



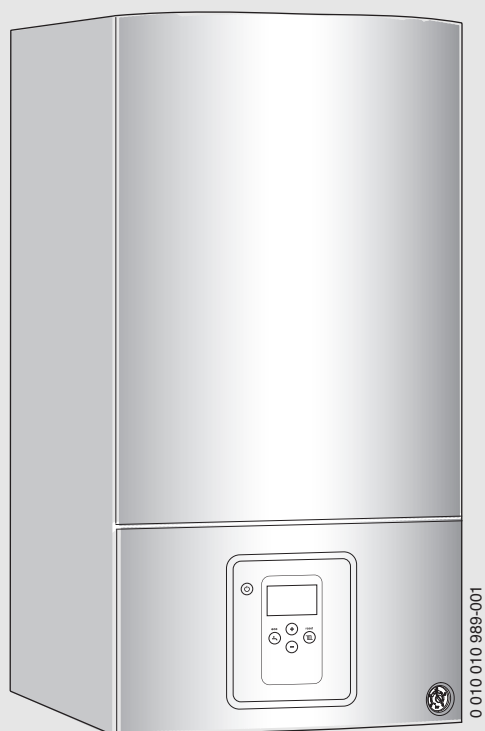
# BOSCH

Installation and maintenance instructions for the contractor

## Wall mounted gas boiler

### **Gaz 6000 W**

WBN 6000-24/28 /35 CR/HR N/L



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## 1 Explanation of symbols and safety instructions

### 1.1 Explanation of symbols

#### Warnings

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

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



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



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



**CAUTION** indicates that minor to medium personal injury may occur.



**NOTICE** indicates that material damage may occur.

#### Important information



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

#### Additional symbols

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

Table 1

### 1.2 General safety instructions

#### ⚠ Notices for the target group

These installation instructions are intended for 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 instructions (heat source, heating controller, 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.

#### ⚠ 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 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 mains voltage is disconnected.
- ▶ 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.
- ▶ Point out the possible consequences (personal injury, including danger to life or material damage) of non-existent or improper inspection, cleaning and maintenance.
- ▶ Leave the installation instructions and the operating instructions with the user for safekeeping.

## 2 Product Information

### 2.1 Scope of delivery



Fig. 1

- [1] Wall mounted gas boiler
- [2] Fixing materials
- [3] Set of printed documents for product documentation

### 2.2 Declaration of Conformity

The design and operation of this product comply with European Directives and the supplementary national requirements. Conformity has been demonstrated by the CE marking.

You can ask for a copy of the declaration of conformity for this product. For this see the contact address on the back cover of these instructions.

### 2.3 Product identification

#### Data plate

The data plate includes the product performance information, approval data and serial number. The data plate location can be found in the product overview.

#### Additional type plate

The product name and the most important product data are shown on the additional data plate. The additional type plate can be found on the outside of the product in an easily accessible location.

### 2.4 Overview of types

**WBN 6000-.. CR appliances** are combi boilers for central and instantaneous DHW heating.

**WBN 6000-.. HR appliances** are appliances for central heating and DHW heating, fitted with a heating pump and 3-way valve for the connection of an indirectly heated cylinder.

Type	Country	Part No.
WBN 6000-24 CR N	Egypt, Tunisia, Algeria, Morocco	7 736 901 278
WBN 6000-28 CR N	Egypt, Tunisia, Algeria, Morocco	7 736 901 275
WBN 6000-28 HR N	Egypt, Tunisia, Algeria, Morocco	7 736 901 276
WBN 6000-35 CR N	Tunisia	7 736 902 011
WBN 6000-35 HR N	Tunisia	7 736 902 012

Table 2 Overview of types

## 2.5 Dimensions and minimum clearances

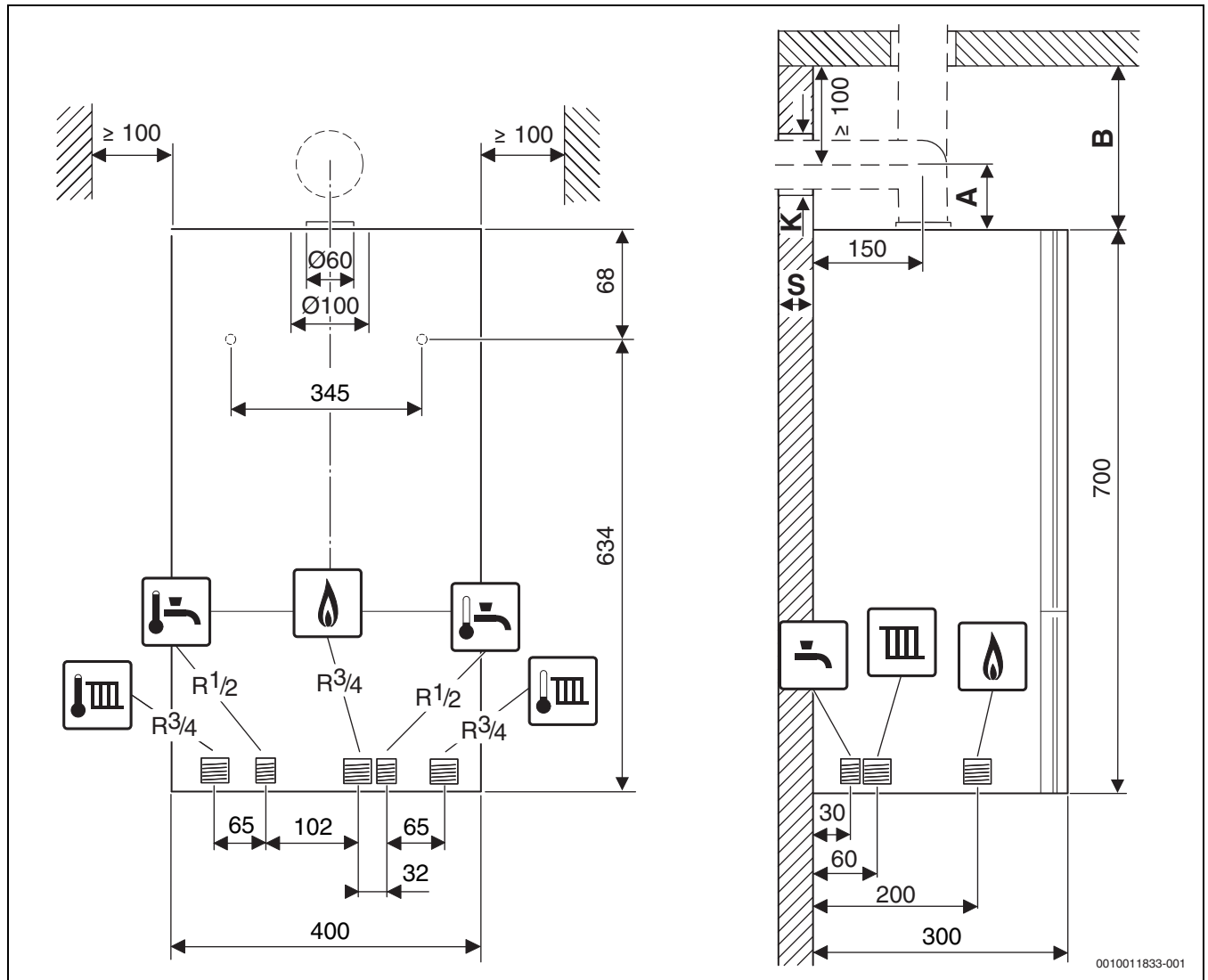


Fig. 2 Dimensions and minimum clearances (mm)

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	145	170

Table 3 Wall thickness S depending on the diameter of the flue accessories




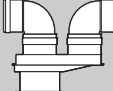
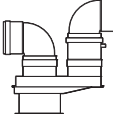
Flue gas accessories		A [mm]
	Ø 60/100 mm Connection elbow Ø 60/100 mm	95
	Ø 60/100 mm Connection adapter Ø 60/100 mm, elbow 90° Ø 60/100 mm	185
	Ø 80 mm Connection adapter Ø 60/100 mm with combustion air supply, elbow 90° Ø 80 mm	198
	Ø 80/80 mm Separate pipe connection Ø 80/80 mm, elbow 90° Ø 80 mm	180
	Ø 80/80 mm Separate pipe connection Ø 80/80 mm, vertical condensate drain Ø 80 mm, elbow 90° Ø 80 mm	265

Table 4 Clearance A depending on the flue accessories for horizontal flue pipe






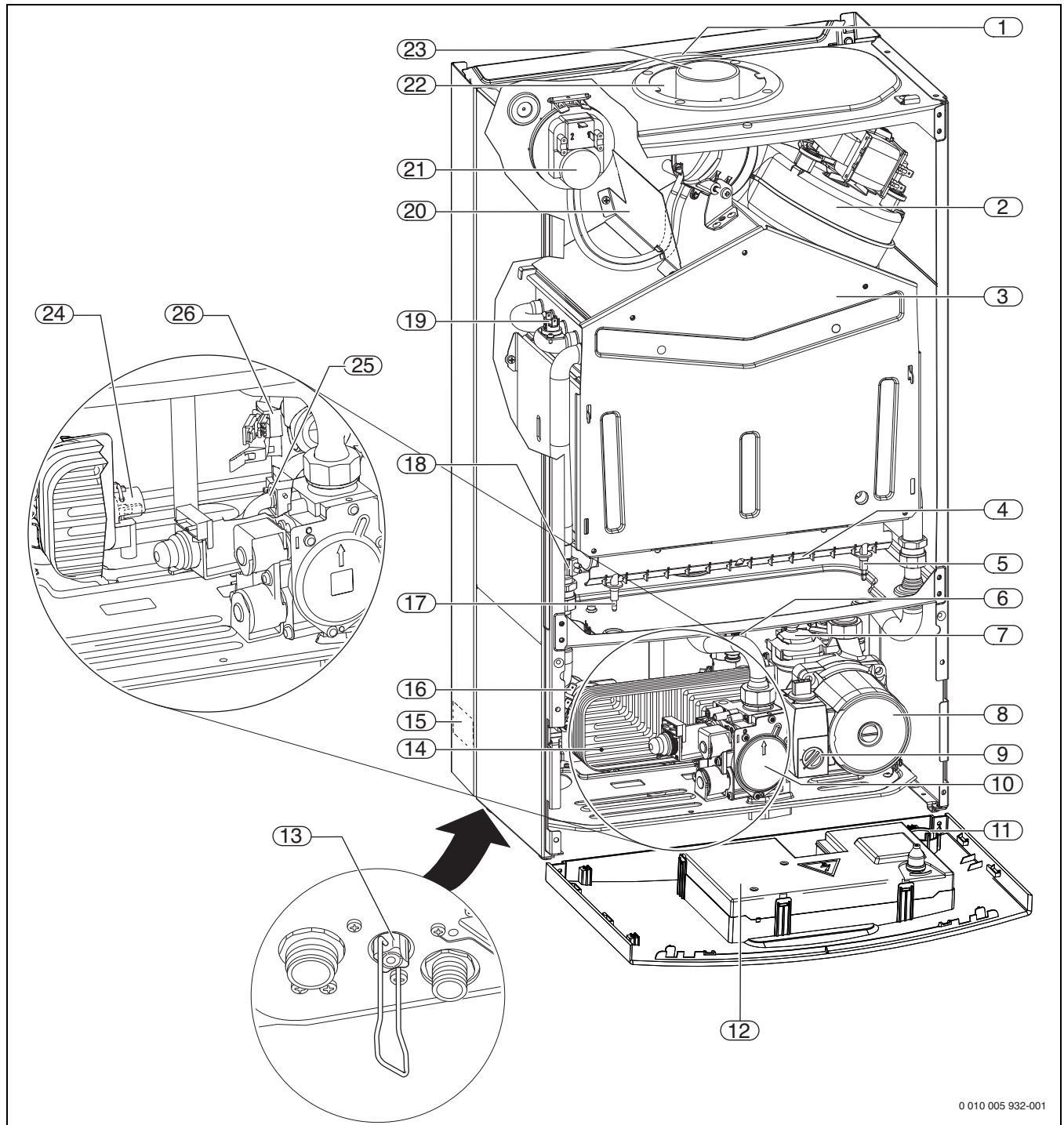
Flue gas accessories		B [mm]
	<b>Ø 60/100 mm</b> Connection adapter Ø 60/100 mm	≥ 170
	<b>Ø 60/100 mm</b> Vertical condensate drain Ø 60/100 mm	≥ 220
	<b>Ø 80 mm</b> Connection adapter Ø 60/100 mm with combustion air supply	≥ 200
	<b>Ø 80/80 mm</b> Separate pipe connection Ø 80/80 mm	≥ 210
	<b>Ø 80/80 mm</b> Separate pipe connection Ø 80/80 mm, vertical condensate drain Ø 80 mm	≥ 290

Table 5 Clearance B depending on the flue accessories for vertical flue pipe

## 2.6 Product overview



0 010 005 932-001

Fig. 3

- |  |  |
|--|--|
| [1] Expansion vessel   | [16] Pressure switch                                     |
| [2] Fan  | [17] Flame sense electrode                               |
| [3] Combustion chamber                                       | [18] Flow temperature sensor                             |
| [4] Burner body with nozzle holder                           | [19] Heat exchanger temperature limiter                  |
| [5] Ignition electrode                                       | [20] Air baffle  |
| [6] Pressure relief valve (heating circuit)                  | [21] Differential pressure switch                        |
| [7] Automatic air vent                                       | [22] Combustion air inlet                                |
| [8] Heating pump   | [23] Flue pipe   |
| [9] Pump speed switch  | [24] Hot water temperature sensor                        |
| [10] Gas valve   | [25] Pressure relief valve (cold water) (WBN 6000-.. CR) |
| [11] Pressure gauge  | [26] Flow meter (turbine) (WBN 6000-.. CR)               |
| [12] Control device  |  |
| [13] Filling device (WBN 6000-.. CR)                         |  |
| [14] Plate heat exchanger for Combi boilers (WBN 6000-.. CR) |  |
| [15] Data plate  |  |

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### **3 Regulations for gas systems**

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

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

## 4 Flue gas routing

Before installing the heating appliance and flue gas routing, consult the responsible building authorities and district flue gas inspector to establish whether there are any objections.

The surface temperature at the combustion air pipe is below 85 °C for concentric pipes. No minimum clearances to combustible building materials are therefore required. Local regulations may differ from this information and may stipulate minimum clearances to combustible building materials.

The surface temperature of the flue pipe, using separate pipes less than 3 m in length, may exceed 85 °C. In such cases, insulate the flue pipe against combustible construction materials by suitable means (e.g. mineral wool).

### 4.1 Approved flue accessories

The flue accessories form part of the CE approval for the appliance. For this reason, only the listed original flue accessories must be installed.

- Flue accessories, concentric pipe Ø 60/100 mm
- Flue accessories, single pipe Ø 80 mm

You will find the designations and part numbers for the components of these original flue accessories in the main catalogue.

### 4.2 Installation instructions



#### CAUTION:

**Due to the high efficiency of the appliance, the water vapour contained in the flue gas may condense in the flue pipe.**

- Install a condensate pipe, if required.
- In this case, install horizontal flue pipes with a downward slope to the appliance of 5,2 % so that the condensate can run off in the direction of the condensate pipe.

Condensate pipe required for	Flue length [m]
Flue gas routing with separate pipe (Ø 80)	≥ 5
Flue gas routing with concentric pipe (Ø 60/100), horizontal	≥ 1.5
Flue gas routing with concentric pipe (Ø 60/100), vertical	≥ 2

Table 6

- The flue gas routing must correspond to B<sub>22</sub> for an open flue or C<sub>12</sub>, C<sub>32</sub>, C<sub>42</sub>, C<sub>52</sub> or C<sub>82</sub> for balanced flue operation.
- The flue pipe is produced with Ø 60/100 mm concentric pipes or as a separate pipe system with Ø 80 mm single pipes.
- If there is a separate pipe connection as per C<sub>52</sub>, the flue outlet and combustion air inlet should not be installed at opposite sides of the building.
- If there is a separate pipe connection as per C<sub>52</sub>, the clearance between the flue outlet and combustion air inlet must be at least 500 mm.



