

## Gas Water Heater

# Therm 6000 S



**BOSCH**

### Installation and operating instructions



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 fulfil the ventilation requirements!



Installation by an authorised person only!


# Index

1	Key to symbols and safety instructions	3	6	Admission / exhaust accessories (accessory Ø 80/80 mm)	19
1.1	Key to symbols	3	6.1	Admission/exhaust accessories (diameter in mm)	19
1.2	Safety information	3	6.2	Fitting instructions	20
2	Technical Characteristics and Dimensions	4	6.3	Explanation of Symbols on Fitting Diagrams	20
2.1	Declaration of conformity with relevant EEC regulations	4	6.4	Approved flue systems	21
2.2	Explanation of Model Code	4	7	Electrical connection	24
2.3	Package contents	4	7.1	Connection	24
2.4	Description of the heater	4	7.2	Power cable	24
2.5	Optional accessories	4	7.3	Position of the fuses in control unit	24
2.6	Dimensions	5	8	Installation instructions	26
2.7	Appliance overview	6	8.1	Factory regulations	26
2.8	Electrical diagram	7	8.2	Measuring gas pressure	26
2.9	Technical data	8	8.3	Adjusting CQ (carbon dioxide)	27
2.10	Operational instructions	9	8.4	Program values	30
3	Regulation	9	8.5	Control board diagnostics	31
4	Operating instructions	9	8.6	Fan speed adjustment	32
4.1	Description LCD Display	10	9	Maintenance	34
4.2	Before operating the appliance	10	9.1	Periodic maintenance tasks	34
4.3	Connect and disconnect the appliance	11	9.2	Verify the fuses in the control board	34
4.4	Water temperature setting	11	9.3	Startup after maintenance	35
4.5	Operation	11	10	Problem solving	36
4.6	Registration of remote control (accessory no 7 709 003 756)	12	10.1	Problem/Cause/Solution	36
4.7	Remote control operation (accessory no 7 709 003 756)	12	11	Functional scheme	40
4.8	Program button	13	12	Environmental protection	41
4.9	"Priority" function	13	13	Warranty Terms	42
4.10	Purge the appliance	13			
4.11	Reset button	14			
4.12	Locked condition	14			
5	Installation instructions	14			
5.1	Important remarks	15			
5.2	Selection of location for installation	15			
5.3	Minimum distances	15			
5.4	Installation of fixing bracket	15			
5.5	Installation	16			
5.6	Water connection	17			
5.7	Gas connection	17			
5.8	Installation of the exhaust accessory and admission of air	18			

# 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 Safety information

If you smell gas:

- Close the gas valve.
- Open the windows.
- Do not operate any electrical appliances or switches (on/off).
- Extinguish any fire.
- Go to a different location and call the gas supplier or an

authorised technician.

If you smell combustion gases:

- Turn off the heater (page 11).
- Open doors and windows.
- Notify a gas fitter.

### Installation, modifications

The installation may only be carried out by registered installers and shall comply with the requirements of SANS 10087-1.

The appliance must be installed along with a low-pressure gas regulator.

The assembly and modifications during the installation of the heater can only be performed by an authorised installer. Do not modify the pipes which conduct combustion gases. Do not close or reduce air circulation vents.

### Maintenance

We recommend to have the system regularly serviced in order to ensure that it functions reliably and safely.

The installer is responsible for the safety and environmental compatibility of the installation.

The heater must be serviced annually.

Only original spare parts must be used.

### Explosive and highly inflammable material

Do not store or use inflammable material (paper, solvents, paints, etc) near the heater.

### Combustion air and surrounding air

To avoid corrosion, the combustion air and surrounding air must be free from harmful substances (e.g. halogenated hydrocarbons which contain chlorine and fluorine compounds).

### Information to the client

Inform the client about how to operate and handle the heater.

This appliance is not intended for use by persons (including children) with lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.

Caution clients against performing modifications or repairs themselves.

2 Technical Characteristics and Dimensions

2.1 Declaration of conformity with relevant EEC regulations

This appliance fulfils European directive requirements 2009/142/EEC, 92/42/EEC, 2006/95/EEC, 2004/108/EEC and corresponds to the specifications described in the corresponding EEC certificate of proof.

Model	GWH 24 CTD E
Category	II <sub>2H3B</sub>
Type	C

Table 2

2.2 Explanation of Model Code

GWH 24	C	T	D	E	23	30
--------	---	---	---	---	----	----

Table 3

- [GWH] Gas water heater
- [24] Capacity (Liter per minute)
- [C] Room sealed box
- [T] Thermostatic
- [D] LCD
- [E] Electric ignition
- [23] Appliance adjusted for Natural Gas
- [30] Appliance adjusted for LPG

2.3 Package contents

- Gas heater
- Support elements
- Heater documentation

2.4 Description of the heater

- Heater for wall-mounting
- High power pre-mix compact burner with low NOx emissions
- Modulating Gas Valve with constant gas:air ratio control
- LCD panel with back light
- Failure codes for easy diagnostics and repair
- Electronic ignition

- Modulating water valve:
  - Cold water temperature sensor
  - Water flow sensor
- Hot water temperature sensor
- Safety devices:
  - Flame failure device (ionization flame rod sensor)
  - Back flow temperature sensor
  - Inlet temperature sensor
  - Outlet temperature sensor
  - Room sealed box temperature sensor
  - Over heat prevention (temperature limiter)
- Power supply: 230 V, 50 Hz
- IP X4 (protection against water drops)

2.5 Optional accessories

- Gas conversion kit (NG)
  - Code n° 7 719 002 460
- Freeze prevention kit
  - Code n° 7 709 003 709
- Outdoor kit
  - Code n° 7 709 003 732
- Anti-freeze kit
  - Code n° 7 709 003 709
- Cascading kit
  - Code n° 7 736 500 272
- Wireless remote control to operate with the appliance
  - Code n° 7 709 003 756
- High temperature kit
  - Code n° 7 736 500 605



## 2.6 Dimensions

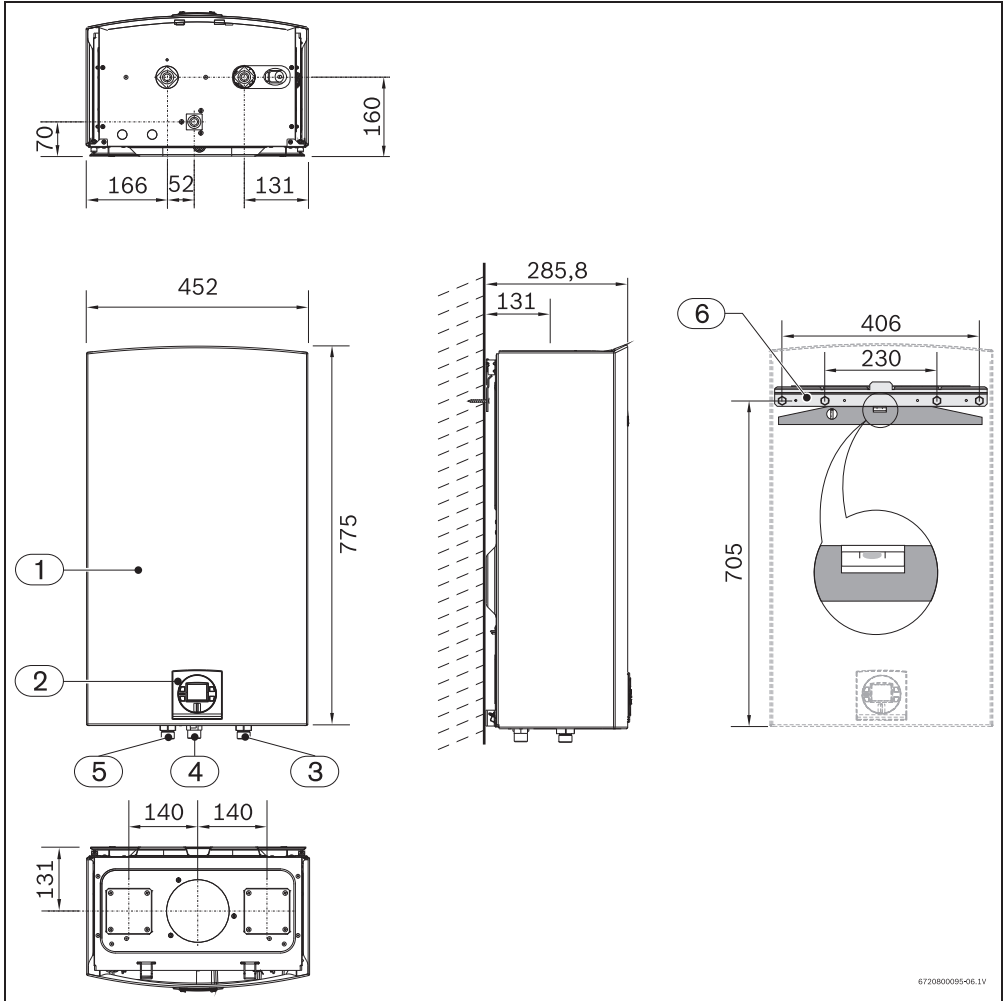


Fig. 1

- [1] Front cover
- [2] Key pad
- [3] Cold water inlet:  $\varnothing \frac{3}{4}$  "
- [4] Gas connection:  $\varnothing \frac{3}{4}$  "
- [5] Hot water outlet:  $\varnothing \frac{3}{4}$  "
- [6] Support bracket

