



Gas instantaneous water heaters

Therm 4000 S

GWH12/15/18 CTD E23/31 F6 O...



BOSCH

Installation and Operating Manual



Read installation manual prior to installation of this unit!
Read user manual before putting this unit in operation!



Observe the warnings in the manuals!
The installation room must fulfill the ventilation requirements!



Installation by an authorised person only!

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1 Key to symbols and safety instructions

1.1 Key to symbols

Warnings



Warnings in this document are identified by a warning triangle printed against a grey background.

Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

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

- **NOTICE** indicates a situation that could result in damage to property or equipment.
- **CAUTION** indicates a situation that could result in minor to medium injury.
- **WARNING** indicates a situation that could result in severe injury or death.
- **DANGER** indicates a situation that will result in severe injury or death.

Important information



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

Additional symbols

Symbol	Explanation
▶	Step in an action sequence
→	Cross-reference to another part of the document
•	List entry
–	List entry (second level)

Table 1

1.2 General safety instructions

These instructions are aimed at the owner, specialist technicians and those qualified in gas, water, electricity, heating installations.

- ▶ Before use, read and keep the operation manuals (appliance, heating controller, etc.).
- ▶ Read the installation instructions (appliance, heating controller, etc) before the installation.
- ▶ Pay attention to the safety and warning notices.
- ▶ Pay attention to national and regional regulations, technical regulations and directives.

- ▶ Document works carried out.

If you smell gas

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

- ▶ Prevent flames or sparks:
 - Do not smoke, use a lighter or strike matches.
 - Do not operate any electrical switches or unplug any equipment.
 - Do not use the telephone or ring doorbells.
- ▶ Turn off the gas at the meter.
- ▶ Warn your neighbours and leave the building.
- ▶ Prevent anyone from entering the building.
- ▶ Well away from the building: call the fire brigade, police and gas supplier.

Use as per regulations

The appliance may only be used for the production of DHW for human consumption in domestic installations or equivalent with intermittent use.

The appliance can only be installed outdoors.

Any other type of use is deemed improper. No liability is accepted for any damage as a result of this.

Safety of electrical appliances for domestic use and similar purposes

The following requirements apply in accordance with EN 60335-1 in order to prevent hazards from occurring when using electrical appliances:

“This device can be used by children of 8 years and up as well and by people with reduced physical, sensory or mental capabilities or lacking in experience and knowledge, if they are supervised and have been given instruction in the safe use of the device and understand the resulting dangers. Children must not play with the device. Cleaning and user maintenance may not be performed by children without supervision”

“If the power supply cable is damaged, in order to avoid risks it must be replaced by

the manufacturer or its customer service department or a similarly qualified person.”

Installation, commissioning and maintenance

The installation, commissioning and maintenance may only be carried out by an authorised contractor.

- ▶ Check the tightness of the connections to the device (gas and water).
- ▶ Only fit original spare parts.

Inspection and maintenance

Regular inspection and maintenance are essential for the safe and environmentally-sound operation of the heating system.

We recommend taking out an annual inspection and maintenance contract with the manufacturer.

- ▶ Work should only be carried out by an authorised contractor.
- ▶ Immediately remove any faults detected.

Any situation that does not meet the conditions described in the manual must be duly assessed by a qualified, contractor. In the event that it is approved for use, the technician shall adapt the maintenance requirements to the wear and tear and associated conditions as well as the standards and requirements of the market and the particular application.

Modifications and repairs

Unprofessional modifications to the appliance or other parts of the heating system can result in injury and/or damage to property or equipment.

- ▶ Have any work carried out only by an authorised contractor.
- ▶ Do not remove the appliance case.
- ▶ Do not modify the appliance or other parts of the heating system in any way.

Electrical work

Electrical work must only be carried out by a qualified electrician.

- ▶ Before starting electrical work:
 - Isolate the mains electrical supply and secure against unintentional reconnection.
 - Check for zero potential.
- ▶ Also observe connection diagrams of other system components.

Open flue operation

The installation room must be adequately ventilated if the appliance draws its combustion air from the room.

- ▶ Consult an authorised contractor to ensure the ventilation requirements are met:

- if structural modifications are made (e.g. replacing windows and doors)
 - if appliances are subsequently installed which route extract air to the outside (e.g. extract air fans, kitchen fans or air conditioning units).
- ▶ Never cover or reduce the size of ventilation apertures.

Handover to the user

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

- ▶ Explain how to operate the heating system and draw the user's attention to any safety-relevant action.
- ▶ Explain that modifications and repairs must only be carried out by an authorised contractor.
- ▶ Point out the necessity of inspection and servicing for safe and environmentally compatible operation.
- ▶ Leave the installation instructions and the operating instructions with the user.

2 Product details

GWH appliances are appliances for producing hot water ready for operation at the simple touch of a remote control button.

2.1 EC Declaration of Conformity

This appliance meets the requirements of the European Directives 2009/142/EC, 2006/95/EC, 2004/108/EC and corresponds to the approval sample described in the relevant CE test certificate.

The appliance has been EN 26 tested.

Model	GWH12/15/18 CTD E23/31 F6 O...
Category (gas type)	I _{3B/P}
Type of installation	A ₃

Table 2

2.2 Type overview

GWH12	CT	D	E	23 31	F6	O
GWH15	CT	D	E	23 31	F6	O
GWH18	CT	D	E	23 31	F6	O

Table 3

[GWH]	Gas instantaneous water heater
[12]	Capacity (l/min)
[CT]	Thermostatic
[D]	Digital user interface
[E]	Electric ignition
[23]	Appliance set for natural gas
[31]	Appliance set for LPG
[F6]	Room sealed
[O]	Outdoor installation

The code number indicates the gas group according to EN 437:

Code numbers	Wobbe Index (W _G) (15 °C)	Gas type
31	20.2-21.3 kWh/m ³	LPG group3R

Table 4

2.3 Material attached

- Gas instantaneous water heater
- Fasteners
- Appliance documentation
- Remote control
- Anti freeze kit

2.4 Rating plate

The rating plate is located on the outside of the appliance, on the bottom.

It contains details of the output of the appliance, the order number, the approval data and the date of manufacture in encoded form (FD).

