prerequisite: only the roof structure is above the ceiling of the installation location.

- If a fire rating is required for the ceiling, the flue system between the top edge of the ceiling and the roof skin must be clad in a material with the same fire rating.
 - If no fire rating is required for the ceiling, the flue system must be routed through a duct made of non-combustible, dimensionally-stable materials or a metal protective pipe (mechanical protection) running from the top edge of the ceiling to the roof skin.
- Observe country-specific requirements for the minimum clearances in relation to roof windows.

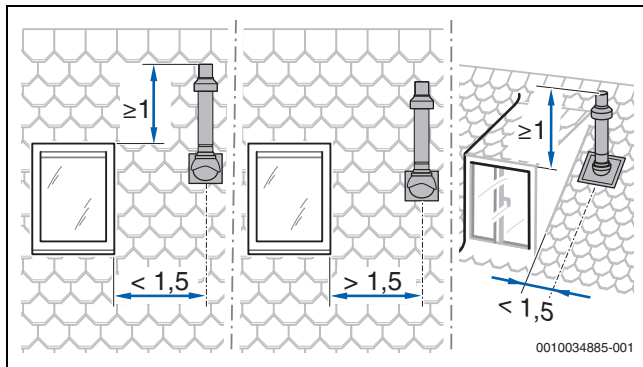


Fig. 6

4.6 Calculating the length of a flue system

You can find an overview of the maximum permissible pipe lengths in each case alongside the individual flue gas routing types.

The specified maximum pipe lengths take the deflections required in a flue gas routing system which are shown correctly in the relevant figures into consideration.

- Every additional 87° elbow reduces the permissible pipe length by 1.5 m.
- Every additional elbow between 15° and 45° reduces the permissible pipe length by 0.5 m.

4.7 Horizontal concentric flue system

Inspection apertures

- Observe local standards and regulations.

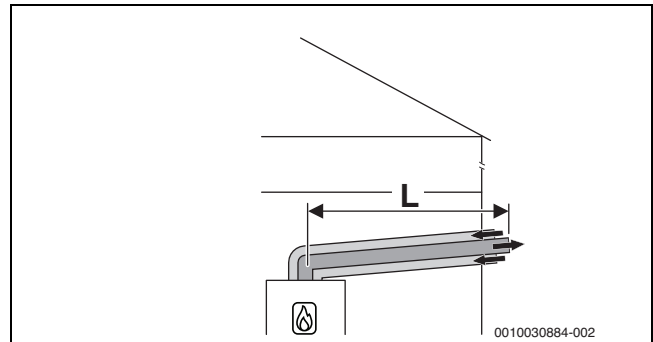


Fig. 7 Horizontal concentric flue system via the external wall

Allowed maximum length

GC8300iW 35/40 C

Accessory Ø [mm]	Maximum pipe length L [m]
Ø 60/100	11
Ø 80/125	35

Table 6 Flue routing

4.8 Vertical concentric flue system

You can find information on the installation location and roof clearances with vertical flue gas routing in Chapter 4.5 on page 12.

Inspection apertures

- Observe local standards and regulations.

4.8.1 Vertical flue system via roof

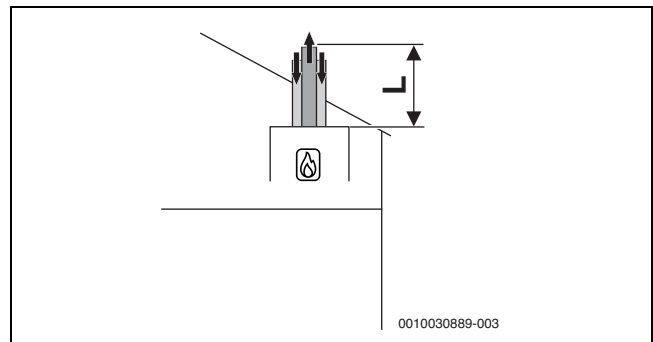


Fig. 8 Vertical concentric flue system

Allowed maximum length

GC8300iW 35/40 C

Accessory Ø [mm]	Maximum pipe length L [m]
Ø 60/100	15
Ø 80/125	35

Table 7 Flue routing

5 Preconditions for installation

5.1 General notes

- Observe all the current applicable national and regional regulations as well as all technical rules and guidelines.
- Obtain all necessary approvals (gas supplier, etc.).
- Consider the requirements of the building authorities, e.g. when using a condensate neutraliser (accessory).
- Convert open heating systems into closed systems.
- Do not use galvanized radiators or pipework.

5.2 Installation location requirements



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.

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. Observe specific national regulations.

Wall structure

The wall used for installation of the appliance must be load-bearing and the appliance must be able to rest on it over the entire surface.

Protection zones in damp areas



Observe all the current applicable national and regional regulations as well as all technical rules and guidelines. These may contain additional or deviating requirements for installations in damp areas.

- Do not install any switches, sockets or devices with mains power supply in the protection zones.
- Connect device to a residual current circuit breaker.
- Use only control units with suitable IP rating.

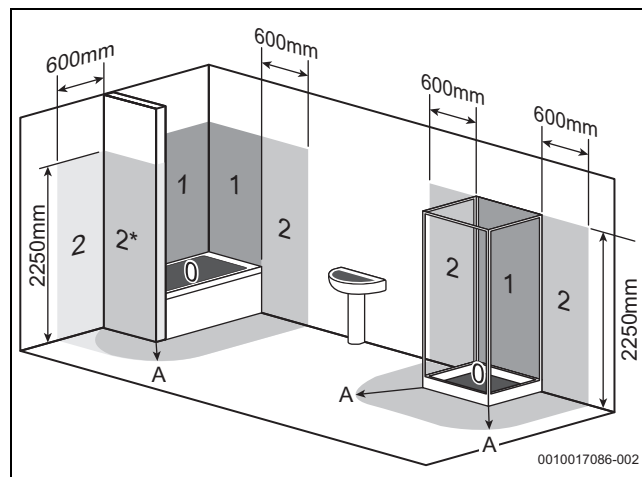


Fig. 9 Protection zones (example)

- [0] Protection zone 0
- [1] Protection zone 1
- [2] Protection zone 2
- [2*] Without bulkhead, protection zone 2 with a width of 600 mm applies.
- [A] Within a radius of 600 mm from the bath or shower

5.3 Water system and pipe work

Plastic pipe work

- Any plastic pipe work must have a polymeric barrier with 600 mm (minimum) length of copper pipe connected to the boiler.
- Plastic pipe work used for underfloor heating must be correctly controlled with a thermostatic blending valve limiting the temperature of the circuits to approximately 50 °C.

Primary system connections/valves

- All system connections, taps and mixing valves must be capable of sustaining a pressure up to 3 bar (300 kPa).
- Bosch recommends that thermostatic radiator valves (TRVs) be used on all radiators within the sleeping accommodation but not the radiator where the room thermostat is sited. This must be fitted with lock-shield valves and left open.
- A drain point is required at the lowest part of the system.
- An air vent is required at all the high points in the system.



The boiler is equipped with an automatic internal by-pass.

Sealed primary system



Do not use artificially softened water to fill the CH system.
Do not use galvanised pipes or radiators.

- The CH sealed system must be filled using an approved filling loop or comply with figure 10, p. 14 for system fill.

5.4 System Fill

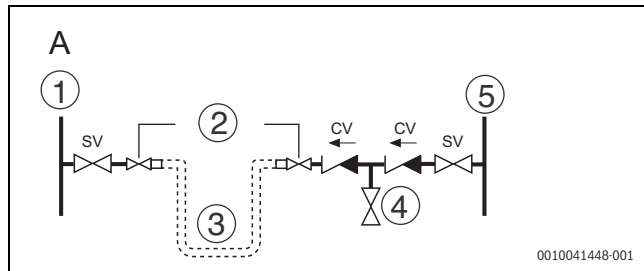


Fig. 10

- A System fill
 AA Auto air vent
 CV Check valve
 SV Stop valve
 [1] Heating return
 [2] Hose union
 [3] Temporary hose
 [4] Test point
 [5] Mains supply

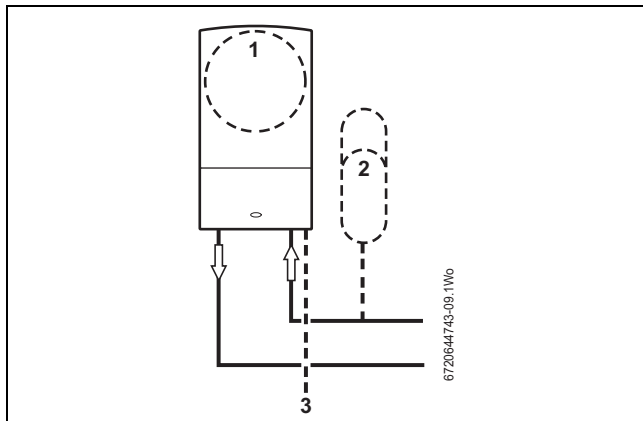


Fig. 11 Additional expansion vessel

- [1] Boiler expansion vessel - CH
 [2] Extra expansion vessel - CH return
 [3] Pressure relief discharge-

5.5 Condensate pipe work

NOTICE

- ▶ Where a new or replacement boiler is being installed and freezing conditions are possible, access to an internal drain "gravity discharge" point should be one of the factors considered in determining boiler location.
- ▶ The condensate pipe must be a minimum of 40 mm Ø plastic pipe.
- ▶ The condensate pipe work must fall at least 50 mm per metre towards the outlet and should take the shortest practicable route.
- ▶ Ensure that there are no blockages in the pipe run.

5.5.1 Internal connections

Where there is the possibility of freezing conditions and in order to minimise the freezing risk during prolonged cold spells, the following methods of installing condensate drainage pipe should be adopted in order of priority.

Wherever possible, the condensate drainage pipe should be routed and terminated so that the condensate drains away from the boiler under gravity to a suitable internal soil and vent stack. A suitable permanent connection to the foul waste pipe should be used.

A self sealing device should be incorporated in the drainage path, if possible, in an upright position.

A tundish should be used as a suitable air gap just before the self sealing device. The self sealing device can be used on a gradient as long as it is preceded by a vertically mounted tundish.

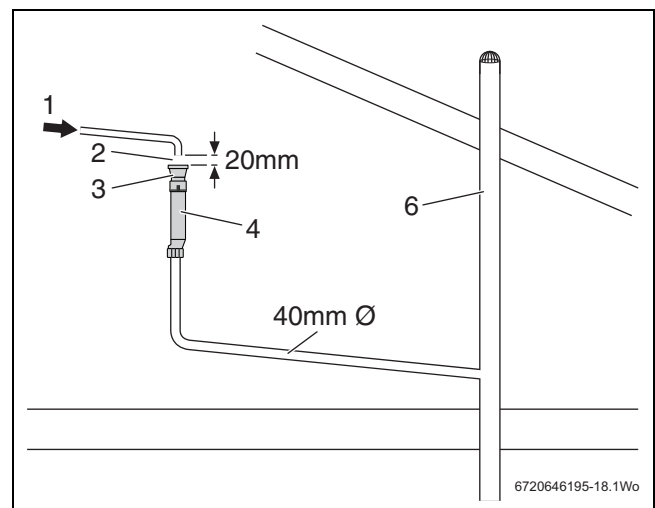


Fig. 12 Disposal to soil vent stack - vertical position

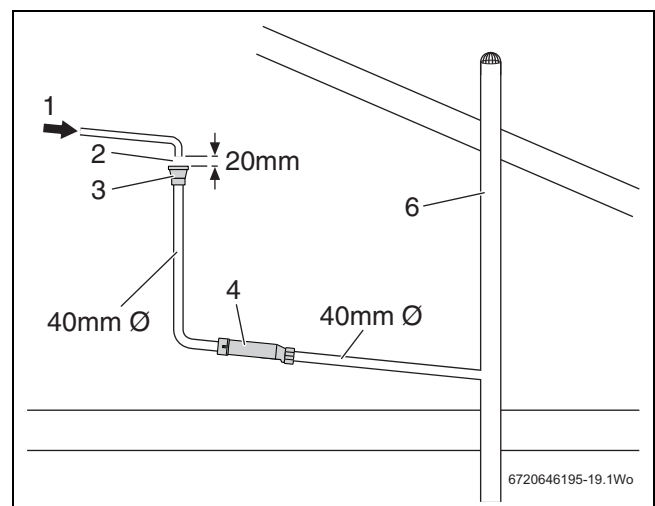


Fig. 13 Disposal to soil vent stack - on gradient

Alternatively if the first option is not possible an internal kitchen or bathroom waste pipe can be used.

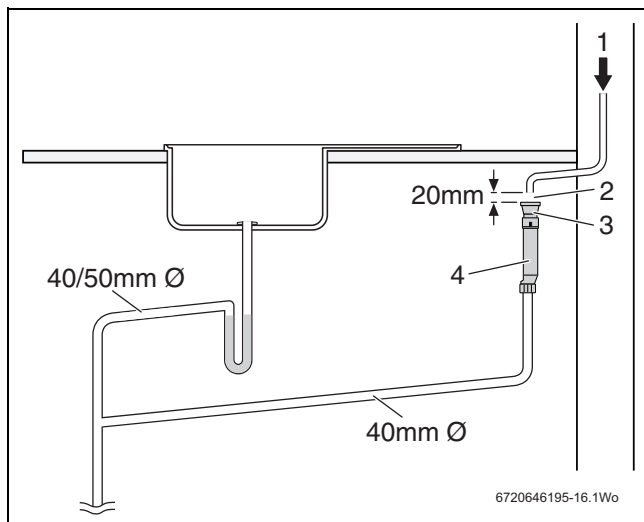


Fig. 14 Disposal to waste pipe

A washing machine waste pipe or bifurcated pipe, etc. can also be used.

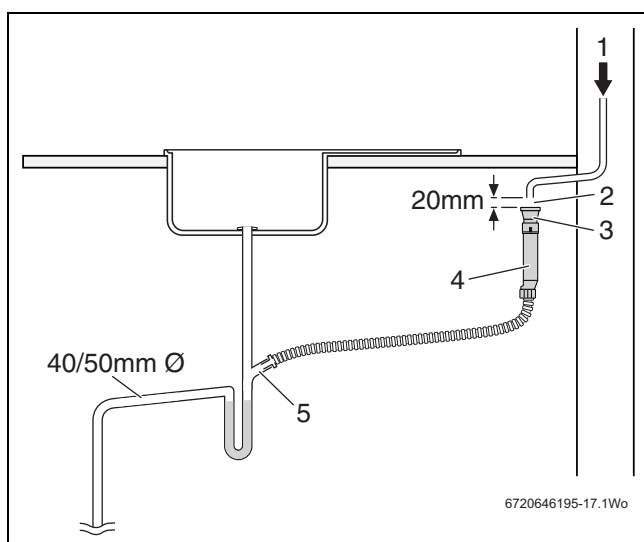


Fig. 15 Branched pipe disposal

Legend to Fig. 12 – Fig. 15:

- [1] Condensate discharge
- [2] Air gap (20mm)
- [3] Tundish
- [4] Self sealing device
- [5] Dishwasher connection
- [6] Vent stack

5.6 Heating

Gravity circulation heating

- Connect the device to the existing piping system via a low loss header with a dirt separator.

Underfloor heating systems

- Observe the permissible flow temperatures for underfloor heating systems and connect a temperature switch if required.
- When using plastic pipes, use oxygen-tight pipework or create system separation by means of heat exchangers.

5.7 Fill and top-up water

Water quality of the heating water

The quality of the fill and top-up water is an essential factor for increased efficiency, functional reliability, long service life and for maintaining the operational readiness of a heating system.

NOTICE

Unsuitable water, antifreeze or heating water additives can damage the heat exchanger or cause a fault in the heat source or DHW supply!

Unsuitable or contaminated water can lead to sludge formation, corrosion or scaling. Unsuitable antifreeze or hot water additives (inhibitors or anti-corrosion agents) can damage the heat source and heating system.

- Flush the heating system prior to filling.
- Only fill the heating system with potable water.
- Do not use well water or groundwater.
- Treat the fill and top-up water according to the instructions in the following section.
- Only use antifreeze approved by us.
- Only use a heating water additive, e.g. corrosion inhibitor, if the manufacturer of the heating water additive certifies its suitability for a heat source made of aluminium materials and for all other materials in the heating system.
- Only use antifreeze and heating water additives according to specifications of the manufacturer, e.g. with regard to the minimum concentration.
- Follow the instructions of the manufacturer of the antifreeze and heating water additive about regular checking and corrective measures.

Heating system water

Unsuitable fill and top-up water in the heating system can result in the heat exchanger scaling up and failing prematurely.

Hardness range	Water treatment
soft ($\leq 8.4^\circ \text{dH}$)	not required
medium ($8.4 - 14^\circ \text{dH}$)	recommended
hard ($\geq 14^\circ \text{dH}$)	required

Table 8



CAUTION

The type of fluid used in the combination boiler heating circuit is to be of a non-toxic type.

Antifreeze



The document 6 720 841 872 contains a list of approved antifreezes. You can use the document search on our website to display this. You will find the address of the website on the back cover of these instructions.

Corrosion inhibitor

The following corrosion inhibitors are permitted:

Designation	Concentration
Fernox	see supplier information
Sentinel	see supplier information

Table 9

Heating water additives

Heating water additives, e.g. corrosion inhibitors, are only required in the case of constant oxygen ingress, which can not be prevented through other means.



Sealants in the heating water can cause deposits in the heat exchanger. We therefore advise against their use.

Measures for hard water

To protect against increased limescale and resulting service work:

Water hardness range	Action
≥ 15 °dH/25 °f/ 2.5 mmol/l (hard)	► Set the DHW temperature lower than 55 °C.
≥ 21 °dH/37 °f/ 3.7 mmol/l (hard)	We recommend: ► Installing a water treatment system.

Table 10 Measures for hard water

6 Installation

6.1 Safety instructions for installation

⚠ Risk of death from explosion!

Escaping gas can cause an explosion.

- Close the gas isolator before working on any gas-carrying components.
- Replace used gaskets with new gaskets.
- After completing work on gas-carrying components, carry out a tightness test.

⚠ Danger to life due to poisoning!

Escaping flue gas can cause poisoning.

- Performing a tightness test after working on flue gas routing components.

⚠ Observe the tightening torque.

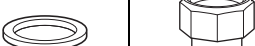
	G 1/2"	Nm 20 (+10/-0)
	G 3/4"	Nm 30 (+10/-0)
	G 1"	Nm 40 (+20/-0)

Table 11 Standard tightening torque

Notification must be provided of all deviations in tightening torque.

Sizing the gas line

- Check on the data plate the identification of the country of destination and the suitability for the gas type provided by the gas supplier (→ Chapter 9.6.3, table 26).
- Size gas supply as per AS/NZS5601. Incorrect gas pipe sizing will not be covered by the warranty. After finishing the gas piping system, the pipes must be thoroughly purged and leak-tested. To avoid damaging the gas valve by excess pressure, this test must be performed with the gas valve of the heater closed.
- **Observe the maximum rated heat output for heating or DHW heating according to the specifications.**
- Determine internal diameter for the gas supply.
- In the case of LPG: to protect the device against high pressure, install a pressure regulator with a pressure-relief valve.

6.1.1 Water preheated by solar energy



WARNING

Risk of scalding from hot water!

DHW temperatures over 45 °C can arise in solar mode and this can cause scalding.

- Use a thermostatic DHW mixer from the solar set (accessory) to limit the temperature to 45 °C!

6.2 Check the size of the expansion vessel

The following graph permits the approximate estimation of whether the installed expansion vessel is sufficient or whether an additional expansion vessel is required (not for underfloor heating system).

The following key data was taken into account for the curves shown:

- 1 % Water seal in the expansion vessel or 20 % of the rated volume in the expansion vessel
- Operating pressure differential for the pressure relief valve of 0.5 bar
- Pre-charge pressure of the expansion vessel corresponds to the static system head above the wall mounted boiler.
- Maximum operating pressure: 3 bar

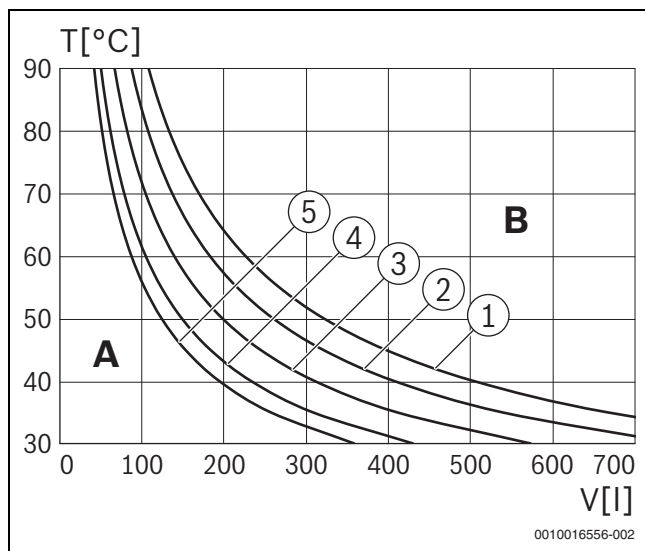


Fig. 16 Curves for the expansion vessel

- [1] Pre-charge pressure 0.5 bar
- [2] Pre-charge pressure 0.75 bar (default setting)
- [3] Pre-charge pressure 1.0 bar
- [4] Pre-charge pressure 1.2 bar
- [5] Pre-charge pressure 1.3 bar

A Operating capacity of the expansion vessel

B Additional expansion vessel required

T Supply temperature

V System content in litres

- If the results are borderline: determine the precise vessel size according to country-specific regulations.
- If the intersection is on the right beside the curve: install an additional expansion vessel.

6.3 Assembly

6.3.1 Preparing the device installation

NOTICE

Incorrect assembly can cause material damage.

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

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

- ▶ Remove the packaging, observing all notices in the packaging.