#### CAUTION:

**Low efficiency and functional problems if an incorrect fan stage is used!**

- Follow installation instructions for the flue accessories.
- Before installing the flue accessories:  
Grease gaskets on the female connections with solvent-free grease (e.g. petroleum jelly).
- If installing the flue/combustion air pipe, always push the flue accessories as far as possible into the female connections.

### 4.3 Selecting the fan stage



The devices are matched to the flue length by setting the fan stages.

- ▶ Select the fan stage according to the type of flue gas routing, appliance type and flue length (→ tab. 7 to 12).
- ▶ Set the fan stage with the service function 2.bd (→ chapter 11, page 26).

#### 4.3.1 B<sub>22</sub> horizontal flue gas routing

##### NOTICE:

**Poor combustion if restrictor is not installed.**

- ▶ If B<sub>22</sub> flue gas routing is used and appliance output < 35 kW, install restrictor (accessory 7 736 995 123).
- ▶ If B<sub>22</sub> vertical flue gas routing is used and appliance output = 35 kW, install restrictor (accessory 7 736 900 818).

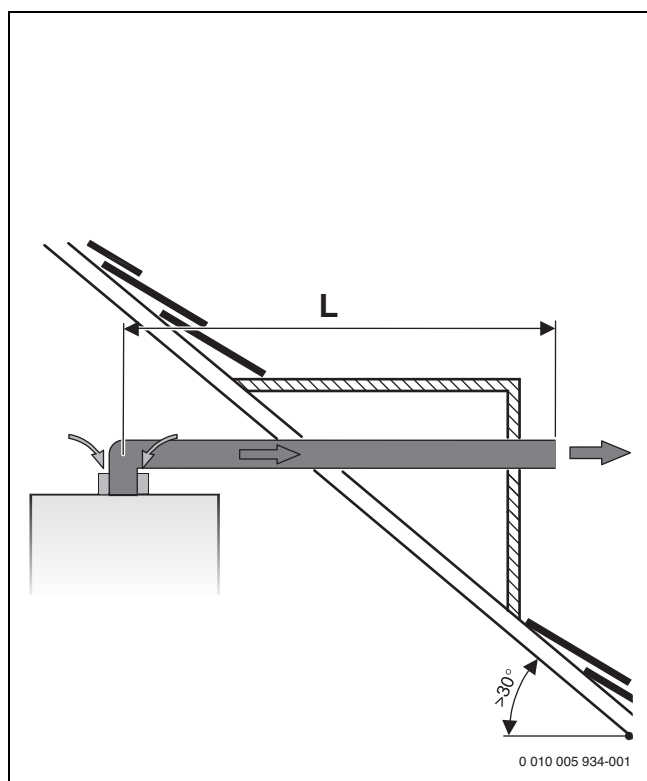


Fig. 4 B<sub>22</sub> horizontal flue gas routing

The 90° elbow on the device is taken into account in the maximum lengths.

- Each additional 90° elbow is equivalent to 2 m.
- Each additional 45° elbow is equivalent to 1 m.

	L [m]	Fan stage
<b>WBN 6000-24</b>	≤ 2	14
	2 – 5	16
	5 – 9	18
	9 – 12	19
	12 – 15	20
<b>WBN 6000-28</b>	≤ 2	3
	2 – 5	16
	5 – 9	17
	9 – 15	20

	L [m]	Fan stage
<b>WBN 6000-35</b>	≤ 2	5
	2 – 5	6
	5 – 9	7
	9 – 12	8

Table 7 B<sub>22</sub> horizontal flue gas routing

#### 4.3.2 B<sub>22</sub> vertical flue gas routing

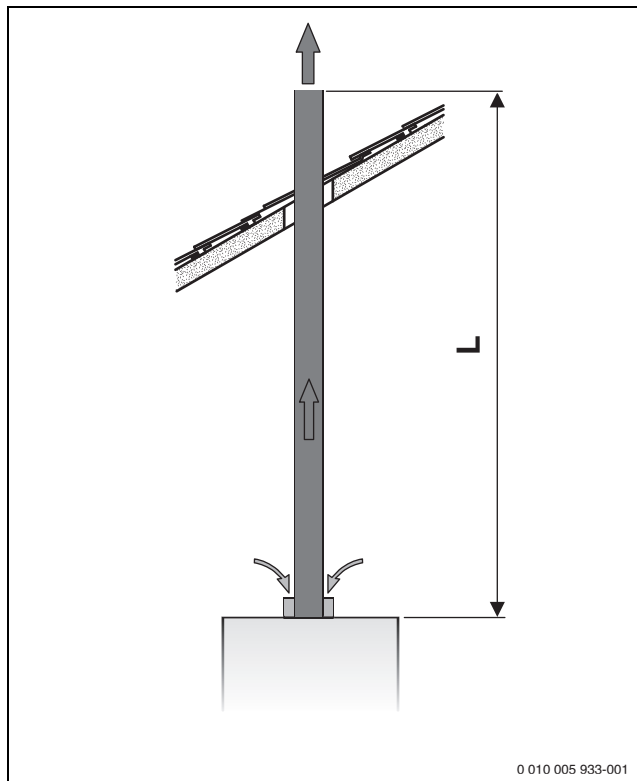


Fig. 5 B<sub>22</sub> vertical flue gas routing

##### NOTICE:

**Poor combustion if restrictor is not installed.**

- ▶ If B<sub>22</sub> flue gas routing is used and appliance output < 35 kW, install restrictor (accessory 7 736 995 123).
- ▶ If B<sub>22</sub> vertical flue gas routing is used and appliance output = 35 kW, install restrictor (accessory 7 736 900 818).

- Each additional 90° elbow is equivalent to 2 m.
- Each additional 45° elbow is equivalent to 1 m.

	L [m]	Fan stage
<b>WBN 6000-24</b>	≤ 2	16
	2 – 5	18
	5 – 9	19
	9 – 15	20
<b>WBN 6000-28</b>	≤ 2	4
	2 – 5	14
	5 – 9	17
	9 – 15	20
<b>WBN 6000-35</b>	≤ 2	8
	2 – 5	12
	5 – 9	14
	9 – 12	18

Table 8 B<sub>22</sub> vertical flue gas routing



#### 4.3.3 C<sub>12</sub>, C<sub>42</sub> horizontal flue gas routing with concentric pipe

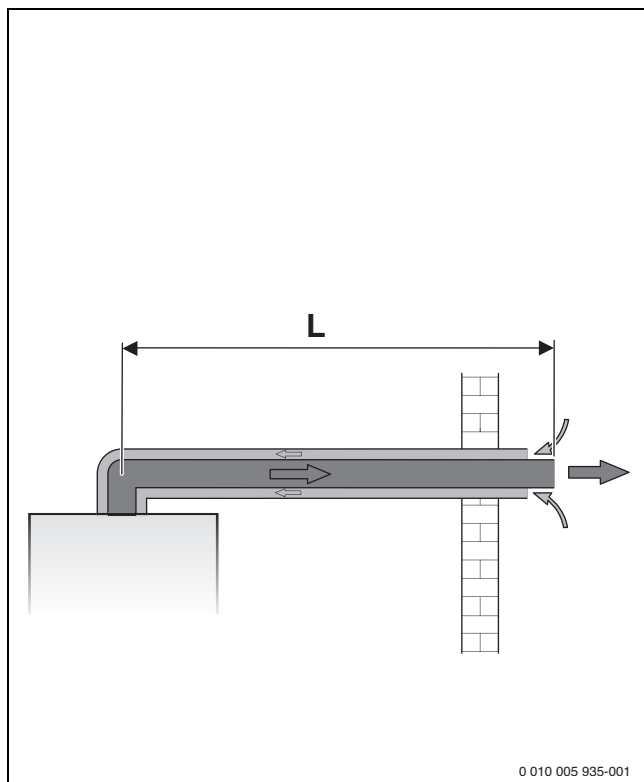


Fig. 6 C<sub>12</sub> horizontal flue gas routing with concentric pipe

The 90° elbow on the device is taken into account in the maximum lengths.

- Each additional 90° elbow is equivalent to 1 m.
- Each additional 45° elbow is equivalent to 0.5 m.

	L [m]	Fan stage	
		Natural Gas	LPG
<b>WBN 6000-24</b>	≤ 0.5	1	14
	0.5 – 2	2	16
	2 – 3	3	18
	3 – 4	4	19
<b>WBN 6000-28</b>	≤ 0.5	1	1
	0.5 – 2	2	2
	2 – 3	3	3
	3 – 4	4	4
<b>WBN 6000-35</b>	≤ 0.5	1	1
	0.5 – 2	2	2
	2 – 3	3	3
	3 – 4	4	4

Table 9 C<sub>12</sub>, C<sub>42</sub> horizontal flue gas routing with concentric pipe

#### 4.3.4 C<sub>12</sub>, C<sub>42</sub>, C<sub>82</sub> horizontal flue gas routing with separate pipe

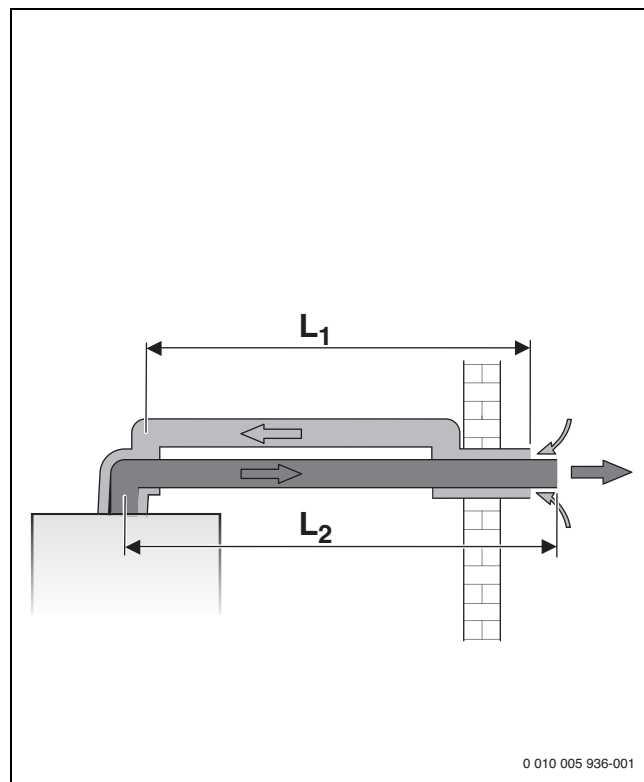


Fig. 7 C<sub>12</sub> horizontal flue gas routing with separate pipe

L<sub>1</sub> Combustion air pipe length  
L<sub>2</sub> Flue length

The 90° elbow on the device is taken into account in the maximum lengths.

- Each additional 90° elbow in the flue pipe is equivalent to 2 m.
- Each additional 45° elbow in the flue pipe is equivalent to 1 m.
- Each additional 90° elbow in the combustion air pipe is equivalent to 1 m.
- Each additional 45° elbow in the combustion air pipe is equivalent to 0.5 m.

	L = L <sub>1</sub> + L <sub>2</sub> [m]	L <sub>2</sub> [m]	Fan stage
<b>WBN 6000-24</b>	≤ 4	≤ 2	6
	4 – 10	2 – 5	10
	10 – 18	5 – 9	14
	18 – 24	9 – 12	15
	24 – 30	12 – 15	17
<b>WBN 6000-28</b>	≤ 4	≤ 2	8
	4 – 10	2 – 5	11
	10 – 18	5 – 9	13
	18 – 24	9 – 12	14
	24 – 30	12 – 15	17
<b>WBN 6000-35</b>	≤ 4	≤ 2	11
	4 – 10	2 – 5	14
	10 – 18	5 – 9	17
	18 – 25	9 – 12.5	18

Table 10 C<sub>12</sub>, C<sub>42</sub>, C<sub>82</sub> horizontal flue gas routing with separate pipe

#### 4.3.5 C<sub>32</sub> vertical flue gas routing with concentric pipe

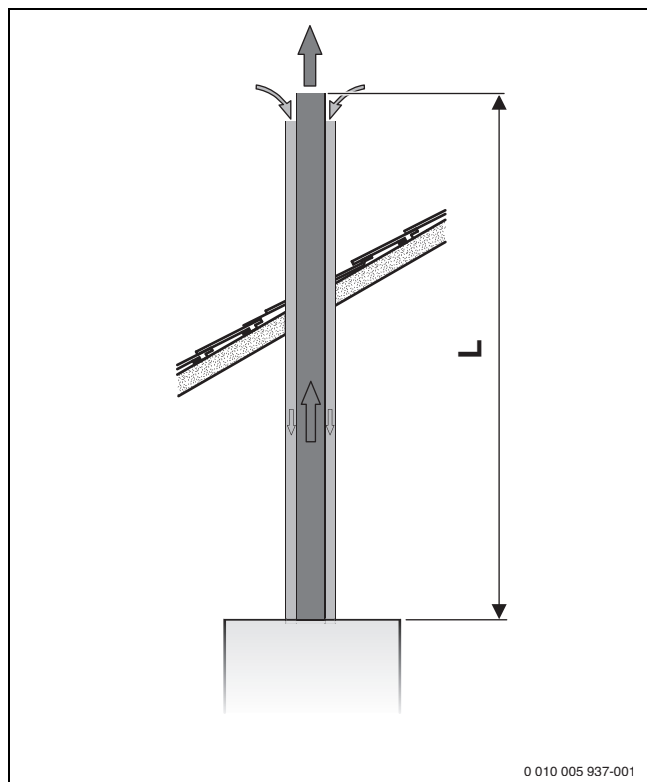


Fig. 8 C<sub>32</sub> vertical flue gas routing with concentric pipe

- Each additional 90° elbow is equivalent to 1 m.
- Each additional 45° elbow is equivalent to 0.5 m.

	L [m]	Fan stage
<b>WBN 6000-24</b>	≤ 1.5	6
	1.5 – 2.5	9
	2.5 – 5	11
	5 – 8	18
<b>WBN 6000-28</b>	≤ 1.5	7
	1.5 – 2.5	13
	2.5 – 5	14
	5 – 8	20
<b>WBN 6000-35</b>	≤ 1.5	1
	1.5 – 2.5	2
	2.5 – 5	3
	5 – 7	18

Table 11 C<sub>32</sub> vertical flue gas routing with concentric pipe

#### 4.3.6 C<sub>32</sub>, C<sub>52</sub> vertical flue gas routing with separate pipe

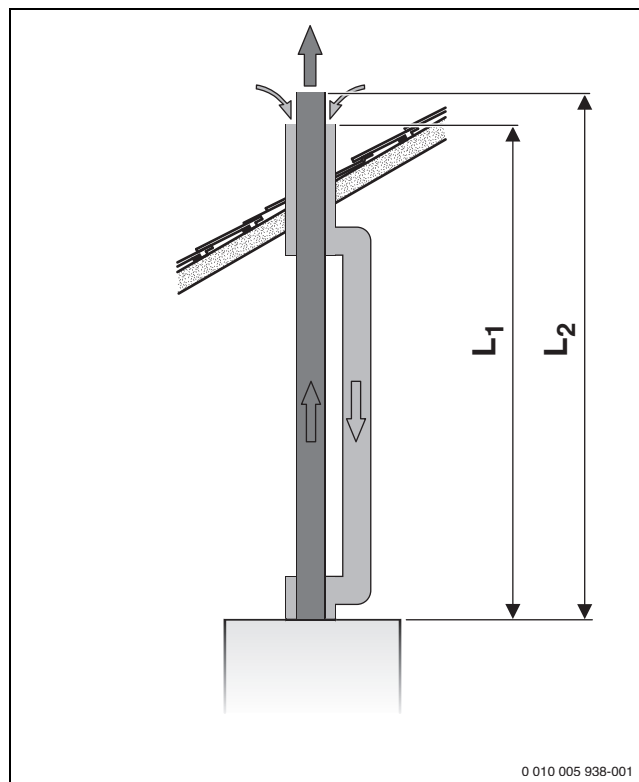


Fig. 9 C<sub>32</sub> vertical flue gas routing with separate pipe

- L<sub>1</sub> Combustion air pipe length  
L<sub>2</sub> Flue length

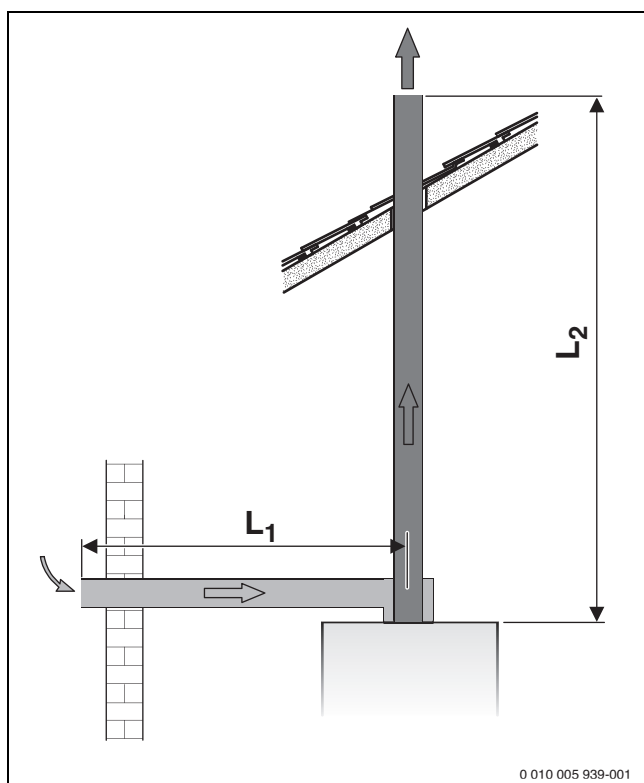


Fig. 10 C<sub>52</sub> vertical flue gas routing with separate pipe

L<sub>1</sub> Combustion air pipe length

L<sub>2</sub> Flue length

- Each additional 90° elbow in the flue pipe is equivalent to 2 m.
- Each additional 45° elbow in the flue pipe is equivalent to 1 m.
- Each additional 90° elbow in the combustion air pipe is equivalent to 1 m.
- Each additional 45° elbow in the combustion air pipe is equivalent to 0.5 m.