## 2.7 Appliance overview

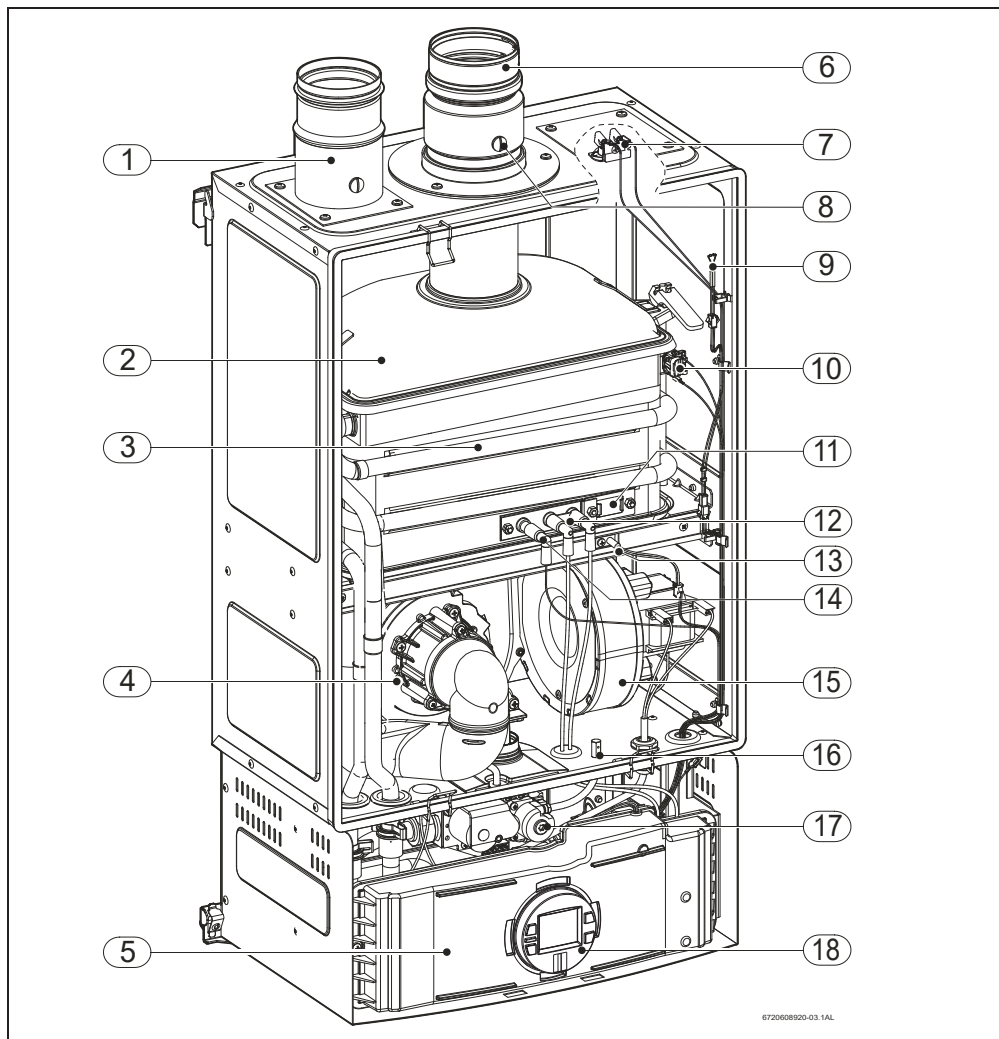


Fig. 2

- |  |   |
|--|---|
| [1] Admission accessory (not included)   | [10] Over heat prevention (temperature limiter) |
| [2] Flue gas collector                   | [11] Observation window                         |
| [3] Heat exchanger                       | [12] Ignition electrodes                        |
| [4] Primary fan (Mixer)                  | [13] Backflow temperature sensor                |
| [5] Control unit                         | [14] Ionization sensor                          |
| [6] Exhaust accessory (not included)     | [15] Secondary air fan                          |
| [7] Room sealed box temperature sensor   | [16] Pressure point gas valve                   |
| [8] CO <sub>2</sub> / CO measuring point | [17] Gas valve                                  |
| [9] Exhaust temperature sensor           | [18] Key pad                                    |

## 2.8 Electrical diagram

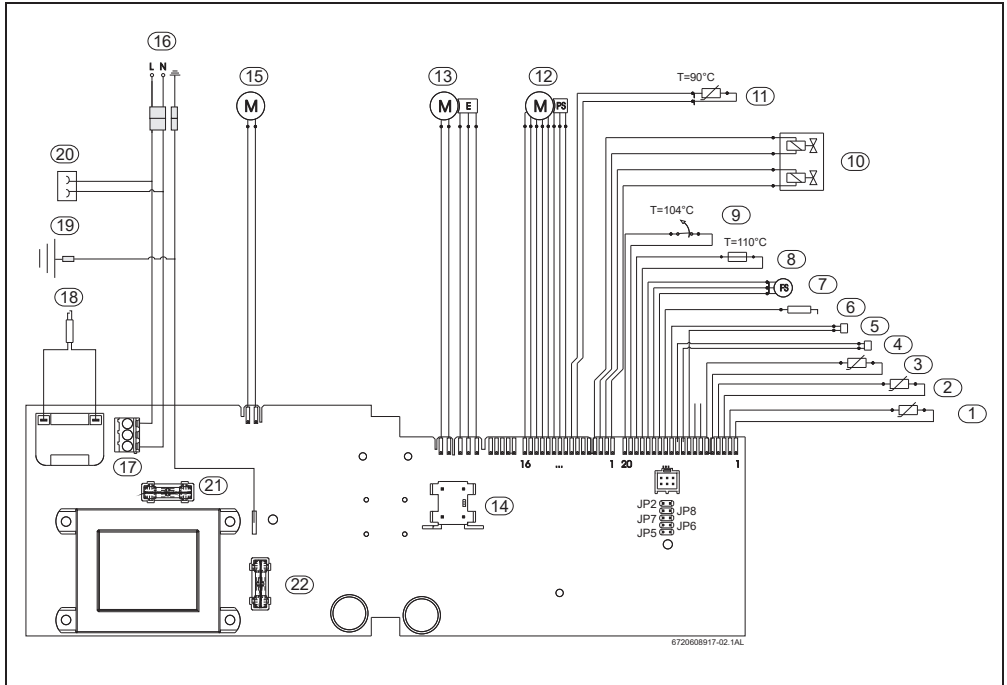


Fig. 3 Electrical scheme

- [1] Inlet water temperature sensor
- [2] Outlet water temperature sensor
- [3] Backflow temperature sensor
- [4] Cascading output connection
- [5] Cascading input connection
- [6] Ionization sensor
- [7] Water flow sensor
- [8] Room sealed box temperature sensor
- [9] Heat exchanger overheat sensor (104 °C)
- [10] Gas valve
- [11] Resistance
- [12] Water valve
- [13] Primary fan
- [14] ON/OFF switch
- [15] Secondary fan
- [16] AC plug
- [17] Main connection
- [19] Ground post
- [20] Antifreeze kit connection
- [21] Fuse
- [22] Fuse

## 2.9 Technical data

Technical characteristics	Symbol	Units	GWH 24 CTDE
Power and flow			
Nominal useful power	P <sub>n</sub>	kW (Btu/h)	42,0 (143 310)
Minimum useful power	P <sub>min</sub>	kW (Btu/h)	6,0 (20 475)
Useful power (adjustment range)		kW	6,0 - 42,0
Nominal thermal flow	Q <sub>n</sub>	kW (Btu/h)	48,4 (165 295)
Minimum thermal flow	Q <sub>min</sub>	kW (Btu/h)	6,3 (21 500)
Gas data			
Supply pressure			
LPG (Butane)	G30	kPa	3,0
Natural gas	G20	kPa	2,0
Consumption			
LPG (Butane)	G30	kg/h	3,8
Natural gas	G20	m <sup>3</sup> /h	5,1
Water data			
Maximum permissible pressure	p <sub>w</sub>	bar	12
Minimum operating pressure	p <sub>wmin</sub>	bar	0,3
Minimum activation flow		l/min	1,9
Maximum water flow with temperature rise of 25 °C		l/min	24
Combustion products contents - DIN 4705			
Exhaust gas flow			
LPG - Butane		kg/h	69,1
Temperature of gases at extractor grill			
Exhaust temperature at maximum power		°C	215
Exhaust temperature at minimum power		°C	48
General Data			
Voltage		V	230
Frequency		Hz	50
Maximum power consumption		W	116
Type of protection		IP	X4D
Ambient temperature permitted		°C	0 - 50
Noise		db (A)	59
Efficiency		%	87
Weight (excluding packaging)		kg	31

Table 4

## 2.10 Operational instructions

### Hot water

Open the gas and water valves and ensure that all joints are hermetic.