2.5 Description of appliance

- Room sealed wall-mounted appliance
- Remote control with multifunctional display panel
- Appliance for operating with LPG
- Electronic ignition
- Water flow sensor
- Temperature sensors for monitoring the temperature of the cold and hot water of the appliance.
- Safety devices:
 - Ionisation electrode
 - Thermofuse
 - Hot water temperature sensor
 - Control box
 - Air temperature sensor
- Electrical connection: 230 V, 50 Hz

2.6 Accessory (not supplied with the appliance)

- Gas conversion kits

2.7 Dimensions and minimum clearances

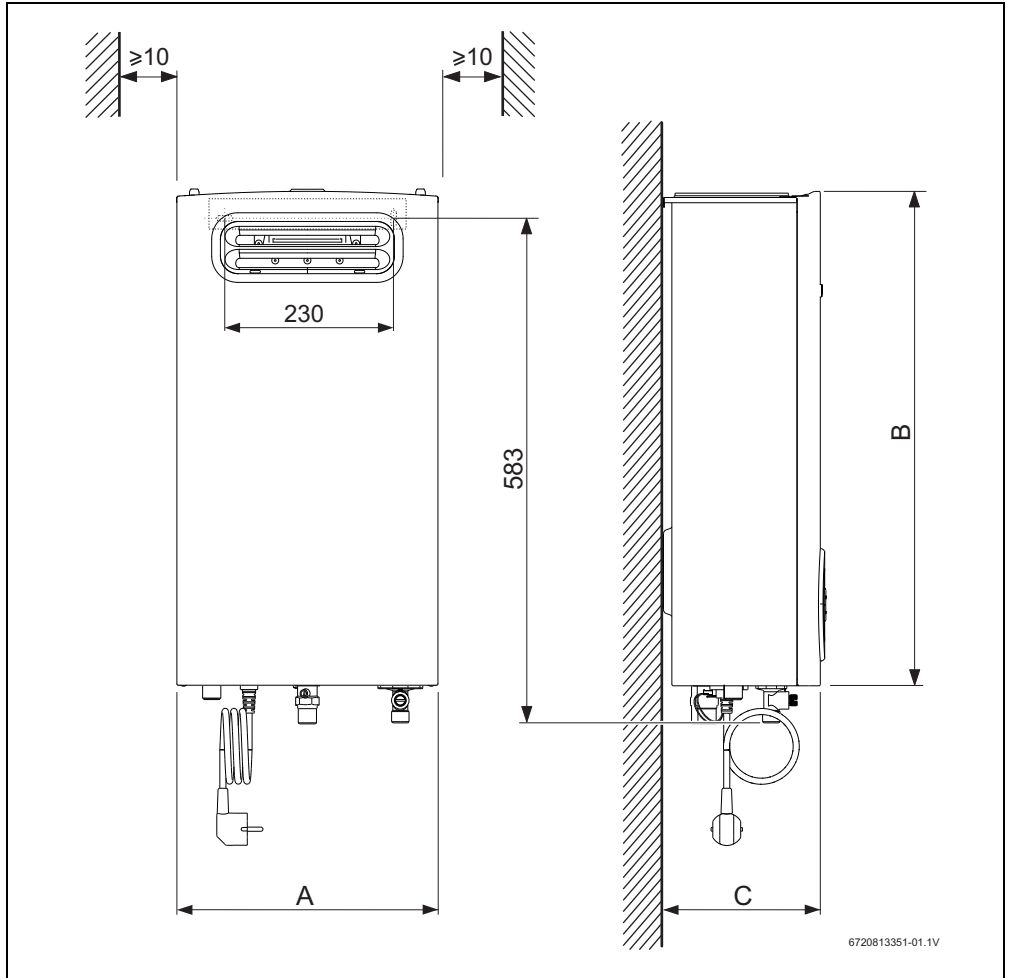


Fig. 1 Dimensions (in mm)

	A	B	C
GWH12	300	568	170
GWH15	300	568	170
GWH18	364	568	175

Table 5 Dimensions (in mm)

2.8 Appliance layout

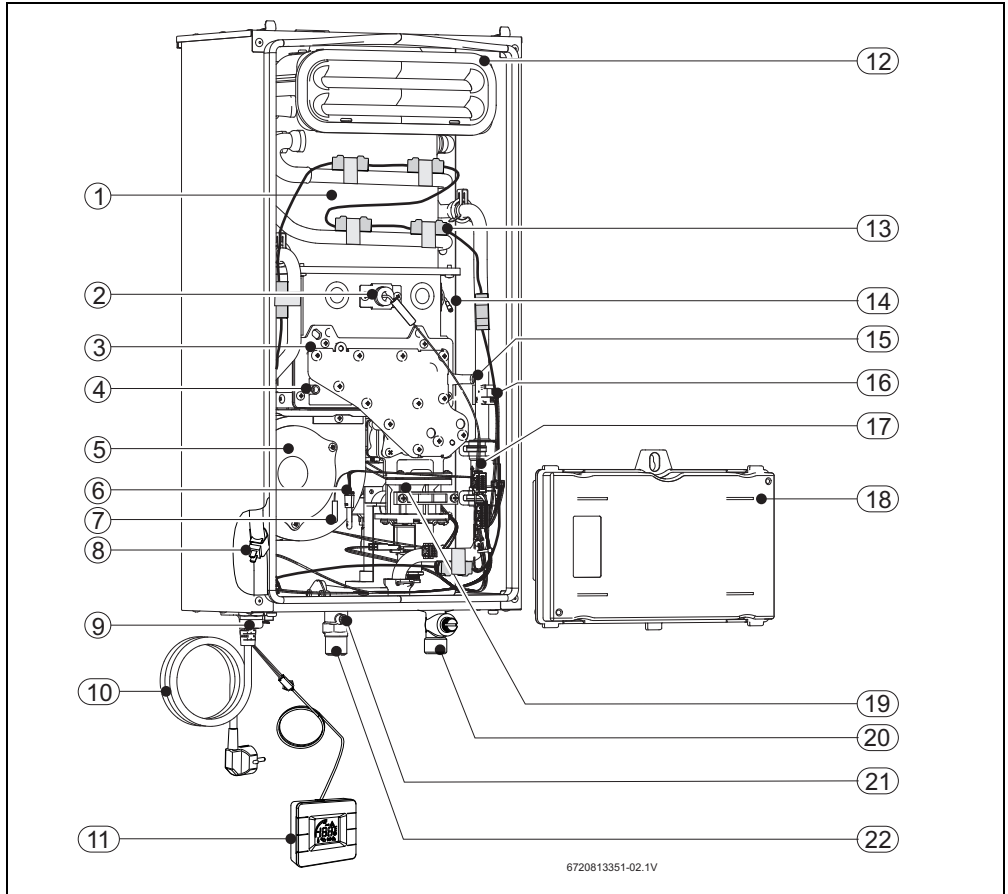


Fig. 2

- | | |
|---------------------------------------|--------------------------------------|
| [1] Combustion chamber | [15] Gas pressure head in the burner |
| [2] Monitoring electrode | [16] Cold water temperature sensor |
| [3] Burner | [17] Water flow sensor |
| [4] Air pressure head in the box | [18] Control box |
| [5] Fan | [19] Gas valve |
| [6] Air temperature sensor of the box | [20] Water inlet |
| [7] Thermofuse | [21] Incoming gas pressure head |
| [8] Hot water temperature sensor | [22] Gas |
| [9] Water outlet | |
| [10] Connecting lead with plug | |
| [11] Remote control | |
| [12] Combustion gas collector | |
| [13] Anti freeze kit | |
| [14] Ignition electrode | |