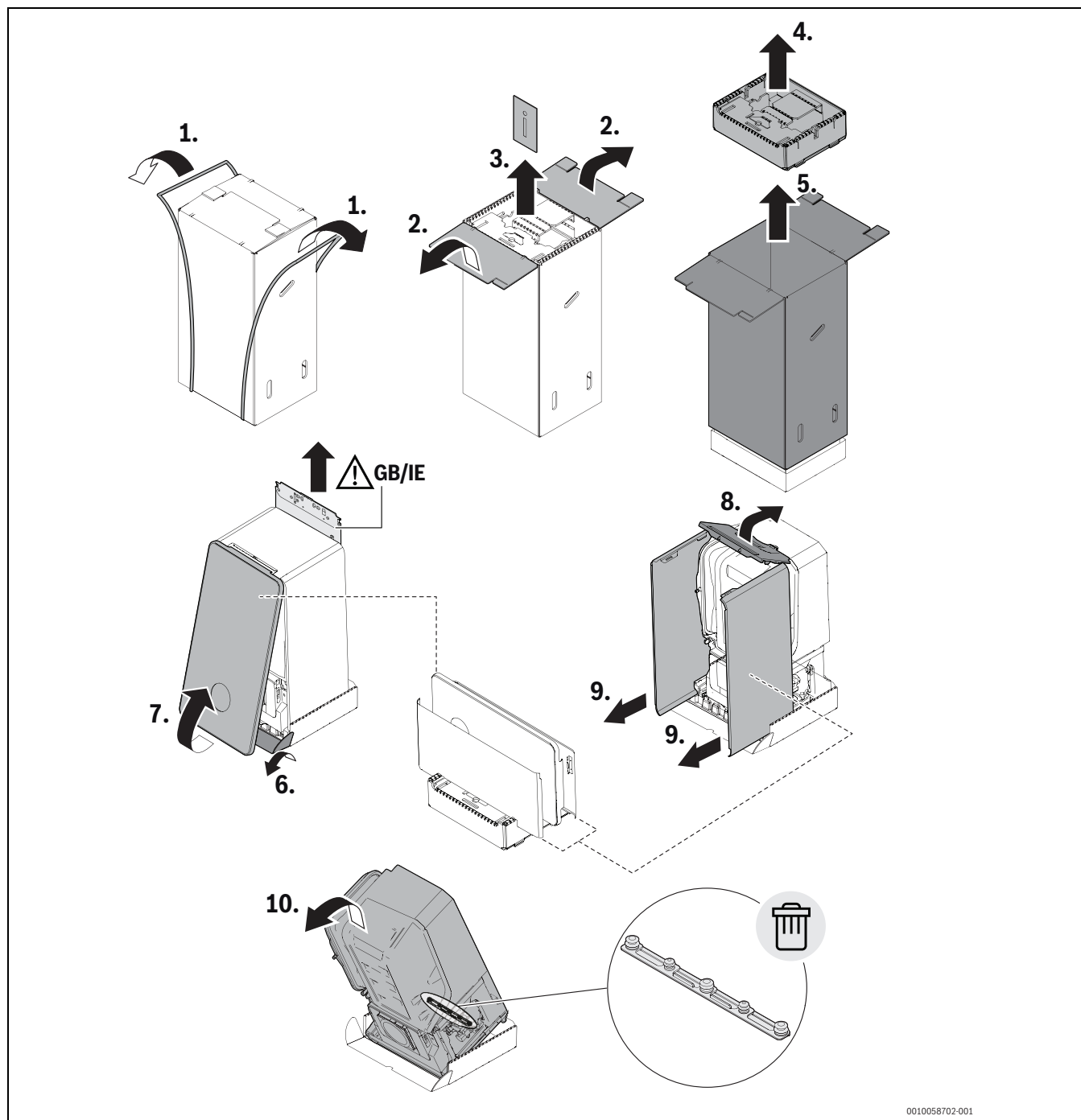


Fig. 17 Packaging instructions

- ▶ Make sure that the gas type specified on the data plate is the same as the gas type supplied.
- ▶ Make sure that the installation location is in the country of destination specified on the data plate.

- ▶ Affix an installation template (if available) to the wall.
- ▶ Check whether the screws and rawl plugs supplied with the device can be used.
- ▶ Drill suitable holes for the selected rawl plugs and screws.
- ▶ Fasten the mounting rail to the wall using the available screws and wall plugs (scope of delivery).
- ▶ Fitting the mounting plate.

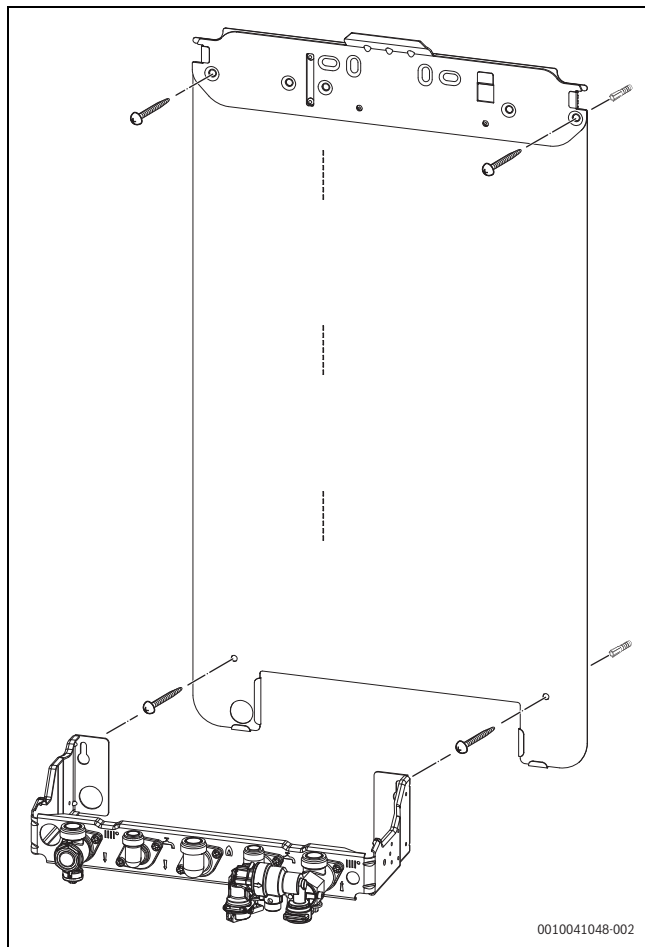


Fig. 18 Fit mounting rails and connection plate

- ▶ Fit the pipes with gaskets to the mounting plate.

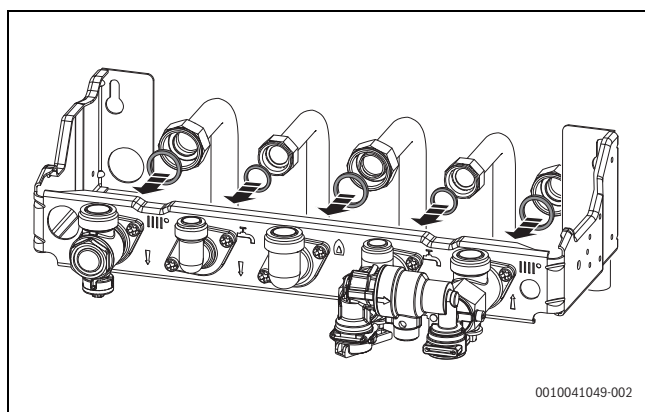


Fig. 19 Fitting the pipes with gaskets to the mounting plate

6.3.2 Installing the appliance

Removing the casing (see packaging)

- ▶ Remove the locking bracket.

Hanging the appliance

- ▶ Fit the sealing washers to service valves.
- ▶ Hang the appliance.
- ▶ Unlock the condensate trap and remove from appliance (→ Fig. 9.17, p. 45)
- ▶ Check the positioning of the sealing washers on the pipe connections.
- ▶ Tighten the union nuts on the pipe connections starting with the CH return on the right.

6.4 Hydraulic connection

Preparing the pipework

Residues in the pipework can damage the device.

- ▶ Purge the pipework prior to connection.

Fitting a pipe to the pressure relief valve

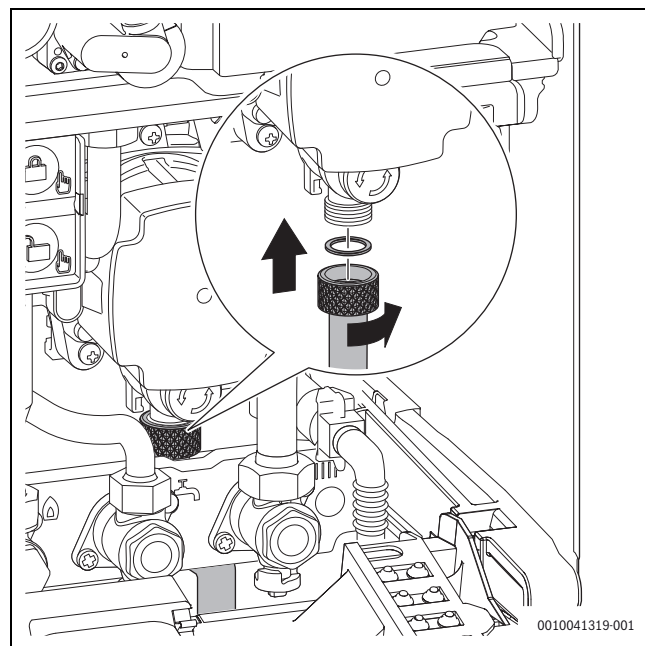


Fig. 20 Fitting a pipe on the pressure relief valve

Connecting the condensate pipes

- ▶ Insert the condensate pipe hose into the mounting plate (1).
- ▶ Insert the condensate hose on the connector (2).

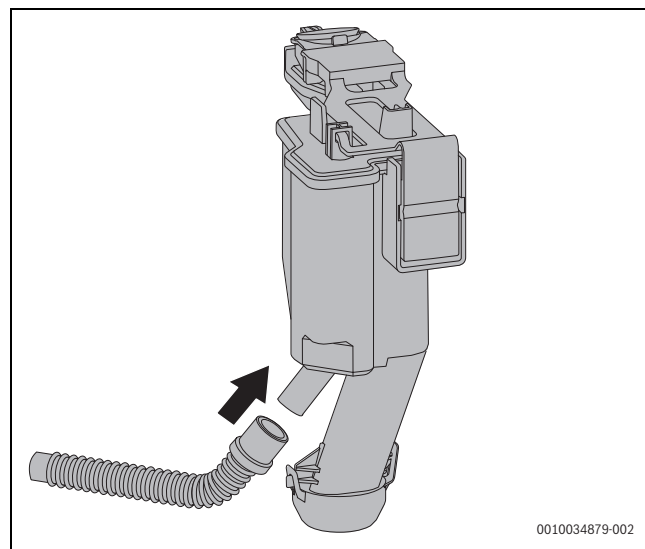


Fig. 21 Fitting the condensate pipes to the mounting plate

Filling the condensate trap

**DANGER**

Danger to life from poisoning!

If the condensate trap is not filled, poisonous flue gas can escape.

- Fill the condensate trap with approx. 250 ml water via the flue pipe.

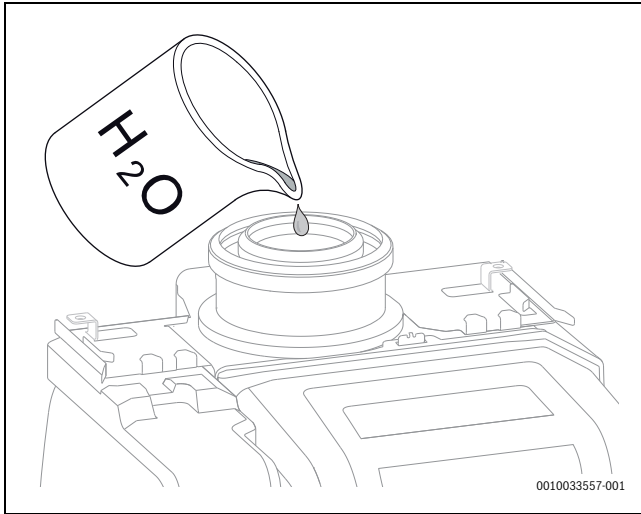


Fig. 22 filling the condensate trap with water

6.5 Connecting the flue accessories



For more detailed information on the flue gas routing and connection of the flue pipe → see chapter 4, page 10

- Observe the installation instructions of the flue accessory.
- Remove the protective strip from the adhesive ring of the seal.

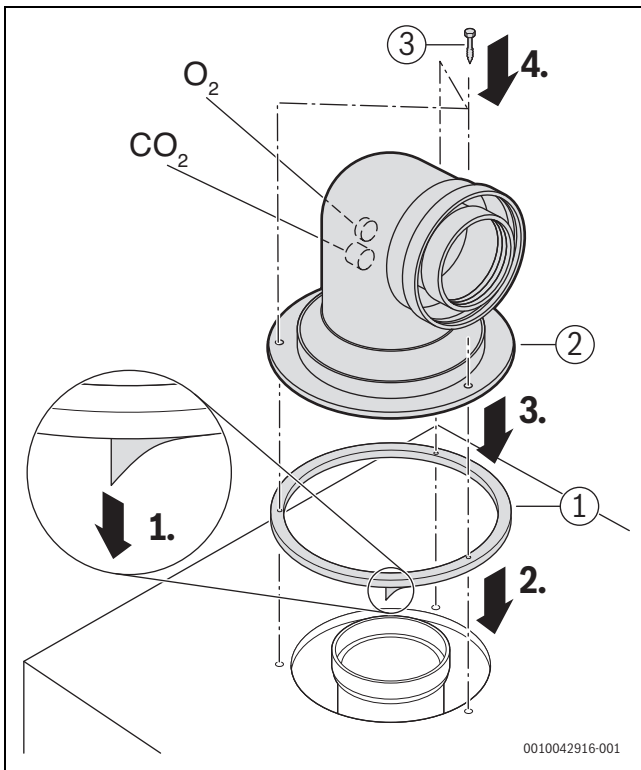


Fig. 23

- Align the seal [1] with the holes and stick it onto the housing of the appliance.

- Put on the flue accessory [2].
- Secure the flue accessory with screws [3].
- Check the flue gas path for tightness (→ Chapter 6.6, page 20).

6.6 Filling the system and checking for tightness

NOTICE

Commissioning without water damages the appliance!

- Operate this device only when filled with water.

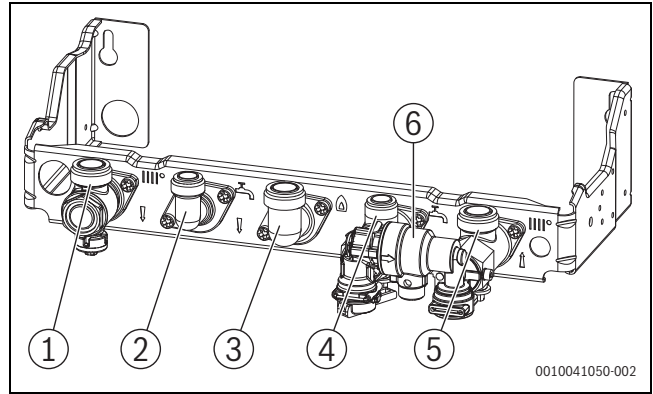


Fig. 24 Connections on the gas and the water side

- [1] Heating flow valve
- [2] Hot water
- [3] Gas
- [4] Cold water tap
- [5] Heating return valve
- [6] Filling facility

Filling and venting the DHW circuit

- Open the cold water tap [4] and open a DHW draw-off point until water flows out.
- Check the joints for tightness (test pressure: max. 10 bar).

Filling and venting the heating circuit

- Adjust the expansion vessel pre-charge pressure to the static head of the heating system (→ Chapter 6, page 17).
- Open the radiator valves.
- Open the heating flow [1] and return [5] valves.
- Fill the heating system to 1 to 2 bar.
- Vent the radiators.
- Open air vent (→ Chapter 2.6, page 8) and close again after venting.
- Refill the heating system to 1–2 bar and then close the drain valve again.
- Check the joints for tightness (test pressure: max. 2.5 bar at the pressure gauge).

Checking tightness of the gas line

- Close the gas isolator to protect the air/gas ratio control valve against damage from excess pressure.
- Check tightness of all joints (test pressure: max. 150 mbar).
- Depressurise the system.

6.7 Electrical connection

6.7.1 General notes



WARNING

Risk to life from electric shock!

Touching live electrical parts can cause an electric shock.

- Before working on electrical parts, disconnect all phases of the power supply (fuse/circuit breaker) and lock the isolator switch to prevent unintentional reconnection.
- Observe protective measures according to national and international regulations.
- In rooms with a bath or a shower, connect the device to a circuit breaker.
- Do not connect any additional consumers to the device power supply.

6.7.2 Connecting the device

Connection is only possible outside protection zones 1 and 2 (→ Fig. 9, page 13).

- Insert the main plug into a grounded electrical socket.



A damaged power cable may only be replaced by an original spare part (→ spare parts catalogue). The installation may only be carried out by experts qualified in electrical installations.

6.7.3 Connecting external accessories



WARNING

Danger to life from electric shock!

Connections PCO, PW1 and PW2 are 230 V connections. The connections PCO, PW1 and PW2 are live as soon as the mains voltage is switch on the device.

- Disconnect all poles of the power supply (fuse/miniature circuit breaker) and secure to prevent unintentional reconnection.
- Flip down the control device (→ Fig. 25).

- Open the cover.

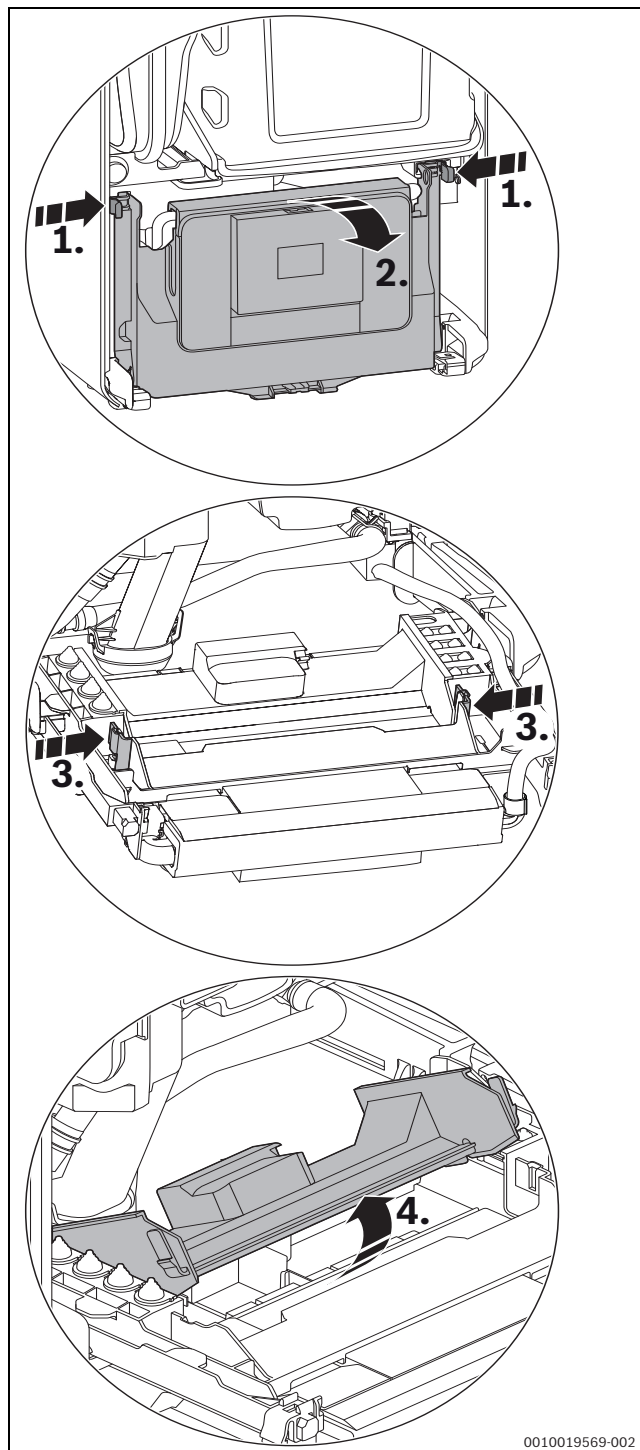


Fig. 25 Opening the cover

When the cover is open, there is access to the electrical connection of the control panel.

- For splash water protection (IP): cut the strain relief to match the diameter of the cable.

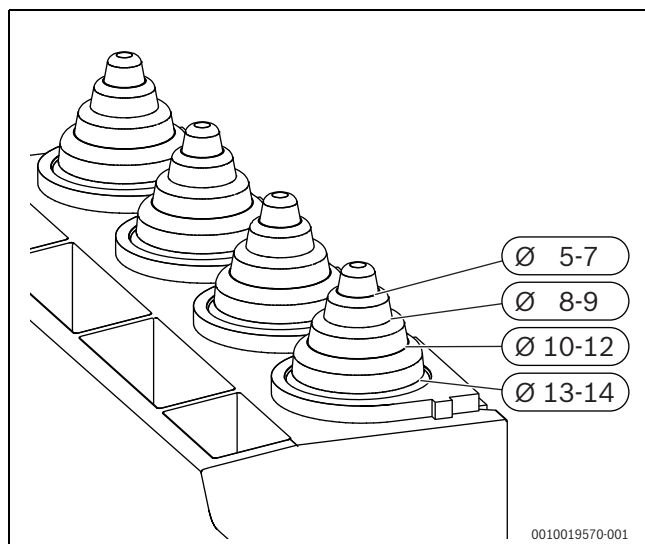


Fig. 26 Adapting the strain relief to the cable diameter

- Guide the cable through the strain relief.
- Connect the cable to the terminal strip for external accessories (→ Fig. 27).
- Secure the cable on the strain relief.

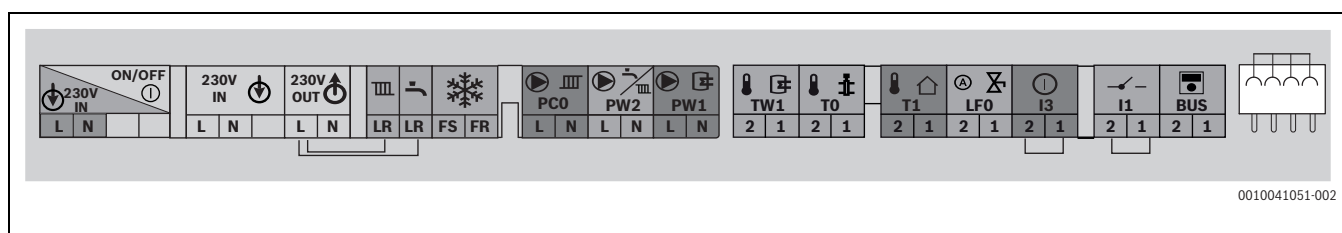
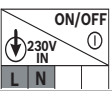


Fig. 27 Terminal strip for external accessories

Symbol	Function	Description
	Mains voltage	On/Off-switch
	Power supply connection	External power supply
	Power supply connection	External modules (switched via On/Off switch)
	Live switch	Live return to the device ▮ CH output demand ▮ DHW output demand (active only when the optional permanently installed diverter valve is connected)
	Frost thermostat connection	No setting required in the service menu
	Without function	
	Mains power supply for the heating pump (max. 100 W) downstream the low loss header in the heating circuit without mixer	► Set hydraulic configuration heating circuit 1 with service function 2-A3 to 2.
	Without function	

Symbol	Function	Description
 TW1 2 1	Without function	
 T0 2 1	External flow temperature sensor (e.g. differential sensor)	▶ Connect the external flow temperature sensor. ▶ Set hydraulic low loss header with service function 2-A1.
 T1 2 1	Outside temperature sensor	▶ Connect the outside temperature sensor.
 LF0 2 1	Without function	
 I3 2 1	External switching contact, volt free (e.g. temperature switch for underfloor heating system, bridged in the delivered condition)	If several external items of safety equipment, such as TB 1, and a condensate pump are connected, they must be connected in series. Temperature switch is only to be connected to the device if the heating system is equipped with an underfloor heating system and has a direct hydraulic connection: when the temperature switch trips, the CH and DHW modes are interrupted. ▶ Remove the jumper. ▶ Connect the temperature switch. Condensate pump: the CH and DHW modes are interrupted if the condensate drain is faulty. ▶ Remove the jumper. ▶ Connect the burner shutdown contact. ▶ Establish an external 230V-AC connection.
 I1 2 1	24V-On/Off temperature controller (volt free)	▶ Remove the jumper. ▶ Connect the On/Off temperature controller.
 BUS 2 1	External operator unit/external module with 2-wire BUS	▶ Remove the jumper at I3. ▶ Connect the communication cable.
 5AF	Fuse	There is a replacement fuse on the inside of the cover.
 230V OUT L N LR LR	230V-On/Off temperature controller	▶ Remove the jumper at L-LR and N-LR. ▶ Connect the 230V-On/Off temperature controller.