Place the principle switch (Fig. 4, [1]) in the operating position (chapter 4.3), so that the appliance is quickly ready for use.

When a hot tap is opened, the water flow sensor should be initiated. This signal initiates the following:

- The fan starts working
- Simultaneously, sparks are produced and the gas valve opens.
- The burner lights.
- The ionisation electrode controls the state of the flame.
- The water temperature is controlled automatically by the sensors/controllers according to the temperature selected.

### Security cut-off when safety period is surpassed

If a flame is not achieved within the stipulated security period (35 sec), a security cut-off will occur.

The presence of air in the gas inlet pipe (when the appliance is used after long periods of inactivity for example) may delay ignition.

In this case, if the attempts to ignite go on too long, the security mechanisms prevent operation.

### Security cut-off due to excessive water heating

The control unit detects the heating temperature via a NTC resistor located in the hot water exit tube and the temperature limiter located in the heat exchanger. If it detects an excessive temperature it provokes a security cut-off.

### Restarting after security cut-off

To restart the appliance following a security cut-off:

Press the reset key (Fig. 19).

## 3 Regulation

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.



The installation may only be carried out by registered installers and shall comply with the requirements of SANS 10087-1.

## 4 Operating instructions

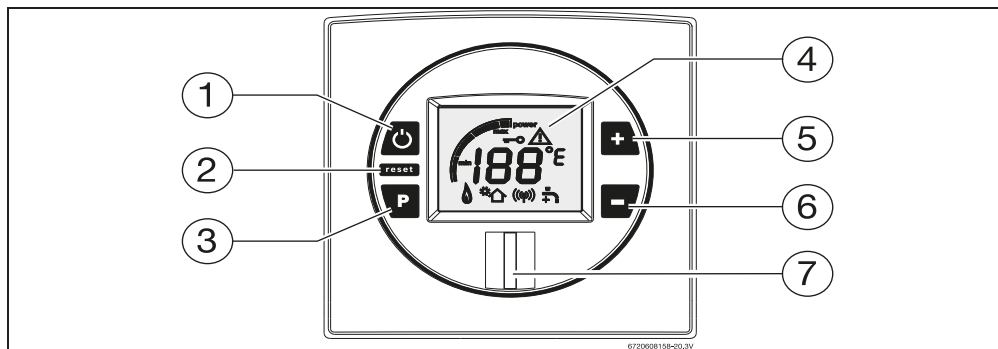


Fig. 4

- [1] Main switch ON/OFF
- [2] Reset key
- [3] Program key
- [4] LCD panel
- [5] Temperature increase key/ programming key
- [6] Temperature decrease key / programming key
- [7] LED

## 4.1 Description LCD Display

**CAUTION:**

Do not use any cleaning aggressive or corrosive agents to clean the window.

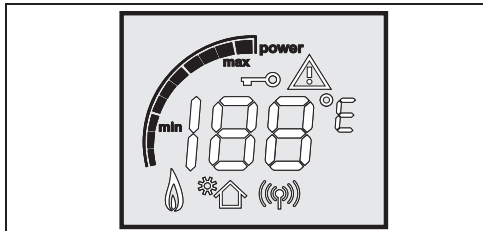


Fig. 5 Power bar indicator (input)

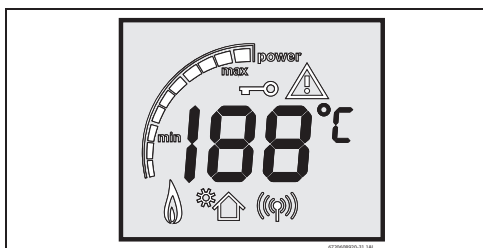


Fig. 6 Temperature indicator

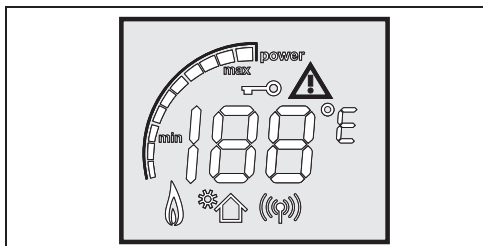


Fig. 7 Error indicator

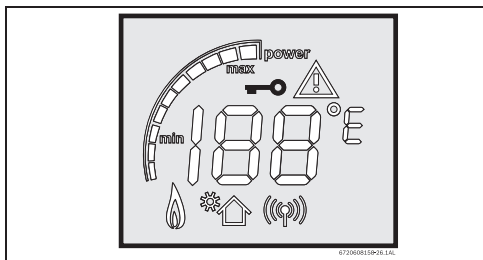


Fig. 8 Locked condition indicator (only with remote control)

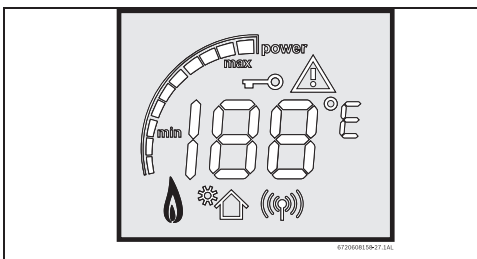


Fig. 9 Flame indicator

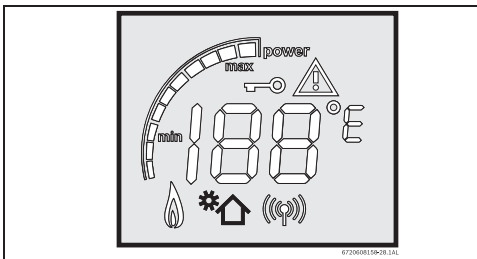


Fig. 10 Solar mode indicator

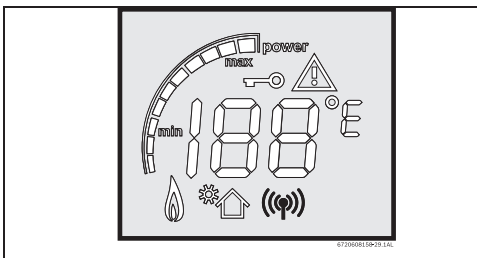


Fig. 11 Remote control indicator

## 4.2 Before operating the appliance

**CAUTION:**

The initial startup of the heater must be realized by a qualified technician, who will provide the client with all the information necessary for its correct usage.

Confirm that the gas type of the heater matches the gas supply you will be connecting the heater.  
Open gas valve.



Check for gas leaks at all joints.

Open water valve.



Check for water leaks at all joints.

### 4.3 Connect and disconnect the appliance

#### Connect

To start the appliance press the On/Off button.

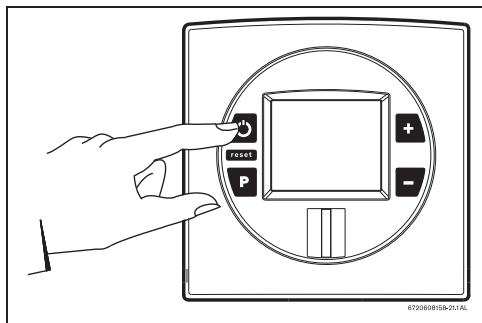


Fig. 12

#### Disconnect

To shut down the appliance press the On/Off button again.

### 4.4 Water temperature setting



The temperature value indicated on the LCD panel corresponds to the water temperature at the appliance outlet.

To regulate the emitted water temperature:

Press the **+** or **-** until the desired value is obtained.

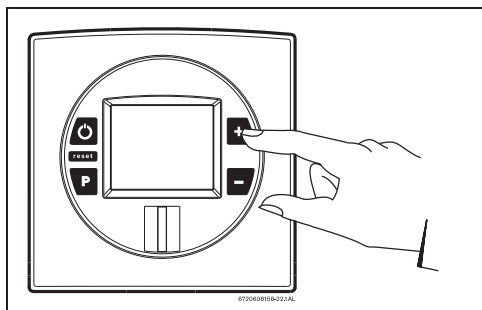


Fig. 13


Once the desired temperature is set, open the hot water tap.