2.9 Electrical wiring diagram

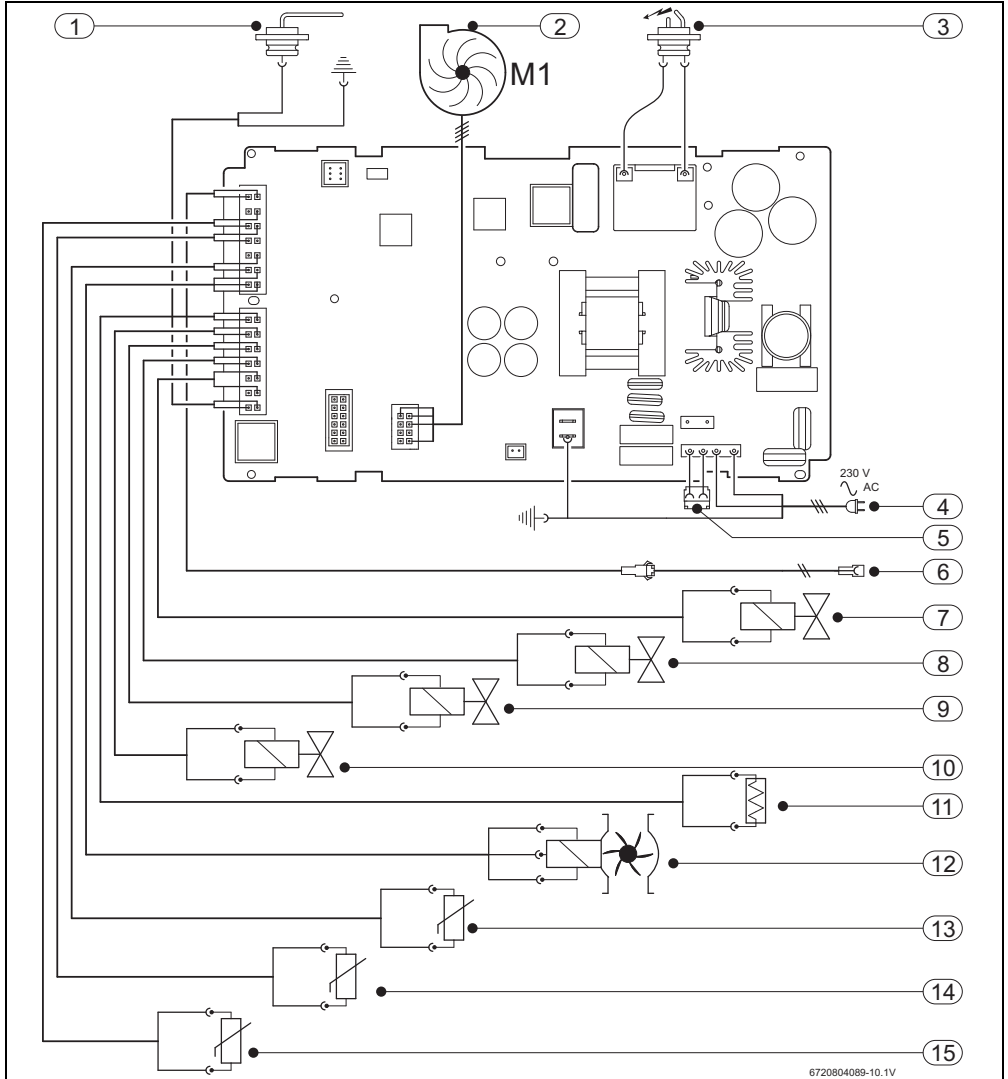


Fig. 3 Electrical diagram

- [1] Monitoring electrode
- [2] Fan
- [3] Ignition electrode
- [4] Supply
- [5] Connection for anti freeze kit
- [6] Connection for remote control
- [7] Electrovalve 1

- [8] Electrovalve 2
- [9] Electrovalve 3
- [10] Electrovalve 4
- [11] Thermofuse
- [12] Water flow sensor
- [13] Air temperature sensor of the box
- [14] Outgoing water temperature sensor
- [15] Incoming water temperature sensor

2.10 Specification

Technical features	Symbols	Units	GWH12	GWH15	GWH18
Performance¹⁾					
Output capacity	Pn	kW	70973	86668	107824
Minimum output capacity	Pmin	kW	9895	12966	16378
Setting range			9895 - 70973	12966 - 86668	16378 - 107824
Heat input	Qn	kW	76773	93834	116013
Minimum heat input	Qmin	kW	10236	13649	17061
Efficiency at 100% of nominal load		%	92.0	92.0	92.0
Efficiency at 30% of nominal load		%	94.0	94	94
Data relating to the gas					
Permissible gas supply pressure					
Natural gas	G20	kPa	2	2	2
LPG	G30	kPa	2.8	2.8	2.8
Gas supply rate					
Natural gas	G20	kg/h	2.4	2.9	3.6
LPG	G30	kg/h	1.8	2.2	2.7
Data relating to the water					
Maximum admissible pressure ²⁾	pw	psi	170	170	170
Minimum operating pressure	pwmin	psi	1.5	1.5	1.5
Start-up flow		l/min	2.2	2.2	2.2
Maximum flow, corresponding to a temperature increase of 35 °C		l/min	9.0	10.0	13.0
Ventilation circuit					
Flow of combustion products ³⁾		kg/h	50	70	85
Temperature of the combustion gases at the test points		°C	170	170	170
Electrical circuit					
Power supply voltage		V	230	230	230
Maximum power consumption		W	228	228	228
Appliance enclosure rating				IPX5D	
General data					
Weight (unpacked)		kg	10	11	12
Height		mm	568	568	568
Width		mm	300	300	364
Depth		mm	170	170	175

Table 6

- 1) 15 °C - 1013 mbar - dry: Natural gas 34.02 MJ/m³ (9.5 kWh/m³)
GPL: Butane 45.65 MJ/kg (12.7 kWh/kg) - Propane 46.34 MJ/kg (12.9 kWh/kg)
- 2) Considering the effect of the dilation of the water, this value must not be exceeded
- 3) For nominal output

3 Operation instructions



- ▶ Open all the water and gas locking devices.



CAUTION: Burns!

In the flue exit area, high temperatures may be reached.

- ▶ Do not touch the flue exit area while in operation.

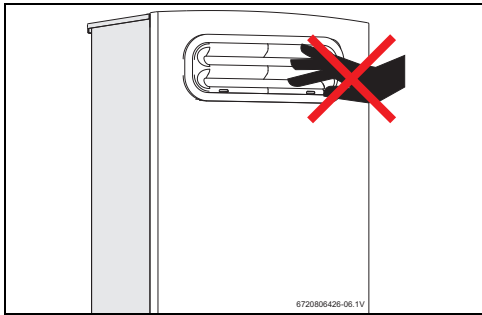


Fig. 4

3.1 Digital display - description

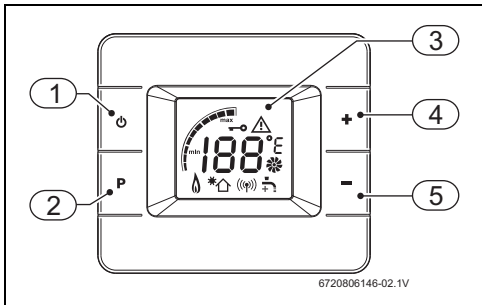


Fig. 5 Digital display

- [1] ON/OFF button
- [2] Programming button
- [3] LCD panel
- [4] Feed button
- [5] Return button

3.2 Before commissioning the appliance



CAUTION:

- ▶ The initial start-up of the water heater must be done by a qualified contractor who will provide the customer with all the information required for the proper operation thereof.