	L = L <sub>1</sub> + L <sub>2</sub> [m]	L <sub>2</sub> [m]	Fan stage
<b>WBN 6000-24</b>	≤ 4	≤ 2	5
	4 – 10	2 – 5	9
	10 – 18	5 – 9	13
	18 – 24	9 – 12	16
	24 – 30	12 – 15	18
<b>WBN 6000-28</b>	≤ 4	≤ 2	5
	4 – 10	2 – 5	7
	10 – 18	5 – 9	10
	18 – 24	9 – 12	15
	24 – 30	12 – 15	16
<b>WBN 6000-35</b>	≤ 4	≤ 2	7
	4 – 10	2 – 5	8
	10 – 18	5 – 9	14
	18 – 25	9 – 12.5	20

Table 12 C<sub>32</sub>, C<sub>52</sub> vertical flue gas routing with separate pipe

## 5 Installation



### WARNING:

#### 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.



### WARNING:

#### Risk to life through poisoning!

Escaping flue gas can cause poisoning.

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

### 5.1 Prerequisites

- ▶ Prior to installation, obtain the approval of the gas supplier and the flue gas inspector.
- ▶ Convert open heating systems to sealed systems.
- ▶ To prevent the formation of gas, do not use galvanised radiators or pipes.
- ▶ In the case of LPG, install a pressure regulator with a pressure relief valve.

#### 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 permitted flow temperatures for underfloor heating systems.
- ▶ When using plastic pipes, use diffusion-resistant piping or create system separation by means of heat exchangers.

#### Surface temperature

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

### 5.2 Solar preheated water (only WBN 6000-.. CR)



### WARNING:

#### Risk of scalding from hot water!

DHW temperatures over 60 °C can arise during solar operation and this can cause scalding.

- ▶ Use a thermostatic DHW mixer from the Solar set (accessories) to limit the temperature to 60 °C!



### CAUTION:

#### Risk of system damage through excessively high temperatures!

Excessive temperatures due to solar preheated water can damage the device.

- ▶ Use a thermostatic DHW mixer from the Solar set (accessories) to limit the temperature to 60 °C!
- ▶ If solar preheated water is used, activate the burner start delay (→ service function 2.bf, chapter 11).

### 5.3 Fill and top-up water

#### Fill and top-up water for the heating system

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 ( $\leq 8.4$ °dH)	not required
medium (8.4 - 14 °dH)	recommended
hard ( $\geq 14$ °dH)	required

Table 13



For straightforward water treatment:

- ▶ Use the system approved by us.

#### Antifreeze

The following antifreeze fluids and concentrations are approved:

Designation	Concentration
Varidos FSK	22 - 55 %
Alphi - 11	25 - 40 %
Glythermin NF	20 - 62 %
Antifrogen N	20 - 40 %

Table 14

#### Heating water additives

Corrosion inhibitor	Concentration
Nalco 77381	1 - 2 %
Sentinel X 100	1,1 %
Fernox Protector F1	As specified by the manufacturer

Table 15 Permissible corrosion inhibitors

#### Sealant

In our experience, the addition of sealants to the heating water can cause problems (deposits in the heat exchanger). We therefore advise against their use.

## 5.4 Checking 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

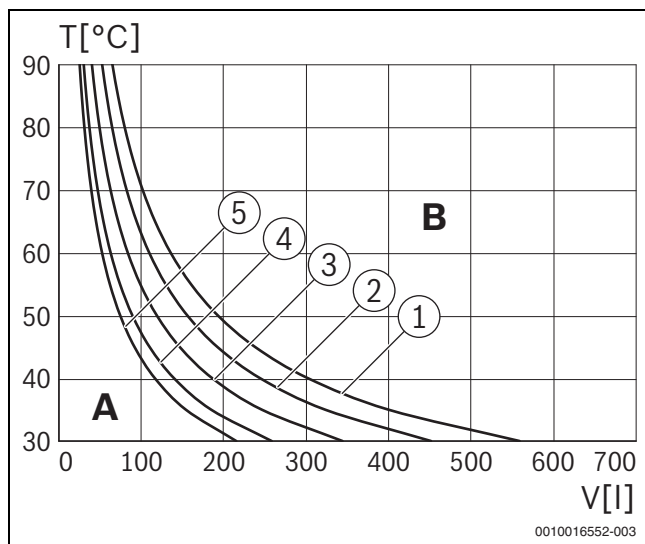


Fig. 11 Curves of the expansion vessel 6 l (appliance output < 35 kW)

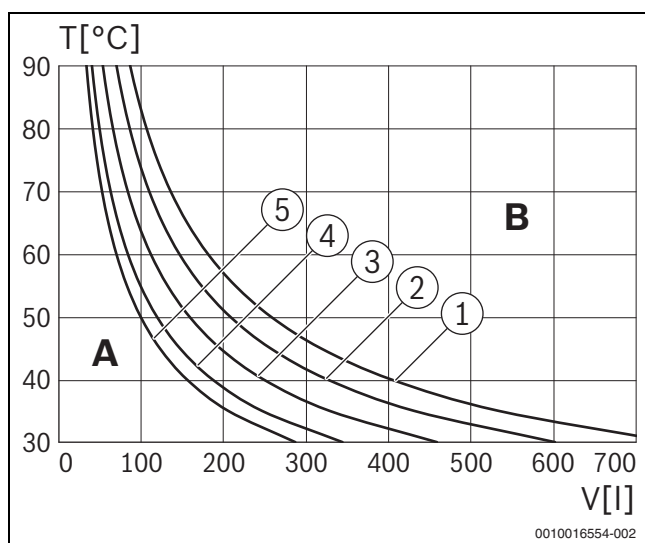


Fig. 12 Curves of the expansion vessel 8 l (appliance output = 35 kW)

### Legend to fig. 11 and 12:

- 1 Pre-charge pressure 0.5 bar (default setting)
- 2 Pre-charge pressure 0.75 bar
- 3 Pre-charge pressure 1.0 bar
- 4 Pre-charge pressure 1.2 bar
- 5 Pre-charge pressure 1.3 bar
- T Supply temperature
- V System content in litres
- A Operating capacity of the expansion vessel
- B Additional expansion vessel required

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

## 5.5 Installing the device

### Making drill holes and the wall opening

- Secure the mounting template supplied with the printed documents to the wall; when doing so, observe the minimum side clearances of 100 mm (→ page 7).
- Drill the holes for the screw hooks according to the mounting template.
- If required: create wall opening for flue accessories.

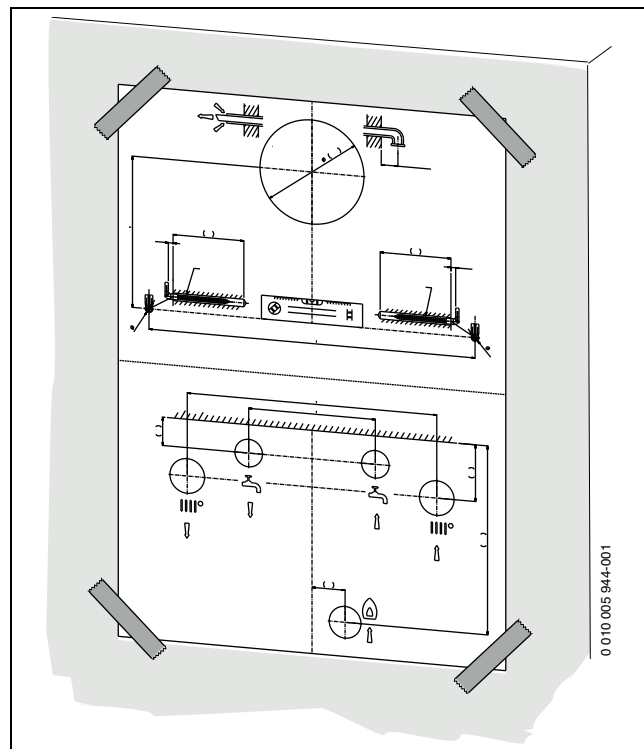


Fig. 13 Mounting template

- Remove mounting template.

### Hanging the appliance

- Remove packaging, observing all notes on the packaging.
  - On the data plate, check the designation of the target country and suitability for the gas type supplied by the local gas supplier.
1. Fit rawl plug.
  2. Fit screw hooks.
  3. Position the appliance on the wall and mount it on the screw hooks.

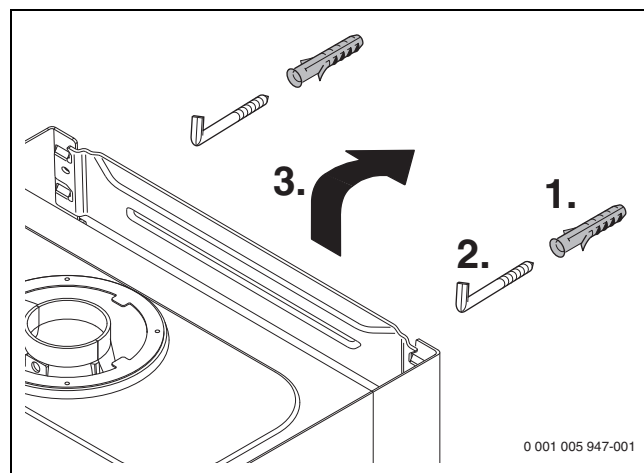


Fig. 14 Mounting the appliance on the screw hooks

### Flipping down the control device



The casing is secured with two screws against unauthorised removal (electrical safety).

- Always secure the casing with these screws.

1. Undo screws.
2. Pull the control device down.
3. Flip the control device down.

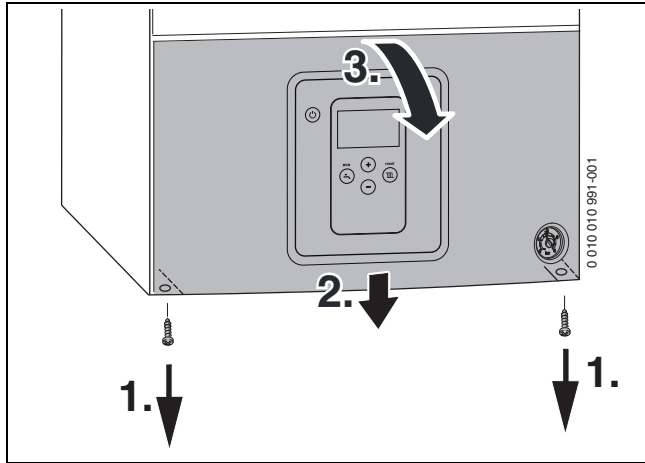


Fig. 15 Flipping down the control device

### Installing pipework



#### **DANGER:**

#### **Contaminated heating water can damage the device!**

Residues in the pipework can damage the device.

- Flush the pipework before installing the device.
- Determine the internal diameter for the gas supply.
- All pipe connections in the heating system must withstand a pressure of 3 bar, and they must be suitable for 10 bar in the DHW circuit.
- Service valves<sup>1)</sup> and install the gas isolator<sup>1)</sup>.
- For draining and filling the system on site, install a drain & fill valve at the lowest possible point in the system.
- Create a drain line for the pressure relief valve from corrosion-resistant materials.
- Always route hoses with a slope.

1) Accessories

### 5.6 Filling the system and checking for tightness

#### **NOTICE:**

#### **Commissioning without water damages the appliance!**

- Operate this device only when filled with water.

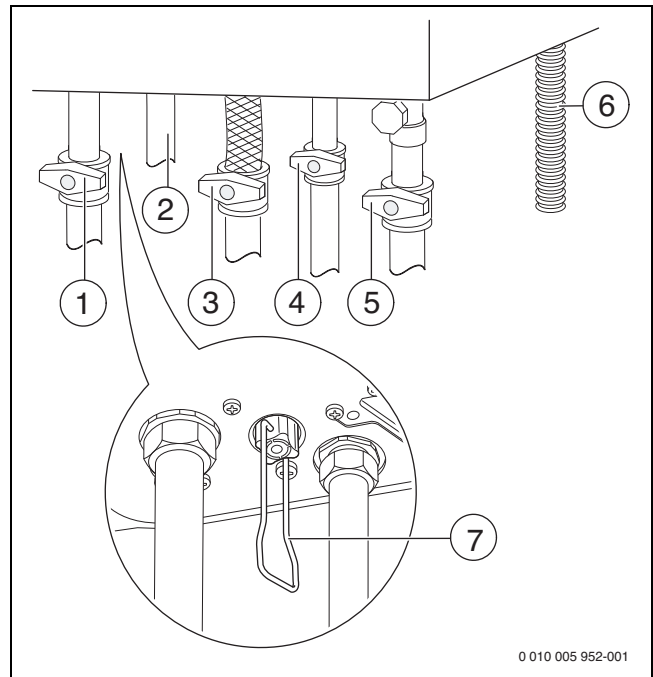


Fig. 16 Connections on the gas and water side (accessories)

- [1] Heating flow cock<sup>2)</sup>
- [2] WBN 6000-.. HR appliances: Cylinder flow, WBN 6000-.. CR appliances: DHW
- [3] Gas isolator<sup>2)</sup>
- [4] WBN 6000-.. HR appliances: Cylinder return, WBN 6000-.. CR appliances: Cold water tap<sup>2)</sup>
- [5] Heating return valve<sup>2)</sup>
- [6] Hose from the pressure relief valve (heating circuit)
- [7] WBN 6000-.. CR appliances: Filling facility

#### **Filling and venting the DHW circuit**

- WBN 6000-.. CR appliances: Open cold water valve [4] and one DHW tap until water flows out.
- WBN 6000-.. HR appliances with a DHW cylinder: turn on the external cold water tap and then turn on a hot water tap until water runs out.
- Check all joints for tightness (test pressure: max. 10 bar).

#### **Filling and venting the heating circuit**

- Set the pre-charge pressure of the expansion vessel to the static head of the heating system (→ page 17).
- Open radiator valves.
- Open the heating flow [1] and return valves [5].
- Fill the heating system to 1 to 2 bar through the drain and fill valve [7], and then close the drain and fill valve.
- Bleed radiators.
- Open the automatic air vent valve (leave open).
- Refill the heating system to 1 to 2 bar and then close the fill and drain valve again.
- Check the joints for leaks (test pressure: max. 2.5 bar at the pressure gauge).

2) ACCESSORIES

**Checking the gas line for tightness**

- ▶ Close the gas isolator to protect the gas valve against damage from excess pressure.
- ▶ Check all joints for tightness (test pressure: max. 150 mbar).
- ▶ Depressurise the system.

## 6 Electrical connection

### 6.1 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.
- ▶ Safety 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.