These appliance has an electronically controlled gas valve that modulates the burner input in response to both varying hot water flow rates and/or changes in any incoming and outgoing water temperatures.

### 4.5 Operation

Turn ON the main switch and the appliance is ready to work.

When a hot water tap is opened, main burner ignites and LCD displays indication .

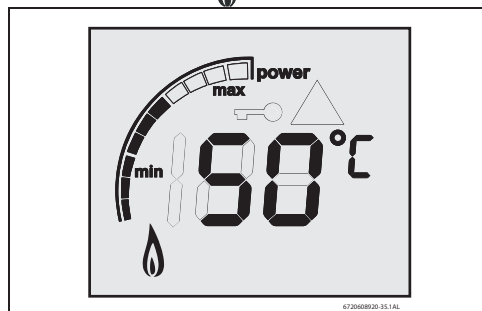


Fig. 14



LCD flashes until selected temperature is reached.

#### 4.6 Registration of remote control (accessory no 7 709 003 756)

Only a qualified technician is allowed to install the additional PCB that is supplied with the remote. Only after installation of PCB the registration can be made.


The registration of the remote control must be done near the appliance.

Hot water tap closed.

Turn OFF the appliance (Fig. 4, [1]).

Press and hold the programming key (Fig. 4, [3]), press ON/OFF button (Fig. 4, [1]) to connect the appliance.


Release programming key only when LCD displays "188". The LCD displays the signal "P2".

Press key , until it displays the signal "P3".

Press programming key again for about 1 second.

LCD panel displays one number and one rotating digit.

The number represents the remote control which is to be registered, the first remote control will be registered with number "0", the second with number "1" and so on.

Test the remote control in front of the electronic box by simultaneously pressing the  and  control keys.

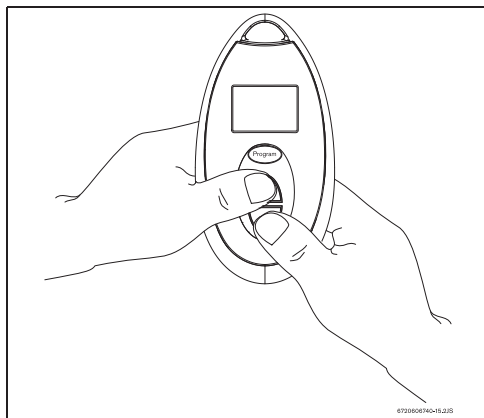


Fig. 15 Activate new control

Press both keys until the LCD panel stops flashing and shows the indication "00".

Press ON/OFF button (Fig. 4, [1]) to disconnect the appliance.

Remote control is now deactivated.



Press the ON/OFF button to turn ON the remote control and it's ready to work.

#### 4.7 Remote control operation (accessory no 7 709 003 756)

This appliance fulfills European directive requirements 1999/5/CEE (R&TTE) and corresponds to the specifications described in the corresponding CE certificate of proof.



Press buttons  and  in order to reach requested temperature.



Fig. 16 Remote control (temperature selection)



NOTE: up to 6 remote controls can be programmed for one single water heater, each with a range distance of 30m.



#### CAUTION:

Remote control is not a toy - do not allow children to play with the remote control unit.

#### Batteries replacement

Remove the 2 screw from the remote control back.



Open the cover.

Remove the old batteries and correctly place the new ones.

Close the remote control assuring that both screws are tighten screwed.



#### CAUTION:

remote control can be used under the shower , however, it's immersion must not be forced .

#### Precautions when using the batteries

- Do not dispose of batteries as domestic waste. Take them to appropriate collecting places for recycling.
- Do not insert flat batteries.
- Only use the type of batteries indicated.



## 4.8 Program button

Program button can be used/programmed in the appliance and in the remote control.

### Programming "Program" function



Each remote control program button can be programmed with different temperature values according with the user needs. A temperature value can be programmed in the remote control and another value in the appliance.

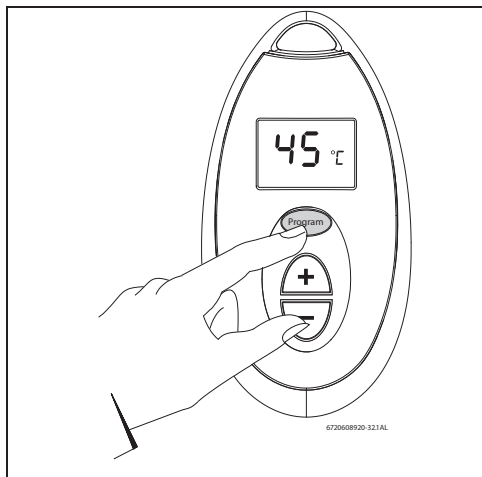


Fig. 17 "Program" key

Press buttons  and  to select temperature to be memorized.

Press "Program" button for 3 seconds to save temperature. The temperature is saved on "Program" when the LCD panel stops blinking.

### Using "Program" function

In order to select memorized temperature:

Press "Program" key.  
LCD shows pre-memorized temperature, which is now the selected hot water temperature.

## 4.9 "Priority" function



PRIORITY is a function that prevents the user from accidentally altering the water temperature selected by another user.



The appliance does not have a designated default priority. Priority is attributed when the first user selects a temperature (see chapter 4.4).

The following symbol appears for other users. The priority user may change the initial selection at any time. Non-priority users cannot change the selection made by the priority user.

The system resets priority function 5 minutes after last water demand, returning to the initial state.

To select priority

Any user may select temperature selection priority in the following manner:

Press one of the selection keys   for 5 seconds.



Priority cannot be selected when the appliance is working.

## 4.10 Purge the appliance

If there is a risk of freezing, proceed as follows:

- Close the cold water valve of the water heater.
- Open hot water taps to drain the water heater.
- Remove all the water contained inside of the appliance.



### CAUTION:

The non accomplishment of the purgative of the appliance whenever the freezing risk exists, it can damage components of the appliance.




If the appliance is installed in places where freezing risk exists the accessory anti-freezing should be used, cod. 7 709 003 709.

## 4.11 Reset button



This appliance has an error codes system. The visualization of these codes is made through the LCD display. (Fig. 4, [4]).

If the LCD shows the error symbol , do not shut off power or unplug the heater. Follow instructions below to reset error first.

Record the error code on LCD and consult chapter 10 to identify the error.

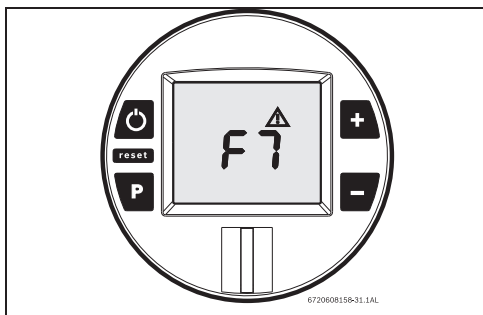


Fig. 18 Error code

After following instructions indicated in "Troubleshooting" section,

press reset button firmly in order to return heater to normal operation.

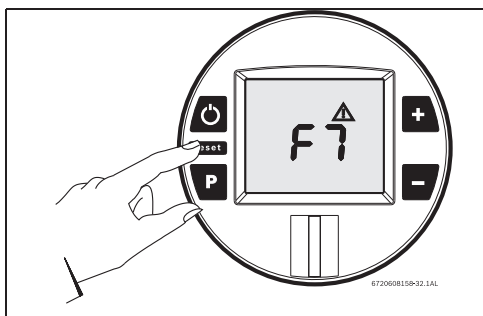


Fig. 19 Reset button

If the problem persists, contact your installer.

## 4.12 Locked condition

This condition is only valid for appliances with one or more remote controls installed.

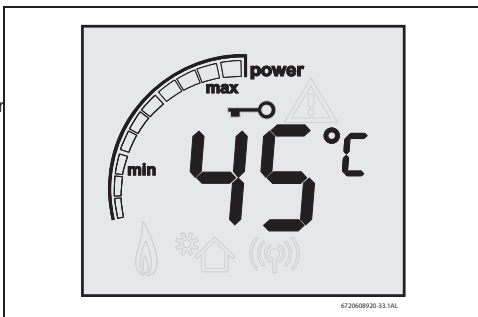



Fig. 20 Locked condition

Whenever LCD shows , the temperature setting cannot be adjusted because the appliance is in use by a user which already selected a different temperature. Appliance will be automatically unlock 5 minutes after closing hot water tap.

## 5 Installation instructions



**DANGER: Explosion!**

Always close the gas valve before doing any work in gas components.



The installation, the electric connection, the gas installation, the installation of the exhaust / admission ducts, as well as the start up must be carried out by a qualified technician.



The appliance can only be used in the countries mentioned in the type plate.