- ▶ Check that the type of gas indicated on the rating plate is the same as that used in the room.
- ▶ Connect the appliance to the electrical current.
- ▶ Open the gas shut-off valve of the installation.
- ▶ Open the water shut-off valve of the installation.

3.3 Switching the appliance on/off

Connect



By default, the heating temperature of the water is 42 °C.

- ▶ Press the button .
The cover shows the desired water temperature.

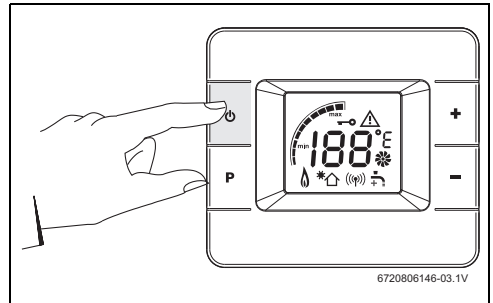


Fig. 6

Disconnect

- ▶ Press the button .

3.4 Temperature control



The temperature value indicated on the LCD cover matches the pre-selected temperature.

- ▶ Press the buttons **+** and **-** until you reach the value desired.

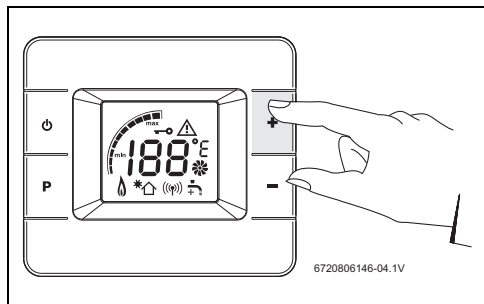


Fig. 7

Controlling the temperature by the minimum value in accordance with the requirements, reduces the energy, water consumption and reduces the probability of deposits of lime in the combustion chamber.





CAUTION:

The temperature indication on the display is approximate, always confirm with your hand before bathing children or old people.

Water flow

The temperature on the display flashes until the value selected is achieved.

If after 30 seconds, the selected temperature is not reached, a tap symbol appears in the LCD display, indicating that the water flow needs to be adjusted.

- ▶  increase the water flow to obtain the temperature selected.
- ▶  reduce the water flow to obtain the temperature selected.

3.5 Programming button

Memorise the outgoing water temperature

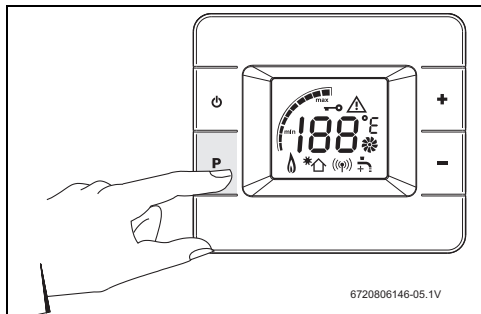


Fig. 8

- ▶ Press the buttons **+** and **-** to select the temperature to be memorised.
- ▶ Press the programming button for 3 seconds to fix the temperature.

When the display stops flashing, the temperature is set in the memory.

Select the temperature memorised

To select the temperature memorised.

- ▶ Press the programming button for 1 second.

The display shows the temperature previously memorised and this goes on to be the selected temperature.

3.6 Draining the appliance



NOTICE:

Not draining the appliance when a freezing risk exists may damage components of the appliance.



Beforehand place a receptacle below the appliance to collect all the water that comes out of the appliance.

If draining the appliance is required, the following process should be followed:

- ▶ Shut off the cold water isolation valve on the cold water inlet of the appliance.
- ▶ Open a hot water tap.
- ▶ Remove the connection to the cold water inlet tube.
- ▶ Empty all the water contained inside the appliance.

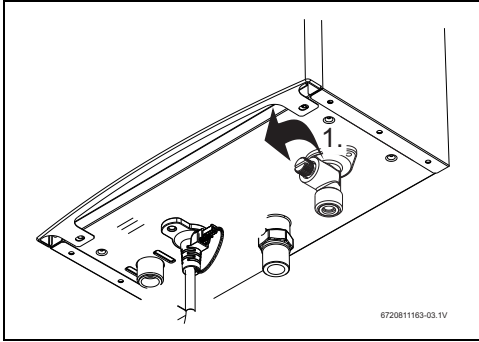


Fig. 9 Drain screw

i The anti-freeze device protects the appliance against possible risks of freezing.

3.7 Codes of errors in the display

See tab. 11 on page 21.

Resetting the appliance

Some of the possible faults may be solved by resetting the appliance:

- ▶ Press the button  for 3 seconds.

3.8 Cleaning the front of the appliance

- ▶ Only clean the front of the appliance with a cloth and some detergent.

i Do not use corrosive and/or abrasive detergents.

4 Regulations

Any local by-laws and regulations pertaining to installation and use of gas-heated appliances must be observed. Please refer to the laws that should be attended in your country.

5 Installation (only by qualified contractors)



DANGER: Explosion!

- ▶ Always shut off the gas tap before any work on the gas pipe parts.



The installation, electrical connection, the installation of the gas, the connection of the flue/air intake pipes and the initial start-up are operations to be carried out by contractors only.



The appliance may only be used in the countries indicated on the rating plate.



CAUTION:

- ▶ The temperature of the incoming water of the appliance must not exceed 60 °C.
- ▶ Fit a 3-way or thermostatic valve (adjusted for values less than 60 °C), if the incoming water temperature exceeds these values.
- ▶ In the case of a thermal solar system, ensure that the installation has an expansion tank.

Thermal solar system (thermosiphon)

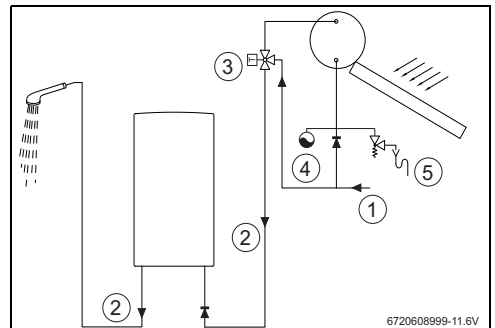


Fig. 10 Thermal solar system

- [1] Cold water from the mains
- [2] Incoming water
- [3] Thermostatic valve
- [4] Expansion tank
- [5] Safety unit



For outgoing temperatures above 45 °C, we recommend the use of a de-scaling system.

5.1 Important notes


- ▶ Before carrying out the installation, consult the gas supply company and the standard on gas appliances and ventilation of rooms.

Water quality

The appliance must be used with water suitable for human consumption in accordance with the legislation in force. In regions where the hardness of the water is high, we recommend the use of a water treatment system. In general, the water parameters that affect the precipitation of lime must meet the values shown in tab. 7.

TDS (Total Dissolved Solids) (mg/l)	Hardness (mg/l)	pH
0 - 600	0 - 180	6.5 - 9.0

Table 7



NOTICE: Damage to the appliance!
Non compliance with these values may lead to partial blocking and accelerated aging of the combustion chamber.

5.2 Choice of installation site

5.2.1 Regulations concerning the installation site

General indications

- ▶ Install the appliance outdoors.
- ▶ Comply with the specific determinations of each country.
- ▶ The water heater may not be installed on a heat source.
- ▶ Respect the minimum installation measures indicated in fig. 11.
- ▶ Ensure that there is a socket for electrical connection in the room and that it is easily accessible after the installation of the water heater.