#### **Fuses**

The device is protected by two fuses. They are located on the circuit board.



Replacement fuses are located on the cover of the control device.

### 6.2 Connect the device

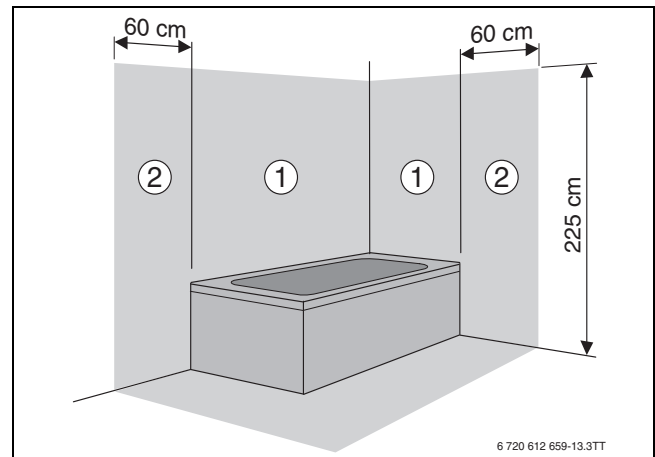


Fig. 17 Protection zones

- [1] Safety zone 1, directly above the bath
- [2] Safety zone 2, within a radius of 60 cm from the bath/shower



If the cable is not long enough:

- ▶ Remove the main power cord and replace it with a suitable one (→ Table 16).

Connection outside safety zones 1 and 2:

- ▶ Attach a suitable mains plug to the mains cable.
- ▶ Insert plug into a grounded electrical socket.

**-or-**

- ▶ Securely connect the power cable to a manifold.

Connection inside safety zones 1 and 2:

- ▶ Remove the main power cord and replace it with a suitable cable (→ Table 16).
- ▶ Connect the main power cord in such a way that the ground conductor is longer than the other conductors.
- ▶ Make the electrical connection via an isolator that disconnects all phases with at least 3 mm contact separation (e.g. fuses, circuit breakers).
- ▶ In safety zone 1: Route main power cord vertically upward.

The following cables are suitable as replacement for the built-in main power cord:

Connecting area	Suitable cable
Inside safety zones 1 and 2	NYM-I 3 × 1.5 mm <sup>2</sup>
Outside safety zones 1 and 2	HO5VV-F 3 × 1.0 mm <sup>2</sup> HO5VV-F 3 × 0.75 mm <sup>2</sup>

Table 16 Suitable main power cord



## 6.3 control device terminals

### NOTICE:

**Leftover pieces of cable can damage the control device.**

- Always strip cables away from the control device.

### 6.3.1 Connecting the on/off controller or OpenTherm controller

Only operate this appliance with a Bosch controller.

The controller must be suitable for mains voltage (from heating appliance) and must not have its own earth connection.

For installation and electrical connection, see the respective installation instructions.

- Remove the cover.
- Remove the jumper from the TH terminals.
- Connect the controller to the TH terminals.

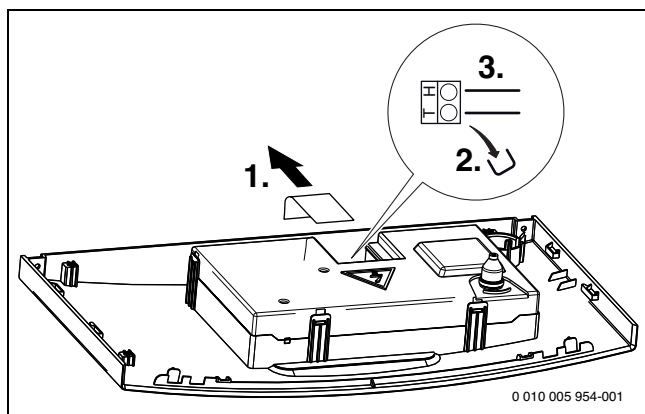


Fig. 18

### 6.3.2 Replacing the power cable

Only use original power cables from the manufacturer.

The control device must be opened to connect the power cable.

- Disconnect the ignition cable.
- Remove cover.
- Remove the old power cable.
- Plug the connector for the new cable into the circuit board.
- Insert the strain relief fitting into the casing.
- Install the casing cover.
- Install the ignition cable.

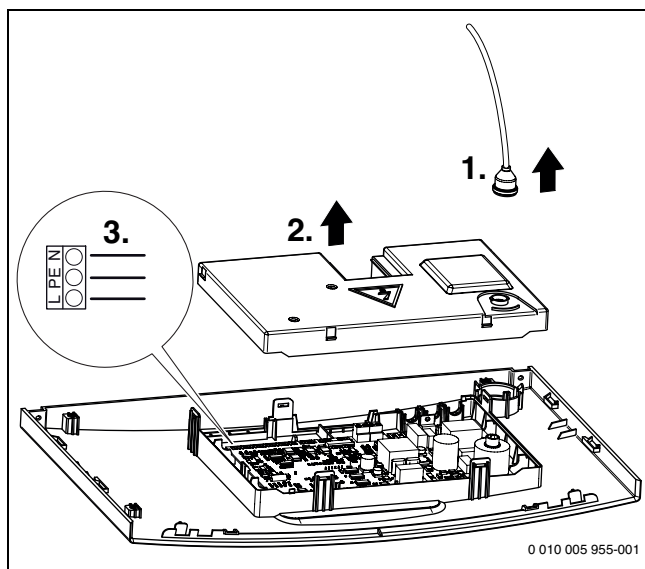


Fig. 19

### 6.3.3 Connecting a cylinder temperature sensor (WBN 6000-.. HR only)

- Bosch Connect the cylinder along with the cylinder temperature sensor directly to the terminals.

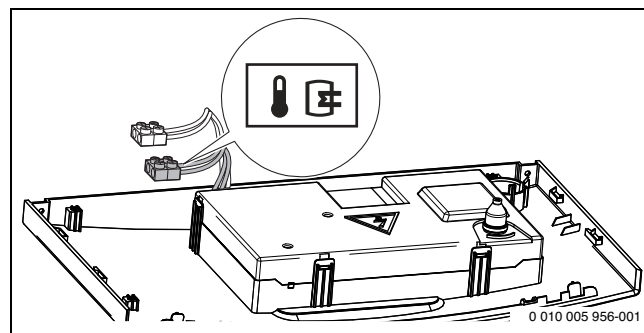


Fig. 20 Connecting a cylinder temperature sensor

### 6.3.4 Connecting an alarm contact

- Connect the alarm contact directly to the terminals.

The alarm contact is closed in the event of a fault.

Maximum load of the alarm contact: 24 V, 40 mA.

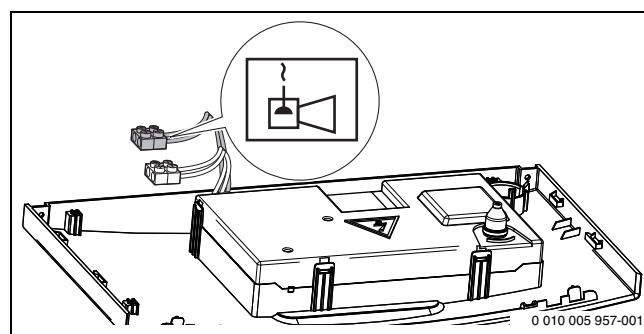


Fig. 21 Connecting an alarm contact

## 7 Commissioning

### NOTICE:

#### Commissioning without water damages the appliance!

- ▶ Operate this device only when filled with water.

#### Before commissioning the appliance

- ▶ Check the charge pressure of the system.
- ▶ Ensure that all service valves are open.
- ▶ Check whether the gas type specified on the data plate is the same as the gas type used.
- ▶ Open the gas isolator.

### 7.1 Control panel overview

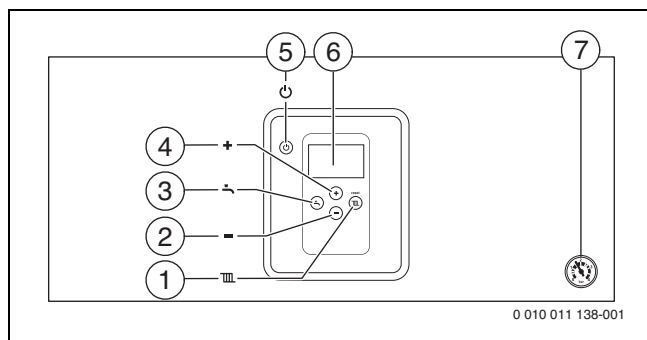





Fig. 22

- [1] Press  (reset)
- [2] - key
- [3] Press 
- [4] + key
- [5]  key
- [6] Display
- [7] Pressure gauge

### 7.2 Display readings

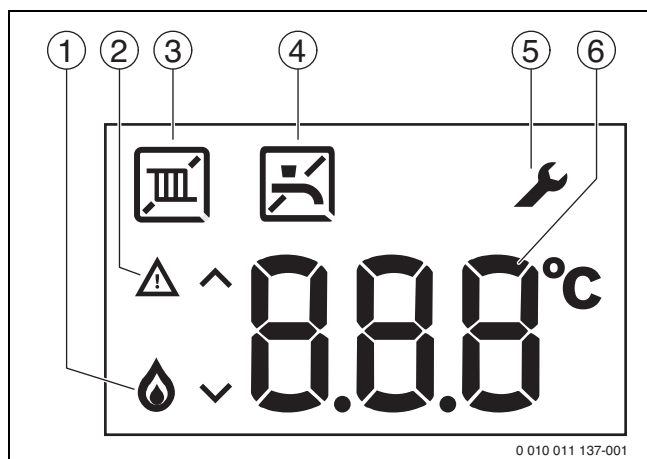


Fig. 23 Display readings

- [1] Burner operation
- [2] Error display
- [3] Heating mode
- [4] DHW heating
- [5] Service mode
- [6] Temperature display (in °C)

### 7.3 Switching on the appliance

#### Initial switching on/setting the fan stage





Fan stage 0 is set at the factory, i.e. the fan and burner do not operate.

Once the power supply is connected, the following message will flash on the display:




Fig. 24

Setting the fan stage:


- ▶ Determine the suitable fan stage (→ chapter 4, page 11).
- ▶ Press the + key and - key simultaneously until the display shows **L.1**.
- ▶ Press + key until the display shows **L.2**.
- ▶ Press  key to open menu 2 (L2).
- ▶ Press + key or - to call up service function 2.bd (→ chapter 11.2, from page 27).
- ▶ Using the  key, switch to the service function. The current value flashes on the display.
- ▶ Press + key or - to set the required value.
- ▶ Press  key until the display shows **[ ]**. The set value is stored and the display automatically changes to the higher level menu.
- ▶ Press the  button.

#### Switching on

- ▶ Switch on the device with the  key. The display shows the heating water flow temperature.


### 7.4 Setting the flow temperature



The maximum flow temperature can be set between 40 °C and approx. 82 °C. The current flow temperature is shown on the display.

- ▶ Press  key. The set maximum flow temperature is displayed.
- ▶ Press + key or - to set the required maximum flow temperature. The setting is stored after 3 seconds. The display shows the current flow temperature.

You can find typical maximum flow temperatures in Tab. 17.



Heating mode is blocked in summer mode (on the display appears ).

If the burner is active in heating mode, the following symbols appear  and  on the display.




Flow temperature	Sample application
 (Symbol  appears)	Summer mode
<b>approx. 75 °C</b>	Radiator heating system
approx. 82 °C	Convactor heating system



Table 17 Maximum flow temperature

## 7.5 Setting the DHW heating

### 7.5.1 Adjust the domestic hot water temperature

The DHW temperature can be set between 35 °C and 60 °C.

- ▶ Press  key.  
The set DHW temperature is displayed.
- ▶ Press **+** key or **-** to set the required DHW temperature  
The setting is stored after 3 seconds. The display shows the current flow temperature.

When the burner is active in DHW mode, the symbols appear  and  on the display.

#### WBN 6000-.. CR appliances: measures for hard water

To protect against increased limescale and resulting service work:



In hard water with a hard hardness range ( $\geq 15^\circ\text{dH}$  /  $27^\circ\text{fH}$  /  $2.7 \text{ mmol/l}$ )

- ▶ Set the DHW temperature to less than 55 °C.

## 7.6 Setting the heating controls



Observe the operating instructions for the heating controller used.  
These will show you:

- ▶ how to set the room temperature.
- ▶ how to heat economically and save energy.

The Bosch TRZ200, CR10, CR50 OpenTherm controllers (programmable heating controllers) can be used.

## 7.7 After commissioning

- ▶ Check the gas supply pressure (→ page 31).
- ▶ Complete commissioning report (→ page 43).

## 7.8 Setting summer mode

The heating pump and consequently central heating are switched off.  
The DHW and power supply for the heating control device and timer are retained.




#### NOTICE:

#### Heating system at risk through frost.

In summer mode, only the device is protected against frost.

- ▶ Observe frost protection measures where there is a risk of frost (→ Chapter 8.2).

To activate summer mode:

- ▶ Press  key.
- ▶ Press **-** key until on the display  appears.  
The setting is stored after 3 seconds. The display permanently shows .




For further information, see the heating controller operating instructions.

## 8 Shutdown

### 8.1 Switching off/standby mode



The device has an anti-seizing function which prevents the heating pump and the 3-way valve seizing up following long periods of inactivity. The anti-seizing function remains active during standby mode.

- ▶ Switch off the device with the  key.  
The display shows only the symbols  and .
- ▶ If the device is taken out of operation for a long period: Bear in mind frost protection (→ chapter 8.2).

### 8.2 Setting 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 for the heating system:

Frost protection for the heating system is only ensured if the heating pump is operational and is pumping heating water through the entire system.

- ▶ Leave the heating switched on.
- ▶ Set the maximum flow temperature to at least 40 °C (→ Section 7.4).
- or- If you want to leave the device switched off:
  - ▶ mix Bosch-approved anti-freeze into the heating water (→ Tab., page 16) and drain the DHW circuit.



For further information, see the heating controller operating instructions.

#### Device frost protection:

The device frost protection function switches the burner and heating pump on when the temperature in the installation room (at temperature sensor for heating flow) falls below 5 °C. This prevents the boiler freezing up.

- ▶ Activate summer mode (→ chapter 7.8) or set the device to standby mode (→ chapter 8).

#### NOTICE:

#### Heating system at risk through frost.

In summer/standby mode, only the device is protected against frost.

#### Frost protection with OpenTherm controllers:

- ▶ In order to protect the heating system against frost, adjust the controller to a minimal setback temperature of 10 °C.

The controller must not be switched off or set to stand by.

### 8.3 Anti-block protection



This function prevents the heating pump and the 3-way valve seizing up following long periods of inactivity. The anti-seizing function remains active during standby mode.

Every time the pump is switched off, a timer is started that briefly starts the heating pump after 24 hours.

## 9 Thermal disinfection (WBN 6000-.. HR only)

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

Proper thermal disinfection involves the DHW system including the discharge points.



### 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.

- ▶ Close all DHW draw-off points.
- ▶ Set any DHW circulation pump to constant operation, if installed.
- ▶ Activate thermal disinfection via service function 1.2d (→ page 27).
- ▶ Wait until the maximum temperature has been reached.
- ▶ Open all DHW draw-off points in sequence from the nearest to the farthest, and draw off DHW until hot water at 70 °C has been flowing from all draw-off points for 3 minutes.
- ▶ Restore the original settings.

## 10 Heating pump

### 10.1 Changing the heating pump curve

The speed of the heating pump can be changed at the terminal box of the pump.

- ▶ To save as much energy as possible and keep flow noises to a minimum, set a low pump curve.