Table 12 Terminal strip for external accessories

7 Commissioning

7.1 Pre-Commissioning checks



DANGER

Risk of electric shock!

- ▶ Before carrying out any work on electrical components, isolate them from the power supply (230 V AC) (fuse, circuit breaker) and secure against unintentional re-connection.
- ▶ Check for zero potential before proceeding with work.

NOTICE

If the appliance is not to be commissioned immediately then, after successfully completing all of the checks and any rectification work:

- ▶ Isolate the electricity supply.
- ▶ Isolate the gas supply.
- ▶ Close the water shut-off valves to the appliance.
- ▶ Label appropriately.

7.2 Filling the appliance and adding Inhibitor



Before pressurising the system.

Additional expansion vessel fitted to the system.

The appliance integral expansion vessel is pre-charged to 0.75 bar. A Schrader type valve is fitted to the expansion vessel to allow for pressure adjustment if required.

- ▶ If an extra expansion vessel is fitted to the central heating system, ensure that it is set to the same pressure as the appliance internal expansion vessel, refer to separate instructions supplied with the extra expansion vessel.

Filling the system - Sealed systems

NOTICE

- ▶ Salt based softened water must not be used to fill the central heating system.
- ▶ Check drain cocks and manual air vents are closed and all radiator valves are open. Add a suitable inhibitor or combined inhibitor/anti-freeze, if the system is exposed to freezing conditions, to the heating system water in accordance with the manufacturers instructions.
- ▶ Turn on the water main and open the system valves.
- ▶ Fill the system to between 0.8 and 1.7 bar via a WRAS approved filling loop or one of the Integrated filling link accessories.
 - Refer to Integrated filling link accessory instructions for operation and use.
- ▶ The Automatic Air Vent will release any air trapped in the appliance.
- ▶ Manually vent all radiators, tighten when completed and check the system for any leaks and correct if required.
- ▶ Top up the system pressure if the pressure drops below 0.8 bar.
- ▶ Isolate and remove filling loop connections to the system.
 - Refer to Integrated filling link accessory instructions for any further actions required after filling the system.



Filling the system - When initially filling the appliance, before power is applied, use the pressure gauge to set the system pressure. Once the appliance electrical pre commissioning is complete and the appliance is switched on refer to the digital pressure display on the appliance.



The analogue pressure gauge within the appliance is for indication purposes only, and is intended to assist when initially filling the system. Pressure shown on this gauge should not be compared to readings shown on the digital display as they will differ, especially when the circulation pump is running. Final adjustments to system pressure must be made whilst referring to the digital pressure display.

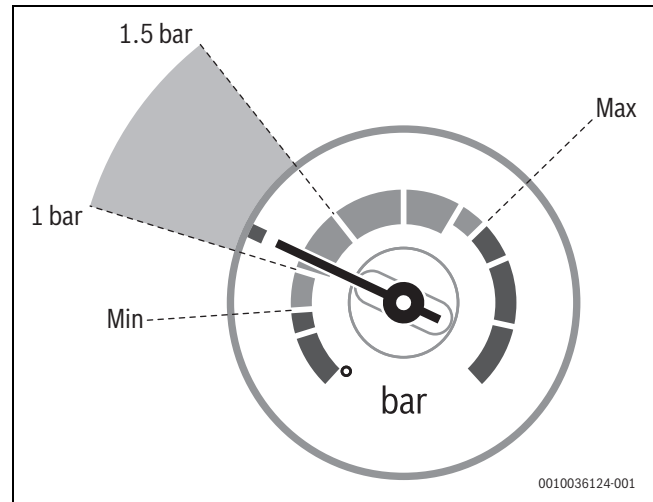


Fig. 28

Integral keyless filling link

Locate the filling link and follow the instructions for re-pressurising the system.

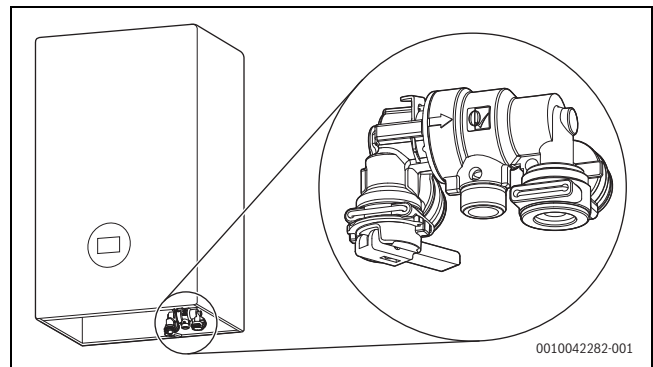


Fig. 29

- ▶ Re-pressurise the system.
 - Pull the lever [1] down to start the filling process.
- ▶ When the pressure, shown on the display, reaches between the 1 and 1.5 bar,
 - Release the lever [1] to stop the filling process.

- Top up the system pressure, if as a result of the air bleeding the pressure drops off.

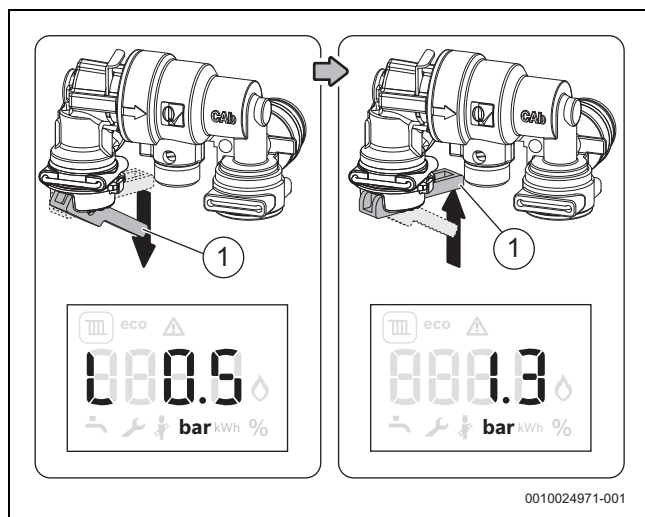


Fig. 30



If the display reads more than 1.5 bar as a result of over filling:

- Bleed one radiator until the pressure, shown on the display, returns to between 1 and 1.5 bar.

7.3 Adjusting the operating pressure of the heating system

Pressure shown on the digital display	
1 bar	Minimum charge pressure (when system is cold)
1 - 1.5 bar	Optimal charge pressure
3 bar	Maximum charge pressure at maximum heating water temperature must not be exceeded (pressure relief valve opens).

Table 13

If the displayed pressure is below 1 bar when the system is cold:

- Top up the water until the indicator is between 1 bar and 1.5 bar again.

If pressure is not being maintained:

- Check tightness of expansion vessel and heating system.

7.4 Starting the appliance

NOTICE

Damage to appliance or system!

Running the appliance:

- Never run the appliance when the appliance/system is empty or partially filled.

7.4.1 Control panel overview

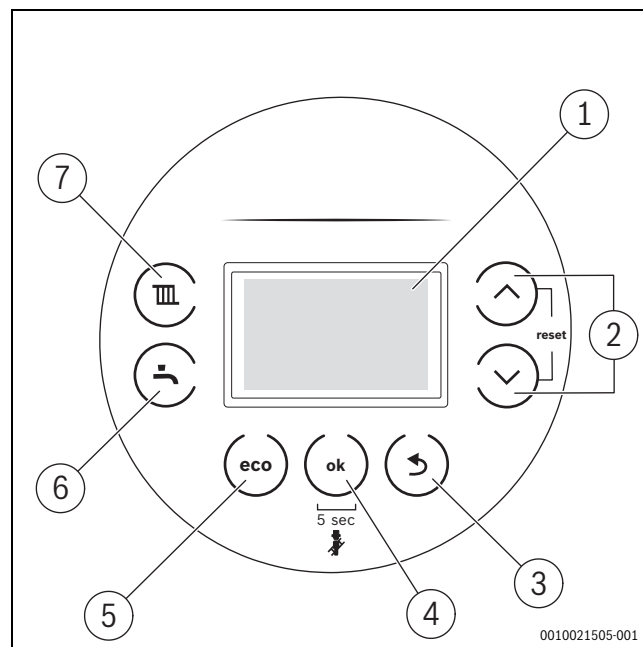


Fig. 31 Control panel

- [1] Display
- [2] ▲ and ▼ keys: To navigate through menus and increase/decrease settings
- [3] ↵ key: Return/back
- [4] ok key: Save settings, Chimney sweeper key (Service Engineer function): press 5 seconds for chimney sweeper mode
- [5] eco key: Hot water preheat selection
- [6] Hot water key: Adjusting the hot water temperature
- [7] Heating key: Heating mode on, set the maximum flow temperature

7.4.2 Turn on the appliance

Set the language the first time the appliance is turned on.

- To scroll through the languages, press the ▲ or the ▼ key.
- To select the desired language, press the **ok** key.



When the symbol  appears alternately with the flow temperature, the siphon filling program is active. The condensate siphon in the appliance is filled (→ chapter 7.4.3).

Detailed operating settings



Appliance operation

- Refer to Operating Instructions for full details on setting the CH flow temperature, DHW temperature set point and the operating settings menu information.

**WARNING****Risk of scalding!**

This appliance may deliver water at high temperature.

- ▶ Refer to the plumbing code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.
- ▶ This appliance is supplied with the CH control set at approximately 65 °C, a temperature that should be suitable for most installations that comply with current Building Regulations. When the boiler switches from CH to DHW, the temperature of the hot water may briefly exceed the DHW set point if the CH temperature is set higher than the DHW temperature. If the CH temperature is changed to above 65 °C, it is advisable to fit a thermostatic mixing valve (TMV) at the point of use (e.g. before the bath hot tap or shower) to protect vulnerable people from scalding.

**WARNING****Risk of scalding!**

- ▶ This appliance is supplied with the CH control set at approximately 65 °C, a temperature that should be suitable for most installations. When the boiler switches from CH to DHW, the temperature of the hot water may briefly exceed the DHW set point if the CH temperature is set higher than the DHW temperature. If the CH temperature is changed to above 65 °C, it is advisable to fit a thermostatic mixing valve (TMV) at the point of use (e.g. before the bath hot tap or shower) to protect vulnerable people from scalding.

7.4.3 Siphon filling mode, manual activation/de-activation

The siphon filling mode is activated automatically or manually by the installer on the appliance.

- ▶ Press the **||||** key and the **⏸** key simultaneously, until **L.A** will be displayed.
- ▶ Press the **▲** key repeatedly, until **L.4** will be displayed.
- ▶ Press the **ok** key to confirm.
- ▶ Select and adjust service function **4-A2**.

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

- The appliance is switched on using the fuse spur.
- The burner was not in use for at least 28 days.
- After switching from summer to winter mode.
- After a reset.

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

During the siphon filling program, the symbol  appears alternately with the flow temperature on the display.

The siphon filling mode is interrupted when the chimney sweep mode is started.

7.5 Chimney sweep mode

You have 15 minutes to take your measurements or to make your settings. After this time the appliance returns to normal operation. When running in the chimney sweep mode, the appliance will operate both the central heating and the domestic hot water circuits. This is to allow sufficient time for this part of the commissioning procedure. It will be necessary to run water through the domestic hot water circuit to ensure that the appliance will not overheat whilst in chimney sweep mode.

In chimney sweep mode the rated output of the appliance can be selected.

- ▶ Press the **ok** key until the countdown is completed and the symbol  appears.
- ▶ Set the desired rated output min and max using the **▲** or the **▼** keys. The value is accepted after 2 seconds.
- ▶ To exit the chimney sweep mode, press the **↶** key.

Adjustment with casing removed in chimney sweep mode

1. Set the chimney sweep mode and start up the appliance at maximum rated output.
2. Set the chimney sweep mode and set the appliance at minimum rated output.

7.6 Combustion casing removal

- ▶ Remove the combustion cover.

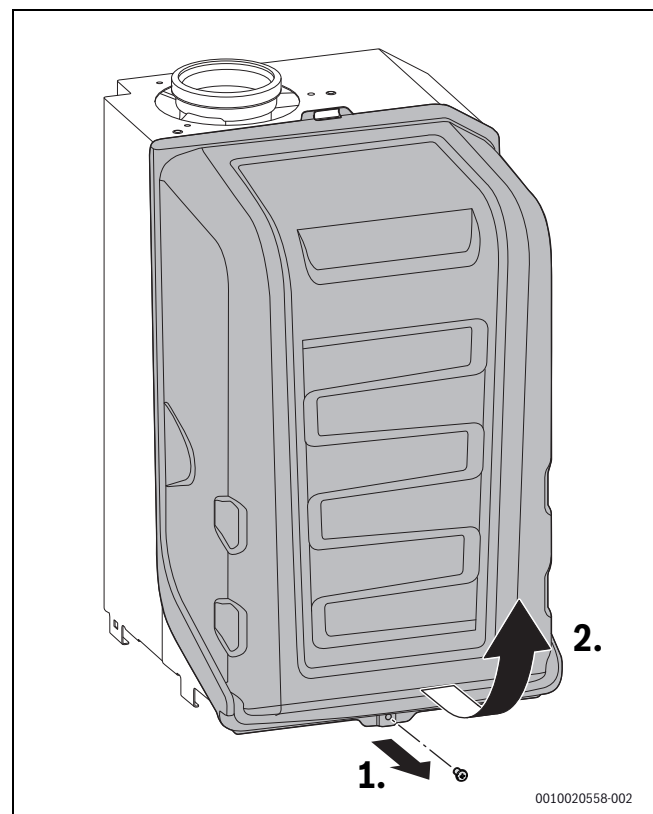


Fig. 32 Removing the combustion cover

0010020558-002

7.7 Checking gas inlet pressure

7.7.1 Checking the gas supply pressure

- ▶ Switch off the appliance and close the gas isolator.
- ▶ Unscrew the screw on the test point for the gas supply pressure and connect a pressure gauge.

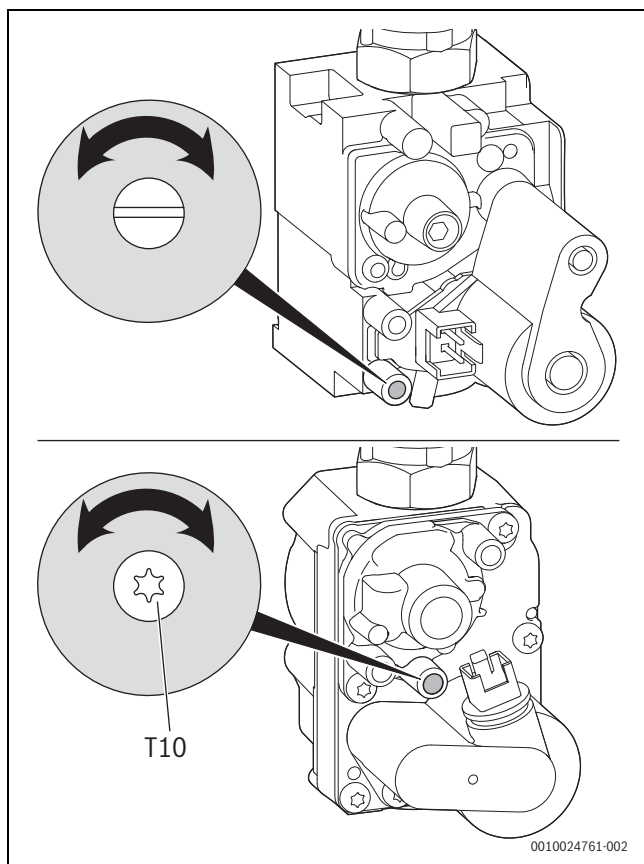


Fig. 33 Gas valve test points (above: SIT valve, below: Honeywell valve)

- ▶ Open the gas isolator and switch on the appliance.
- ▶ Ensure that there is heat transfer by opening the radiator valves and zone valves.
- ▶ Set the chimney sweep mode and start up the appliance at maximum rated output.
- ▶ Check the required gas supply pressure according to table 14.



Commissioning must not take place outside of the permissible pressure range.

- ▶ Identify the cause and rectify the fault.
- ▶ If this is not possible: isolate the appliance on the gas side and notify the gas supplier.



If the operating inlet pressure cannot be achieved there may be an issue with the gas supply meter (NG), cylinder regulator (LPG), or pipe sizing (Ref AS/NZS5601). This must be resolved before proceeding.

- ▶ Exit the chimney sweep mode.
- ▶ Switch off the appliance, close the gas isolator, remove the pressure gauge and tighten the screw.

- ▶ Check for gas tightness.

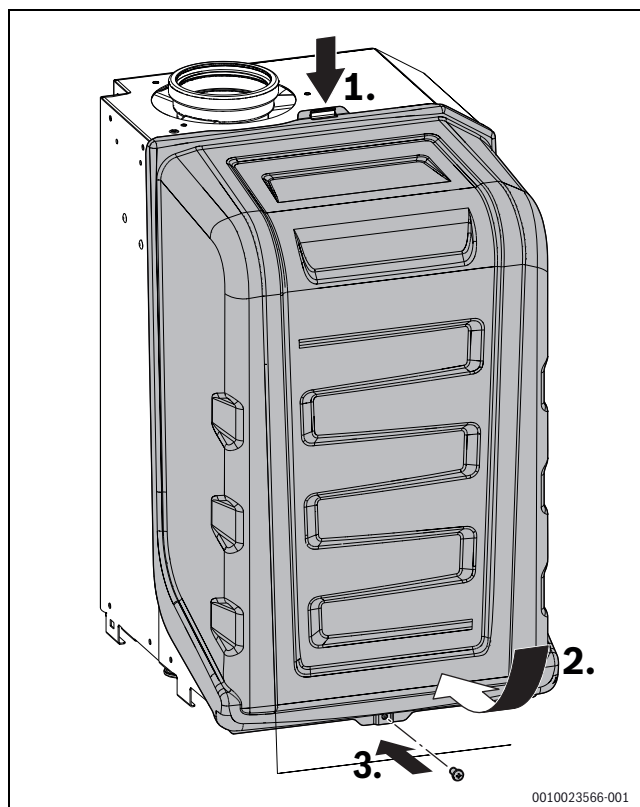


Fig. 34 Refit combustion casing

- ▶ Refit the combustion casing.
- ▶ Ensure this cover is engaged onto top bracket [1] before securing screw [3].

Gas pressure within the system



The appliance must be running at maximum output rate when performing the gas rate check (→ chapter 7.5).



Combi appliances

- ▶ Running a hot water tap does not guarantee the boiler will operate at maximum output throughout the test.

Gas type	Design pressure [mbar]	Permissible pressure range at maximum rated output	
		[mbar]	[kPa]
NG (23)	11.3	11 – 30	1.1 – 3.0
LPG (propane) ¹⁾	27.5	25 – 45	2.5 – 4.5
LPG (butane)	27.5	25 – 35	2.5 – 3.5

1) Standard figure for LPG with fixed cylinders with capacities up to 15 000 l

Table 14 Permissible gas supply pressure

If the pressure drops are greater than shown below, then this would indicate a problem with the pipe work or connections within the system.

NOTICE

Do not continue commissioning until the correct gas pressure is achieved.

- ▶ Set the chimney sweep mode and start up the appliance at maximum rated output.
- ▶ Where a gas meter is not available (e.g. LPG) the CO/CO₂ must be checked to the units shown in the setting of the air/gas ratio.
- ▶ If pressure and gas rate are satisfactory press the **ok** key or the **↵** key and the boiler will return to normal operation.

7.8 Checking for gas leaks during operation

- ▶ Use an approved gas sniffer or leak detection fluid to check all connections for possible leaks. Leak detection fluid must be certified as a gas leak testing agent.
- ▶ Do not allow leak detection fluid to come into contact with the electrical components.

7.9 CO and combustion check

The following combustion and flue integrity checks are mandatory and these values must be recorded on the check list, at the end of these instructions.

Once the gas rate and pressure have been confirmed as acceptable then the CO and combustion checks can be undertaken.

The flow chart is given for guidance, the details of the checks are given in the following sections:

- Checking flue integrity (→ chapter 7.10).
- Flue gas analysis (→ chapter 7.11).

NOTICE

Before CO and combustion checks:

- ▶ Verify the appliance is connected to the correct gas type.
- ▶ Ensure the appliance is supplied with the correct gas inlet pressure and gas rate as specified previously in the Commissioning section.
- ▶ Visually check the integrity of the whole flue system and confirm that all the components are correctly assembled, fixed and supported.
- ▶ Check and zero the analyser in fresh air as specified by the manufacturer.