Combustion air

The air intake grill for the combustion must be located in a well-ventilated site.

In order to prevent corrosion, the combustion air must not contain any corrosive substances.

Substances classed as corrosion-promoting include halogenated hydrocarbons which contain chlorine and fluorine compounds. They may be found in solvents, paints, adhesives, aerosol propellants and household cleaners, for example..

If these conditions cannot be guaranteed, a different site must be chosen for the air intake.

Surface temperature

The maximum surface temperature of the appliance is below 85 °C. That means that, according to TRGI and TRF, no special safety precautions are required with regard to flammable building materials and fitted furniture. If regulations differ in individual countries they must be observed.

5.3 Minimum distances

Determine the site for placing the appliance, considering the following limitations:

- ▶ Maximum distance of all the protruding parts, such as hoses, tubes, etc.
- ▶ Ensure good access during maintenance works
- ▶ Respect the minimum distances indicated in the fig. 11.

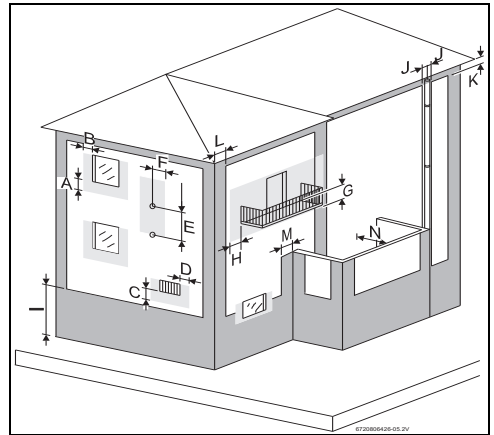


Fig. 11 Minimum distances to exhaustion points

Minimum distance to flue terminal (in mm)		
A	Under the window	600
B	Sides of the window	400
C	Under an opening for inlet/outlet	600
D	Sides of an opening for inlet/outlet	600
E	Vertically between two flue terminals	1 500

Table 8

Minimum distance to flue terminal (in mm)		
F	Horizontally to a flue terminal	600
G	Under the balcony	300
H	Sides of a balcony	1 000
I	To the ground or to another floor	2 200
J	To vertical or horizontal flue terminals	300
K	Under the eaves	300
L	To the wall / corner /corner of the building without window	300
M	To the wall / corner /corner of the building with window	1 000
N	To the front wall with window	3 000
	To the front wall without window	2 000

Table 8

5.4 Fitting wall-mounting bar



Before fitting the wall-mounting bar, ensure that the water/gas flue accessory connections are guaranteed.

No special wall protection is necessary. The wall has to be level and capable of supporting the weight of the appliance.

- ▶ Fix the packaging to the wall mark the position of the fixing holes.

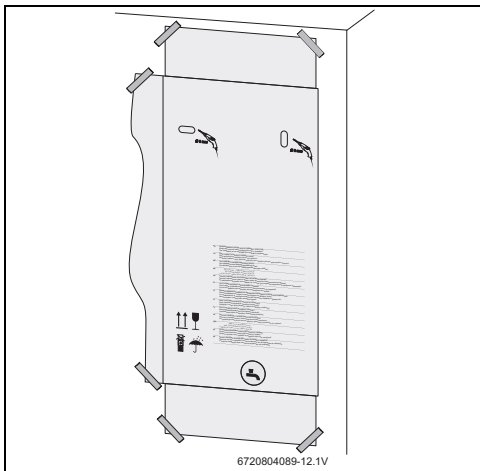


Fig. 12 Fitting templates

- ▶ Remove the packaging from the wall.
- ▶ Open the respective holes (Ø 8 mm).
- ▶ Fix the wall-mounting bar using the screws and plugs supplied.

5.5 Fitting the appliance



NOTICE: The appliance may be damaged due to dirt in the pipes.

- ▶ Drain and wash the pipes to eliminate possible foreign bodies.

- ▶ Remove the appliance from the packaging.
- ▶ Check that all the material indicated is included.
- ▶ Remove the covers from the gas and water connections.
- ▶ Check the destination country on the type plate and make sure that the gas type specified on the identification plate matches that of the gas supplied by the gas utility company.



CAUTION:

- ▶ Never support or balance the water heater on the water and gas connections.



To facilitate fitting, it is advisable to first of all complete the connection of the water and only later the remaining connections.

5.6 Water connection

- ▶ Identify the cold and hot water pipe to avoid possible confusion.

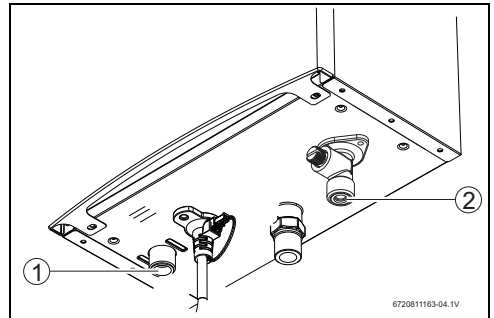


Fig. 13 Water connection

- ▶ Complete the cold (fig. 13. [2]) and hot (fig. 13, [1]) water connections, using the connection accessories supplied or recommended.
- ▶ To avoid problems caused by changes in temperature occurring in the supply, it is advisable to fit a non-return valve upstream of the appliance.

5.7 Gas connection



DANGER:

Non-compliance with legal standards applicable may cause a fire or explosion, causing material damage or personal injury or even death.



Only use original accessories.

The gas connection to the water heater must absolutely comply with the National Standards.

- ▶ First ensure that the water heater to be installed corresponds to the type of gas supplied.
- ▶ Fit a gas shut-off valve at the entrance as close as possible to the appliance.
- ▶ After completion of the gas network, thorough cleaning must be done and a tightness test carried out to avoid damage due to excess pressure in the automatic gas system, this has to be carried out with the gas valve of the appliance closed.
- ▶ Check that the flow and the pressure supplied for the reducer installed are those indicated for the consumption of the appliance (see technical data in tab. 6).

Installation with flexible tube (G.P.L.)



DANGER: Danger to life caused by gas leak!

- ▶ Proceed to replace the tube if you find that it is dry and fragile.
- ▶ Replace the tube at least every four years.

The installation, if done with **flexible tube** (not metal), only for appliances designed to be connected to a bottle of Butane, must comply with the following:

- must have a possible minimum length of at most 1.5 m;
 - the tube must comply with ET IPQ 107-1 and applicable standards;
 - must be controllable all the way through;
 - must not come near areas where heat is released;
 - avoid folds or other bottlenecks;
 - the connection at the ends must be made with proper accessories and tabs without grooves
- ▶ Check that the supply tube is clean.
 - ▶ Use the accessory door rubbers (supplied) and a tab to make the connection to the incoming gas of the appliance.

Installation with connection to a gas supply network

- ▶ In the case of an installation with connection to a gas supply network, you must use metal tubes in accordance with the applicable standards.