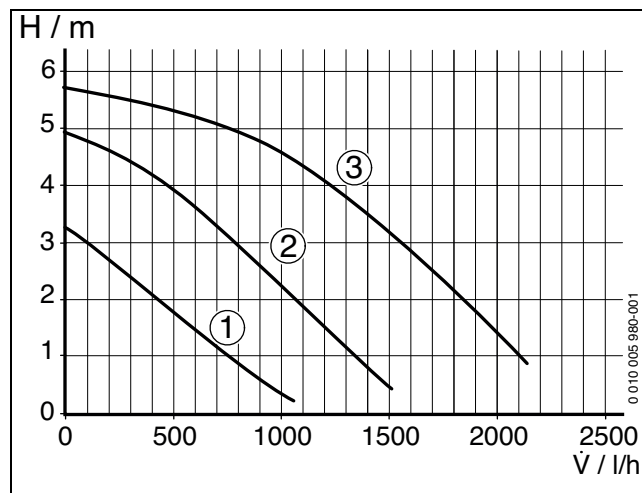


Fig. 25 Heating pump curve (appliance output < 35 kW)

- [1] Pump curve at speed 1
- [2] Pump curve at speed 2
- [3] Pump curve at speed 3 (default setting)

H Residual head  
V-dot Flow rate

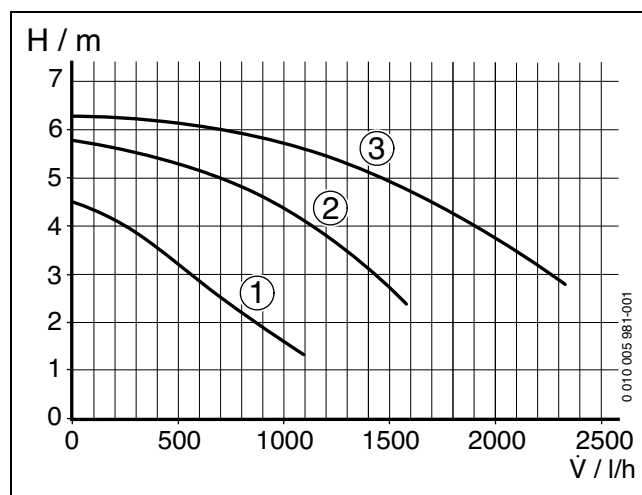


Fig. 26 Heating pump curve (appliance output = 35 kW)

- [1] Pump curve at speed 1
- [2] Pump curve at speed 2
- [3] Pump curve at speed 3 (default setting)

H Residual head  
V-dot Flowrate

## 11 Settings in the service menu

The service menu enables the adjustment and checking of many device functions. It includes:

- Menu 1
- Menu 2
- Menu 3

### 11.1 Operating the service menu

#### Select and set the service function



If a key is not pressed for 15 minutes, the system exits the selected service function.

- ▶ To select a service function, press **+** key or **-** .  
The display shows the service function.
- ▶ To confirm the selection, press the key **III** .  
The current setting flashes.
- ▶ To change the setting, press the **+** key or **-** .
- ▶ To store: press **III** key until **[ ]** is displayed.

**-or-**

- ▶ To not store: press **↶** key.  
The next highest menu level is displayed.
- ▶ Press **↶** key again.  
The appliance returns to standard operation.

#### Opening the menu

The description is before the overview tables of the individual menus.

#### Documenting the settings

- ▶ Record the change the settings in the commissioning report  
(→ Section 18.1).

## 11.2 Service functions overview

### 11.2.1 Menu 1

- ▶ Press the **+** key and **-** key simultaneously until the display shows **L.1**.
- ▶ Press **||||** key to make the settings in menu 1 (L.1).
- ▶ Press **+** key or **-** to scroll through this menu's service functions.



Default settings are shown **in bold** in the following table.

Service function		Settings/adjustment range	Comment/Restriction
1.2C	Venting function	<ul style="list-style-type: none"> <li>• <b>00</b>: Venting function off</li> <li>• 01: Switched on</li> </ul>	The venting function can be activated after maintenance.
1.2d	WBN 6000-.. HR appliances: Thermal disinfection of the DHW cylinder	<ul style="list-style-type: none"> <li>• <b>00</b>: Switched off</li> <li>• 01: Switched on</li> </ul>	<p>This service function activates the heating of the DHW cylinder to 75 °C.</p> <ul style="list-style-type: none"> <li>▶ Implement thermal disinfection as described in chapter 9, page 25.</li> </ul> <p>Thermal disinfection will not be displayed.</p> <p>Thermal disinfection terminates after the water has been held at 75 °C for 35 minutes.</p>
1.2F	Operating mode	<ul style="list-style-type: none"> <li>• <b>00</b>: Standard operation; the device operates as specified by the control unit.</li> <li>• 02: The appliance runs for 15 minutes at the set maximum output. After 15 minutes the appliance reverts to the standard operating mode.</li> <li>• 03: The appliance runs for 15 minutes at minimum output. After 15 minutes the appliance reverts to the standard operating mode.</li> <li>• 04: The appliance runs for 15 minutes at maximum output. After 15 minutes the appliance reverts to the standard operating mode.</li> </ul>	Using this service function, you can temporarily change the operating mode of the device.
1.3b	Time interval for stopping and restarting the burner	• 1 ... <b>3</b> ... 10 minutes	The time interval determines the minimum delay between the burner stop and restart.
1.3C	Temperature differential for stopping and restarting the burner	• 0 ... <b>5</b> ... 10 kelvin	The temperature differential determines, how much the flow temperature must drop below the set flow temperature until the drop is interpreted as heat energy demand. It can be set in increments of 1 K.
1.3F	Duration of heat maintenance	• <b>1</b> ... 10 minutes	Heating mode is disabled for this period of time following DHW heating.
1.5b	Fan run-on time	• 01 ... <b>03</b> ... 18 × 10 seconds	This service function allows you to set the fan run-on time.
1.6A	Calling up the last fault saved	• <b>00</b> : Service function is reset	This service function allows you to call up the last fault saved.
1.6d	Current turbine flow rate	–	The current turbine flow rate is displayed in litres per minute.
1.7A	LCD display lighting	<ul style="list-style-type: none"> <li>• <b>00</b>: Switched off</li> <li>• 01: Switched on</li> </ul>	
1.7C	Minimum DHW flow rate	• <b>2.5</b> ... 5 litres per minute	DHW heating is activated, if amounts above this value are drawn off.

Table 18 Menu 1

**11.2.2 Menu 2**

- ▶ Press the **+** key and **-** key simultaneously until the display shows **L.1.**
- ▶ Press **+** key until the display shows **L.2.**
- ▶ Press **III** key to make the settings in menu 2 (L.2).
- ▶ Press **+** key or **-** to scroll through this menu's service functions.



Default settings are shown **in bold** in the following table.

Service function		Settings/adjustment range	Comment/Restriction
2.1A	Maximum output	• "Minimum rated output" ... <b>"maximum rated output"</b>	Some gas suppliers require a base price that is subject to output. ▶ Set the output in percent. ▶ Measure the gas flow rate and compare it with the information from the setting tables (→ from page 42). If they do not match, correct the setting.
2.1b	Maximum output (DHW)	• "Minimum rated output" ... <b>"maximum rated output"</b>	▶ Set the DHW output in percent. ▶ Measure the gas flow rate and compare it with the information from the setting tables (→ from page 42). If they do not match, correct the setting.
2.2b	Maximum flow temperature	• 40 ... <b>82</b> °C	
2.3d	Minimum rated output (heating)	• <b>"Minimum rated output"</b> ... "maximum rated output"	Rated output (heating) varies according to each appliance. ▶ Set the output in percent.
2.4E	Internal parameter	–	Do not change value 0.
2.8A	Software version	–	The current software version is displayed.
2.8E	Returning the appliance to its default setting	• <b>00</b>	This service function enables you to reset the appliance to its default setting.
2.9A	Permanent operating mode	• <b>00</b> : Standard operation; the device operates as specified by the control unit. • 01: The appliance runs at minimum output. • 02: The appliance runs at maximum output.	This function permanently sets an operating mode.
2.9b	Current fan speed	–	Current fan speed in 1/s
2.9E	WBN 6000-.. CR appliances: Turbine signal delay	• 01 ... <b>02</b> ... 06 × 0.25 seconds	Through spontaneous pressure change in the water supply, the flow meter (turbine) can signal that DHW is being drawn off. This means the burner starts briefly although no water is drawn off.
2.9F	Heating pump overrun time	• 0 ... <b>3</b> ... 10 minutes (1-minute increments)	The pump run-on time is started by the control system at the end of the heat requirement.
2.AA	Temperature at the flow temperature sensor	–	This service function allows you to display the temperature at the flow temperature sensor.
2.Ab	WBN 6000-.. CR appliances: DHW temperature	–	This service function allows you to display the DHW temperature.
2.AC	WBN 6000-.. HR appliances: Temperature at cylinder temperature sensor	–	This service function allows you to display the temperature in the DHW cylinder.
2.bd	Fan stage	• <b>00</b> (Fan not running)	This service function allows the fan stage to be adjusted to the flue length (selecting the fan stage → chapter 4, page 11).
2.bF	WBN 6000-.. CR appliances: DHW heating delay (solar mode)	• <b>00</b> ... 50 seconds	Heating will be suppressed until the DHW temperature sensor detects that the water preheated by solar energy has reached the required hot water temperature. Set the heating mode delay in accordance with system conditions.
2.dd	Ignition ramp offset	• <b>00</b> ... 30 mA	



Service function		Settings/adjustment range	Comment/Restriction
2.0A	Gas type for appliance type	<ul style="list-style-type: none"> <li>• <b>00</b>: Appliance for natural gas</li> <li>• 01: Appliance for LPG</li> </ul>	This service function allows you to set the gas type. In the case of a conversion, 2.bd is set to 00.
2.0b	Ionisation current	–	<ul style="list-style-type: none"> <li>• When the burner is running: <ul style="list-style-type: none"> <li>– <math>\geq 1 \mu\text{A}</math> = OK</li> <li>– <math>&lt; 1 \mu\text{A}</math> = fault</li> </ul> </li> <li>• With burner switched off: <ul style="list-style-type: none"> <li>– <math>&lt; 1 \mu\text{A}</math> = OK</li> <li>– <math>\geq 1 \mu\text{A}</math> = fault</li> </ul> </li> </ul>

Table 19 Menu 2

### 11.2.3 Menu 3

- ▶ Press the + key and – key simultaneously until the display shows **L.1**.
- ▶ Press + key until the display shows **L.3**.
- ▶ Press **||||** key to make the settings in menu 3 (L.3).
- ▶ Press + key or – to scroll through this menu's service functions.



Default settings are shown **in bold** in the following table.

Service function		Settings/adjustment range	Comment/Restriction
3.1A	Appliance type, performance	–	This service function allows you to adjust the control device to the appliance output. This is necessary when the control device is replaced.

Table 20 Menu 3

### 11.2.4 Restoring values to default setting

To restore all values from service levels 1 and 2 to their default settings:

- ▶ Select service function 2.8E in the second service menu and save value **1**. The appliance starts in the default setting.

## 12 Check gas setting

The default setting for natural gas appliances is natural gas H.

The fan stage needs to be set to adjust the system to different flue lengths.

Converting the gas type must be carried out in accordance with the instructions for the gas type conversion set in the product box (bag with nozzles), and the barcodes listed in the section on gas type conversion must be taken into account.



With all gas type conversion sets, one can find the barcode on the back of the bag.

### 12.1 Gas type conversion

Appliance	Conversion to	Part No.
WBN 6000-24 CR	Liquid gas (LPG)	8 737 601 081 0
	Natural gas	8 737 601 077 0
WBN 6000-28 CR	Liquid gas (LPG)	8 737 601 083 0
WBN 6000-28 HR	Natural gas	8 737 601 077 0
WBN 6000-35 CR	Liquid gas (LPG)	7 736 900 815
WBN 6000-35 HR	Natural gas	7 736 900 813

Table 21 Gas type conversion



#### **DANGER:**

#### **Risk of explosion!**

- ▶ Close the gas isolation valve prior to working on gas-carrying components.
  - ▶ Check for gas tightness after carrying out work on gas-carrying components.
- 
- ▶ Install the gas type conversion set according to the supplied installation instructions.
  - ▶ Make the gas setting after every conversion (→ sec. 12.2).

## 12.2 Gas setting (natural gas and LPG)

### 12.2.1 Preparation

- ▶ Flip the control device down (→ page 18).
- ▶ Mount the control device at the bottom of the appliance so that the gas train and the control device can be operated at the same time.

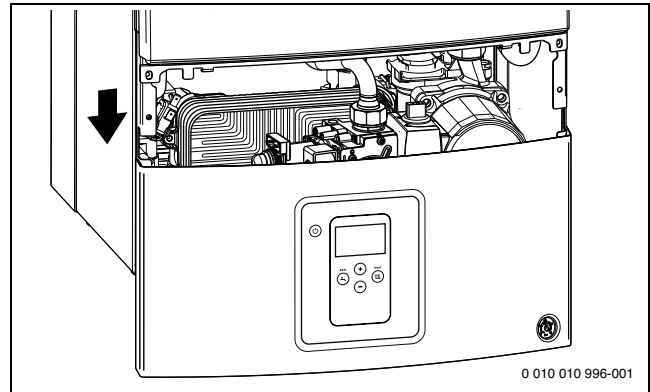


Fig. 27 Control device, mounted in the frame, allowing the gas valve and control device to be operated at the same time

The rated output can be set using the burner pressure or volumetrically.

- ▶ Always set to maximum output first then minimum output.
- ▶ Ensure heat transfer by opening the radiator valves or DHW tap.

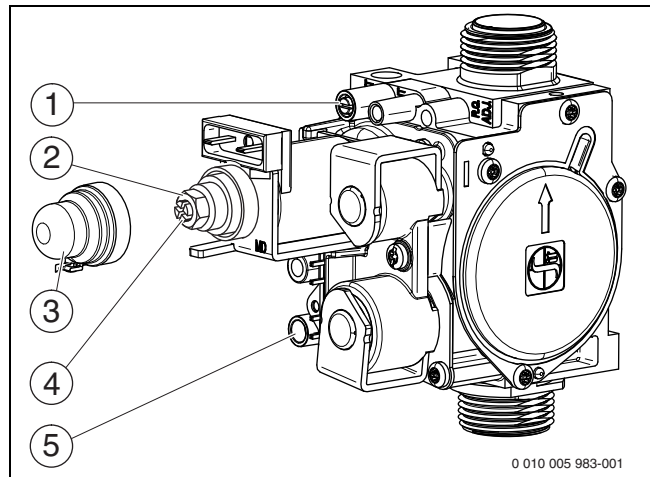


Fig. 28 Gas valve

- [1] Burner pressure test nipple
- [2] Adjusting screw, maximum gas volume
- [3] Cover
- [4] Adjusting screw, minimum gas volume
- [5] Test nipple for gas supply pressure

### 12.2.2 Burner pressure adjustment

#### Burner pressure at maximum output

- ▶ Select service function 1.2F and set operating mode **4 (= maximum rated output)** (→ Chapter 11.2, from page 27).
- ▶ Loosen the sealing screw at the test nipple for the burner pressure ( Fig. 28, [1]) and connect the U-tube pressure gauge.
- ▶ Remove the cover ( Fig. 28, [3]).
- ▶ For “max.” specified burner pressure (mbar), see table on page 42. Use the setting screw to set the burner pressure for the max. gas volume ( Fig. 28, [2]). Turn clockwise = more gas; turn anti-clockwise = less gas.

#### Burner pressure at minimum output

- ▶ Select service function 1.2F and set operating mode **3 (= maximum rated output)** (→ Chapter 11.2, from page 27).
- ▶ For “min.” specified burner pressure (mbar), see table on page 42. Use the adjusting screw to set the burner pressure for min. gas volume ( Fig. 28, [4]).
- ▶ Check the set min. and max. values and correct them if required.

#### Checking the gas supply pressure

- ▶ Switch off the wall mounted conventional gas boiler, close the gas valve, remove the U-tube pressure gauge and tighten the sealing screw (Fig. 28, [1]).
- ▶ Release the sealing screw at the test nipple for the gas supply pressure ( Fig. 28, [5]) and connect the pressure gauge.
- ▶ Open the gas valve and switch on the wall mounted conventional gas boiler.
- ▶ Select service function 1.2F and set operating mode **4 (= maximum rated heat output)** (→ chapter 11.2, from page 27).
- ▶ Check the required gas supply pressure according to the following table.

Gas type	Design pressure [mbar]	Permissible pressure range at maximum rated heat output [mbar]
Natural gas H (23)	20	17...25
LPG (propane) <sup>1)</sup>	37	25...45
LPG (butane)	30	25...35


1) Standard value for LPG with fixed containers up to 15,000 l capacity

Table 22



Do not commission the appliance if the measured value is below or above these values. Identify the cause and rectify the fault. If this is not possible, isolate the device on the gas side and notify the gas supplier.