**CAUTION:**

Do not install the appliance where the inlet water temperature is superior to 60 °C. In such cases we recommended the installation of a mixer's valve in the entrance of the appliance as prevention measure.

## 5.1 Important remarks

Before installation, consult the gas company and current legislation regarding gas appliances and site ventilation. Install a gas shut-off tap as close to the appliance as possible.

After connection to the gas main, the appliance should be carefully cleaned and tested for leaks; To avoid damage from excess pressure in the gas regulator, this should be carried out with the gas valve shut.

Ensure that the appliance installed is suitable for the type of gas provided.

Ensure that the flow and pressures for the regulator installed are those indicated for the consumption of the appliance (see technical data in Table 4).

A low-pressure gas regulator must be installed with the appliance.

## 5.2 Selection of location for installation

Considerations relevant to location

Fulfil requirements specific to each country.

The heater must not be installed above a source of heat.

Respect the minimum installation measurements indicated in Fig. 21.

The appliance must not be installed in sites where the ambient temperature is susceptible to drop below 0 °C.

Where there is a risk of freezing, disconnect and empty the appliance (chapter 4.10).



If the above conditions are not possible, it's mandatory to use the kit anti-freeze n° 7 709 003 709.

Assure that there exists a socket for the electric connection at the place where the appliance will be installed.

Assure that there exists at the place of the installation a sewer point for the condensed waters.

Combustion air

The air admission grill must be located in a well ventilated area.

To avoid corrosion, products such as solvents, inks, inflammable gases, glue or domestic detergents containing halogenic hydro-carbons or any product that might provoke corrosion must not be stored near the air admission grill.

Where these conditions are impossible to fulfil, an alternative site for gas admission and exhaust must be selected.

Surface Temperature

The maximum surface temperature of the appliance is below 85 °C. Special protection measures are not required for inflammable building materials or housings.

## 5.3 Minimum distances

Determine the installation site with the following limitations in mind:

Maximum seclusion of all salient parts such as hoses and pipes, etc.

Ensure adequate access for maintenance work, respecting the minimum distances indicated in Fig. 21.

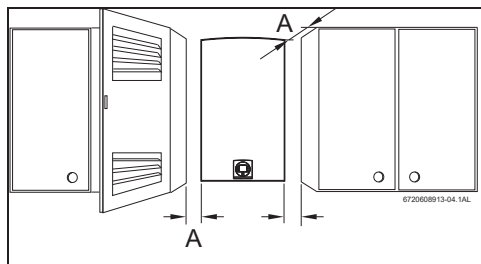


Fig. 21 Minimum distances

[A] Front > 2 cm, Side > 1 cm

## 5.4 Installation of fixing bracket



Before installing the fixing bracket, ensure that the water/gas/exhaust connections are guaranteed.

Fix the fixing bracket to the installation point selected.

Mark the position of the holes for the fixing bracket, make sure that the fixing bracket is level, only then open the holes.

Fix the fixing bracket to the wall using the screws and plugs provided. Loosen the two Philips head screws located on bottom rear of cover (Fig. 23).

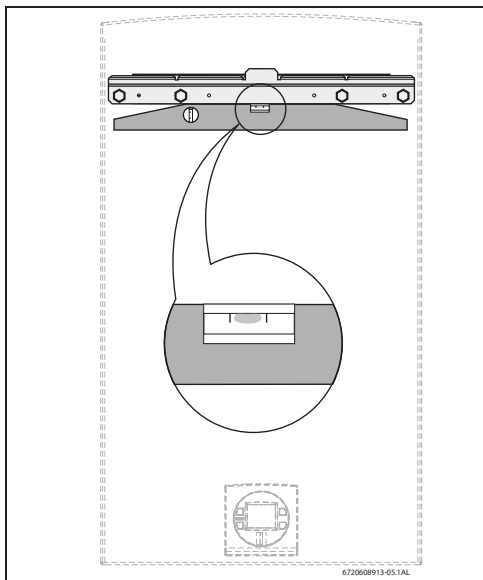


Fig. 22 Fix the fixing bracket

## 5.5 Installation



**CAUTION:** Possibility of damage caused by foreign bodies!

Purge all tubes to eliminate possible foreign bodies.

Remove appliance from packaging.

Ensure that all indicated parts are included.

Remove the plastic caps from the gas and water connections.

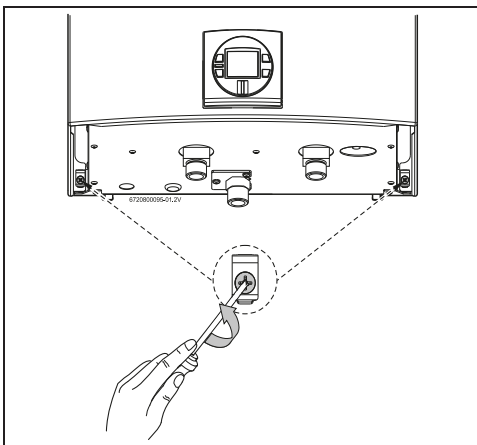


Fig. 23 Loosen the two screws

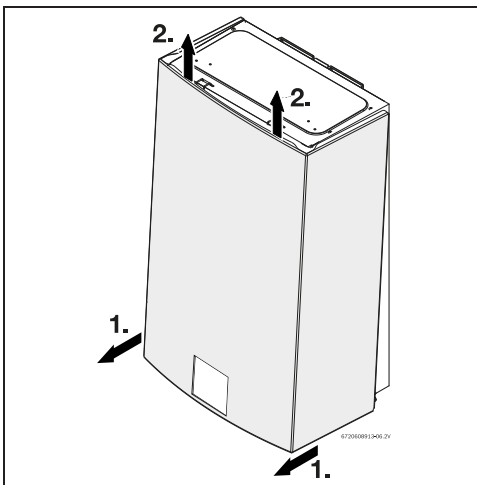


Fig. 24

Fix the appliance in a vertical position.

Lift front cover panl upward and remove.



**CAUTION:**

Never rest the heater on the gas or water connections.



For ease of installation it is recommended that the water be connected followed by the rest of the connections.

## 5.6 Water connection

Mark the hot and cold water pipes in order to avoid confusion.

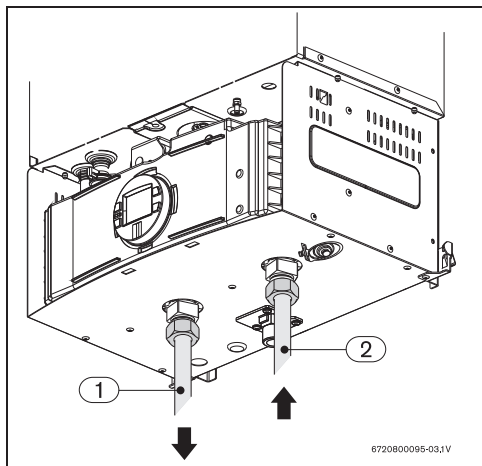


Fig. 25

- [1] Hot water
- [2] Cold water

Make the hot and cold water connection.

In order to prevent problems caused by sudden inlet pressure changes, the inclusion of an anti-return valve is advised when installing the appliance.

## 5.7 Gas connection



### DANGER:

If local regulations are not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.



Only use accessories recommended in this manual.

When the installation is effected with non-metallic, flexible tubes for use with bottled Butane, the following should be observed:

- the tubes should be as short as possible and no longer than 1.5 m;
- the tube should be to IPQ 11038 standard and fulfil all applicable regulations;
- it should be accessible for inspection along its entire length;
- it should not be located near heat sources;
- bends and other obstructions should be avoided;
- the ends should be secured with adequate accessories and clamps;

Tubes must be replaced every four years or whenever it becomes dry or brittle;

Ensure that the inlet tube is clean;

Use the tube support accessory (provided) and an appropriate clamp to make the inlet connections to the appliance;

Install a gas shut-off tap as near to the appliance as possible;

When the gas inlet is connected to the main, metallic tubes must be used according to the applicable regulations.

- The accessory provided must be used to connect the heater to the gas main.
- Tighten the threaded head of the gas inlet (Fig. 26, [1]) and use the copper (Fig. 26, [2]) extremity to solder the pipe to the main (Fig. 26, [3]).

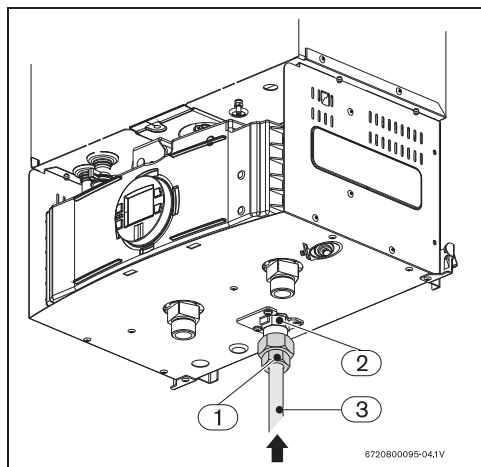


Fig. 26

- [1] Gas piping

The gas connection must fulfil local regulations.