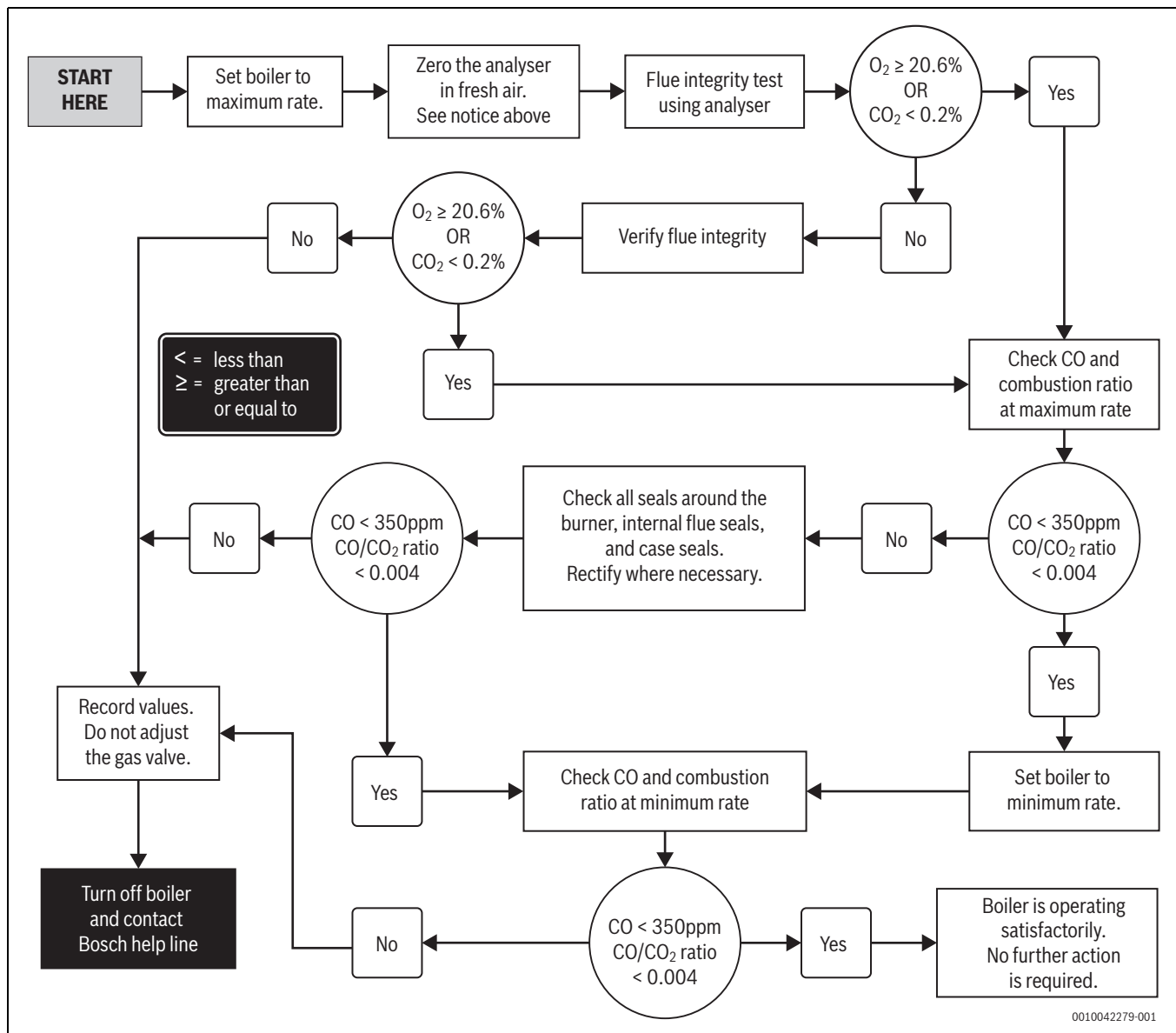


Fig. 35 Commissioning checks flow chart

7.10 Checking flue integrity



Flue integrity check

- ▶ The combustion casing must be fitted whilst this test is carried out.
- ▶ Refit the test point plugs after the test has been completed.

The integrity of the flue system and performance of the appliance can be checked via the flue turret/adaptor sample points.

Air inlet sample point location on flue turret/adaptor.

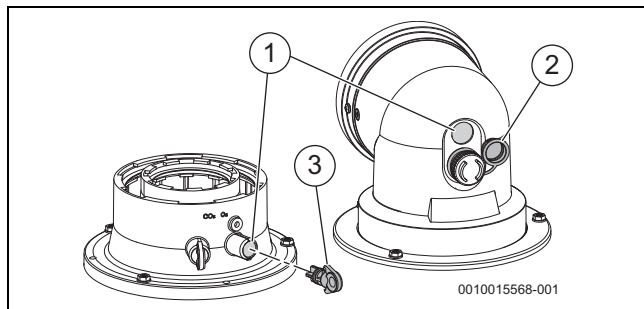


Fig. 36 Flue integrity check test point

- [1] Air inlet sample point
- [2] Flue turret air inlet blank plug (with retaining ring)
- [3] Flue adaptor air inlet blank plug
- ▶ With the appliance combustion casing on and the appliance running at maximum output in chimney sweep mode (→ chapter 7.5 "Chimney sweep mode"), remove the blanking plug [2 or 3] for the air inlet sample point [1].
- ▶ Insert the analyser probe into the air inlet sample point [1].
- ▶ Allow the readings to stabilise and check that:
 - O_2 is equal to, or greater than 20.6%
 - CO_2 is less than 0.2%
- ▶ If the readings are outside these limits then this indicates that there is a problem with the flue system or combustion circuit.

7.11 Flue gas analysis

NOTICE

Combustion testing

- ▶ Combustion testing must be carried out by a competent qualified person. Testing must not be attempted unless the person carrying out the combustion check is equipped with a calibrated Flue Gas Analyser and is competent in its use.



Flue gas analysis

- ▶ Ensure that the gas inlet pressure has been checked and is satisfactory.
- ▶ Refit the test point plugs after the test has been completed.

The flue gas analysis performance of the appliance can be checked via the flue turret/adaptor sample points.

Refer to figure 37 for the location of the flue gas sample point on flue turret/adaptor.

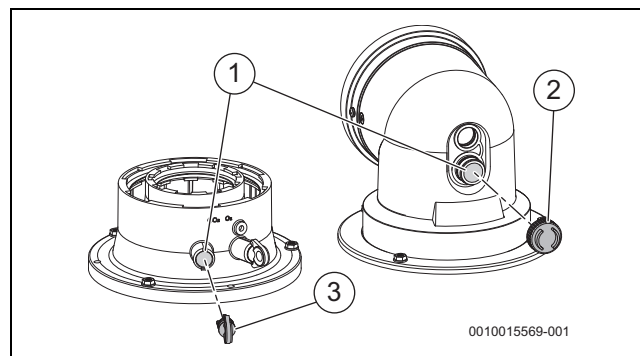


Fig. 37 Combustion test

- [1] Flue gas sample point
- [2] Flue turret flue gas blank plug
- [3] Flue adaptor flue gas blank plug

The CO and combustion ratio are checked;

- In chimney sweep mode at maximum output.
- In chimney sweep mode at minimum output.

Appliance to maximum output

- ▶ Set the appliance running at maximum output in chimney sweep mode (→ chapter 7.5 "Chimney sweep mode").

Appliance to minimum output

- ▶ Set the appliance running at minimum output in chimney sweep mode (→ chapter 7.5 "Chimney sweep mode").
 - Allow the appliance to stabilise at minimum output.

Measuring the CO and combustion ratio.

- ▶ Remove the blanking plug [2 or 3] for the flue gas sample point [1].
- ▶ Insert the analyser probe into the flue gas sample point [1].
 - Ensure that the probe reaches the centre of the flue gas exhaust, adjust the cone on the probe so that it seals the sample point and correctly positions the end of the probe.
- ▶ Check the CO and combustion readings.

7.12 Range rating the appliance

The maximum heat output of this boiler can be adjusted to suit the exact requirements of the building. The process of adjusting the maximum heat output is commonly referred to as range rating. The new boiler is set at the maximum output and should be adjusted when it is installed and commissioned. In accordance with the standards, the declared space heating efficiency, useful efficiency and NO_x values efficiency for this range rated boiler are not measured at the maximum output. To achieve the published efficiency and NO_x values, the gas rate should be reduced (→ chapter , Menu 3 (L.3) Basic settings, Service function 3-b1, page 33).

7.13 Finishing commissioning

7.13.1 Fitting the appliance casing



The front casing is to be secured at the bottom with one screw (as supplied) against unauthorised removal (electrical safety).

- ▶ Always secure the casing with this screw.
- ▶ Do not operate the boiler without a casing.



- ▶ Remove the protective films from the boiler display before handing over to the user.

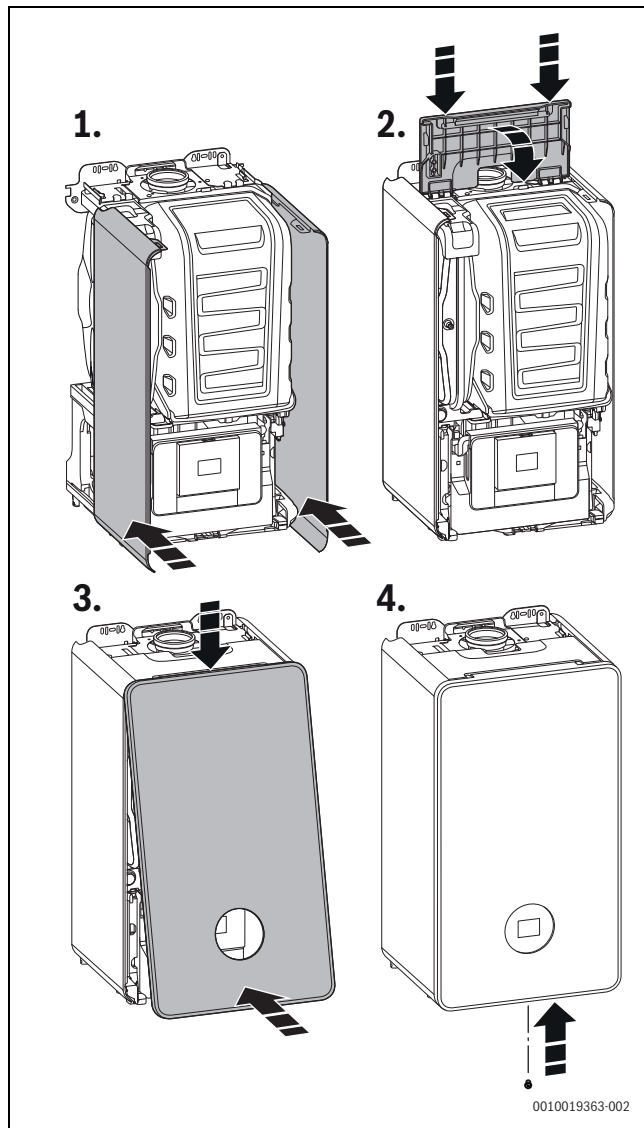


Fig. 38 Fitting the appliance casing

- [1] side covers
- [2] top
- [3] front
- [4] bottom

Appliance handover:

- ▶ Complete the Gas Boiler Commissioning Checklist.
- ▶ Show the customer the special features of the appliance.
- ▶ Show the customer the efficiency tips in the User Instructions.
- ▶ Set up the appliance controls and show the customer how to operate all the control unit/s for central heating and DHW operation.
 - Also show where in the appliance/controls documentation where this information can be found.
- ▶ Where applicable, instruct the customer on:
 - how to check the system pressure and re-pressurise if necessary.
 - how to set the TRVs.
 - how to reset the appliance.
- ▶ Show the customer the fault finding section in the User Instructions.
- ▶ Show the customer where the serial number/appliance information is located, they will need this information if they call in with a problem.
- ▶ Give the customer details of how to contact the installer/ gas emergency numbers.
- ▶ Show the customer how to safely isolate the appliance.
- ▶ Advise the customer where they can find information on the Bosch Group website
www.bosch-homecomfort.au / www.bosch-homecomfort.nz.
- ▶ Ensure that all documentation, is left with the appliance or homeowner.
 - Appliance documentation.
 - Controls documentation.
 - Any other equipment documentation that is connected to the appliance or system.
- ▶ Appliance not in use
 - If the appliance is not going to be used immediately and may be exposed to freezing conditions, advise the customer of the precautions necessary to prevent damage to the appliance, system and building.
 - If the appliance is unused and exposed to freezing conditions, safely isolate all the mains supplies and drain the system and appliance, label accordingly.
- ▶ Show the customer the location of the condensate pipe run in unheated or external areas that may be at risk of freezing during prolonged cold spells.
- ▶ **User recommendation:**
 - Advise the user to have the appliance and heating system thoroughly serviced annually by a competent, registered gas engineer, such as a Licensed Gas service technician.
 - Present, where relevant, maintenance aids and reminders within the appliance menus.
 - Arrange an inspection/maintenance contract with an approved heating contractor.

7.13.2 Checking the operating status of the heating pump

An LED on the pump indicates the operating status.

Possible operating states are:

- LED flashing green = normal operation
- LED solid green = no communication with heating pump, operation without modulation
- LED solid red = malfunction

If LED is solid green:

- ▶ Check and ensure correct connection of the signal cable.

If LED is solid red:

- ▶ Determine and eliminate the cause of the malfunction.

Possible causes of a malfunction are:

- Air in the system,
- low voltage,
- pump is blocked.

8 Settings in the service menu

Many appliance functions can be set and checked in the service menu.

8.1 Operating the service menu

Opening the service menu

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

Closing the service menu

- ▶ Press the  button.

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 setting values

- ▶ Select the menu item with the **OK** key.
- ▶ To select the desired value, press the  or the  key.
The setting is applied after 5 s or after pressing the **OK** key.

Exiting the menu item without saving values

- ▶ Press the  button.
The value is not saved.

Documenting the settings

The label "Service menu settings" (scope of delivery) makes it easier to restore the individual settings following maintenance.

- ▶ Enter modified settings.
- ▶ Affix label to the device in a visible location.

8.2 Service menu

8.2.1 Service functions overview

Menu 1: Info

- ▶ Press the  key and  key simultaneously until the display shows **L.1.**
- ▶ To confirm the selection: press **OK** key.
- ▶ Selecting and setting the service function.

Service function	Unit	Additional Information
1-A1 Current operating status		Status code
1-A2 Current fault		Malfunction Code
1-A3 Maximum heat output	%	The maximum heating capacity can be decreased via the service function 3-b1.
1-A5 Temperature at flow temperature sensor	°C	–
1-A6 Set flow temperature (requested by heating controller)	°C	–
1-A7 Temperature at the low loss header	°C	This service function is only available if service function 2-A1 is activated.
1-b2 Volumetric flow rate of the turbine (DHW)	L/min	–
1-b3 Current DHW temperature	°C	–
1-b4 DHW temperature	°C	–
1-b7 Set DHW temperature (requested by heating controller)	°C	–
1-b8 Current heat output as a % of the maximum rated heat output	%	
1-C1 Ionisation current	µA	Permissible values are on page 58.
1-C2 Current pump modulation	%	
1-C4 Current outside temperature (with outside temperature sensor connected)	°C	–
1-C6 Operating pressure	bar	–
1-d1 Collector temperature	°C	Only displayed when a solar module is connected.
1-d2 Temperature at solar cylinder (bottom)	°C	Only displayed when a solar module is connected.
1-d3 Solar pump	%	Only displayed when a solar module is connected.
1-d4 Solar unit fault		Only displayed when a solar module is connected. Malfunction Code
1-d5 Status Monitor fill automatically		0: OFF 1: ON
1-E1 Software version of the control panel (main version)		–
1-E2 Software version of the control panel (secondary version)		–
1-E3 Coding plug number		Running-text display with five-digit coding plug number.
1-E4 Coding plug version		–
1-EA Software version of device electronics (main version)		–
1-Eb Software version of device electronics (secondary version)		–

Table 15 Menu 1: Info

Menu 2: Hydraulic settings

- ▶ Press the  key and  key simultaneously until the display shows **L.1.**
- ▶ Press the  key repeatedly until **L.2** appears.
- ▶ To confirm the selection: press **OK** key.
- ▶ Selecting and setting the service function.



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

Service function	Settings/adjustment range	Remark/restriction
2-A1 Low-loss header	• 0: no low loss header installed • 1: temperature sensor connected to the device • 2: low loss header connected to the module • 3: low loss header without temperature sensor	This setting defines where the temperature sensor of the low loss header is connected.
2-A3 Hydraulic configuration, heating circuit 1	• 0 (Heating pump connected to the module) • 2: heating pump behind the low loss header connected to the device (PW2)	Setting only if heating circuit 1 is connected behind the low loss header without module.

Table 16 Menu 2: hydraulic settings

Menu 3: Basic settings

- ▶ Press the **||||** key and **↶** key simultaneously until the display shows **L.1.**
- ▶ Press the **▲** key repeatedly until **L.3** appears.
- ▶ To confirm the selection: press **OK** key.
- ▶ Selecting and setting the service function.



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

Service function	Settings/adjustment range	Remark/restriction
3-b1 Maximum approved heating capacity	50 ... 100 % (depending on the appliance output)	▶ Set the heating capacity in percent. ▶ Measure the gas rate. ▶ Compare the measurement with the setting tables (→ page 59). Correct the setting in the case of any deviation.
3-b2 Time interval between stopping and starting the burner in heating mode	3 ... 10 ... 60 minutes	The time interval determines the minimum waiting time between switching off the burner and switching it back on (standby period).
3-b3 Temperature differential for restarting the burner	-15 ... -6 ... -2 K (°C)	The difference between the current flow temperature and the set flow temperature until the burner is switched on.
3-C4 Turbine signal delay	2 ... 16 × 0.25 seconds	The delay prevents sudden changes in the water supply pressure from causing the burner to briefly operate although no water is drawn off.
3-C5 Delay of DHW mode (solar mode)	0 (not active) ... 50 seconds	DHW mode will be suppressed until the DHW temperature sensor detects if the water preheated by solar energy has reached the desired DHW temperature. ▶ Set the DHW mode delay according to the system conditions.
3-C6 Time between DHW mode and change to heating mode	0 ... 1 ... 30 minutes	After hot water has been drawn, the device remains in DHW mode for the set time.
3-C8 Thermal disinfection	OFF - ON	With thermal disinfection activated, when drawing hot water the water is heated 70 °C for a duration of 10 minutes. After 10 minutes or after drawing hot water 3 minutes long, the thermal disinfection ends automatically.
3-CA DHW Mode	0: comfort mode, the device is continually kept at the set temperature. 1: ECO mode, only heat-up to the selected temperature when hot water is being drawn. 3: intelligent	Short waiting time in comfort mode, when domestic hot water is extracted. The device therefore switches on, even if no domestic hot water is extracted.
3-d1 Pump characteristic	0: Pump output proportional to the heat output 1: constant pressure 150 mbar 2: constant pressure 200 mbar 3: constant pressure 250 mbar 4: constant pressure 300 mbar 5: constant pressure 350 mbar 6: constant pressure 400 mbar	▶ In order to save energy and reduce any flow noise, set a low pump curve (→ sec 13.5, page 59).
3-d2 Pump control mode	OFF - ON	ON: Save energy: intelligent shutdown of heating pump for heating systems with weather-compensated controller. The heating pump is only switched on if required.
3-d3 Min. output of the heating pump	10 ... 100 %	Pump output at minimum heat output. Only available with pump characteristic 0.
3-d4 Max. output of the heating pump	10 ... 100 %	Pump output at maximum heat output. Only available with pump characteristic 0.
3-d6 Overrun time of the heating pump in heating mode	1 ... 2 ... 60 minutes 24 hours	The pump overrun begins at the end of the heat demand by the heating controller.

Table 17 Menu 3: Basic settings

Menu 4: Settings

- ▶ Press the  key and  key simultaneously until the display shows **L.1.**
- ▶ Press the  key repeatedly until **L.4** appears.
- ▶ To confirm the selection: press **OK** key.
- ▶ Selecting and setting the service function.



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

Service function		Settings/adjustment range	Remark/restriction
4-A1	Venting function	• 0 • 1: Switched on once (At the end of ventilation, the setting reverts to the "0" status.) • 2: Switched on permanently	The venting function can be switched on after maintenance work. During ventilation, the  symbol and flow temperature appear alternately in the display.
4-A2	Siphon filling program	• 0: (only permissible during maintenance) • 1: switched on with minimum appliance output • 2: Switched on with minimum heating capacity	The siphon filling program is activated automatically in the following cases: • 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 The next time there is a heat requirement for heating, the device is held at low thermal output for 15 minutes. The siphon filling program remains active until the device was in operation with low heat output for 15 minutes. The  symbol and flow temperature appear alternately in the display for the duration of the siphon filling program.
4-A3	3-way valve centre position	• OFF • ON	To fill the heating system
4-A4	Type of maintenance	Setting the service display • 0 • 1: By burner runtime • 2: By date (with heating controller) • 3: acc. to hours run	
4-A5	Burner runtime	• 10 ... 60 (= 1000 ... 6000 h)	This service function is only available if service function 4-A4 is set to 1 Burner runtime. After this interval has expired, the display indicates that an inspection is due via the service display 1018.
4-A6	Hours run	• 12 ... 72 months	This service function is only available if service function 4-A4 is set to 3 (Operating hours). After this interval has expired, the display indicates that an inspection is due via the service display 1018.
4-b1	Device-internal weather-compensated control	• OFF • ON	This service function is only available if an outside temperature sensor is detected in the system. This service function is no longer available when a weather-compensated control unit with EMS connection is connected.
4-b2	Outside temperature limit for automatic changeover between summer and winter mode.	• 0 ... 16 ... 30 °C	This service function is only available if service function 4-b1 is activated. If the outside temperature exceeds the set temperature limit, the heating is switched off (summer mode). If the outside temperature falls to at least 1 K (°C) below the setting, the heating is switched back on (winter mode).

Service function		Settings/adjustment range	Remark/restriction
4-b3	End point of the heating curve for weather-compensated control	• 20 ... 90 °C	This service function is only available if service function 4-b1 is activated. Set flow temperature for an outside temperature of -10 °C.
4-b4	Base point of the heating curve for weather-compensated control	• 20 ... 90 °C	This service function is only available if service function 4-b1 is activated. Set flow temperature for an outside temperature of +20 °C.
4-b5	Device frost protection	• OFF • ON	This service function is only available if service function 4-b1 is activated. The device frost protection function switches the burner and heating pump on when the outside temperature falls below the temperature set in the service function 4-b6. This prevents the wall mounted boiler freezing.
4-b6	Frost threshold temperature	• 0 ... 5 ... 10 °C	This service function is only available if service function 4-b1 is activated.
4-C1	Maximum temperature in the solar cylinder	• 20 ... 60 ... 90 °C	Only available if the solar module is activated. Temperature at which the solar cylinder can be charged.
4-C2	Solar pump speed control	• 0: No • 1 : PWM • 2: 0-10 V	Only available if the solar module is activated.
4-C3	Solar module active	• OFF • ON	Only available if the solar module is detected.
4-d2	Min. pressure	• 0.6 ... 0.8 bar	This service function is only available if service function 4-d1 ON is activated.
4-d3	Target pressure	• 1.0 ... 1.3 ... 1.7 bar	This service function is only available if service function 4-d1 ON is activated.
4-d4	Max. filling time	• 5 ... 30 ... 240 s	This service function is only available if service function 4-d1 ON is activated.
4-d7	Reset filling	• YES • NO	This service function is only available if service function 4-d1 ON is activated.
4-d8	Heating system type	• Small • Middle • Large	Small: < 8 radiators Middle: 8 – 15 radiators Large > 15 radiators
4-d9	Manuel filling	• YES • NO	Only possible if the number of maximum fillings has been reached. Before use, make sure that no water escapes from the heating system.
4-F1	Reset device to basic setting	• NO : settings are retained • YES: device is reset to factory settings	
4-F2	Reset service display	• NO • YES	

Table 18 Menu 4: settings

Menu 5: Limit values

- ▶ Press the key and key simultaneously until the display shows **L.1**.
- ▶ Press the key repeatedly until **L.5** appears.
- ▶ To confirm the selection: press **OK** key.
- ▶ Selecting and setting the service function.