#### Re-setting normal operating mode

- ▶ Select service function 1.2F and operating mode **0 (= normal mode)** (→ Chapter 11.2, from page 27) or press the back key .
- ▶ Switch off the appliance, close the gas isolator, remove the pressure gauge and tighten the sealing screw.
- ▶ Reattach the cover and seal it ( Fig. 28, [3]).

## 13 Flue gas test

### 13.1 Setting appliance output

To set the **maximum appliance output**:

- ▶ Select service function 1.2F and set operating mode **4** (→ Chapter 11.2, from page 27).

To set the **minimum appliance output**:

- ▶ Select service function 1.2F and set operating mode **3** (→ Chapter 11.2, from page 27).




You have 15 minutes in which to take your measurements. After this time the appliance returns to normal operation.

To set **normal mode**:

- ▶ Select service function 1.2F and set operating mode **0** (→ Chapter 11.2, from page 27).

-or-

- ▶ Press key  .  
The heating appliance returns to normal mode.

### 13.2 Tightness test of the flue gas path

Measuring O<sub>2</sub> or CO<sub>2</sub> levels in combustion air.

Use an annular gap probe for measuring.



With a type C<sub>12</sub> and C<sub>32</sub> flue gas routing system, the tightness of the flue gas path can be tested by measuring the O<sub>2</sub> or CO<sub>2</sub> content of the combustion air. The O<sub>2</sub> level must not be below 20,6 %. The CO<sub>2</sub> level must not exceed 0,2 %.

- ▶ Ensure heat transfer by opening the radiator valves or DHW tap.
- ▶ Switch on the appliance and wait a few minutes.
- ▶ Remove the plug from the combustion air test nipple [2].
- ▶ Insert a flue gas probe into the connector and seal the test point.

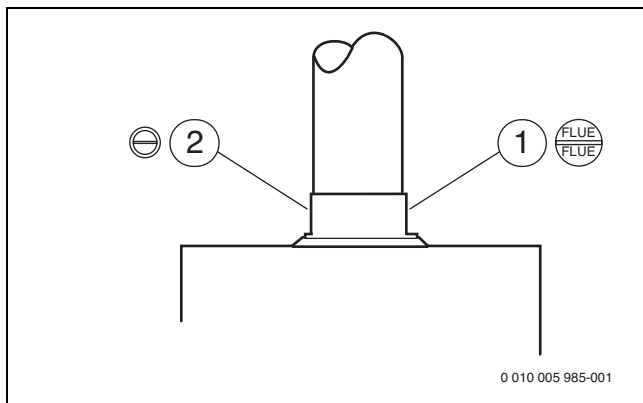




Fig. 29 Flue gas test port and combustion air test nipple

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

- ▶ Select service function 1.2F and set operating mode **4** (→ Chapter 11.2, from page 27).
- ▶ Measure the CO<sub>2</sub> and O<sub>2</sub> levels.
- ▶ Select service function 1.2F and set operating mode **0** (→ Chapter 11.2, from page 27) or key  .
- ▶ Switch off the appliance.
- ▶ Remove the flue gas probe.
- ▶ Replace the plug.


### 13.3 Checking the CO level in the flue gas

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

- ▶ Ensure heat transfer by opening the radiator valves or DHW tap.
- ▶ Switch on the appliance and wait a few minutes.
- ▶ Remove plug from flue gas test port (→ Fig. 28, [1]).
- ▶ Insert a flue gas probe as far as it will go into the port and seal the test point.
- ▶ Select service function 1.2F and set operating mode **4** (→ Chapter 11.2, from page 27).
- ▶ Measure the CO content.
- ▶ Select service function 1.2F and set operating mode **0** (→ Chapter 11.2, from page 27) or key  .
- ▶ Switch off the appliance.
- ▶ Remove the flue gas probe.
- ▶ Replace the plug.

### 13.4 Testing flue gas loss value

A flue gas probe and a temperature sensor are required for the test.

- ▶ Ensure heat transfer by opening the radiator valves or DHW tap.
- ▶ Switch on the appliance and wait a few minutes.
- ▶ Remove the plug from the flue gas test port [1].
- ▶ Insert flue gas probe approx. 60 mm into the connector and find the position with the highest flue gas temperature.
- ▶ Seal the test point.
- ▶ Remove the plug from the combustion air test nipple [2].
- ▶ Push the temperature sensor approx. 20 mm into the connector.
- ▶ Seal the test point.
- ▶ Select service function 1.2F and set operating mode **4** (→ Chapter 11.2, from page 27).
- ▶ Test the flue gas loss value and combustion efficiency at a boiler temperature of 60 °C.
- ▶ Select service function 1.2F and set operating mode **0** (→ Chapter 11.2, from page 27) or key  .
- ▶ Switch off the appliance.
- ▶ Remove the test probe.
- ▶ Remove the temperature sensor.
- ▶ Replace the plug.

---

## **14 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.

## 15 Inspection and maintenance

### 15.1 Safety instructions for inspection and maintenance

#### **⚠ Notes for the target group**

Only approved contractors may carry out inspection and maintenance. The manufacturer's maintenance instructions must be observed. Failure to comply with instructions may result in material damage and personal injury, including possible loss of life.

- ▶ Inform the user of the consequences of insufficient or non-existent inspection and maintenance.
- ▶ Have the heating system inspected at least once a year, and have any required maintenance or cleaning work carried out.
- ▶ Remedy all faults immediately.
- ▶ Check the heat exchanger at least every 2 years, and if necessary clean it. We recommend an annual inspection.
- ▶ Use only original spare parts (see the spare parts catalogue).
- ▶ Replace removed gaskets and O-rings with new ones.

#### **⚠ 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) (fuse, circuit breaker) 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.

#### **⚠ 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.

#### **⚠ Resources for inspection and maintenance**

- The following measuring devices are required:
  - Electronic flue gas analyser for CO<sub>2</sub>, O<sub>2</sub>, 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.

#### **⚠ After the inspection/maintenance**

- ▶ Re-tighten all the threaded connections that have been released.
- ▶ Restart the appliance (→ chapter 7, page 22).
- ▶ Check all joints for leaks.
- ▶ Check the gas/air ratio.

## 15.2 Description of various workflow steps

### 15.2.1 Calling up the last fault saved



For an overview of faults, see page 40.

- Select service function 1.6A (→ Chapter 11.2, from page 27).

### 15.2.2 Opening the appliance

#### Removing the front casing



The front casing is secured with two screws against unauthorised removal (electrical safety).

- Always secure the casing with these screws.
- Flip the control device down (→ page 18).
- 1. Remove both safety screws from the appliance front.
- 2. Lift off the casing.

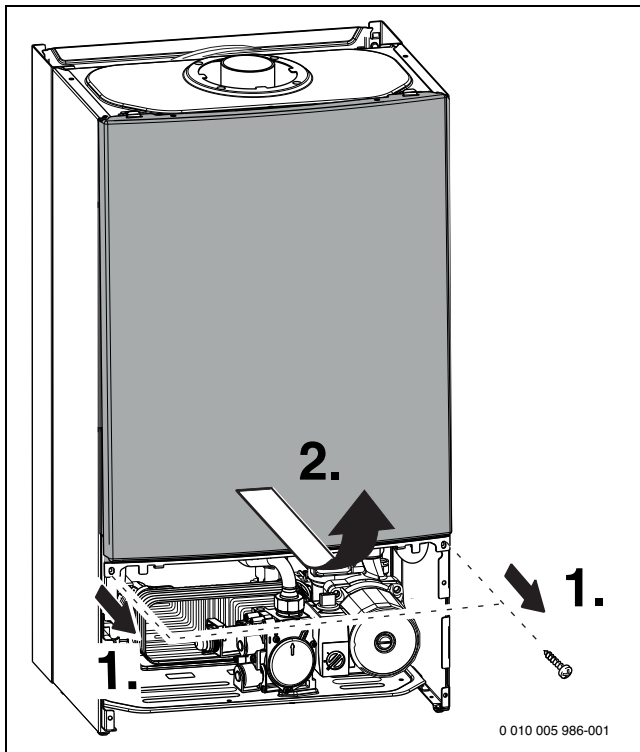


Fig. 30

### 15.2.3 Checking the strainer in the cold water pipe (WBN 6000-.. CR)

1. Remove the clip.
2. Pull out the pressure relief valve.

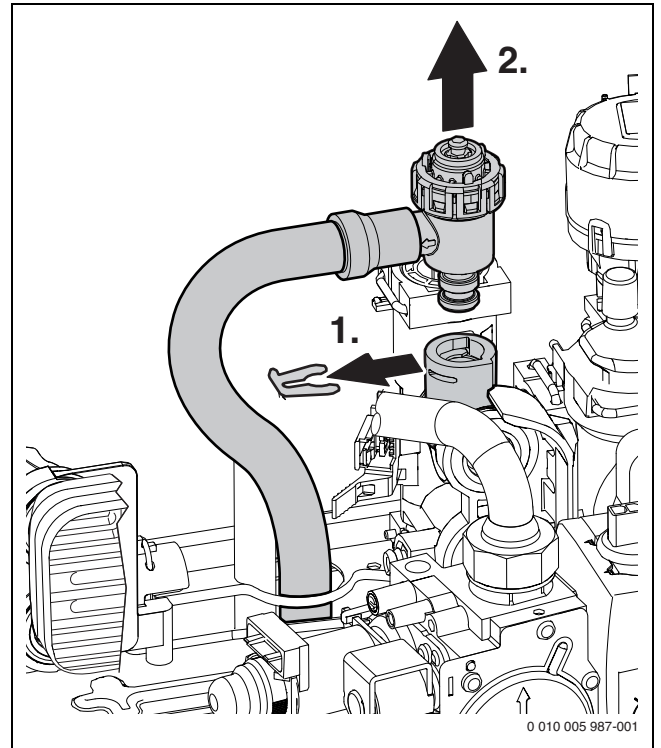


Fig. 31 Removing the pressure relief valve (heating circuit)

1. Remove the clip.
2. Pull out the insert.
3. Check filter for contamination.

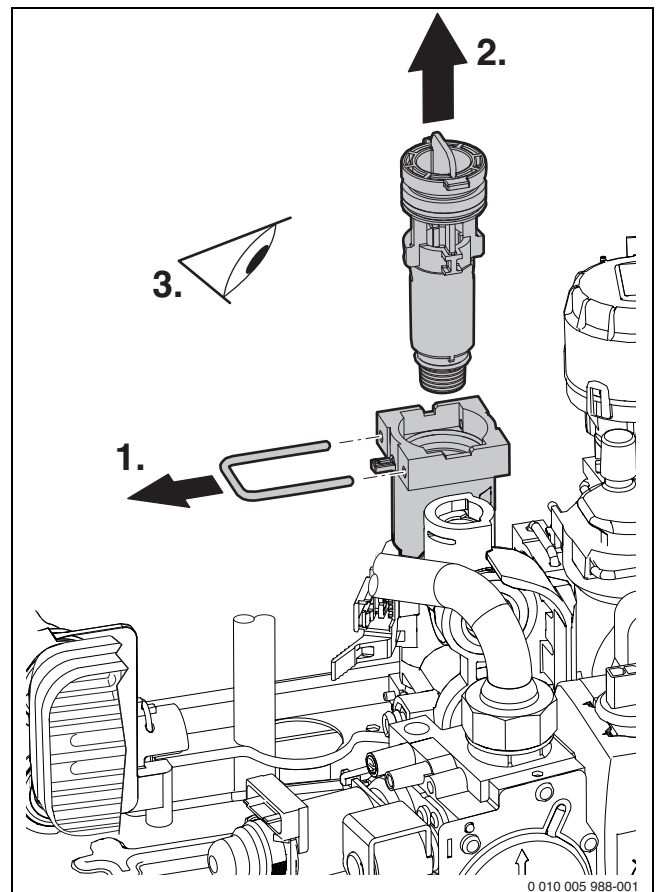


Fig. 32 Checking the filter in the cold water pipe

### 15.2.4 Clean burner body, nozzle and burner

- Loosen five screws and lift out the combustion chamber cover by pulling it forwards.

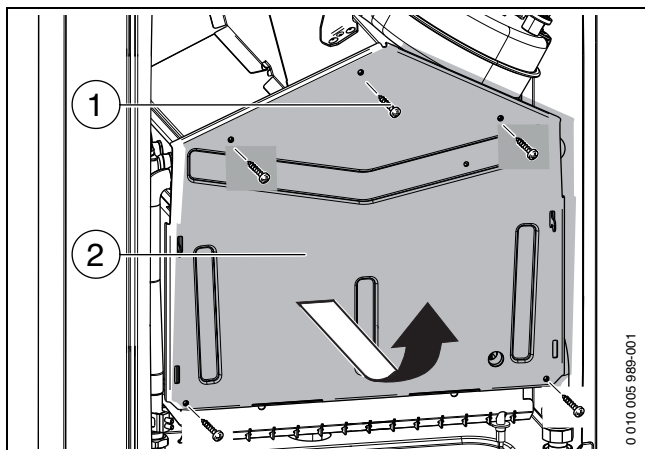


Fig. 33 Opening the burner

- [1] Screws
- [2] Combustion chamber cover

- Remove the burner.
- Remove the nozzle holder.
- Clean the burner with a brush to ensure that the fins and nozzles are clear. **Do not clean the nozzles with metal pins.**
- Check electrodes for contamination and clean or replace if required.
- Check gas setting (→ page 30).

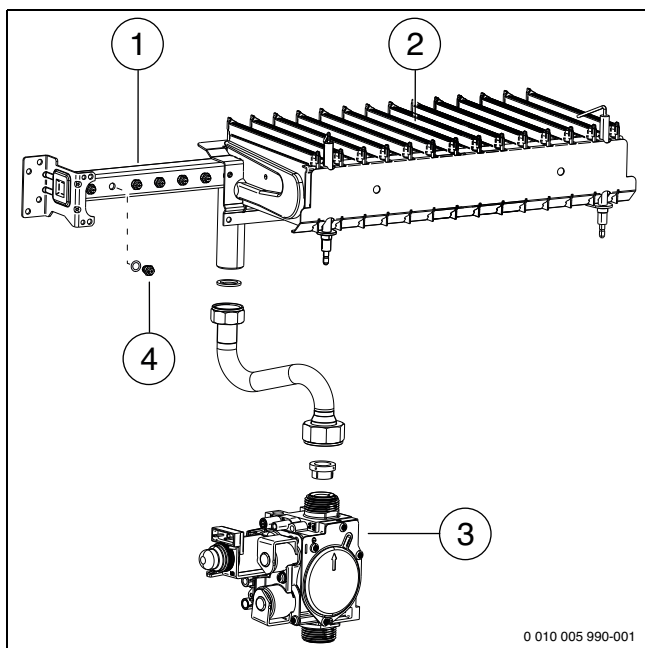


Fig. 34

- [1] Nozzle holder
- [2] Half burners
- [3] Gas valve
- [4] Nozzle

### 15.2.5 Cleaning the heat exchanger

1. Disconnect the cable.
2. Remove screw fittings.
3. Pull the heat exchanger out towards the front.

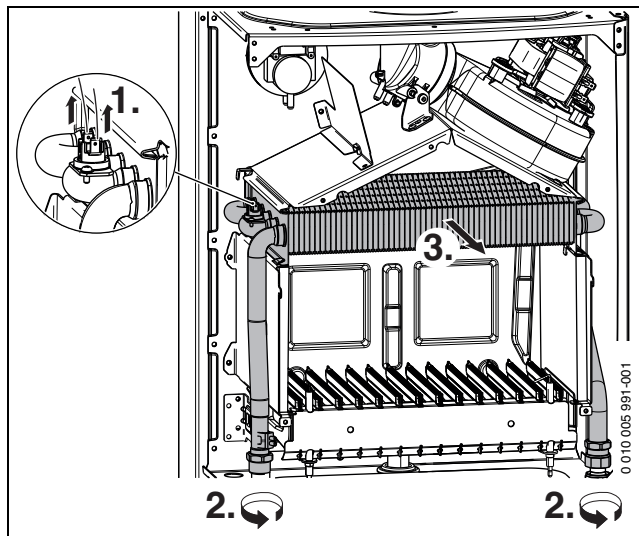


Fig. 35

- Clean the heat exchanger in water using a rinsing agent and reinstall it.
- Find any bent fins on the heat exchanger and carefully bend them straight.