## 5.8 Installation of the exhaust accessory and admission of air



It is mandatory the installation of the accessories for the exhaust / admission of air, cód. 7 709 003 734 (system of admission / exhaust Ø80/80 mm).

For the installation of the accessory they should be following the manufacturer's instructions.



### WARNING:

This appliance is required to be connected to a duct flue system incorporating separate paths for provision of the combustion air and the exhaust of the combustion products to and from the exterior of the building. Note the manufacturer's specific instructions regarding installation of the appliance.

### 5.8.1 Installation of the accessory of admission of air

To install the accessory of admission of air, proceed as follow;

Put the gasket between the appliance and the accessory (Fig. 27, [1]).

Tighten the 4 screws of the accessory of admission of air (Fig. 27, [2]).

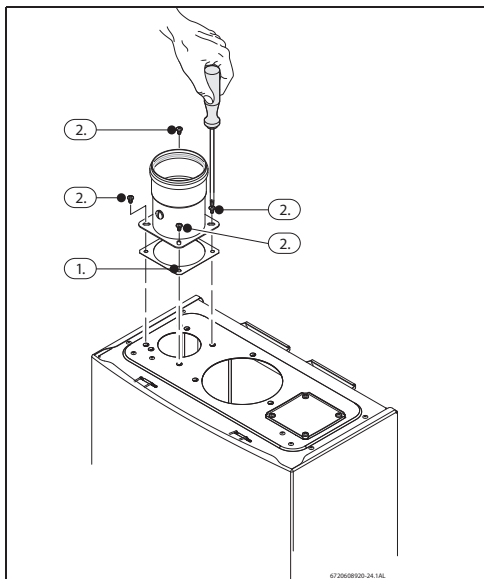


Fig. 27

### 5.8.2 Installation of the exhaust accessory Ø80mm

To install the accessory of the exhaust accessory, proceed as follow;

Put the gasket between the appliance and the accessory (Fig. 28, [1]).

Tighten the 3 screws of the exhaust accessory (Fig. 28, [2]).

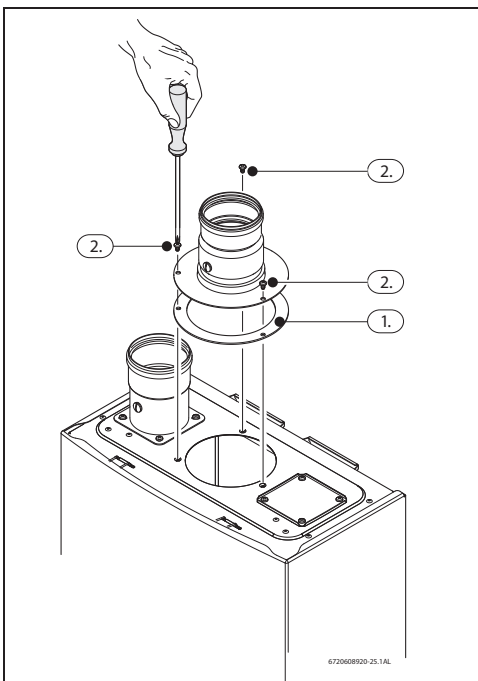


Fig. 28

## 6 Admission / exhaust accessories (accessory Ø 80/80 mm)

### 6.1 Admission/exhaust accessories (diameter in mm)



Once is done the connection of the vent pipes it always necessary to verified and guaranteed that is sealed.



**DANGER:** Make sure that all flue connections are tighten sealed.

Failure to follow this requirement may cause dangerous exhaust gases to enter living space which may result causing personal injury or loss of life.

#### 6.1.1 Flue accessories twin pipe Ø80 mm

Type	Description	TTNO
-	Accessories for the exhaustion / admission of air	7 709 003 734
AZ 381	Elbow 90° - Ø80	7 716 050 056
AZ 382	Elbow 45° - Ø80	7 716 050 057
AZ 383	Pipe Ø80 of 500mm	7 716 050 058
AZ 384	Pipe Ø80 of 1000mm	7 716 050 059
AZ 385	Pipe Ø80 of 2000mm	7 716 050 060
AZ 387	Terminal Ø80	7 716 050 062
AZ 378	Vertical terminal	7 716 050 053

Table 5 Flue accessories Ø80

## 6.2 Fitting instructions

- The permissible maximum flue/pipe length,  $L_{max}$ , for the various possible flue configurations is specified in the tables starting on chapter 8.6.
- If the concentric flue/air pipe enters a chimney below ground level, the appliance may register a fault and shut down in cold weather due to ice formation. For that reason such flue configurations should be avoided.

## 6.3 Explanation of Symbols on Fitting Diagrams



Lightly grease seal on flue side with solvent-free grease (e.g. Vaseline) (Fig. 29).



Push flue kit fully home (in this case: 50 mm insertion depth) (Fig. 30).



Drill two 3-mm diameter holes in the combustion air pipe. Maximum drilling depth 8 mm. It is essential that flue pipe is not damaged! (Fig. 31).



Secure joint with the screws supplied (Fig. 32).