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

Service function		Settings/adjustment range	Remark/restriction
5-A1	Maximum flow temperature	• 30 ... 88 °C	Limits the adjustment range for the flow temperature.
5-A2	Maximum DHW temperature	• 35 ... 60 °C	Limits the adjustment range for the domestic hot water temperature.
5-A3	Minimum output (heating and DHW)	• 12 ... 30 ... 50 %	

Table 19 Menu 5: limit values

Menu 6: Function checks

- ▶ Press the **||||** key and **↶** key simultaneously until the display shows **L.1.**
- ▶ Press the **▲** key repeatedly until **L.6** appears.
- ▶ To confirm the selection: press **OK** key.
- ▶ Selecting and setting the service function.



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

Service function		Settings/adjustment range	Remark/restriction
6-t1	Permanent ignition	• OFF • ON	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.
6-t2	Permanent fan operation	• OFF • ON	Fan running without gas supply or ignition.
6-t3	Permanent pump operation (heating pump)	• OFF • ON	The heating pump runs
6-t5	3-way valve permanently in the DHW heating position	• 0: Heating • 1: DHW • 2: Centre position	
6-t7	HC1 Pump	• OFF • ON	This service function is only available if service function 2-A3 2 ON is set.
6-t9	Solar pump	• OFF • ON	This service function is only available if a solar module is connected.
6-tA	Ionisation oscillator	• OFF • ON	
6-tb	Burner test	• OFF • ON	The burner test is ended by resetting the setting value to 0, or by exiting L.6.

Table 20 Menu 6: function checks

Menu 0: Manual operation

- ▶ Press the **||||** key and **↶** key at the same time until the display shows **L.1.**
- ▶ Press the **▲** key repeatedly until **L.0** appears.
- ▶ To confirm the selection: press **OK** key.
- ▶ Selecting and setting the service function.



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

Service function		Settings/adjustment range	Remark/restriction
0-A1	Manual operation	• OFF • ON	
0-A2	Set temperature in manual operation	• OFF • 30 ... 82 °C	This service function is only available if service function 0-A1 is switched on.

Table 21 Menu 0: manual operation

8.3 Thermal disinfection

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

You can program a heating controller with hot water control to perform thermal disinfection. Alternately, you can have a contractor carry out thermal disinfection.



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.
- ▶ Enable continuous operation of any DHW circulation pump that may be installed.
- ▶ Once the maximum temperature is reached, open the DHW draw-off points one by one, starting from the nearest and ending in the farthest, and draw off DHW until hot water at 70 °C has been discharging for 3 minutes.
- ▶ Restore the original settings.

9 Inspection and maintenance

9.1 Safety instructions for inspection and maintenance

⚠ Notes for the target group

Only approved contractors may carry out inspection, cleaning and maintenance in compliance with the system-relevant instructions. Improper execution may result in personal injury, including danger to life or material damage.

- ▶ Inform the user of the possible consequences of non-existent or improper inspection, cleaning and maintenance.
- ▶ Inspect the heating system at least once a year.
- ▶ Carry out any required cleaning or maintenance work according to the checklist (→ page 38).
- ▶ Remedy all defects immediately.
- ▶ Check the heat exchanger assembly once a year, and if necessary clean it.
- ▶ Use only original spare parts.
- ▶ Observe the service life of gaskets.
- ▶ Replace removed gaskets and O-rings with new ones.
- ▶ Record any work carried out.

⚠ Danger to life through electric shock!

Touching live parts can result in an electric shock.

- ▶ Before carrying out work on electrical components, isolate them from the power supply (230 V AC) and secure against unintentional reconnection.

⚠ Risk of death from escaping flue gas!

Escaping flue gas can cause poisoning.

- ▶ Check for leaks after working on flue gas-carrying components.

⚠ Risk of explosion from escaping gas!

Escaping gas can cause an explosion.

- ▶ Close the gas isolator prior to working on gas-carrying components.
- ▶ Carry out tightness test.

⚠ Risk of scalding from hot water!

Hot water can lead to severe scalding.

- ▶ Make residents aware of the risk of scalding prior to activating the chimney sweep mode or a thermal disinfection.
- ▶ Carry out thermal disinfection outside the normal hours of use.
- ▶ Do not change the maximum domestic hot water temperature set.

⚠ Risk of burning from hot surfaces!

Individual components of the floor standing boiler can become very hot even after being shut down for a long time!

- ▶ Before working on the boiler: allow the device to cool down.
- ▶ If necessary, wear protective gloves.

⚠ Escaping water can damage the device.

The control device can be damaged by escaping water.

- ▶ Cover the control device prior to work on parts routing water.

⚠ Observe the tightening torque.

		G 1/2"	Nm 20 (+10/-0)
		G 3/4"	Nm 30 (+10/-0)
		G 1"	Nm 40 (+20/-0)

Table 22 Standard tightening torque

Notification must be provided of all deviations in tightening torque.

9.2 Safety-relevant components

Safety-relevant components (e.g. air/gas ratio control valves) have a limited service life, which depends on their operating time in switching cycles or years.



If the operating time is exceeded or due to increased wear, the affected component may fail and the system safety may be lost.

- ▶ Do not repair, manipulate or disable safety-relevant components.
- ▶ Check safety-relevant components during every inspection and maintenance to determine the continued safety of the system.
- ▶ Replace safety-relevant components in the event of increased wear or at the latest when they have reached the end of their service life.
- ▶ Only use new and undamaged original spare parts for replacement.

Component	Max. operating time in switching cycles	Max. operating time in years
Air/gas ratio control valve	500.000	10

Table 23 Operating time of safety-relevant components

9.3 Resources for inspection and maintenance

- The following measuring devices are required:
 - Electronic flue gas analyser for CO₂, O₂, CO and flue gas temperature
 - Pressure gauge 0 - 30 mbar (minimum resolution 0.1 mbar)
- ▶ Use heat conducting paste 8 719 918 658 0.
- ▶ Use approved greases.

9.4 Checklist for inspection and maintenance

- ▶ Call up the current fault with service function 1-A2.
- ▶ Check the flue gas routing visually.
- ▶ Check the gas supply pressure.
- ▶ Check the gas/air ratio for minimum and maximum rated heat output.
- ▶ Check the tightness of the pipework on the gas and water side.
- ▶ Check and clean the heating block.
- ▶ Check the electrodes.
- ▶ Check the burner.
- ▶ Check the backflow preventer in the mixing device.
- ▶ Clean the condensate trap.
- ▶ Check the pre-charge pressure of the expansion vessel for the static head of the heating system.
- ▶ Check the charge pressure of the heating system.
- ▶ Check the electrical wiring for damage.
- ▶ Check the control system settings.
- ▶ Check the set service functions are in accordance with the "Settings in the service menu" label.

9.5 Checking the operating status of the heating pump

An LED on the pump indicates the operating status.

Possible operating states are:

- LED flashing green = normal operation
- LED solid green = no communication with heating pump, operation without modulation
- LED solid red = malfunction

If LED is solid green:

- ▶ Check and ensure correct connection of the signal cable.

If LED is solid red:

- ▶ Determine and eliminate the cause of the malfunction.

Possible causes of a malfunction are:

- Air in the system,
- low voltage,
- pump is blocked.

9.6 Check gas setting

Natural gas (NG)

Devices that are pre-set to natural gas are set to Wobbe index 50 MJ/m³ and 11.3 mbar (1.13 kPa) supply pressure and sealed in the factory.

Liquid gas (LPG)

Devices that are pre-set to liquid gas are set to Wobbe index 76.9 MJ/m³ and 27.5 mbar (2.75 kPa) supply pressure and sealed in the factory.

LPG type ¹⁾	Use
Commercially available propane	Recommended
Commercially available butane	Permitted
General product	Permitted
Universal LPG (U-LPG)	Permitted

1) According to NZS 5435

Table 24

- If the device is operated with the same gas type as the one set by the factory, adjustment to the rated heat input and the minimum heat input is not required.
- If a device is converted from **natural gas** to **LPG** (or vice-versa), conversion using a gas type conversion set and CO₂ or O₂ adjustment is required.
- ▶ Following the gas conversion, affix the gas type label (included in the scope of delivery of the wall-mounted boiler or gas type conversion set) to the wall-mounted boiler next to the data plate.



The gas/air ratio must always be set on the basis of a CO₂ or O₂ reading taken at maximum rated output and minimum rated output using an electronic measuring device.

9.6.1 Gas type conversion

The devices can be converted to liquid gas or natural gas. The part number of the respective gas type conversion set can be obtained from the price or spare parts list.



Risk of death from explosion!

Escaping gas can cause an explosion.

- ▶ Only allow a licensed contractor to carry out work on gas-carrying components.
- ▶ Close the gas isolator before working on any gas-carrying components.
- ▶ Replace used gaskets with new gaskets.
- ▶ After completing work on gas-carrying components, carry out a leak test.

- ▶ Install the gas type conversion set according to the supplied installation instructions.

Following every conversion:

- ▶ Set the gas type.
- ▶ Check and adjust the gas/air ratio.
- ▶ Affix the gas type label (included in the scope of delivery of the wall mounted boiler or gas type conversion set) to the wall mounted boiler next to the data plate.

9.6.2 Checking and, if required, adjusting the gas/air ratio

- ▶ Switch off the appliance.
- ▶ Remove the front cover.
- ▶ Remove the burner cover.

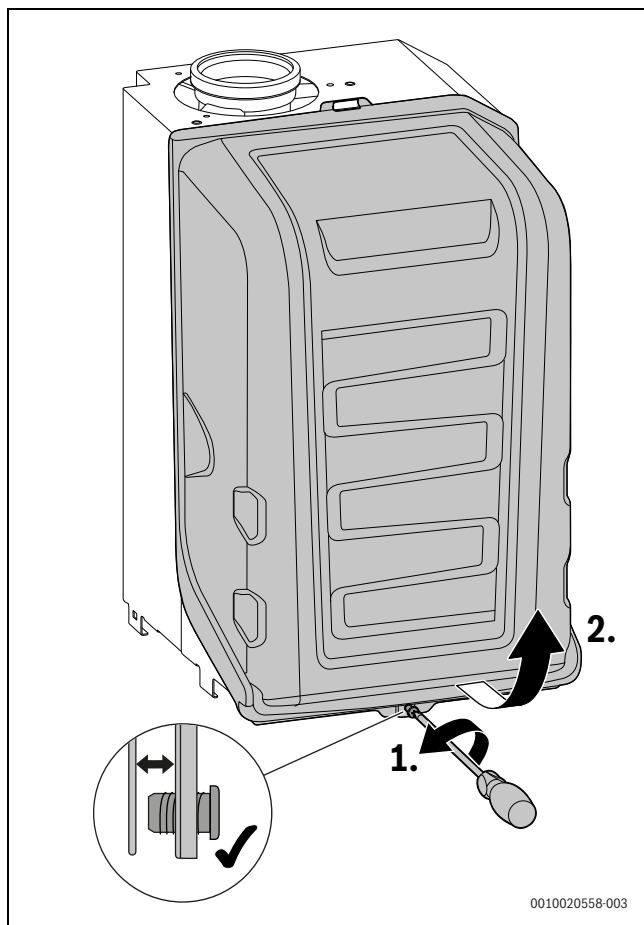


Fig. 39 Removing the burner cover

- ▶ After converting a gas type, roughly adjust the gas type on the scale of the gas adjustment nozzle.
 - **L** = n.a.
 - **H** = natural gas
 - **LPG** = liquid propane

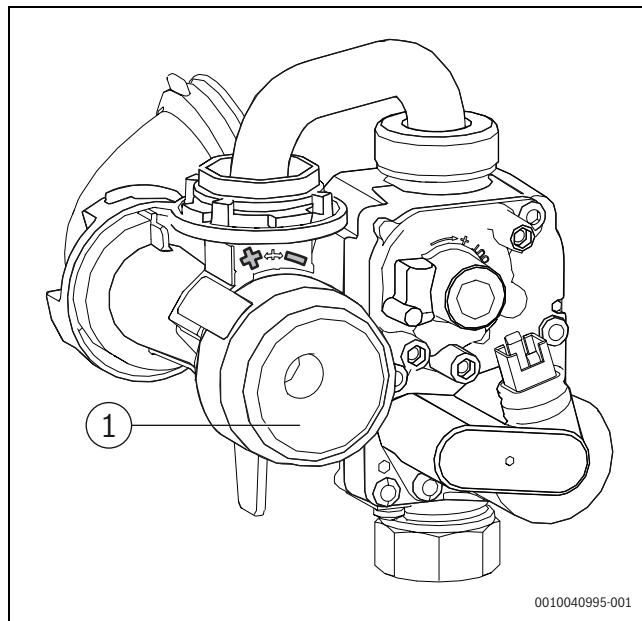


Fig. 40 Adjusting the gas/air ratio

[1] Adjustable nozzle

- ▶ Operate the appliance.
- ▶ Remove the bung from the flue gas test port.
- ▶ Push the flue gas probe centrally into the flue gas test port.
- ▶ Seal the test point.

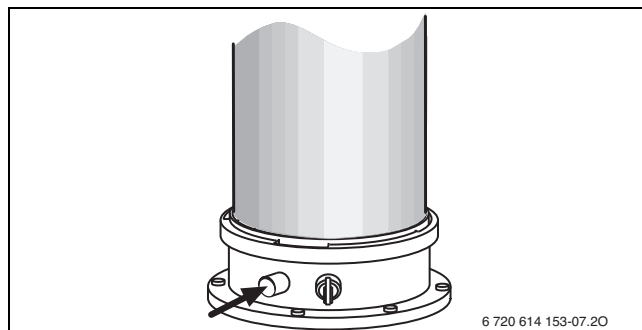


Fig. 41 Flue gas test port

- ▶ To ensure heat transfer: open the radiator valves.
- ▶ Set the chimney sweep mode and start up the device at maximum rated output (→ Chapter 9.7.1, page 41).
- ▶ Measure the CO₂ or O₂ content.
- ▶ Check the CO₂ or O₂ content at maximum rated output according to Tab. and match if required.
- ▶ To increase the CO₂ content, turn the adjustable nozzle to the left.
- ▶ To reduce the CO₂ content, turn the adjustable nozzle to the right.

Gas type	Maximum rated heat output		Minimum rated heat output	
	CO ₂	O ₂	CO ₂	O ₂
Natural gas	9.5 %	4.0 %	8.6 %	5.5 %
Liquid gas (LPG) Propane	10.8 %	4.6 %	10.2 %	5.5 %
Liquid gas (LPG) Butane	11.9	3.2	11.2	5.0

Table 25 CO₂ and O₂ contents

- ▶ Measure the CO content.
The CO content must be < 250 ppm.
- ▶ Set the minimum rated output.
- ▶ Measure the CO₂ or O₂ content.
- ▶ Remove the seal from the adjusting screw of the air/gas ratio control valve (only on the air/gas ratio control valve shown in the below Fig. 42) and set the CO₂ or O₂ content for minimum rated output.

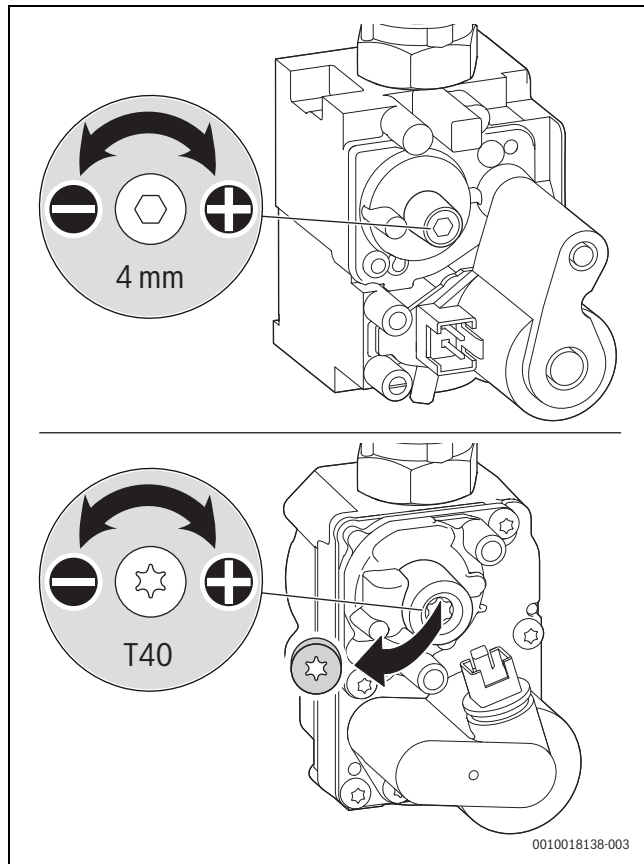


Fig. 42 Set the CO₂- or O₂ content

- ▶ Re-check settings at maximum and minimum rated output and re-adjust if required.
- ▶ Seal the air/gas ratio control valve.
- ▶ Sealing the adjustable nozzle.
- ▶ Exit the chimney sweep mode.
- ▶ Enter the CO₂ or O₂ contents in the commissioning report (→ Chapter 13.8, page 61).
- ▶ Remove the flue gas probe from the flue gas test port and refit the bung.

9.6.3 Check the gas supply pressure

- ▶ Switch off the device and close the gas isolator.

- ▶ Unscrew the screw on the test nipple for the gas supply pressure and connect a pressure gauge.

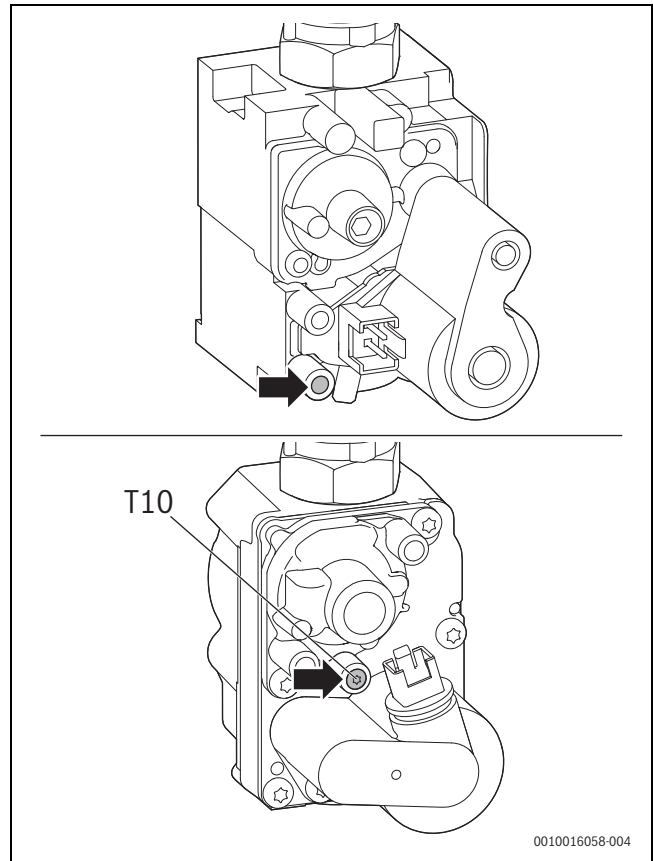


Fig. 43

- ▶ Open the gas isolator and switch on the device.
- ▶ Ensure that there is heat transfer by opening the radiator valves.
- ▶ Set the chimney sweep mode and start up the device at maximum rated output.
- ▶ Check the required gas supply pressure according to the following table.

Gas type	Design pressure [mbar]	Permissible pressure range at maximum rated output	
		[mbar]	[kPa]
NG (23)	11.3	11 – 30	1.1 – 3.0
LPG (propane) ¹⁾	27.5	25 – 45	2.5 – 4.5
LPG (butane)	27.5	25 – 35	2.5 – 3.5

1) Standard figure for LPG with fixed cylinders with capacities up to 15 000 l

Table 26 Permissible gas supply pressure



Commissioning must not take place outside of the permissible pressure range.

- ▶ Identify the cause and rectify the fault.
- ▶ If this is not possible: isolate the device on the gas side and notify the gas supplier.

- ▶ Set the chimney sweep mode and start up the device at minimum rated output.
- ▶ Exit the chimney sweep mode.
- ▶ Switch off the device, close the gas isolator, remove the pressure gauge and tighten the screw.
- ▶ Refit the casing.

9.7 Flue gas test

Flue gas path testing

The checking of the flue includes the testing of the flue gas routing and a CO test.

- ▶ Test the flue gas routing (→ Chapter 9.7.2, page 41).
- ▶ Measure CO (→ Chapter 9.7.3, page 41).

9.7.1 Chimney sweep mode



You have 30 minutes to take your measurements or to make your settings. After this time, the device returns to normal operation.

In chimney sweep mode the rated output of the device can be selected.

- ▶ Ensure that there is heat transfer by opening the radiator valves.
- ▶ Press the OK key until the countdown is completed and **Chimney sweep** is displayed.
- ▶ Confirm the query with **Yes**.
- ▶ Set the desired rated output using the **▲** or the **▼** keys.
The value is accepted after 2 seconds and marked with a tick.
- ▶ To exit the chimney sweep mode, press the **↵** key.

Adjustment with removed casing in chimney sweep mode

1. Set the chimney sweep mode and start up the device at maximum rated output.
2. Set the chimney sweep mode and start up the device at minimum rated output.

9.7.2 Tightness test of the flue gas path

Measurement of O₂ or CO₂ content in combustion air.

Use an annular gap probe for the measurement.



For flue gas routing of concentric flue systems, the tightness of the flue gas path can be tested with an O₂ or CO₂ measurement of the combustion air. The O₂ level must not fall below 20,6%. The CO₂ content must not exceed 0,2%.

- ▶ Remove the plug from the combustion air test nipple [2].
- ▶ Insert a flue gas probe into the connector and seal the test point.
- ▶ Set the **maximum rated output** in chimney sweep mode.