To make the connection between the gas supply network and the water heater, you must use the accessory supplied.:

- ▶ Tighten the coil in the incoming gas tube.
- ▶ Use the end in copper to do the welding to the tube from the supply network

5.8 Altitude of installation site region

To ensure correct operation of the appliance, it must be indicated the region altitude of the installation site.

- ▶ Enter the Service function (→section 7.2). Display with indication "P2".
- ▶ Press **+** until the display shows "P4".
- ▶ Press the button **P**. Display with indication "E".
- ▶ Press **-** until the display shows "AS".
- ▶ Press the button **P**. Display with indication "1".
- ▶ Press the button **+** or **-** and select the region altitude of the installation site according with below table.

Display	Altitude
1	< 500 m
2	500 m - 1 000 m
3	1 000 m - 1 500 m
4	1 500 m - 2 000 m
5	2 000 m - 2 500 m
6	> 2500 m

Table 9

5.9 Remote control connection

The appliance should only be used after the remote control connection.



More than one remote control can be connected, if needed:

- ▶ Call a qualified contractor.

Connecting the communication cable to the remote control

- ▶ Open the remote control.

- ▶ Connect the communication cable to the remote control.

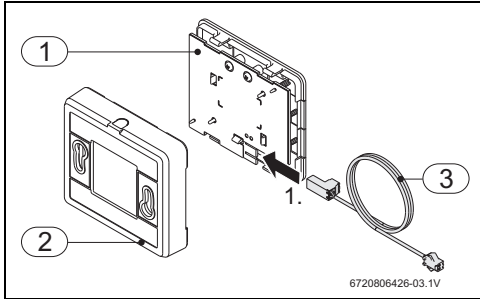


Fig. 14

- [1] Remote control front cover
- [2] Remote control back cover
- [3] Communication cable

- ▶ Close the remote control.

Connecting the communication cable to the appliance

- ▶ Connect the communication cable to the appliance.

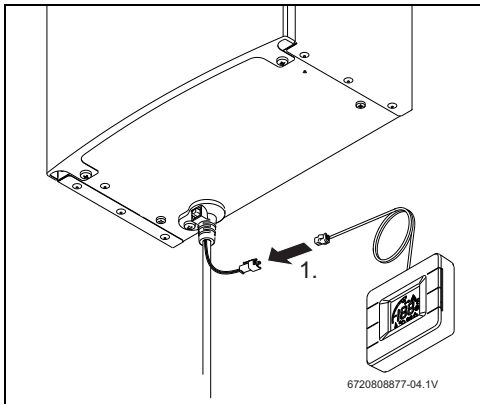


Fig. 15

The remote control connection is concluded.

5.10 Commissioning of the appliance

Hot water

Open the gas and water shut-off valves and check the tightness of all the connections.

Place the ON/OFF button (→fig. 6) in the operating position (chapter 3.3). The appliance is now ready to operate.

When a hot water tap is turned on, the passage of water through the flow sensor (fig. 2, [12]) makes this send a signal to the control box. This signal causes the following:

- The fan starts to work
- Simultaneously, sparks are produced and the gas valve (fig. 2, [13]) opens passage to the burner.
- The burner lights. Initially only a part of the burner is lit.
- The ionisation electrode (fig. 2, [4]) supervises the presence of the flame
- The temperature of the water is checked automatically by the sensors based on the temperature selected

Safety shut-down when the safety time is exceeded

If it is not possible to obtain the flame within the safety interval stipulated, a safety shut-down is carried out.

The presence of air in the gas supply tube (initial start-up of the appliance or start-up after long periods of inactivity) may cause a delay or difficulty in the ignition.

In this case and if the attempt at ignition is too long, the safety devices block the operation and it is necessary to have the air purged from the circuit.

Safety shut-down due to an excessively high water temperature

The control box detects the temperature of the water through the resistance of the NTC placed in the outgoing water tube. In the event that it detects excessive temperature, it causes a safety shut-down.

Safety shut-down due to defective flue conditions

The appliance detects defective flue conditions, causing a safety shut-down.

Re-start after safety shut-down

To put the appliance back into operation after having caused a safety shut-down:

- ▶ Close and re-open a hot water tap.

6 Electrical connection (only by qualified contractors)



DANGER: Due to electric shock!

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

All the regulating, control and safety devices in the appliance are factory supplied already connected and ready to operate.

**CAUTION:** Electrical storm!

- ▶ The appliance must have an independent connection in the electric box, protected by a differential safety switch of 30 mA and ground line. In areas with frequent electrical storms, a protector against electrical storms must also be fitted.

6.1 Connecting the power cable

The electrical connection must be done in accordance with the current rules on domestic electrical installations.

- ▶ An earth connection is essential.

- ▶ Connect the power cable to a power socket with an earth connection.

6.2 Replacing the power cable

If the power cable is damaged, it must be replaced with an original spare part.

- ▶ Disconnect the power cable from the socket.
- ▶ Loosen the fixing screw of the cable to the casing of the appliance.
- ▶ Remove the front of the appliance (fig. 18, page 20).
- ▶ Loosen the control box from the support plate.
- ▶ Release the terminals of the supply cable to the control box.
- ▶ Remove the supply cable and replace it with a new one.
- ▶ Fit the front of the appliance.
- ▶ Check that it is working properly.

7 Regulating the gas (only for qualified contractors)**7.1 Factory regulation**

The sealed components must not be broken.

The appliances are supplied having been set in the factory for the values shown on the rating plate.

Liquid gas

The appliances must not be operated if the dynamic connection pressure is:
Propane: less than 25 mbar or greater than 45 mbar
-Butane: less than 20 mbar or greater than 35 mbar.

**DANGER:**

- ▶ The operations described below must only be carried out by a qualified contractor.

7.2 Service function**Accessing the service function**

- ▶ Press and hold down at the same time **P**, **+** and **-** for 3 seconds.

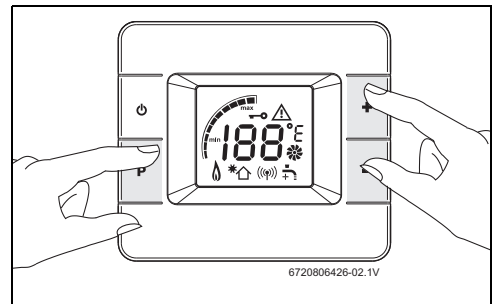


Fig. 16 Service function

Display with indication "P2".
The service function is activated.

7.3 Adjusting the appliance

Always start the adjustment by P1 followed by P2.

7.3.1 Access to the pressure heads

- ▶ Remove the front of the appliance (see page 20).