### 15.2.6 Checking the expansion vessel

The expansion vessel must be checked every year.

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

### 15.2.7 Setting the heating system operating pressure

Display on the pressure gauge	
1 bar	Minimum charge pressure (when system is cold)
1 - 2 bar	Optimal charge pressure
3 bar	Maximum charge pressure at maximum heating water temperature must not be exceeded (pressure relief valve will release).

Table 23

- If the indicator is below 1 bar (when the system is cold): top up the water until the indicator is between 1 bar and 2 bar again.
- If pressure is not being maintained: check expansion vessel and heating system for leaks.



### 15.2.8 Checking electrical wiring

- Check wiring for mechanical damage and replace faulty cables/leads.

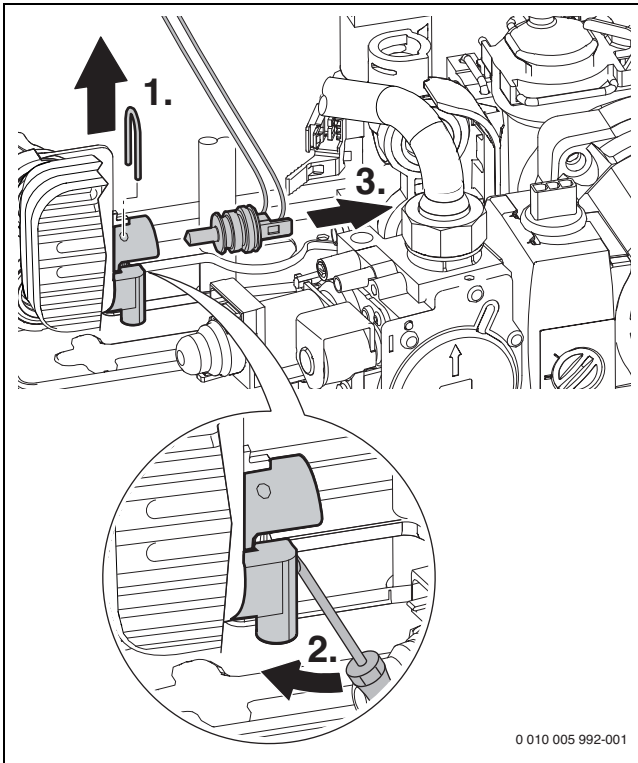
### 15.2.9 Removing the DHW temperature sensor



#### CAUTION:

#### Water damage due to escaping water.

- Close the tap at the cold water inlet.
- 
- Open DHW tap.
1. Remove the clip.
  2. Lever out the DHW temperature sensor from below using a screwdriver.
  3. Disconnect the connector at the temperature sensor.

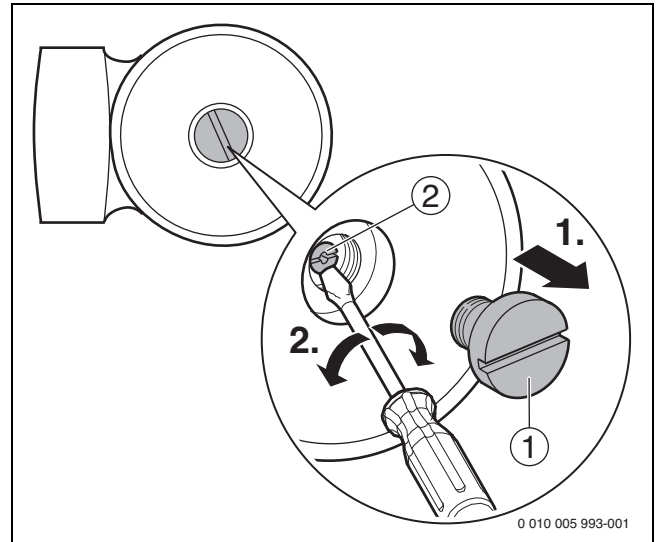


0 010 005 992-001

Fig. 36 Removing the DHW temperature sensor

### 15.2.10 Unblocking the pump (e.g. when commissioning the system)

- Flip the control device down (→ page 18) to access the pump.
- Undo cap [1].  
A small amount of water may escape.
- Turn shaft [2] with a screwdriver for approx. half a turn.
- Screw in the cap again and flip the control device up.



0 010 005 993-001

Fig. 37

### 15.3 Checklist for inspection and maintenance

Date							
1	Call up the last fault saved in the electronics, service function 1.6A (→ section 11.2, from page 27).						
2	Check the filter in the cold water pipe (→ page 35).						
3	Check the flue system visually.						
4	Check the gas supply pressure (→ page 31).	mbar					
5	Leak test on the gas and water side (→ section 5, from page 16).						
6	Check the heat block (→ page 36).						
7	Check the burner (→ page 36).						
8	Check the electrodes (→ page 36).						
9	Check the pre-charge pressure of the expansion vessel for the static head of the heating system.	bar					
10	Check the charge pressure of the heating system.	bar					
11	Check the electrical wiring for damage.						
12	Check the heating controller settings.						
13	Check the set service functions.						

Table 24

## 16 Readings on the display

The display shows the following readings (tab. 25 and 26):

Value displayed	Description
Number, point, number or letter, point followed by a letter	Service function (→ chapter 11, from page 26)
Letter followed by a number or letter	Fault code flashes (→ tab. 17, page 39)
Two numbers or one number, point followed by a number or three numbers	Decimal value e.g. flow temperature

Table 25 Display readings






Special reading	Description
	Venting function active (approx. 2 minutes).
	Summer mode (device frost protection)
e.g. <b>EA</b>	Fault code (→ chapter 17.2)
	Fan stage 0 is set, → service function 2.bd.
only  and 	Standby

Table 26 Special display readings

## 17 Faults

### 17.1 Troubleshooting



#### **DANGER:**

#### **Risk of explosion!**

- ▶ Close the gas isolation valve prior to working on gas-carrying components.
- ▶ Check for gas tightness after carrying out work on gas-carrying components.



#### **DANGER:**

#### **Risk of poisoning.**

- ▶ Check for leaks after working on the flue gas routing parts.



#### **DANGER:**

#### **Risk of electric shock!**

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



#### **WARNING:**

#### **Risk of scalding!**

Hot water can lead to severe scalding.



- ▶ Close all valves and possibly drain device prior to working on parts routing water.

#### **NOTICE:**




#### **Escaping water can damage the electronics.**


- ▶ Cover the electronics prior to working on parts routing water.


The electronics monitors all safety and control components.

If a fault occurs during operation, the display shows the  symbol and, in certain cases, the  symbol, and a fault code (e.g. **EA**) flashes.

If  and  appear:

- ▶ Press the  key and hold it until the  and  symbols are no longer displayed.  
The device goes back into operation and the flow temperature is displayed.

If only  appears:

- ▶ Switch the device off and on again with the  key.  
The device goes back into operation and the flow temperature is displayed.

If a fault persists:

- ▶ Call an approved contractor or Customer service and notify them of the fault code and details of the device.



An overview of the faults and displays can be found on the following pages.

If a fault persists:

- ▶ Check the circuit board, replace it if required and reset the service functions.

## 17.2 Faults that are shown on the display




Display	Description	Remedy
<b>A7</b>	Hot water temperature sensor is faulty.	► Check the temperature sensor and connecting lead for breaks or short-circuits and replace them if required (→ page 37).
<b>Ad</b>	Cylinder temperature sensor not detected.	► Check the cylinder temperature sensor and connecting lead, replace if required.
<b>C1</b>	Fan speed too low.	► Check mains voltage. ► Check the flue system and clean or repair if required.
<b>C4</b>	The differential pressure switch does not open when fan switched off.	► Check the differential pressure switch and cabling, also check the connection hoses.
<b>C6</b>	Differential pressure switch does not close.	► Check the fan cable with plug and fan, replace if required. ► Check the differential pressure switch and flue gas routing.
<b>C7</b>	Fan not running.	► Check the fan cable with plug and fan, replace if required.
<b>CE</b>	Heating system charge pressure is too low.	► Top up the system with water.
<b>d7</b>	Gas valve is faulty.	► Check the connecting lead. ► Check the gas valve and replace it if required.
<b>E2</b>	Flow temperature sensor is faulty (breaks).	► Check the temperature sensor and connecting lead for breaks or short circuits, replace if required.
<b>E9</b>	Temperature limiter for heat exchanger has responded.	► Check the temperature limiter and connecting lead of the heat exchanger for breaks, replace if required. ► Check the operating pressure of the heating system. ► Check the temperature limiter and replace if required. ► Check the starting of the pump, replace pump if required. ► Check the fuse and replace if required (→ page 20). ► Vent the device. ► Check the heat exchanger on the water side and replace if required.
<b>EA</b>	Flame not detected.	► Check that the earth lead is correctly connected. ► Check whether the gas isolator is open. ► Check the gas supply pressure and correct it if required. ► Check the power supply. ► Check the electrodes and cable, replace if required. ► Check the flue system and clean or repair if required. ► Check the gas setting and correct it if required. ► For natural gas: Check the external gas flow monitor and replace it if required. ► In the case of open flue operation, check the interconnected room air supply or ventilation openings. ► Clean the heat exchanger (→ page 36). ► Check the gas valve and replace it if required.
	Flame detected even when the burner is switched off.	► Check electrodes for contamination and replace if required. ► Check the flue system and clean or repair if required. ► Check the PCB for moisture and dry it if required.
<b>FA</b>	After switching gas off: flame is detected.	► Check the gas valve and replace it if required. ► Check the electrodes and connecting lead, replace if required. ► Check the flue system and clean or repair if required.
<b>Fd</b>	Key was held down for too long by mistake (over 30 secs.).	► Press the  key for 3 seconds.
<b>P</b>	Appliance type not defined.	► Set the appliance type (→ service function 3.1A).
	Fan stage not set.	► Set the fan stage.

Table 27

### 17.3 Faults that are not shown on the display

Appliance faults	Remedy
Water circulation noises	▶ Correctly set the pump speed at the pump terminal box.
Heating up takes too long	▶ Correctly set the pump speed at the pump terminal box.
Flue gas readings incorrect; CO content too high	<ul style="list-style-type: none"> <li>▶ Check gas type.</li> <li>▶ Check gas supply pressure and adjust if required.</li> <li>▶ Check flue system. Clean or repair if required.</li> <li>▶ Check gas settings; replace gas valve if required.</li> </ul>
Ignition too violent, or poor	<ul style="list-style-type: none"> <li>▶ Check gas type.</li> <li>▶ Check gas supply pressure and adjust if required.</li> <li>▶ Check power supply.</li> <li>▶ Check electrodes with cable. Replace if required.</li> <li>▶ Check flue system. Clean or repair if required.</li> <li>▶ Check gas settings; replace gas valve if required.</li> <li>▶ For natural gas: Check external gas flow monitor. Replace if required.</li> <li>▶ Check burner. Replace if required.</li> </ul>
DHW outlet temperature is not reached	<ul style="list-style-type: none"> <li>▶ Check appliance type and gas type; see service function 2.0A.</li> <li>▶ Check turbine. Replace if required.</li> </ul>
No heating, no DHW (pump is not running)	▶ Unblock pump (→ page 37).

Table 28 Faults that are not shown on the display

## 18 Appendix

### 18.1 Commissioning report for the device

<b>Customer/system user:</b>			
Surname, first name		Street, house number	
Telephone/fax		Postcode, town	
<b>System installer:</b>			
Order number:			
Appliance type:		<b>(Complete a separate report for every device!)</b>	
Serial number:			
Date of commissioning:			
<input type="checkbox"/> Individual device   <input type="checkbox"/> Cascade, number of devices: .....			
Installation location: <input type="checkbox"/> Cellar   <input type="checkbox"/> Attic   <input type="checkbox"/> Other:			
Ventilation apertures: Number: ....., Size: approx.			cm <sup>2</sup>
Flue gas routing: <input type="checkbox"/> Twin pipe system   <input type="checkbox"/> LAS   <input type="checkbox"/> Duct   <input type="checkbox"/> Separate pipe routing			
<input type="checkbox"/> Plastic   <input type="checkbox"/> Aluminium   <input type="checkbox"/> Stainless steel			
Total length: approx. .... m   Elbow 90°: ..... pce   Elbow 15 - 45°: ..... pce			
Leak check of the flue with a countercurrent: <input type="checkbox"/> Yes   <input type="checkbox"/> No			
CO <sub>2</sub> value in the combustion air at maximum rated output:			%
O <sub>2</sub> value in the combustion air at maximum rated output:			%
Notes regarding underpressure or overpressure operation:			
<b>Gas setting and flue gas test:</b>			
Set gas type:			
Gas supply pressure:		Gas static supply pressure:	
mbar		mbar	
Set maximum rated output:		Set minimum rated output:	
kW		kW	
Gas flow rate at maximum rated output:		Gas flow rate at minimum rated output:	
l/min		l/min	
Net calorific value H <sub>IB</sub> :			
kWh/m <sup>3</sup>			
CO <sub>2</sub> at maximum rated output:		CO <sub>2</sub> at minimum rated output:	
%		%	
O <sub>2</sub> at maximum rated output:		O <sub>2</sub> at minimum rated output:	
%		%	
CO at maximum rated output:		CO at minimum rated output:	
ppm mg/kWh		ppm mg/kWh	
Flue gas temperature at maximum rated output:		Flue gas temperature at minimum rated output:	
°C		°C	
Maximum measured flow temperature:		Minimum measured flow temperature:	
°C		°C	
<b>System Hydraulic:</b>			
<input type="checkbox"/> Low loss header, type:		<input type="checkbox"/> Additional expansion vessel	
<input type="checkbox"/> Heating pump:		Size/pre-charge pressure:	
		Automatic air vent valve present? <input type="checkbox"/> Yes   <input type="checkbox"/> No	
<input type="checkbox"/> DHW cylinder/type/number/heating surface output:			
<input type="checkbox"/> System hydraulics checked, Notes:			

<b>Changed service functions</b>	
Read off the changed service functions and enter the values here.	
<input type="checkbox"/> Label with "settings in the service menu" filled out and affixed.	
<b>Heating controls:</b>	
<input type="checkbox"/> Weather-compensated control	<input type="checkbox"/> Room temperature-dependent control
<input type="checkbox"/> Remote control × ..... pce., heating circuit(s) coding:	
<input type="checkbox"/> Room temperature-dependent control × ..... pce., heating circuit(s) coding:	
<input type="checkbox"/> Module × ..... pce., heating circuit(s) coding:	
Miscellaneous:	
<input type="checkbox"/> Heating controls set, Notes:	
<input type="checkbox"/> Changed settings for the heating controls documented in the operating/installation instructions for the control unit	
<b>The following work has been carried out:</b>	
<input type="checkbox"/> Electrical connections checked, Notes:	
<input type="checkbox"/> Condensate trap filled	<input type="checkbox"/> Leak test carried out on the gas and water sides
<input type="checkbox"/> Function check carried out	
Commissioning includes checking the setting values, a visual leak test on the device 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	<b>Affix the test report here.</b>