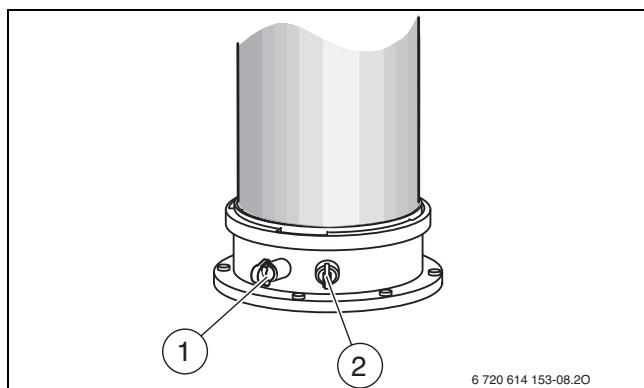


Fig. 44 Flue gas test port and combustion air test nipple

- [1] Flue gas test port
[2] Combustion air test nipple

- ▶ Measure the O₂ and the CO₂ content.
- ▶ Press the **↵** key.
The device returns to normal operation.
- ▶ Remove the flue gas probe.
- ▶ Re-install the plug.

9.7.3 CO test of flue gas

Use a multi-hole flue gas probe for the measurement.

- ▶ Remove the plug from the flue gas test port [1].
- ▶ Insert a flue gas probe into the port as far as it will go and seal the test point.
- ▶ Set the **maximum rated output** in chimney sweep mode.
- ▶ Measure the CO content.
- ▶ Press the OK key.
The device returns to normal operation.
- ▶ Remove the flue gas probe.
- ▶ Re-install the bung.

9.8 Checking the electrodes

- ▶ Remove the electrode set with gasket.
- ▶ Check electrodes for pollution.
- ▶ Clean or replace electrodes if required.
- ▶ Install electrode set with new gaskets.

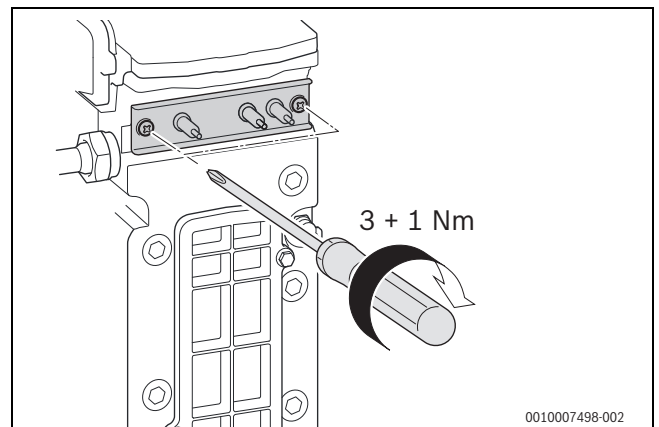


Fig. 45 Installing electrode set

- ▶ Check tightness of electrode set.

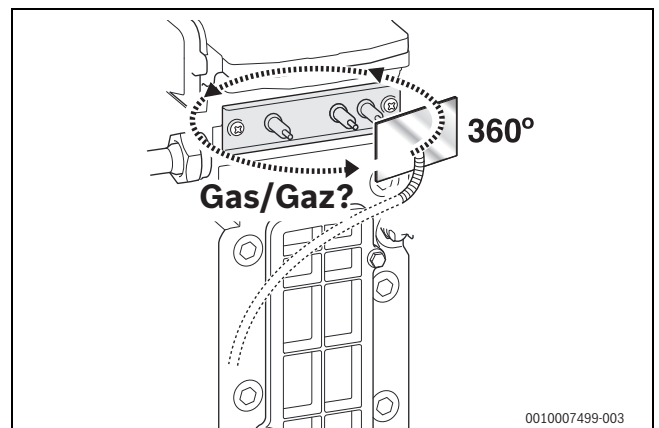


Fig. 46 Checking tightness

9.9 Checking the burner

1. Remove the nut and screw [1] on the burner cover.
2. Remove the burner cover.

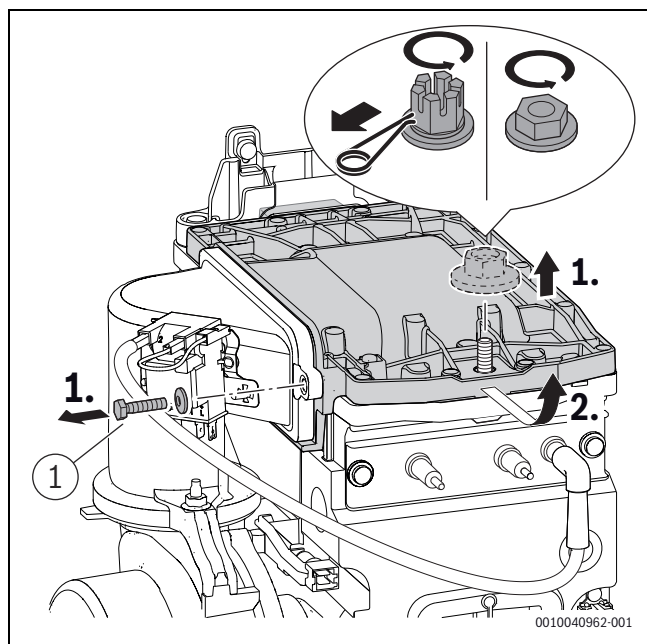


Fig. 47 Removing the burner cover

- Remove the burner and clean its components.

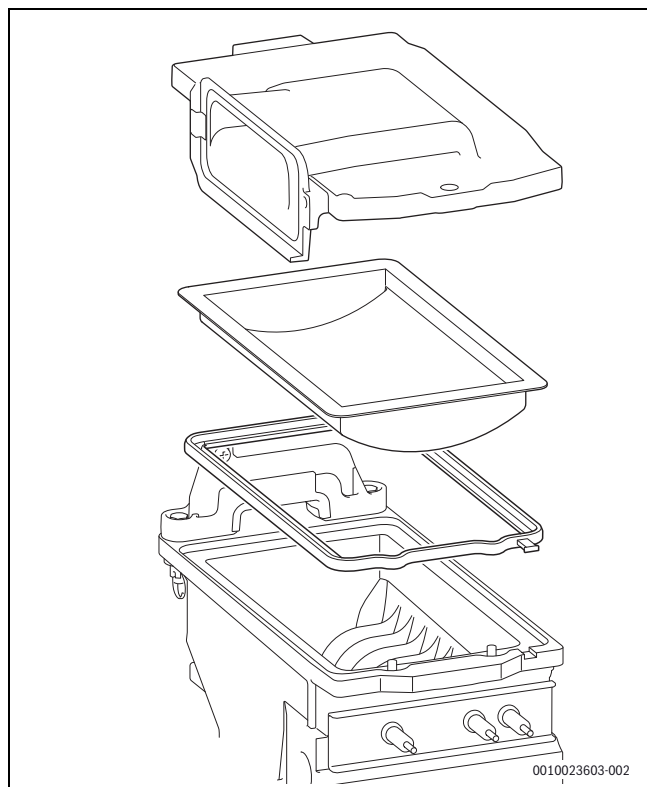


Fig. 48 Burner

- Reinstall the burner in reverse order, including a new gasket if required.
- Install the burner and the burner cover.
- Tighten the screw ([1], Fig. 47) on the burner cover with 5.5 ± 0.5 Nm.

- Tighten the nut on the burner cover with 15 ± 4 Nm.

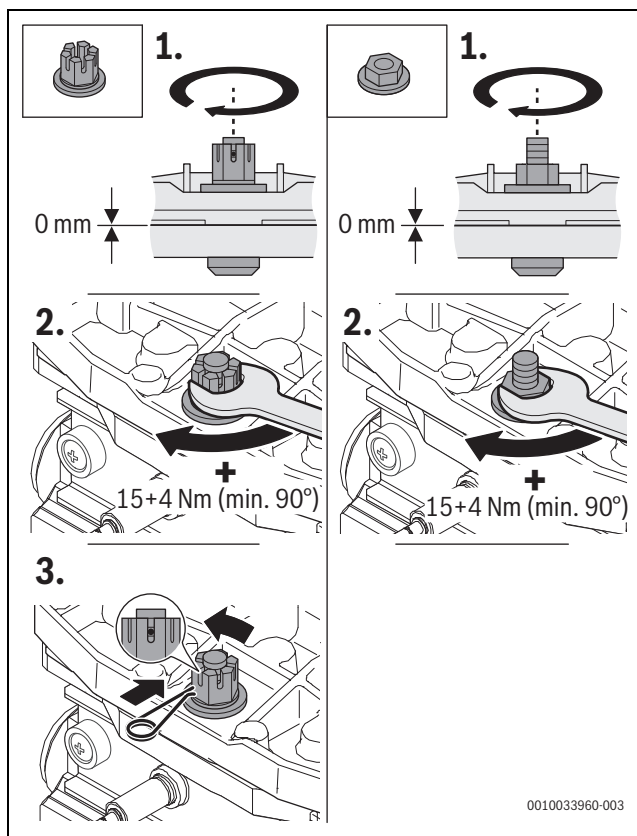


Fig. 49 Tighten the nut on the burner cover

- Check the gas/air ratio.

9.10 Checking the non-return valve in the mixing device

1. Disconnect the transformer.
2. Loosen the screw [1] and nut [2] on the mixing device.
3. Remove the mixing device.

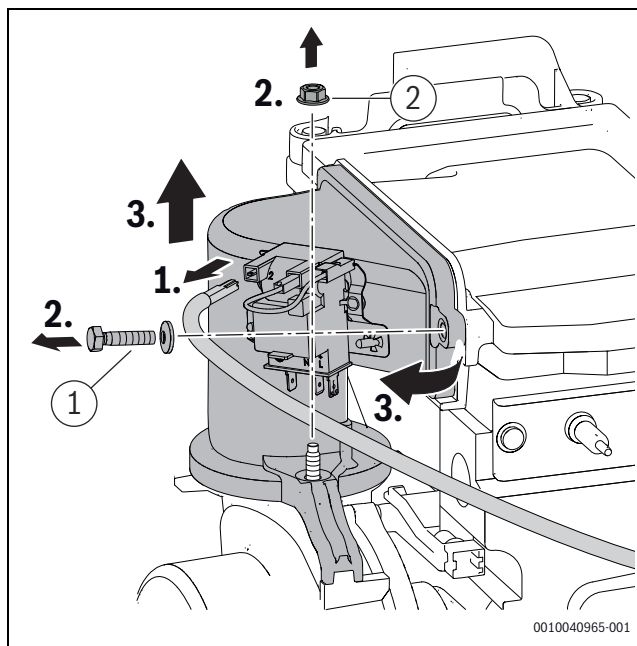


Fig. 50 Removing the mixing device

1. Remove the non-return valve.
2. Check the non-return valve for contamination and cracks.

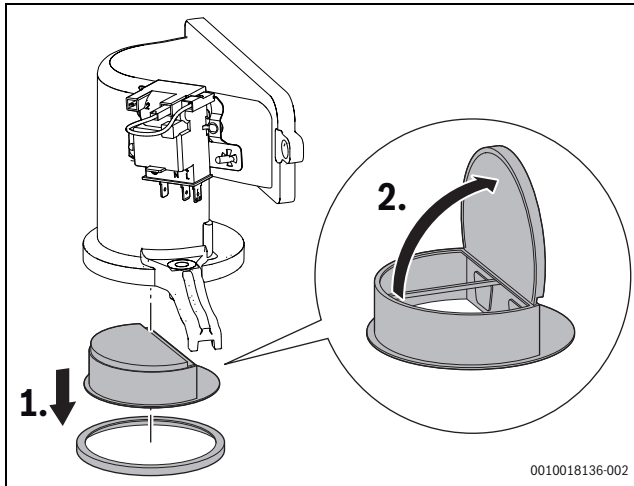


Fig. 51 Non-return valve in the mixing device

- Install the non-return valve.
- Install the mixing device.
- Tighten the screw and nut ([1] and [2], Fig. 50) on the mixing device with 5.5+0.5 Nm.

9.11 Checking the electrical wiring

- Check the electrical wiring for mechanical damage.
- Replace defective cables.

9.12 Checking the expansion vessel

The expansion vessel must be checked every year.

- Depressurise the appliance.
- Adjust the pre-charge pressure of the expansion vessel to the static head of the heating system, if necessary.

9.13 Check the strainer in the cold water pipe and the turbine

1. Remove the clip.
2. Loosen the cold water pipe.
3. Pull the strainer out of the cold water pipe and check for contamination.

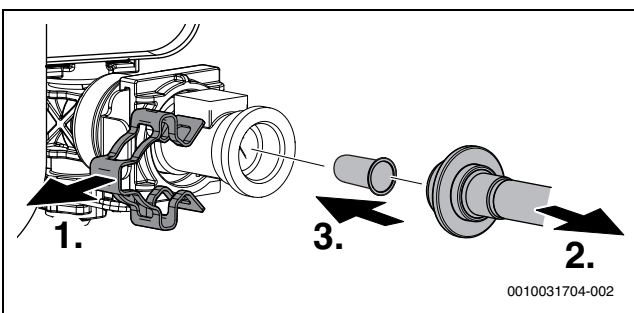


Fig. 52 Removing the strainer from the cold water pipe

1. Remove the clip.
2. Pull out the turbine.

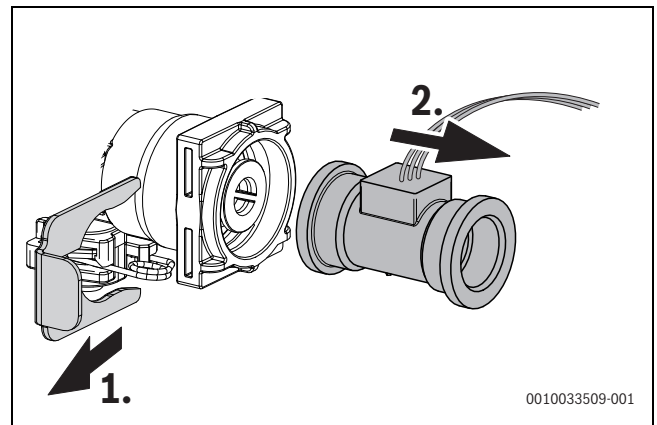


Fig. 53 Removing the turbine at the cold water pipe

- Select the volumetric flow rate of the turbine with service function 1-b2.
- Blow in the flow direction of the turbine.
- If nothing appears on the display, replace the turbine.

9.14 Checking the plate heat exchanger

- Check the strainer in the cold water pipe for contamination (→ Chapter 9.13, page 43).
- Descale the plate heat exchanger with scale removal agent approved for stainless steel.

-or-

- Remove the plate heat exchanger and replace.
- Remove the screw.
- Remove the plate heat exchanger.

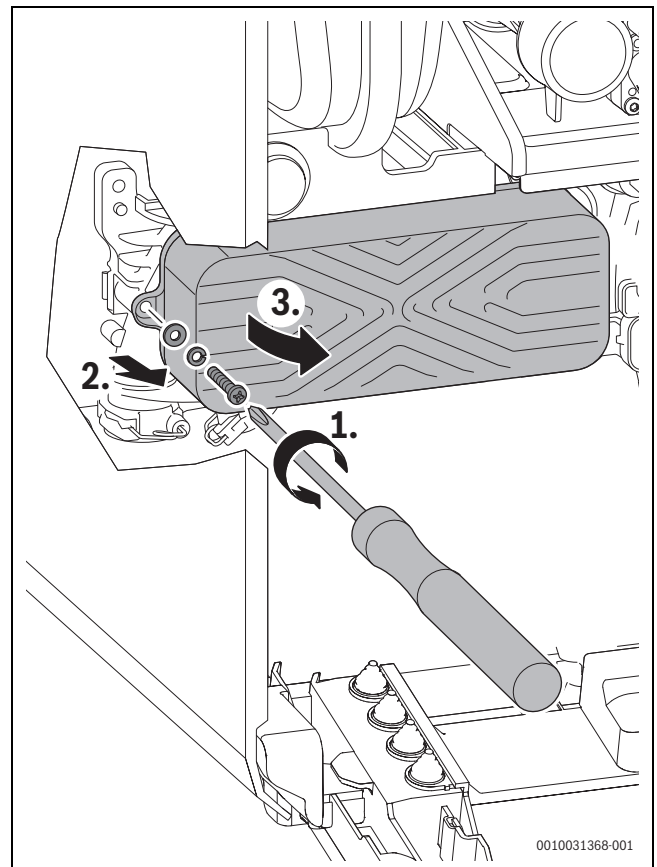


Fig. 54 Removing the plate heat exchanger

- Install the new plate heat exchanger in reverse order.
- Make sure that the label "bottom" is facing downwards.

9.15 Checking heating block

- ▶ Remove cap from test port.
- ▶ Connect the pressure gauge.

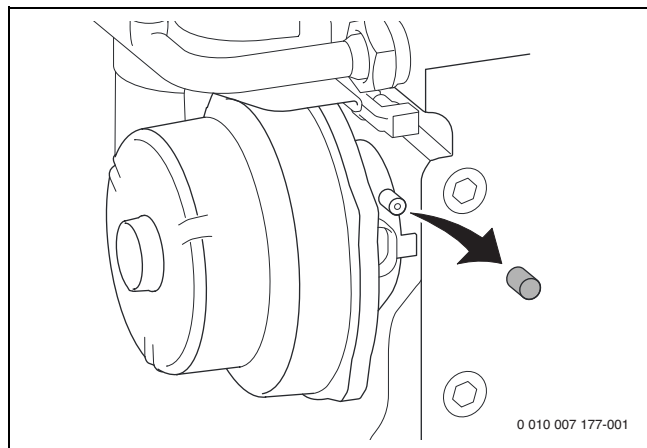


Fig. 55 Test nipple at the mixing device

- ▶ Check actuating pressure with DHW maximum rated heat output at mixing device.

The heating block must be cleaned if the following measurements are obtained:

- GC8300iW 35/40 °C < 5.0 mbar
- ▶ Clean heating block if necessary (→ Chapter 9.16).
- ▶ Remove the pressure gauge.
- ▶ Attach cap to test port.
- ▶ Check the gas/air ratio.

9.16 Cleaning the heat exchanger assembly

Clean the heat exchanger with the cleaning brush set, which is available as a spare part. Using chemical additives for cleaning on the heating gas side is not permitted.

- ▶ Remove the condensate trap (→ chapter 9.17, page 45) and place a suitable container underneath.
- ▶ Remove the cover at the heating block.
- ▶ Clean the heating block with the cleaning knife from top to bottom.

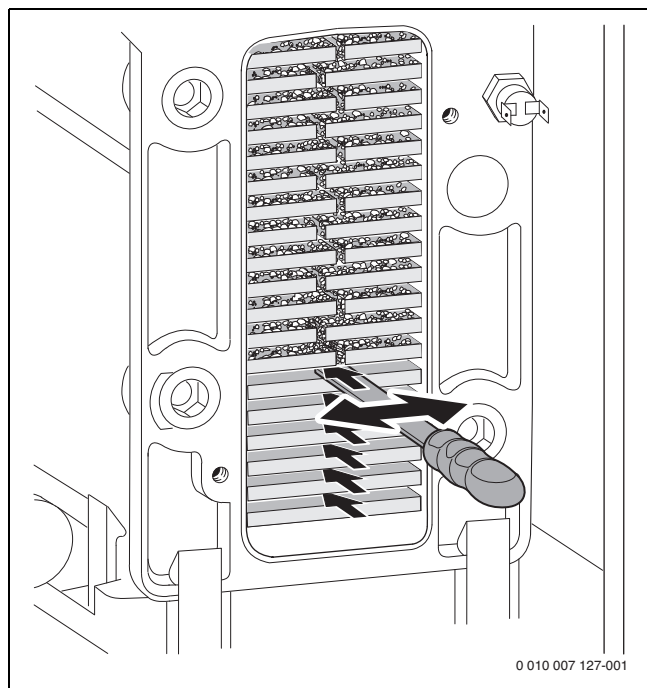


Fig. 56 Cleaning knife

- ▶ Clean the heating block with the brush from top to bottom.

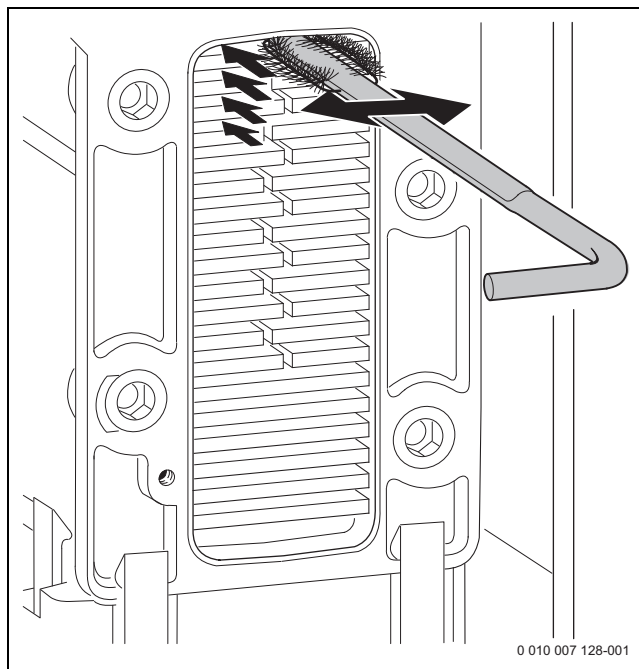


Fig. 57 Cleaning the heating block with a brush

- ▶ Remove the burner (→ chapter 9.9, page 42).
- ▶ Purge the heating block with water from the top.

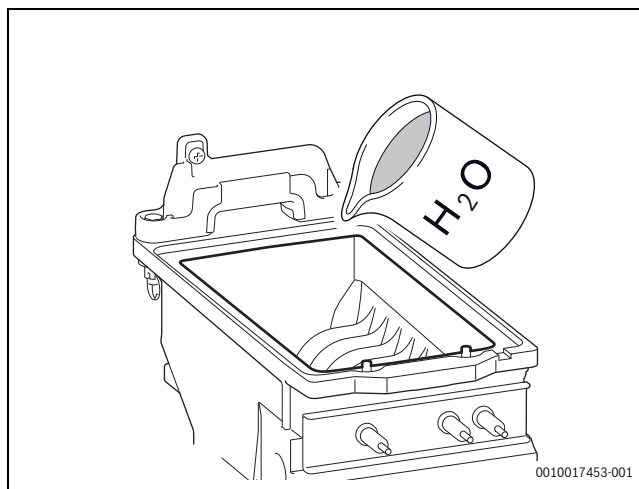


Fig. 58 Purging the heating block

- Clean the condensation catch pan (with reversed brush).