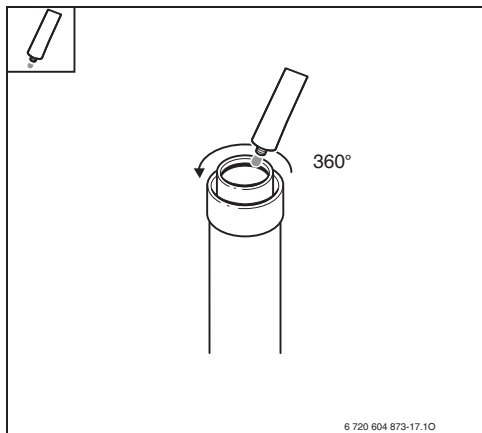


Fig. 29

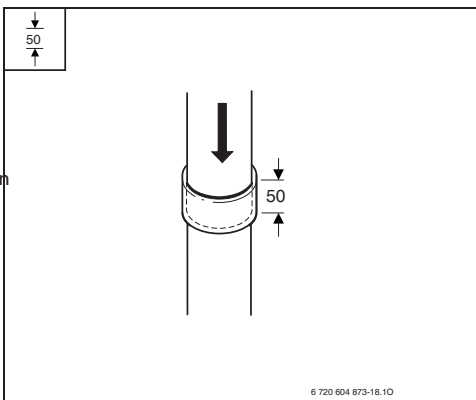


Fig. 30

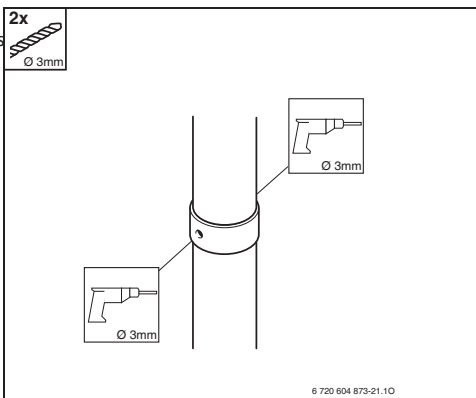


Fig. 31

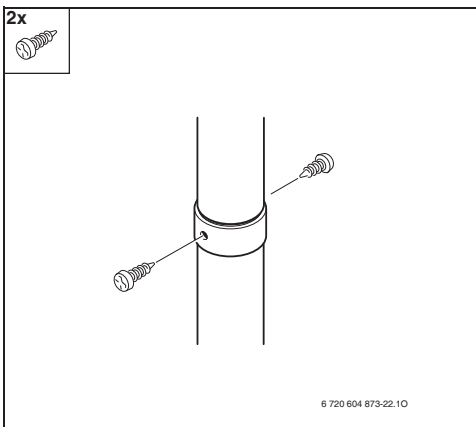


Fig. 32



# 6.4 Approved flue systems

## 6.4.1 Exhaustion type A<sub>3</sub>

Outdoor installation with accessory n° 7 709 003 732

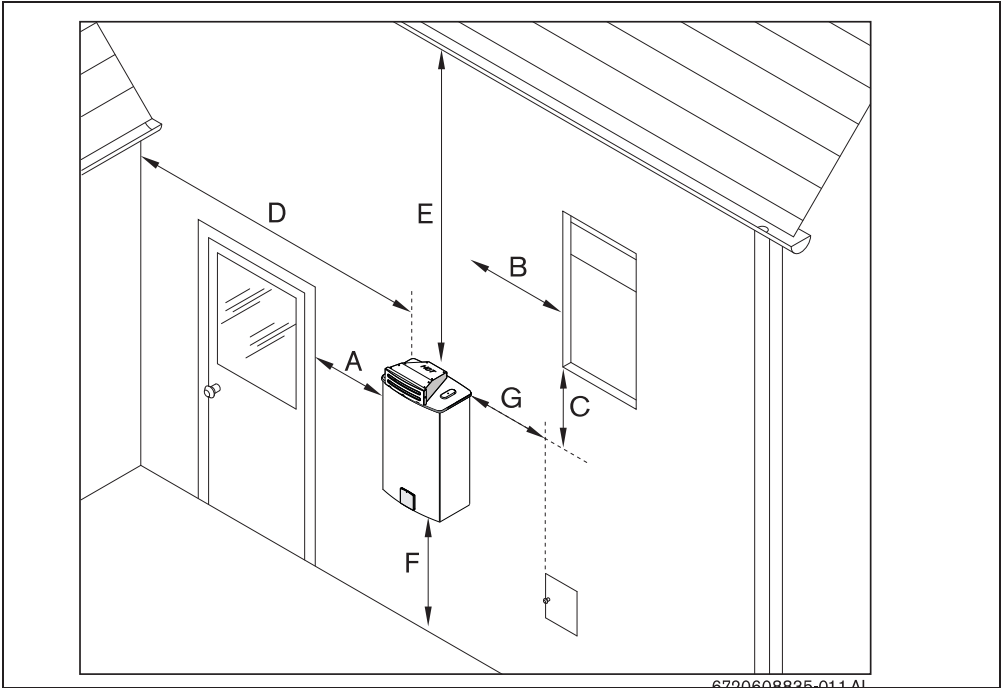


Fig. 33

Ref.	Description	Minimum distance
A	Installation next to window; Installation next to door; Installation near of any open for air recirculation.	> 1,250 m
B		
C		
D	Clearance to side wall	> 1,250 m
E	Clearance to roof or gutter	> 1 m
F	Clearance to the ground	> 1,200 m
G	Clearance to gas meter or regulator	> 1,500 m