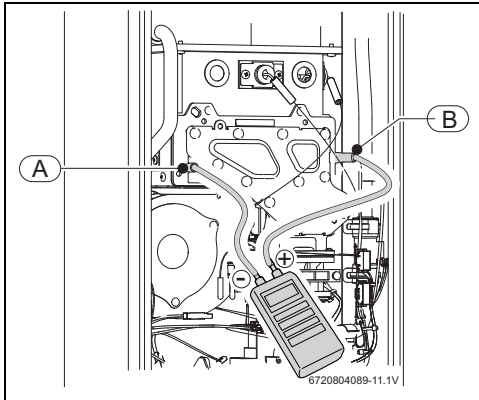


Fig. 17

- [A] Air pressure head in the box
 [B] Gas pressure head in the burner

7.3.2 Adjusting the maximum flow (Parameter P1)

- ▶ Connect the appliance on the ON/OFF button.
- ▶ Loosen the shutter screw of the pressure head point [B].
- ▶ Connect the pressure gauge connection "+" to the test point.
- ▶ Loosen the shutter screw of the pressure head point [A].
- ▶ Connect the pressure gauge "-" to the pressure head point [A].
- ▶ Press **+** until the display shows "P1".
- ▶ Press the button **P** .
Display with indication "E".
- ▶ Press **-** until the display shows "L1".
- ▶ Press the button **P** .
The appliance is in the position for adjustment of the maximum gas flow.
- ▶ Open a hot water tap.
- ▶ Press **+** or **-** until the pressure gauge shows the value indicated in tab. 10.



If it is not possible to reach the value:

- ▶ Adjust the pressure in the burner (section 7.3.4) and repeat the adjusting procedure.

- ▶ Press **P** for 3 seconds.
The value flashes as a sign of confirmation.
- ▶ Press **P** .
Display with indication "L1".
- ▶ Close the hot water tap.
- ▶ Press **+** until the display shows "E".

- ▶ Press the button **P** .
Display with indication P1.
The adjustment of the maximum gas flow is finalised.

7.3.3 Adjusting the minimum flow (Parameter P2)

- ▶ Press **+** until the display shows "P2".
- ▶ Press the button **P** .
Display with indication "E".
- ▶ Press **-** until the display shows "L2".
- ▶ Press the button **P** .
- ▶ Open a hot water tap.
The appliance is in the position for adjustment of the minimum gas flow.
- ▶ Press **+** or **-** until the pressure gauge shows the value indicated in tab. 10.



If it is not possible to reach the value:

- ▶ Adjust the pressure in the burner (section 7.3.4) and repeat the adjusting procedure.

- ▶ Press **P** for 3 seconds.
The value flashes as a sign of confirmation.
- ▶ Press **P** .
Display with indication "L2".
- ▶ Close the hot water tap.
- ▶ Press **+** until the display shows "E".
- ▶ Press the button **P** .
Display with indication "P2".
- ▶ Press simultaneously **P** , **+** and **-** for 3 seconds.
Display with indication of temperature selected.
- ▶ Disconnect the pressure gauges from the pressure heads points [A] and [B].
- ▶ Tighten the shutter screws of the pressure heads points [A] and [B].
The adjustment of the minimum gas flow is finalised.

		Nat. gas	LP gas
Ø injector	GWH12	1.7	1.3
	GWH15		
	GWH18		
Dynamic connection pressure (mbar)	GWH12	2	2.8
	GWH15		
	GWH18		
Burner pressure (psi) - P0	GWH12	1.2	
	GWH15		
	GWH18		
Differential pressure of the burner MAX (psi) - P1	GWH12	0.48 - 0.52	0.46 - 0.5
	GWH15	0.51 - 0.55	0.48 - 0.52
	GWH18	0.41 - 0.45	0.41 - 0.45
Differential pressure of the burner MIN (psi) - P2	GWH12	0.06 - 0.08	0.06 - 0.08
	GWH15	0.07 - 0.09	0.07 - 0.09
	GWH18	0.08 - 0.1	0.07 - 0.09

Table 10 Pressure of the burner

7.3.4 Adjusting pressure in the burner (Parameter P0)



Burner pressure adjustment is only required if "L1" and "L2" cannot be reached.

- ▶ Enter the Service function (section 7.2).
Display with indication "P2".
- ▶ Press until the display shows "P0".
- ▶ Press the button .
- ▶ Open a hot water tap.
Let the value measured in the pressure gauge stabilise.
- ▶ Press or until the pressure gauge shows the value indicated in tab. 10.
- ▶ Press for 3 seconds.
The value flashes as a sign of confirmation.
- ▶ Press to come out of this function.
Display with indication P0.
- ▶ Close the hot water tap.
The adjustment of the burner pressure is finalised.

7.4 Factory default settings

- ▶ Enter the Service function (section 7.2).
Display with indication "P2".
- ▶ Press until the display shows "P4".
- ▶ Press the button .
- Display with indication "E".

- ▶ Press until the display shows "rP"
- ▶ Press the button .
- Display with indication "P1".
- ▶ Press for 3 seconds.
The value flashes as a sign of confirmation.
- ▶ Press .
- Display with indication "P1".
- ▶ Press until the display shows "P2".
- ▶ Press for 3 seconds.
The value flashes as a sign of confirmation.
- ▶ Press .
- Factory default settings are restored.

7.5 Changing the type of gas

Only use original conversion kits. The conversion must only be done by a qualified contractor. The original conversion kits are supplied with fitting instructions.

8 Maintenance (only by qualified contractors)

To guarantee that the consumption of gas and the emission of gas are maintained at the best values, we recommend that the appliance be inspected every year and if necessary, maintenance works be carried out.



Maintenance must only be done by a qualified contractor.



DANGER: By electrical discharge.

- ▶ Always isolate the electrical power in the appliance (fuse, safety power switch) before carrying out any work on electrical parts.

- ▶ Your appliance should only be attended to by a Bosch Technical Assistance Centre.
- ▶ Only use original replacement parts.
- ▶ Order the replacement parts as per the list of appliance replacement parts.
- ▶ Replace the joints and o-rings removed with new ones.
- ▶ Only the following lubricating greases may be used:
 - In the hydraulic connections: Unisilikon L 641 (8 700 918 024 0).
 - Threaded connections for gas: HfT 1 v 5 (8 709 918 010).

8.1 Remove the front cover

- ▶ Loosen the 2 fixing screws from the front (Fig. 18, [1]).

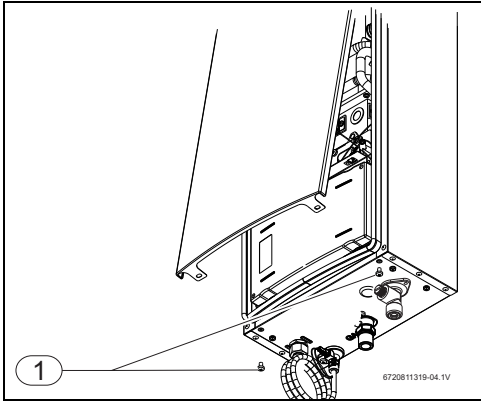


Fig. 18 Remove the front

- ▶ Remove the front.
- ▶ Fit the appliance so that it sits vertical.

8.2 Periodic maintenance works

Functional check

- ▶ Check the proper operation of all the safety, regulation and verification elements.

Combustion chamber

- ▶ If it is dirty:
 - Dismantle the combustion chamber.
 - Clean the chamber by applying a jet of water in the lengthwise direction of the flaps.



NOTICE: Damage to the appliance.
Damage in the combustion chamber.

- ▶ Do not apply a jet that is too strong or aimed in a direction other than that indicated.

- ▶ If the dirt persists, dip the sheets in hot water with detergent and clean carefully.
- ▶ Regions with average/high water hardness: descale the inside of the combustion chamber and the connection tubes.
- ▶ Fit the combustion chamber using new joints.