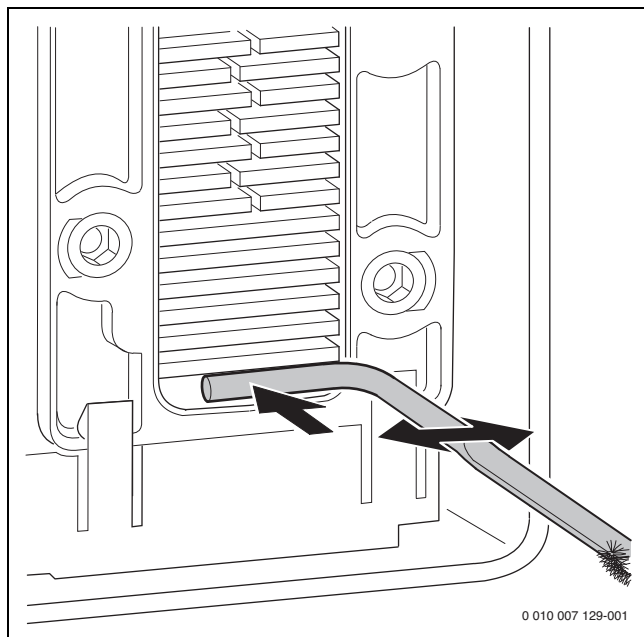


Fig. 59 Cleaning the condensation catch pan

- Purge the heating block with water from the top.
- Install the burner.
- Clean the condensate trap connection.
- Install the condensate trap.
- Re-fit the cover to the heating block. Tighten the screws with 5.5 + 3 Nm.

9.17 Cleaning the condensate trap



WARNING

Danger to life due to poisoning!

If the condensate trap is not filled, poisonous flue gas can escape.

- Only turn off the trap filling program during maintenance, and turn it back on at the end of maintenance.
- Make sure that the condensate drains off properly.



Damages resulting from an insufficiently cleaned condensate trap are excluded from the warranty.

- Clean the condensate trap regularly.
- Unlock the condensate trap.
- Pull the hose from the condensate trap.
- Tilt the condensate trap anti-clockwise for draining.

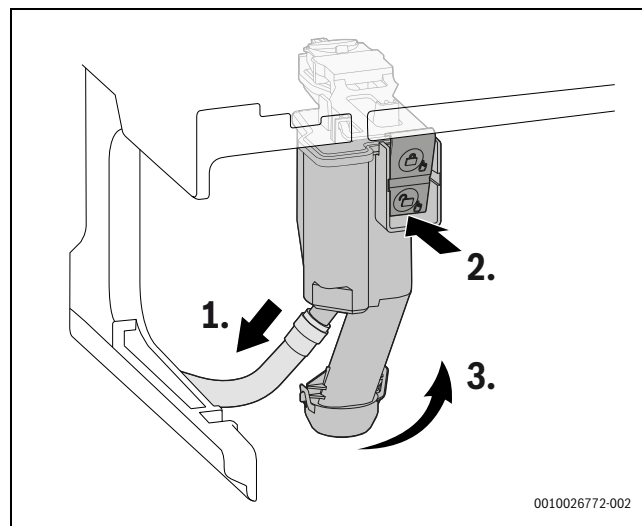


Fig. 60 Removing the condensate trap

- Clean the condensate trap.
- Remove and clean dirt trap at the bottom.
- Reinsert the dirt trap and check for tightness.
- Check the aperture towards the heat exchanger.
- Remove the gasket on the top of the condensate trap.
- Check the gasket for cracks, deformation or breakage and replace if required.
- Align the new gasket correctly with the condensate trap.

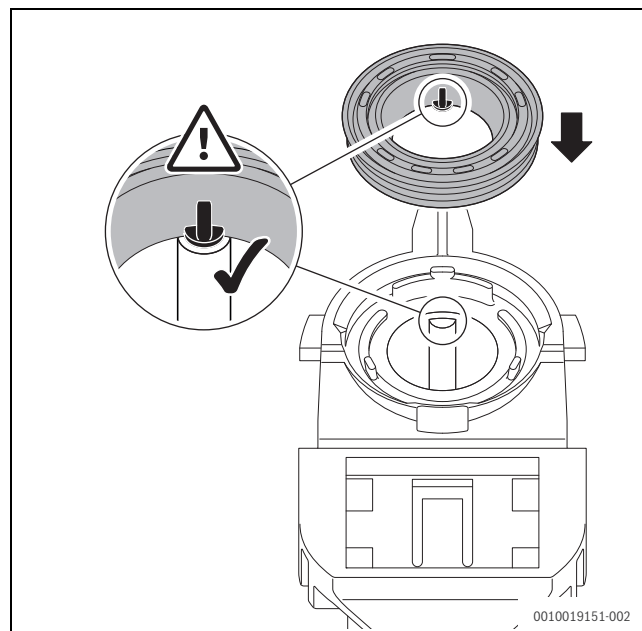


Fig. 61 Aligning the new gasket with the condensate trap

- Press on the gasket in the required order.
When the gasket is correctly inserted, the pin is visible in the recess and is flush with the top edge of the gasket.

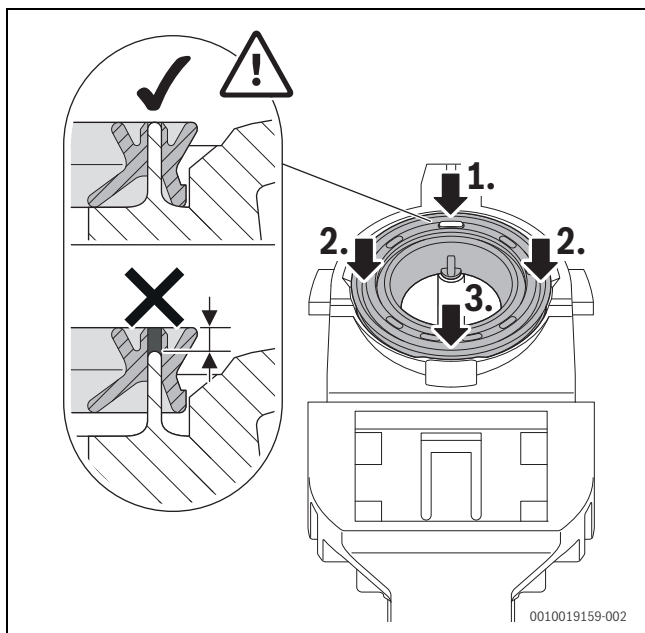


Fig. 62 Pressing on the gasket

- Check the condensate hose and clean if required.
- Fill the condensate trap with approx. 250 ml water.
- Replace the condensate trap and check for tightness.

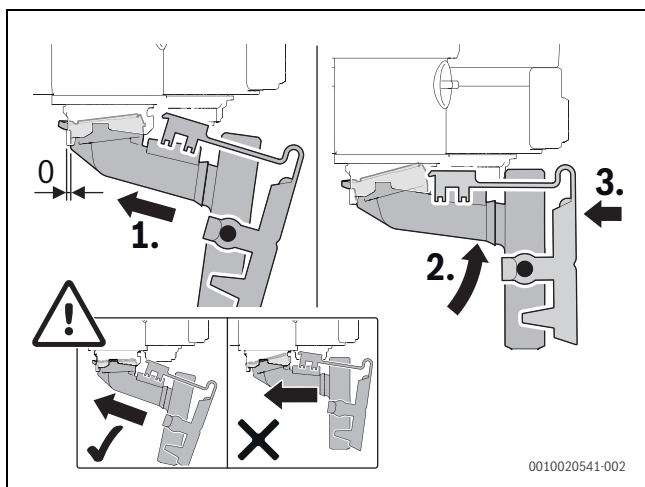


Fig. 63 Install the condensate trap

9.18 Adjusting the operating pressure of the heating system

Display on the pressure gauge	
1 bar	Minimum filling pressure when system is cold
1 - 2 bar	Optimal filling pressure
3 bar	The maximum operating pressure for the maximum heating water temperature must not be exceeded, otherwise the pressure-relief valve will open.

Table 27

If the indicator is below 1 bar when the system is cold:

- Fill the hose with water to prevent air entering the heating system.
- Top up the water until the indicator is between 1 bar and 2 bar again.

If pressure is not being maintained:

- Check the expansion vessel and heating system for leaks.

9.19 Replacing the gas valve

- Close the gas isolator.
1. Unscrew the bayonet connection.
 2. Unscrew the union nut.
 3. Remove the gas pipe.

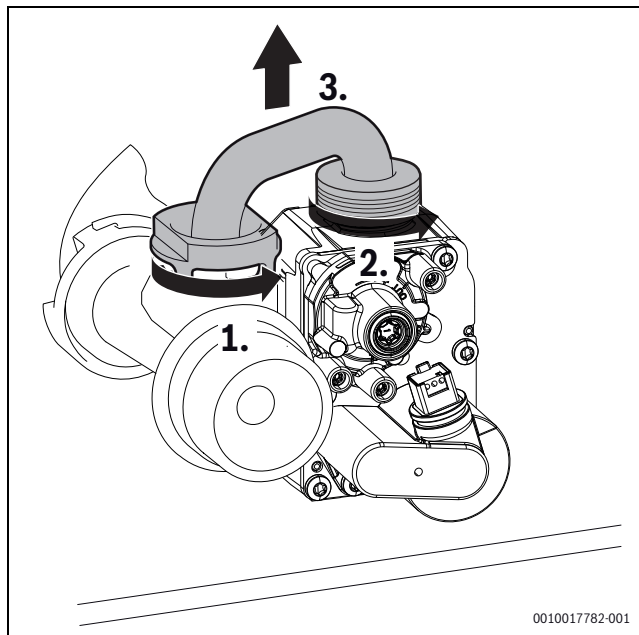


Fig. 64 Removing the gas pipe

1. Unplug the plug.
2. Unscrew the union nut.

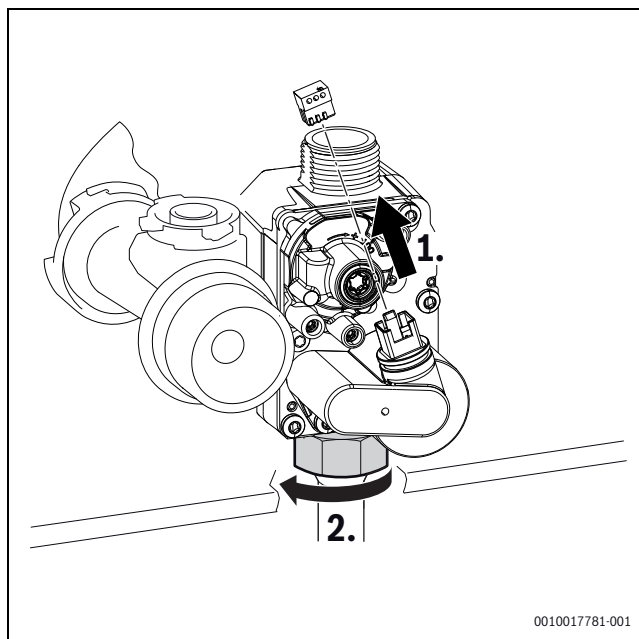


Fig. 65 Unplugging the plug and unscrewing the union nut

1. Remove the 2 screws.
2. Remove the air/gas ratio control valve.

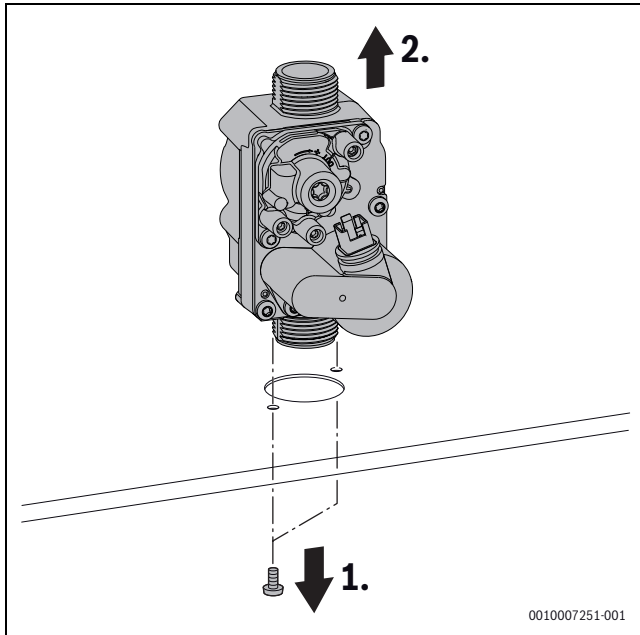


Fig. 66 Removing the gas control valve

- Install the air/gas ratio control valve in reverse order, and check the gas/air ratio.

9.20 Checking/replacing the motor of the 3-way valve

Variant without screws

- In service menu 6t-5, set 1 DHW and check the motor.
- In service menu 6t-5, set 2 Middle position.
- Unplug the plug.
- Turn the motor anti-clockwise and pull it up and out.

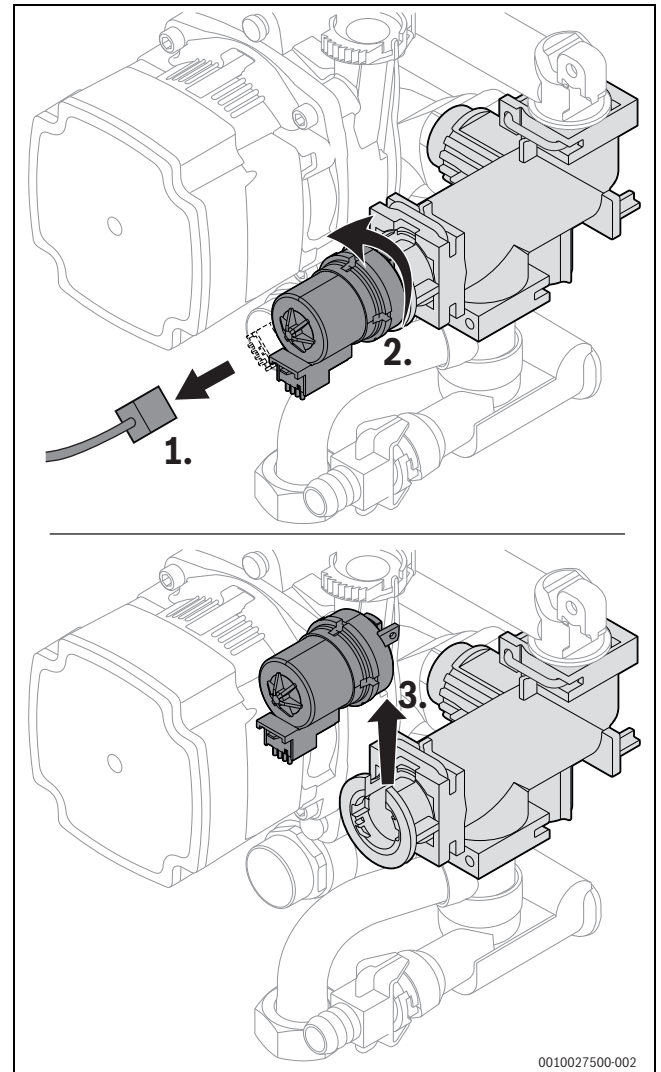


Fig. 67 Detaching the motor from the 3-way valve (variant without screws)

- Push the motor down.
- Turn the motor clockwise as far as it will go.

- Connect the plug.

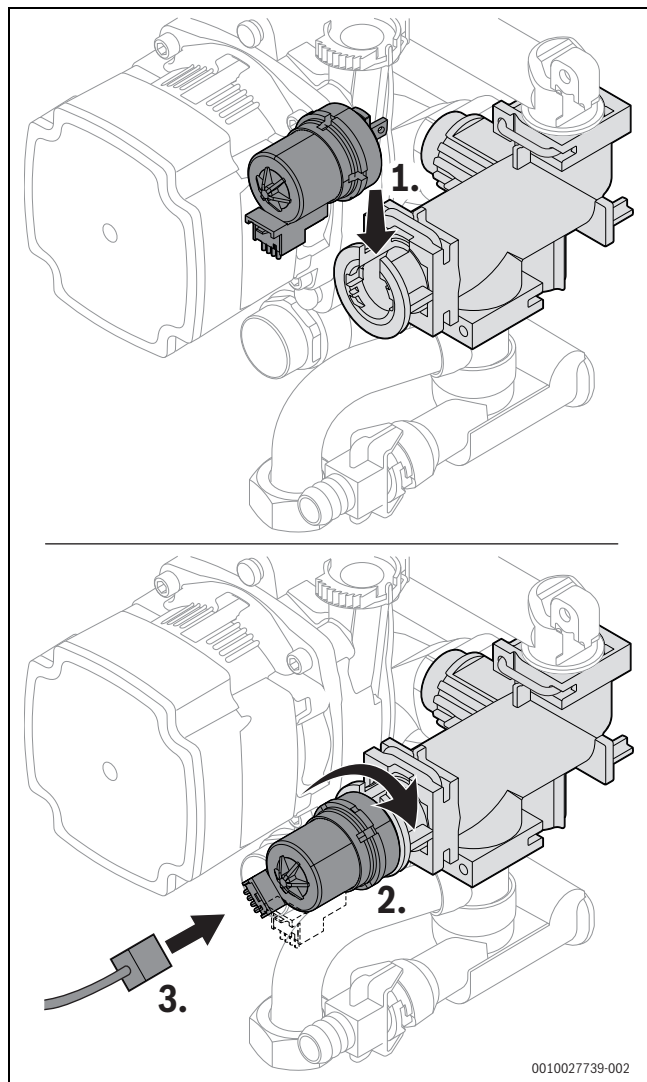


Fig. 68 Installing the motor in the 3-way valve (variant without screws)

Variant with screws

- In service menu 6t-5, set 1 DHW and check the motor.
- In service menu 6t-5, set 2 Middle position.
- Unplug the plug.
- Remove the screws.
- Pull on the motor gently and lift it up.
- Remove the motor.

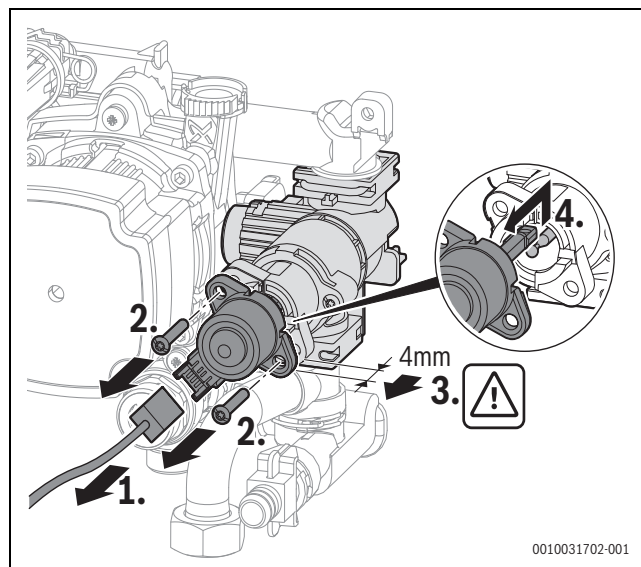


Fig. 69 Detaching the motor from the 3-way valve (variant with screws)



When suspending the motor, do not push against the ball head, as it will be hard to pull it out again.

- Lower the new motor from above and suspend it from the ball head.
- Push the motor in and fasten it in place using 2 screws.
- Connect the plug.

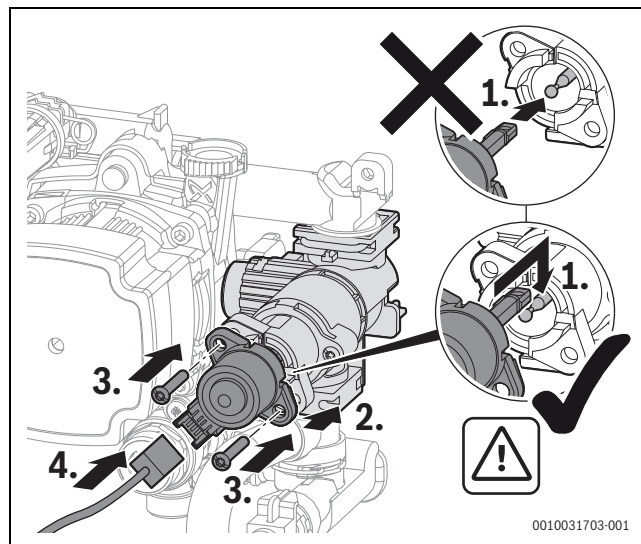


Fig. 70 Installing the motor in the 3-way valve (variant with screws)

9.21 Following inspection/maintenance

- Re-tighten all the threaded connections that have been released.
- Restart the device (→ page 25).
- Check tightness of all joints.
- Check the gas/air ratio.
- Fit the casing.

10 Troubleshooting

10.1 Operating and fault displays

10.1.1 General information

The **Fault code** specifies the cause of the fault.

The **Fault category** specifies the impact of a fault on the device operation.

Fault category O (operating code)

Operating codes specify an operating condition in normal mode.

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.

The fault code of a locking fault flashes together with the  on the display.

- ▶ Check if a serious fault is present.
- ▶ Switch the device off and back on again.

-or-

- ▶ Press the keys  and  at the same time until the symbols  and  disappear.
The device resumes operation. The flowtemperature appears on the display.

If a fault persists after a reset:

- ▶ Remedy the cause of the fault according to the details in the table further down.

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.

10.1.2 Error 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.
227	V	No flame signal after ignition	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 CO ₂ value 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	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	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.

Fault code	Fault category	Fault text on the display, description	Remedy
232	B	Boiler locked by external switching contact	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	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	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	1. Check boiler identification module/coding plug. 2. Install valid combination of control device/burner control unit.
237	V	System fault	1. Replace boiler identification module/coding plug (Bosch contact customer service). 2. Replace control device/burner control unit.
238	V	Boiler electronics faulty	Replace control device.
242 - 263	V	System fault boiler electronics / basic controller	1. Remedy contact problem. 2. If necessary, replace control device or boiler identification module/coding plug (Bosch contact customer service).
265	B	Heat demand lower than energy supplied	–
268	O	Relay test was activated	–
269	V	Flame monitoring	Replace control device/burner control unit.
273	B	Operation of burner and fan interrupted	–
281	B	Pump stuck or running in air	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	1. Replace the air/gas ratio control valve. 2. Replace the ionisation cable. 3. Replace the control device/burner control unit.
358	O	Anti-seizing functn. active	–
360	V	System fault boiler electronics / basic controller	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.
815	W	Low loss header temp. sensor faulty	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	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	1. Carry out maintenance. 2. Reset service display.
1017	W	System pressure too low	1. Top up water and vent the system. 2. Check the pressure sensor, replace if necessary.
1018	W	Maintenance interval expired	1. Carry out maintenance. 2. Reset service display.
1019	W	Incorrect pump type detected	1. Check pump cabling. 2. Check that the correct heating pump type is in the appliance, replace if necessary.
1021	W	Cylinder charging or hot water temperature sensor faulty	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.
1023		Maximum run time including standby time reached	1. Carry out maintenance. 2. Reset service display.