Table 29 Commissioning report

## 18.2 Electrical wiring

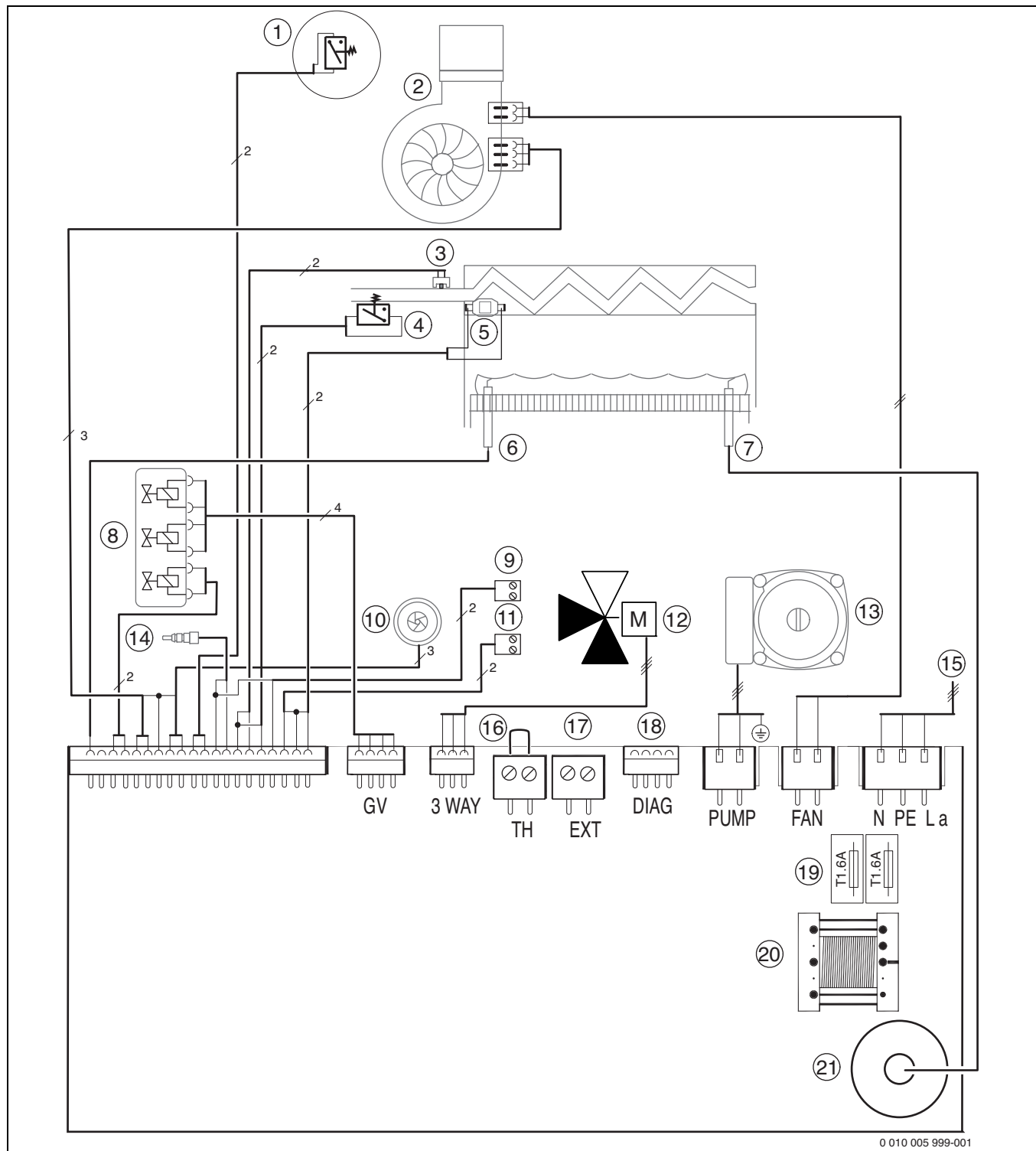


Fig. 38

- |   |  |
|---|--|
| [1] Differential pressure switch                                | [13] Heating pump                                      |
| [2] Fan   | [14] Hot water temperature sensor                      |
| [3] Flow temperature sensor                                     | [15] 230 V connecting lead                             |
| [4] Differential pressure switch                                | [16] OTM connection or ON/OFF controller <sup>1)</sup> |
| [5] Heat exchanger temperature limiter                          | [17] Connection for outside temperature sensor         |
| [6] Flame sense electrode                                       | [18] Diagnostic interface                              |
| [7] Ignition electrode  | [19] Fuses   |
| [8] Gas valve   | [20] Reactor   |
| [9] Connection for cylinder temperature sensor (WBN 6000-.. HR) | [21] Ignition transformer                              |
| [10] Turbine (WBN 6000-.. CR)                                   |  |
| [11] Alarm signal connection (24 V DC, max. 40 mA)              |  |
| [12] 3-way valve  |  |

1) Remove jumper before making connection



### 18.3 Technical Data

	Unit	WBN 6000-24 CR		WBN 6000-28 ..	
		Natural gas	Liquid gas (LPG)	Natural gas	Liquid gas (LPG)
Heat output/load					
Max. rated output (P <sub>max</sub> ) 80/60 °C	KW	24.0	24.0	28.0	28.0
Max. rated heat input (Q <sub>max</sub> ) for heating	KW	26.7	26.7	31.0	31.0
Min. rated output (P <sub>min</sub> ) 53/47 °C	KW	7.2	7.2	8.4	8.4
Min. rated heat input (Q <sub>min</sub> ) for heating	KW	8.0	8.0	9.3	9.3
Max. rated heat output (P <sub>nW</sub> ) for DHW	KW	24.0	24.0	28.0	28.0
Max. rated heat input (Q <sub>nW</sub> ) for DHW	KW	26.7	26.7	31.0	31.0
Gas supply value					
Natural gas H (H <sub>i(15 °C)</sub> = 9.5 kWh/m <sup>3</sup> )	m <sup>3</sup> /h	2.8	–	3.1	–
LPG (H <sub>i</sub> = 12.9 kWh/kg)	Kg/h	–	2.0	–	2.4
Permissible gas supply pressure					
Natural gas H	mbar	15 - 25	–	15 - 25	–
Liquid gas (LPG)	mbar	–	25 - 35	–	25 - 35
Expansion vessel					
Pre-charge pressure	bar	0.5	0.5	0.5	0.5
Total capacity	l	6	6	6	6
Domestic hot water (WBN 6000-.. CR)					
Max. DHW volume	l/min	8	8	10	10
Specific flow ΔT = 50 K	l/min	6.8	6.8	8.0	8.0
Specific flow as per EN 13203-1 (ΔT = 30 K)	l/min	11.4	11.4	13.3	13.3
DHW temperature	°C	35 - 60	35 - 60	35 - 60	35 - 60
Max. permissible DHW pressure	bar	10	10	10	10
Min. flow pressure	bar	0.3	0.3	0.3	0.3
DHW comfort class as per EN 13203	–	2	2	2	2
Calculation figures for calculating the cross-sectional area as per EN 13384					
Flue gas temperature 80/60 °C, max. rated value	°C	142	147	125	130
Flue gas temperature 53/47 °C, min. rated value	°C	63	64	65	67
Flue gas mass flow rate, max. rated value	g/s	16.6	16.8	16.5	18.7
Flue gas mass flow rate, min. rated value	g/s	13.7	13.0	15.4	14.4
CO <sub>2</sub> at max. rated output	%	6.1 - 6.6	7.1 - 7.6	7.0 - 7.5	7.5 - 8.0
CO <sub>2</sub> at min. rated output	%	2.1 - 2.6	2.1 - 2.6	2.4 - 2.8	2.8 - 3.2
NO <sub>x</sub> content	mg/kWh	132	132	132	132
NO <sub>x</sub> class	–	3	3	3	3
Approval data					
Product ID no.	–	CE-0085C00060			
Appliance category (gas type)	–	II <sub>2H3</sub> +			
Installation type	–	B <sub>22</sub> , C <sub>12</sub> , C <sub>32</sub> , C <sub>52</sub> , C <sub>82</sub>			
General description					
Electrical voltage	AC ... V	230	230	230	230
Frequency	Hz	50	50	50	50
Max. power consumption (heating mode)	W	<150	<150	<150	<150
Standby power consumption	W	5	5	5	5
Sound pressure level	dB(A)	≤ 38	≤ 38	≤ 38	≤ 38
IP rating	IP	X4D	X4D	X4D	X4D
Max flow temperature	°C	40 - 82	40 - 82	40 - 82	40 - 82
Max. permitted operating pressure (P <sub>MS</sub> ) for heating	bar	3	3	3	3
Permissible ambient temperature	°C	0 - 50	0 - 50	0 - 50	0 - 50
Weight (without packaging) (WBN 6000-.. HR / WBN 6000-.. CR)	kg	-/31	-/31	31/32	31/32
Dimensions W × H × D	mm	400 × 700 × 299	400 × 700 × 299	400 × 700 × 299	400 × 700 × 299

Table 30 Technical Data

	Unit	WBN 6000-35 ..	
		Natural gas	Liquid gas (LPG)
Heat output/load			
Max. rated output (P <sub>max</sub> ) 80/60 °C	KW	35.0	35.0
Max. rated heat input (Q <sub>max</sub> ) for heating	KW	38.5	38.5
Min. rated output (P <sub>min</sub> ) 53/47 °C	KW	10.8	10.8
Min. rated heat input (Q <sub>min</sub> ) for heating	KW	11.6	11.6
Max. rated heat output (P <sub>nW</sub> ) for DHW	KW	35.0	35.0
Max. rated heat input (Q <sub>nW</sub> ) for DHW	KW	38.5	38.5
Gas supply value			
Natural gas H (H <sub>i(15 °C)</sub> = 9.5 kWh/m <sup>3</sup> )	m <sup>3</sup> /h	4.0	–
LPG (H <sub>i</sub> = 12.9 kWh/kg)	Kg/h	–	2.92
Permissible gas supply pressure			
Natural gas H	mbar	17 - 25	–
Liquid gas (LPG)	mbar	–	25 - 45
Expansion vessel			
Pre-charge pressure	bar	0.5	0.5
Total capacity	l	8	8
Hot water			
Max. DHW volume	l/min	14	14
Specific flow ΔT = 50 K	l/min	9.6	9.6
Specific flow as per EN 13203-1 (ΔT = 30 K)	l/min	16.0	16.0
DHW temperature	°C	35 - 60	35 - 60
Max. permissible DHW pressure	bar	10	10
Min. flow pressure	bar	0.3	0.3
DHW comfort class as per EN 13203	–	3	3
Calculation figures for calculating the cross-sectional area as per EN 13384			
Flue gas temperature 80/60 °C, max. rated value	°C	128	130
Flue gas temperature 53/47 °C, min. rated value	°C	70	75
Flue gas mass flow rate, max. rated value	g/s	22.0	23.8
Flue gas mass flow rate, min. rated value	g/s	19.10	18.6
CO <sub>2</sub> at max. rated output	%	6.8 - 7.3	7.7 - 8.2
CO <sub>2</sub> at min. rated output	%	2.6 - 3.1	2.8 - 3.3
NO <sub>x</sub> content	mg/kWh	143	–
NO <sub>x</sub> class	–	3	–
Flue gas connection	mm	60/100	60/100
Approval data			
Product ID no.		CE-0085C00060	
Appliance category (gas type)		II <sub>2H3+</sub>	
Installation type		B <sub>22</sub> , C <sub>12</sub> , C <sub>32</sub> , C <sub>52</sub> , C <sub>82</sub>	
General description			
Electrical voltage	AC ... V	230	230
Frequency	Hz	50	50
Max. power consumption (heating mode)	W	<150	<150
Standby power consumption	W	5	5
Sound pressure level	dB(A)	≤ 38	≤ 38
IP rating	IP	X4D	X4D
Max flow temperature	°C	40 - 82	40 - 82
Max. permitted operating pressure (P <sub>MS</sub> ) for heating	bar	3	3
Permissible ambient temperature	°C	0 - 50	0 - 50
Weight (unpacked)	kg	39/40	39/40
Dimensions W × H × D	mm	485 × 700 × 315	485 × 700 × 315

Table 31 Technical Data

## 18.4 Sensor values

### 18.4.1 Flow temperature sensor

Temperature [°C ± 10%]	Resistance [Ω]
0	33 242
10	19 947
20	12 394
30	7 947
40	5 242
50	3 548
60	2 459
70	1 740
80	1 256
90	923

Table 32 Flow temperature sensor

### 18.4.2 DHW temperature sensor

Temperature [°C ± 10%]	Resistance [Ω]
0	28 704
10	18 410
20	12 171
25	10 000
30	8 269
35	6 881
40	5 759
45	4 847
50	4 101
55	3 488
60	2 981
65	2 559
70	2 207
75	1 912
80	1 662
85	1 451
90	1 272

Table 33 DHW temperature sensor

## 18.5 Setting values for central heating/DHW output

### WBN 6000-24 ..

Gas type	Burner pressure		Gas rate	
	(mbar) G20 (23)	(mbar) G30 (31)	(l/min) G20 (23)	(kg/h) G30 (31)
Wobbe index 15 °C, 1013 mbar (kWh/ m <sup>3</sup> )	14.1	24.3	14.1	24.3
Net calorific value 15 °C, H <sub>ij</sub> (kWh/ m <sup>3</sup> )	10.5	34.9	10.5	34.9
Output/kW				
7.2	1.3	2.7	13.8	0.6
9.5	2.3	4.7	18.2	0.8
10.7	2.9	5.9	20.5	0.9
11.9	3.5	7.3	22.8	1.0
12.6	3.9	8.1	24.2	1.1
14.4	5.1	10.5	27.6	1.2
15.6	5.9	12.2	30.0	1.3
16.8	6.8	14.1	32.3	1.4
18.0	7.8	16.0	34.6	1.5
19.2	8.8	18.1	36.9	1.6
20.4	9.9	20.3	39.2	1.7
21.6	11.0	22.5	41.6	1.8
22.8	12.2	24.9	43.9	1.9
24.0	13.5	27.6	46.2	2.0

Table 34 Setting values for WBN 6000-24 ..

### WBN 6000-28 ..

Gas type	Burner pressure		Gas rate	
	(mbar) G20 (23)	(mbar) G30 (31)	(l/min) G20 (23)	(kg/h) G30 (31)
Wobbe index 15 °C, 1013 mbar (kWh/ m <sup>3</sup> )	14.1	24.3	14.1	24.3
Net calorific value 15 °C, H <sub>ij</sub> (kWh/ m <sup>3</sup> )	10.5	34.9	10.5	34.9
Output/kW				
8.4	1.1	2.7	16.1	0.7
9.9	1.5	3.8	19.0	0.8
10.5	1.7	4.2	20.1	0.9
11.4	2.0	4.9	21.8	1.0
13.1	2.6	6.5	25.1	1.1
14.6	3.3	8.0	27.9	1.2
16.0	3.9	9.5	30.6	1.4
17.5	4.7	11.3	33.4	1.5
18.8	5.4	12.9	35.9	1.6
20.3	6.2	15.0	38.7	1.7
22.0	7.3	17.4	42.0	1.9
23.5	8.3	19.7	44.8	2.0
25.0	9.3	22.2	47.6	2.1
27.0	10.8	25.6	51.4	2.3
28.0	11.6	27.5	53.3	2.4

Table 35 Setting values for WBN 6000-28 ..

**WBN 6000-35 ..**

Gas type	Burner pressure			Gas rate		
	(mbar) G20 (23)	(mbar) G30	(mbar) G31	(l/min) G20 (23)	(kg/h) G30 (31)	(kg/h) G30 (31)
Wobbe index 15 °C, 1013 mbar (kWh/ m <sup>3</sup> )	14.1	24.3	21.4	14.1	24.3	24.3
Net calorific value 15 °C, H <sub>IB</sub> (kWh/ m <sup>3</sup> )	10.5	34.9	26.6	10.5	34.9	34.9
Output/kW						
10.8	1.0	2.5	3.55	20.3	0.8	0.90
12.1	1.3	3.1	4.41	22.7	0.9	1.01
13.1	1.5	3.7	5.16	24.6	1.0	1.09
14.6	1.8	4.6	6.39	27.5	1.1	1.22
15.1	2.0	4.9	6.82	28.4	1.1	1.26
16.0	2.2	5.5	8.15	30.1	1.2	1.33
17.5	2.6	6.6	9.12	33.0	1.3	1.46
18.8	3.0	7.7	10.50	35.4	1.4	1.57
20.3	3.6	9.0	12.70	38.3	1.5	1.69
22.0	4.2	10.6	14.30	41.5	1.6	1.83
23.5	4.8	12.2	17.00	44.3	1.7	1.96
25.0	5.4	13.8	18.39	47.2	1.9	2.08
26.7	6.2	15.8	21.60	50.4	2.0	2.23
27.5	6.6	16.8	22.19	52.0	2.1	2.29
29.0	7.3	18.8	25.60	54.8	2.2	2.42
31.5	8.6	22.3	28.98	59.6	2.4	2.63
32.3	9.1	23.4	30.30	61.1	2.4	2.69
33.5	9.8	25.3	32.71	63.4	2.5	2.79
34.2	10.2	26.5	34.07	64.8	2.6	2.85
35.0	10.7	27.6	35.30	66.3	2.7	2.92

Table 36 Setting values for WBN 6000-35 ..





Bosch Thermotechnik GmbH  
Junkersstrasse 20-24  
D-73249 Wernau

[www.bosch-thermotechnology.com](http://www.bosch-thermotechnology.com)