Burner

- ▶ Inspect the burner each year and clean it if necessary.

If it is very dirty, (grease, soot):

- ▶ Dismantle the burner.

- ▶ Use a brush and clean the surface of the flutes.
- ▶ Blow the flutes using a jet of air.

Water filter

- ▶ Close the water valve inlet.
- ▶ Loosen the cold water tube.
- ▶ Use a key and carefully pull the water filter.
- ▶ Replace the water filter.

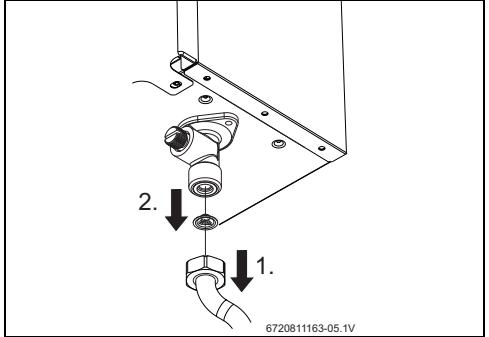


Fig. 19

8.3 Replacement of fuses (control box)

- ▶ Loosen the fixing screw of the control box.
- ▶ Release all the connections to the control box.
- ▶ Open the control box.
- ▶ Replace the fuse.

8.4 Start-up after completion of maintenance works

- ▶ Re-tighten all the connections.
- ▶ Read the chapter 3 "Operating Instructions" and the chapter 7 "Tuning".
- ▶ Check the gas control (burner pressure).
- ▶ Check tightness of the flue circuit (with the front fitted).
- ▶ Check that there are no gas or water leaks.

9 Problems

Fitting, maintenance and repair must only be carried out by qualified contractors. The following table describes the solutions for possible problems (solutions followed by * must only be carried out by qualified contractors).

Display	Description	Solution
A0	Cold and hot water temperature sensor damaged.	<ul style="list-style-type: none"> ▶ Check temperature sensor and associated connections.¹⁾ ▶ Call a qualified contractor.
A1	Temperature inside the box very high (external temperature too high, combustion chamber calcified).	The appliance automatically regulates the performance of the appliance to avoid overheating.
A4	Air temperature sensor of the box faulty.	<ul style="list-style-type: none"> ▶ Check temperature sensor and associated connections.¹⁾
A7	Hot water temperature sensor faulty.	<ul style="list-style-type: none"> ▶ Check temperature sensor and associated connections.¹⁾
A9	Hot water temperature sensor is not fitted properly. Incoming gas pressure low.	<ul style="list-style-type: none"> ▶ Check fitting. ▶ Check incoming pressure.¹⁾
C7	Fan not working.	<ul style="list-style-type: none"> ▶ Check fan connections. ▶ Close and open a hot water tap.
CA	Water flow above maximum value specified.	<ul style="list-style-type: none"> ▶ Check water filter.
CF	Blockage of gases coming out of the combustion.	<ul style="list-style-type: none"> ▶ Remove dirt or any other impediment in the flue/intake pipe.
C1	Air flow sufficient for start-up.	<ul style="list-style-type: none"> ▶ Close and open a hot water tap. <p>If the problem persists, call a qualified contractor.</p>
E0	Breakdown in the electrical box	<ul style="list-style-type: none"> ▶ Press the reset button. <p>If the problem persists, call a qualified contractor.</p>
E1	Hot water temperature sensor detects overheating.	<ul style="list-style-type: none"> ▶ Let the appliance cool and try again. <p>If the problem persists, call a qualified contractor.</p>
E2	Cold water temperature sensor faulty.	<ul style="list-style-type: none"> ▶ Check sensor and associated connections.¹⁾
E4	Hot water temperature sensor detects overheating (leaking combustion products inside the combustion chamber).	<ul style="list-style-type: none"> ▶ Disconnect the appliance. ▶ Call a qualified contractor.
E9	Thermofuse.	<ul style="list-style-type: none"> ▶ Call a qualified contractor.
EA	Flame not detected.	<ul style="list-style-type: none"> ▶ Check the pressure of the gas supply to the mains connection, the ignition electrode and the ionisation electrode. ▶ Press the reset button.
EE	Modulating Solenoid valve disconnected.	<ul style="list-style-type: none"> ▶ Check connections.¹⁾
EF	Wrong gas connection.	Natural gas appliance supplied with liquid gas.
F7	A flame is detected although the appliance is switched off.	<ul style="list-style-type: none"> ▶ Check the electrodes and the cable. ▶ Check the printed circuit board.¹⁾ ▶ Press the reset button.

Table 11



Display	Description	Solution
F9	Safety Solenoid valve disconnected.	<ul style="list-style-type: none"> ▶ Check connections.¹⁾ ▶ Press the reset button.
FA	Fault in the gas shut-off valve.	▶ Call a qualified contractor.
FC	Buttons pressed for more than 30s.	▶ Release the button.
With indication,  but without existence of solar thermal system.	The hot water temperature selected is lower than the minimum power that the appliance supplies.	<ul style="list-style-type: none"> ▶ Increase the hot water flow. If the problem persists, increase the setpoint temperature.
With indication  and water temperature low.		
Echo	Appliance is making an abnormal noise (vibration).	▶ Call a qualified contractor.

Table 11

1) only to be carried out by qualified contractors.

Note: breakdowns diagnosed by the water heater through the signal lamp in the reset button combined with an indication in the LCD panel result in the blocking of the appliance for safety reasons. Once the problem is solved, you have to press the reset button to start the appliance working again.

10 Environment / disposal

Environmental protection is a fundamental corporate strategy of the Bosch Group.

The quality of our products, their efficiency 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 into account of economic considerations.

Packaging

We participate in the recycling programmes of the countries in which our products are sold to ensure optimum recycling.

All of our packaging materials are environmentally friendly and can be recycled.

Used appliances

Used appliances contain valuable materials that should be recycled.

The various assemblies can be easily dismantled and synthetic materials are marked accordingly. Assemblies can therefore be sorted by composition and passed on for recycling or disposal.

11 Warranty Terms

Imported by:

Bosch Thermotechnology South Africa
Robert Bosch PTY (Ltd)
15th Road, Randjiespark
1685 Midrand
South Africa
Tel: +27 (0)11 651 9600

Bosch Gas Water Heaters have been thoroughly tested at the factory and fulfills all standards valid in the country. Robert Bosch (Pty) Ltd. provides warranty for this model and its components, for the period of 24 months from the date of the invoice, for any factory or material fault, with the following exceptions:

- When the installation of the product was done by unauthorized people;
- When the appliance or parts present changes or malfunctions due to misuse of unauthorized people;
- When the operation and use of the appliance is done under conditions which are not allowed in the installation or user's manual;
- When there are changes to the warranty terms and breakage of seals;
- When damages are caused by transportation or accidents;
- When damages are caused by inadequate gas or water pressure;
- When damages are caused by lack of maintenance or by installing non-original parts;

Robert Bosch (Pty) Ltd. does not take over any responsibility for personal damage, property damage or product damage caused by installations done by unauthorized persons. Therefore, we highly recommend that the installation is done by a certified gas installer.



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