Fault code	Fault category	Fault text on the display, description	Remedy
1037	W	Outside temp. sensor faulty - heating back-up operation active	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	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.	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.
1075	W	Heat exchanger temp sensor short circuit	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	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	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	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	1. Check air/gas ratio control valve cabling. 2. Check air/gas ratio control valve. If the fault persists following a reset, the control device or the air/gas ratio control valve is faulty and must be replaced.
2927	B	Flame extinguished during burner operation	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, repair if required. 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	1. Perform reset. 2. Replace control device/burner control unit.

Fault code	Fault category	Fault text on the display, description	Remedy
2931	V	System fault boiler electronics / basic controller	1. Perform reset. 2. Replace control device/burner control unit.
2940	V	System fault burner control unit	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.
2950	B	No flame signal following starting procedure	Burner starts automatically after purging. Set gas/air ratio correctly.
2951	V	Loss of flame too many times	1. Open the main shut-off valve. 2. Open the device shut-off valve. 3. Interrupt the power supply of the appliance and check the gas line. 4. Carry out function check for ionisation. 5. Connect the plug for the ionisation and ignition sections correctly. 6. Establish protective conductor connection (PE) in the control device. 7. Check flame sense electrode, replace if necessary. 8. Check ignition electrode, replace if necessary. 9. Check ignition electrode connecting lead, replace if necessary. 10. Check flame sense electrode connecting lead, replace if necessary. 11. Set the burner correctly/replace the burner nozzles. 12. Set the burner at minimum rated load. 13. Check air/gas ratio control valve, replace if necessary. 14. Check the flue system, repair if required. 15. The interconnected room air supply is too small or the size of the ventilation opening is too small. 16. Clean the heating block on the flue gas side. 17. Check control device/burner control unit, replace if necessary.
2952	V	Internal fault when testing the ionisation signal	1. Perform reset. 2. Replace control device/burner control unit.
2955	B	Boiler does not support the parameters set for the hydraulic configuration	Check hydraulic settings, change if necessary. • Low-loss header • Internal DHW circuit (cylinder charging circuit) • Heating circuit 1 • Heating pump in appliance
2956	O	Hydraulic configuration at the boiler activated	–
2957	V	Boiler electr. system fault	1. Reset control device / burner control unit. 2. Reconnect electrical connections at control device / burner control unit correctly. 3. Replace the control device/burner control unit.
2961 2962	V	No fan signal available	1. Check fan and connecting lead. 2. Check mains voltage.
2963	B	The heat exchanger sensor or both supply and heat exchanger sensors are defect	1. Connect the plug to the temperature sensor correctly. 2. Connect the plug to the control device correctly. 3. Attach the temperature sensor correctly. 4. Check the temperature sensor, replace if necessary. 5. Check temperature sensor connecting lead, replace if necessary.
2965	B	Flow temperature too high	1. Ensure that the heating circulation is working correctly. 2. Check pump setting, adjust to match heating system if necessary. 3. Connect the plug to the temperature sensor correctly. 4. Connect the plug to the control device correctly. 5. Attach the temperature sensor correctly. 6. Check the temperature sensor, replace if necessary. 7. Check temperature sensor connecting lead, replace if necessary.

Fault code	Fault category	Fault text on the display, description	Remedy
2966	B	Flow temperature rise in heat exchanger too rapid	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.
2970	B	Pressure drop in heating system too rapid	–
2971	B	System pressure too low	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	1. Establish supply voltage of at least 196 VAC. 2. Replace burner control unit.
2980	V	The unit has been locked for safety reasons after at least five locking faults have occurred within 15 minutes.	The safety lock may only be lifted by a specialised contractor after troubleshooting and a subsequent on-site system inspection have been successful. 1. Diagnose and remedy the malfunction. 2. Check the complete system, including sensors and harnesses 3. Switch unit off and on again. Fault code 2981 is displayed.
2981	V	The unit was switched off and on again with the safety lock (fault code 2980) in place.	The safety lock may only be lifted by a specialised contractor after troubleshooting and a subsequent on-site system inspection have been successful. 1. Reset the unit within 10 minutes after switching it on. 2. Reset the unit again after 22 to 28 seconds.. The lock is removed and the unit returns to normal operation. 3. Double-check the last 10 faults in the fault history to confirm the fault has been remedied

Table 28 Indicators and fault displays

10.1.3 Faults that are not displayed

Appliance faults	Remedy
Combustion noise too loud; rumbling noises	▶ Check gas type. ▶ Check gas supply pressure. ▶ Check the flue system, clean or repair if required. ▶ Check the gas/air ratio. ▶ Check the air/gas ratio control valve, replace if required.
Flow noises	▶ Set the pump rate or pump characteristic map correctly and match to the maximum output.
Heat-up lasts too long.	▶ Set the pump rate or pump characteristic map correctly and match to the maximum output.
Flue gas readings incorrect; CO content too high.	▶ Check gas type. ▶ Check gas supply pressure. ▶ Check the flue system, clean or repair if required. ▶ Check the gas/air ratio. ▶ Check the air/gas ratio control valve, replace if required.
Ignition too strong, or poor.	▶ Check the ignition transformer with service function t01 for misfiring, replace if necessary. ▶ Check gas type. ▶ Check gas supply pressure. ▶ Check the power supply. ▶ Check the electrodes with cable, replace if required. ▶ Check the flue system, clean or repair if required. ▶ Check the gas/air ratio. ▶ For natural gas: check external gas flow monitor, replace if required. ▶ Check burner. Replace if required. ▶ Check the air/gas ratio control valve, replace if required.
Condensate in the air box	▶ Check non-return valve in the mixing device, replace if necessary.
DHW outlet temperature not reached.	▶ Check turbine. Replace if required. ▶ Check the gas/air ratio. ▶ Check the heating system pressure and adjust if necessary.
DHW volume not reached.	▶ Check the plate heat exchanger. ▶ Check the heating system pressure and adjust if necessary.
No function, the display remains dark.	▶ Check electrical wiring for damage. ▶ Replace faulty cables. ▶ Check the fuse, replace if required.

Table 29 Faults that are not shown on the display

Fault display: System pressure too low

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

- ▶ Fill the heating system.

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

- ▶ Fill the heating system.

11 Shutdown

11.1 Turn off the unit



The anti-seizing function prevents the heating pump and the 3-way valve from seizing up following long periods of inactivity. The anti-seizing function is not active when the device is switched off.

- ▶ Switch off the device using the On/Off switch (→ Fig. 2.6, page 8). The display goes blank.
- ▶ During longer shutdown periods: observe the frost protection.

11.2 Setting frost protection



See the operating instructions for the user for more information on frost protection.

NOTICE

Risk of damage to the system from frost!

The heating system can freeze up after a prolonged period (e.g. during a power failure, switching off the power supply, faulty fuel supply, boiler fault etc.).

- ▶ Ensure that the heating system is in constant use (particularly when there is a risk of frost).

Frost protection when the appliance is switched off

- ▶ Mix antifreeze into the heating water (→ Chapter 5.7, page 15).
- ▶ Drain DHW circuit.

12 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. "(UK) Waste Electrical and Electronic Equipment Regulations 2013 (as amended)". These regulations define the framework for the return and recycling of old electronic appliances that apply in each country.

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

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

You can find more information here:

www.weee.bosch-thermotechnology.com/

Batteries

Batteries must not be disposed together with your household waste.

Used batteries must be disposed of in local collection systems.

13 Technical information and reports

13.1 Technical data

	Unit	GC8300iW 35/40 C		
		Natural gas	Propane	Butane
Heat output/input				
Modulation range, heat input Q	MJ/h	20.4 - 163.2	20.0 - 159.7	22.6 - 180.9
Rated heat input for DHW Q _{nW}	MJ/h	163.2	159.7	180.9
Adjustment range, rated heat input of heating Q _n	MJ/h	68.8 - 137.6	67.3 - 134.6	76.3 - 152.5
Adjustment range, rated heat output (80/60 °C) P _n	kW	16.9 - 33.6	16.9 - 33.6	18.6 - 37.1
Adjustment range, rated heat output (50/30 °C) P _{cond}	kW	17.5 - 35.0	17.5 - 35.0	19.3 - 38.5
Adjustment range, rated heat output (40/30 °C)	kW	17.6 - 35.2	17.6 - 35.2	19.4 - 38.7
Gas supply value				
Natural gas (gross calorific value 37.8 MJ/m ³)	m ³ /h	4.3	–	–
Butane/propane (gross calorific value 50 MJ/m ³)	Kg/h	–	3.2	3.6
Permissible gas supply pressure				
NG	kPa	1.1- 3.0	–	–
LPG	kPa	–	2.75	2.75
Calculation figures for calculating the cross-sectional area as per EN 13384				
Flue gas mass flow rate at max./min. rated heat output	g/s	18.3/2.5	18.3/2.5	18.3/2.5
Flue gas temperature 80/60 °C at max./min. rated output	°C	79/56	79/56	79/56
Flue gas temperature 40/30 °C at max./min. rated output	°C	57/32	57/32	57/32
Residual pressure	Pa	290	290	290
CO ₂ content at max. rated heat input	%	9.5	10.8	11.9
CO ₂ content at min. rated heat input	%	8.6	10.2	11.2
O ₂ content at max. rated heat input	%	4.0	4.6	3.2
O ₂ content at min. rated heat input	%	5.5	5.5	5.0
NO _x class	–	6	6	6
Condensate				
Max. condensate accumulation rate (T _R = 30 °C)	l/h	4.0	4.0	4.0
pH level approx.	–	3.5 - 4.0	3.5 - 4.0	3.5 - 4.0
Expansion Vessel				
Pre-charge pressure	bar	0.75	0.75	0.75
Total capacity	l	10	10	10
Hot water				
Max. flow rate (ΔT = 50 K)	L/min	11.7	11.7	11.7
Cut-in water flow rate	L/min	1.9	1.9	1.9
Hot water temperature	°C	35 - 60	35 - 60	35 - 60
Max. cold water inlet temperature	°C	40	40	40
Max. permissible DHW pressure	bar	10	10	10
Min. flow pressure	bar	0.2	0.2	0.2
Specific flow (ΔT = 25K)	L/min	23.4	23.4	23.4
Approval data				
Appliance category (gas type)	–	II _{2H3P}		
General information				
Electrical voltage	AC ... V	230	230	230
Frequency	HZ	50	50	50
Max. power consumption (standby)	W	1	1	1
Max. power consumption (heating)	W	86	86	86
Max. power consumption	W	121	121	121
Energy efficiency index (EEI) heating pump	–	≤ 0.2	≤ 0.2	≤ 0.2
EMC limit value class	–	B	B	B
Sound power level at P _{max} (as per NF EN 15036-1, NF EN ISO 9614-1 and AFNOR regulations RP247)	dB(A)	54.9	54.9	54.9
Protection index	IP	X4D	X4D	X4D
Max. temperature setting	°C	88	88	88

	Unit	GC8300iW 35/40 C		
		Natural gas	Propane	Butane
Max. permissible operating pressure (PMS), heating	bar	2.5	2.5	2.5
Max. permissible operating pressure (PMS), domestic hot water	bar	10	10	10
Permissible ambient temperature short time/long time	°C	0 - 50/40	0 - 50/40	0 - 50/40
Heating water quantity	l	5.2	5.2	5.2
Weight (without packaging)	kg	50	50	
Dimensions W × H × D	mm	440 × 780 × 365	440 × 780 × 365	440 × 780 × 365
Maximum installation attitude	m	2000	2000	2000

Table 30

13.2 Ionisation current

Gas type	If the burner is running at minimum rated output	
	OK	Faulty
Natural gas	$\geq 7 \mu\text{A}$	$< 7 \mu\text{A}$
Liquid gas (LPG)	$\geq 10 \mu\text{A}$	$< 10 \mu\text{A}$

Table 31 Ionisation current

13.3 Sensor values

Temperature [°C ± 10 %]	Resistance [Ω]
-20	2392
-16	2088
-12	1811
-8	1562
-4	1342
0	1149
4	984
8	842
12	720
16	616
20	528
24	454

Table 32 Outside temperature sensor (for weather-compensated controllers, accessory)

Temperature [°C ± 10 %]	Resistance [Ω]
0	35 975
5	28 538
10	22 763
15	18 284
20	14 772
25	12 000
30	9 786
35	8 054
40	6 652
45	5 523
50	4 607
55	3 856
60	3 243
65	2 744
70	2 332
75	1 990
80	1 703
85	1 464
90	1 261
95	1 093
100	949

Table 33 Flow temperature sensor

13.4 Coding plug

Type	Gas type	Number
GC8300iW 35/40 C	Natural gas	20456
GC8300iW 35/40 C	Liquid gas (LPG)	20457

Table 34 Coding plug

13.5 Pump characteristic map of the heating pump

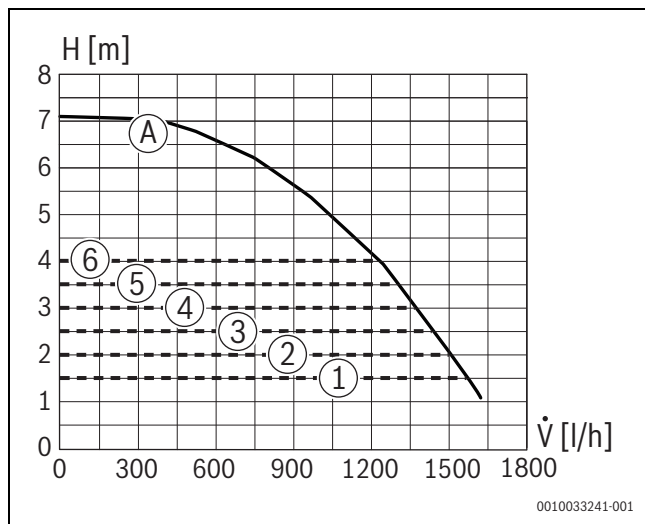


Fig. 71 Pump characteristic maps and pump curves

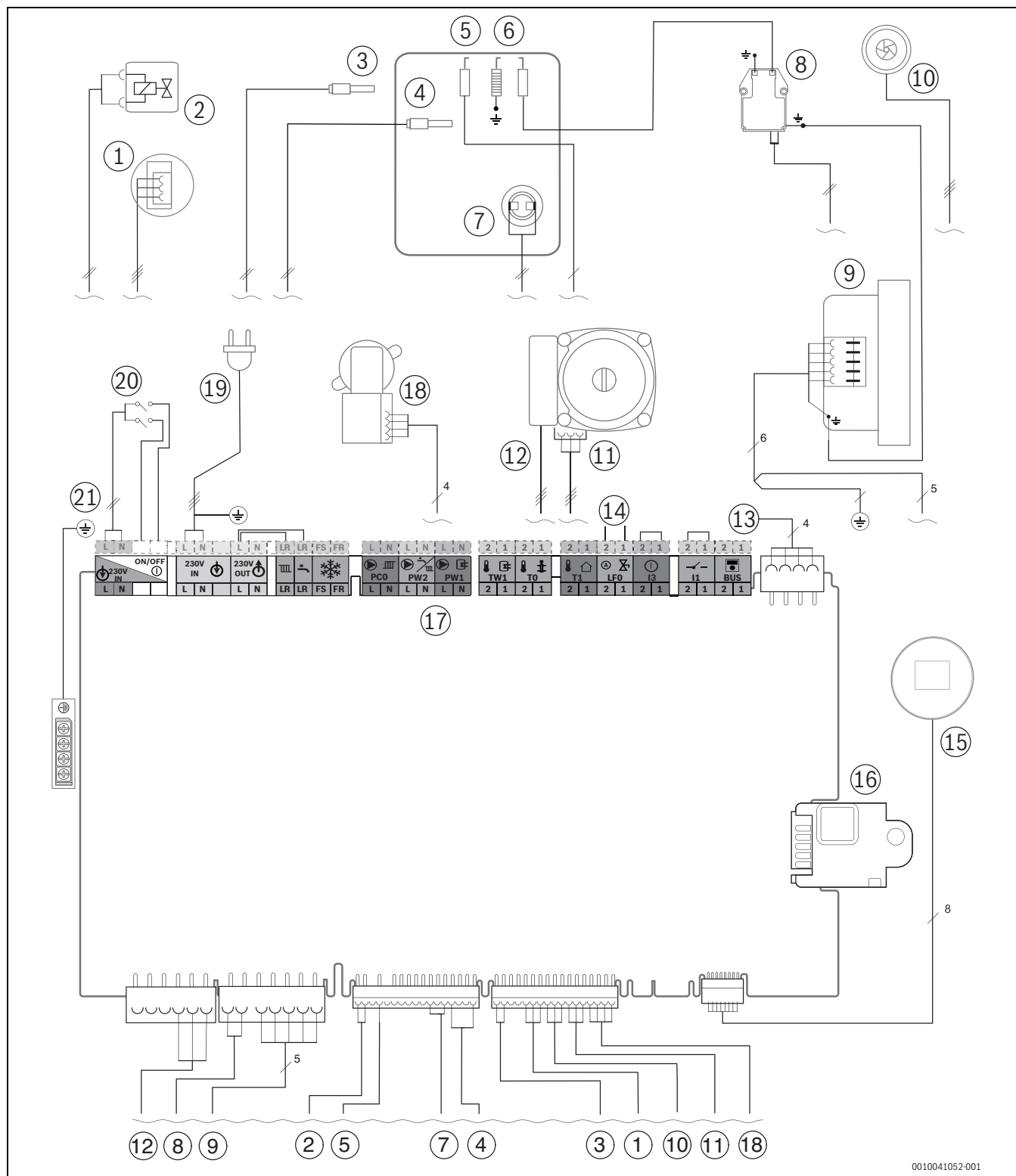
- [1] Pump characteristic map, constant pressure 150 mbar
- [2] Pump characteristic map, constant pressure 200 mbar
- [3] Pump characteristic map, constant pressure 250 mbar
- [4] Pump characteristic map, constant pressure 300 mbar
- [5] Pump characteristic map, constant pressure 350 mbar
- [6] Pump characteristic map, constant pressure 400 mbar
- [A] Pump curve at maximum pump rate
- H Available hydraulic pressure
- $\dot{V}$ Flow rate

13.6 Setting values for heating capacity

Heat output [kW]	Heat input [kW]	Display [%]	G20 (20 mbar) Gas volume [l/min bei $T_V/T_R = 80/60^\circ\text{C}$]
17,0	17,3	43	30
18,0	18,4	45	32
19,0	19,4	48	34
20,0	20,4	50	36
21,0	21,4	53	38
22,0	22,5	55	39
23,0	23,5	58	41
24,0	24,5	60	43
25,0	25,5	63	45
26,0	26,5	65	47
27,0	27,6	68	48
28,0	28,6	70	50
29,0	29,6	73	52
30,0	30,6	75	54
31,0	31,6	78	56
32,0	32,7	80	57
33,0	33,7	83	59
33,7	34,4	84	60

Table 35 GC8300iW 35/40 C

13.7 Electrical Wiring



0010041052-001

Fig. 72 Electrical Wiring

- | | |
|--|---|
| [1] Pressure sensor | [12] Heating pump 230 V |
| [2] Air/gas ratio control valve | [13] Connecting lead for Key slot |
| [3] DHW temperature sensor | [14] Connection for the automatic filling device (accessory) |
| [4] Flow temperature sensor at heating block | [15] Display |
| [5] Flame sense electrode | [16] Coding plug |
| [6] Ignition electrode | [17] Terminal strip for external accessories (→ terminal assignment from page 23) |
| [7] Heating block temperature limiter | [18] 3-way valve |
| [8] Ignition transformer | [19] Connecting lead with plug |
| [9] Fan | [20] On/Off-switch |
| [10] Turbine | [21] Earth bar (PE) |
| [11] Control cable of the heating pump | |

13.8 Commissioning report for the appliance

Customer/operator:			
Surname, Given name:		Street, house number	
Telephone/fax		Postcode, town	
System installer:			
Order number:			
Appliance type:		(Complete a separate report for every appliance!)	
Serial number:			
Commissioning date:			
☐ Individual appliance ☐ Cascade, number of appliances:			
Installation location: ☐ Cellar ☐ Attic ☐ Other:			
Ventilation apertures: Number:, size: approx.			cm ²
Flue gas routing: ☐ Twin pipe system ☐ LAS ☐ Duct ☐ Separate pipe routing			
☐ Plastic ☐ Aluminium ☐ Stainless steel			
Total length: approx. m Elbows 87°: Qty Elbows 15 - 45°: Unit			
Leak check of the flue with a countercurrent: ☐ Yes ☐ 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
Maximum rated heat output set:		kW	Minimum rated heat output set: kW
Gas rate at maximum rated heat output:		L/min	Gas rate at minimum rated heat output: L/min
Net calorific value H _{IB} :		kWh/m ³	
CO ₂ at maximum rated output:		%	CO ₂ at minimum rated output: %
O ₂ at maximum rated output:		%	O ₂ at minimum rated output: %
CO at maximum rated output:		ppm mg/kWh	CO at minimum rated output: ppm mg/kWh
Flue gas temperature at maximum rated output:		°C	Flue gas temperature at minimum rated output: °C
Maximum measured flow temperature:		°C	Minimum measured flow temperature: °C
System Hydraulic:			
☐ Low loss header, type:		☐ Extra expansion vessel	
☐ Heating pump:		Size/pre-charge pressure:	
		Automatic air vent valve present? ☐ yes ☐ no	
☐ DHW storage tank/type/number/heating surface output:			
☐ System hydraulics checked, notes:			

Changed service functions:

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

☐ Label with "settings in the service menu" filled out and affixed.**Heating controls:**☐ Weather-compensated control☐ Room temperature-dependent control☐ Remote control × Qty, coding heating circuit(s):☐ Room temperature-dependent control × Qty, coding heating circuit(s):☐ Module × Qty, coding heating circuit(s):

Other:

☐ Heating controls set, notes:☐ Modified heating control settings documented in the controller operating/installation instructions**The following work has been carried out:**☐ Electrical connections checked, notes:☐ Condensate trap filled☐ Combustion air/flue gas test carried out☐ Function check carried out☐ Tightness test carried out on the gas and water sides

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

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

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

Name of service engineer

Date, user's signature

Date, system installer's signature

Affix the test report here.

Table 36 System commissioning report



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