Table 6 Installation clearances

### 6.4.2 Exhaustion type B<sub>23</sub>

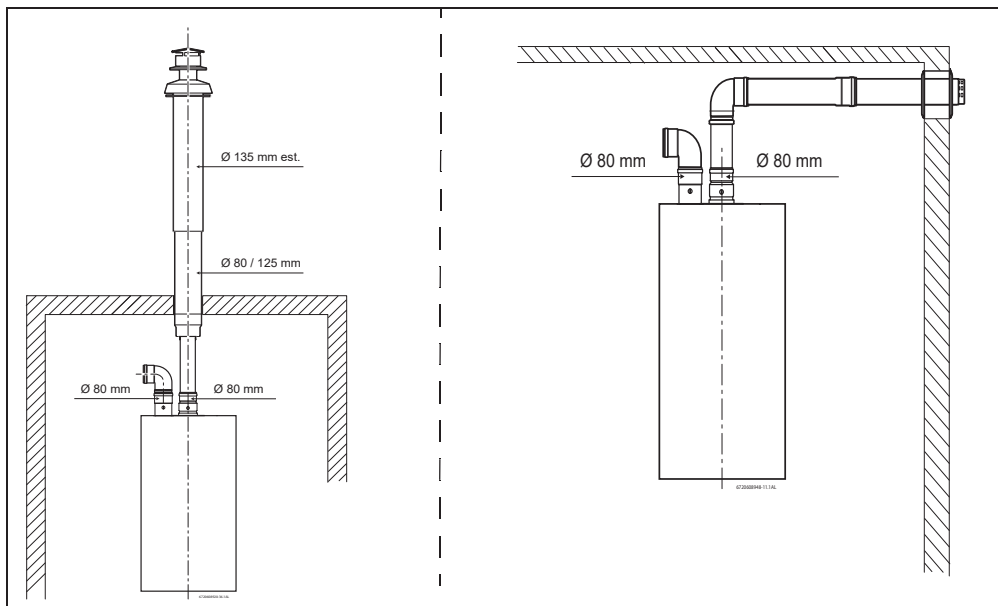


Fig. 34

### 6.4.3 Exhaustion type C<sub>43</sub>

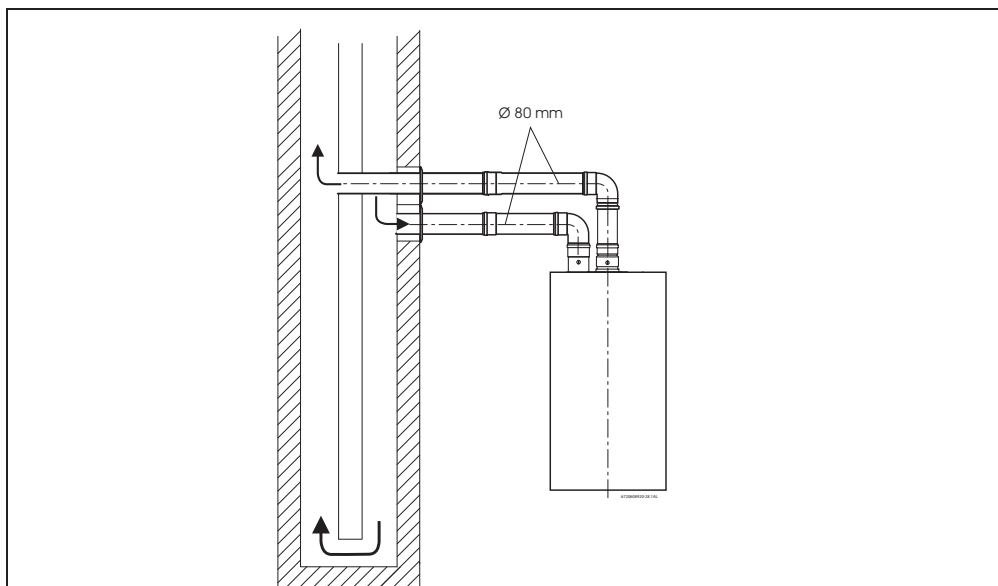


Fig. 35

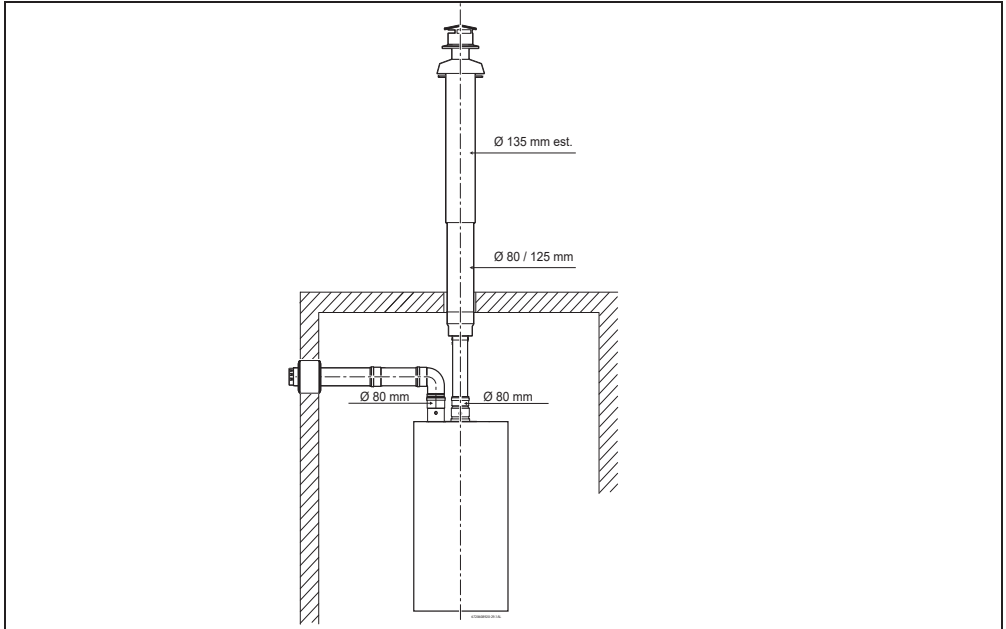
6.4.4 Exhaustion type C<sub>53</sub>

Fig. 36

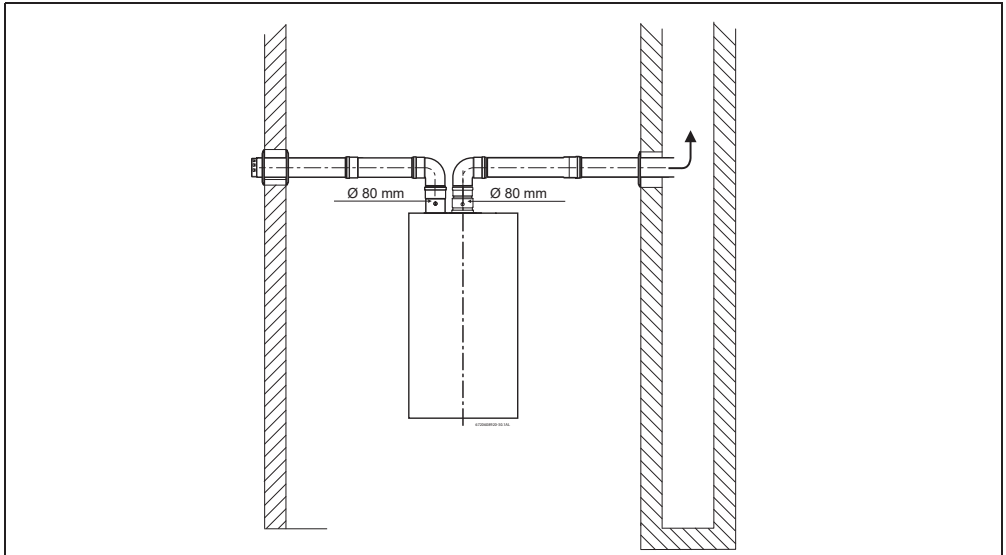
6.4.5 Exhaustion type C<sub>83</sub>

Fig. 37

## 7 Electrical connection



### DANGER: Risk of electric shock!

Always disconnect the power supply to the appliance ~~at~~<sup>from</sup> the mains before carrying out any work on the electrical systems and components.

All regulation, verification ~~and~~<sup>and</sup> safety mechanisms have been rigorously tested in the factory and are ready for use.



### CAUTION: Fuse protection!

The appliance should have an independent connection ~~to~~<sup>to</sup> the electricity mains, protected by a differential 30 mA switch and be earthed. In areas subject to frequent storms, a storm protector should be installed.

### 7.1 Connection



The electrical connection should be according to current regulations regarding domestic electrical installations.

An earth connection is absolutely essential.

Connect the feed cable to an earthed power point.

### 7.2 Power cable

The appliance is provided with a labelled power cord and earthed mains plug.



If the power cable gets damaged it must be replaced by a genuine spare part.

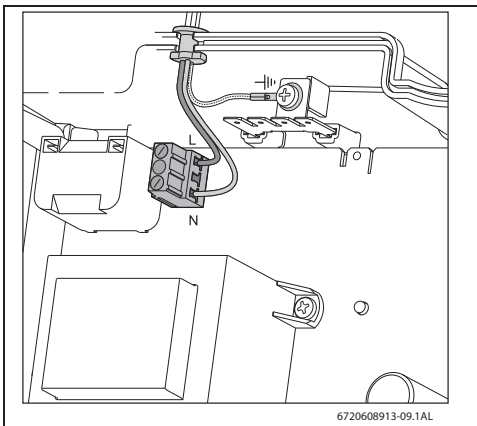


Fig. 38 Power cable connections

### 7.3 Position of the fuses in control unit

To check fuses, proceed as follows;

Remove the front cover, see Fig. 23.

Remove the three screws from the control unit (Fig. 39 and Fig. 40, [1]).

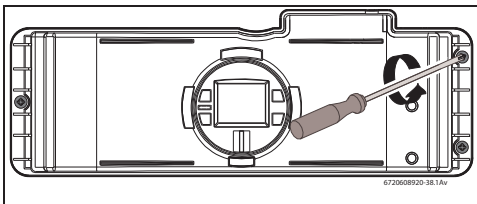


Fig. 39

Remove the six screws from ~~at~~<sup>the</sup> back cover of the control unit, see Fig. 40, [2].

Check the fuses in the printed circuit board, see Fig. 40, [3].

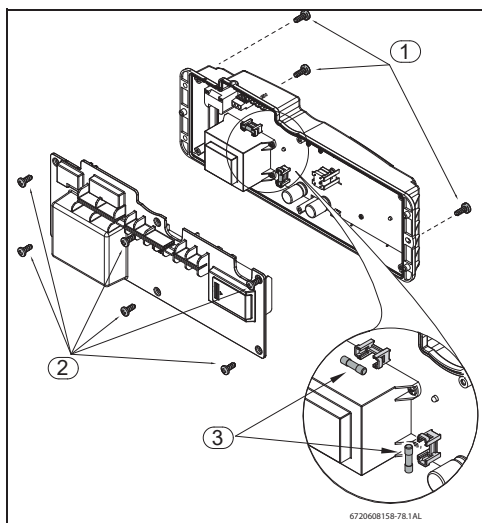


Fig. 40 Fuses position

After checking the fuses, ~~reinstall~~ install all parts in reverse order (Fig. 40, [3]).

## 8 Installation instructions

### 8.1 Factory regulations



Sealed parts must not be interfered with.

#### Natural gas

Heaters designed for Natural gas H (G 20) are factory sealed for delivery after the values on the characteristics panel have been checked.



Heaters should not be ignited when the connections pressure is less than 1,5 kPa more than 2,5 kPa.

#### Liquid gas

Butane heaters (G30) are factory sealed for delivery after the values on the characteristics panel have been checked.



**DANGER:**  
The following operations must be carried out by a qualified technician.

### 8.2 Measuring gas pressure

Confirm gas pressure after installation.

#### Connecting manometer

Shut off gas supply.

Remove the front cover ➔ Fig. 23 .

Loosen screw inside left test point fitting (do not remove) and connect manometer tube to test point.

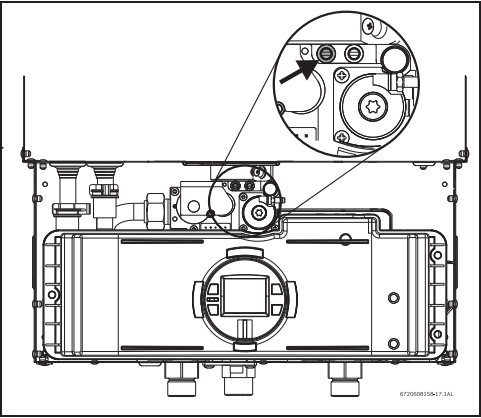


Fig. 41 Gas pressure test port (left tapping)

#### Static Pressure Test

Turn gas supply back on.

Record static gas pressure reading in Table 7 .

#### Static Gas Pressure Reading

Pressure: \_\_\_\_\_ Date: \_\_\_\_\_

#### Operating Gas Pressure Reading

Pressure: \_\_\_\_\_ Date: \_\_\_\_\_

Table 7

#### Operating Pressure Test

Press ON/OFF button to turn off the appliance.

Press and hold "Program" button and press ON/OFF button to turn appliance ON (Fig. 42).

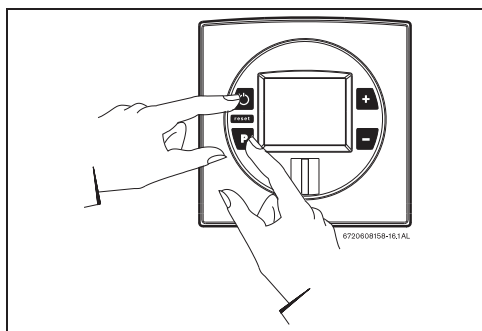


Fig. 42 Gas tuning mode

As soon as '188' is displayed, release "Program" button **P**, and the display reads P2.

Press **+** or **-** until P1 appears.



**NOTE:** While in this mode the appliance will run constantly at maximum power and allow maximum water flow.

For inlet gas pressure adjustment see values in Table 8 :

Gas type	GN	Butane
kPa	2,0	3,0

Table 8

Turn on high volume of hot water flow (at least 15 l/m) and burner will light. If heater display reverts to P2, open more hot water fixtures to allow sufficient flow. Press **+** until P1 reappears on the display.

Operate all other gas appliances on same gas piping system at maximum output.

Record lowest operating gas pressure reading in Table 7 .

Gas pressures lower than 2,0 kPa for Natural Gas or 3,0 kPa for Butane will result in insufficient degree rise to the hot water being used, reduced hot water volume, possible error code faults and must be corrected.

Check gas pipes dimensions.

### 8.3 Adjusting CO<sub>2</sub> (carbon dioxide)



The CO<sub>2</sub> can only be adjusted by a certified gas technician with a calibrated CO<sub>2</sub> analyser.



#### CAUTION:

One factor that may affect CO<sub>2</sub> levels is improper gas pressure.

Check and adjust gas pressure, see chapter 8.2.

When the gas pressure is correct:

Press ON/OFF button to turn off the appliance.

Remove plastic screw on the exhaust collar as seen in Fig. 43.

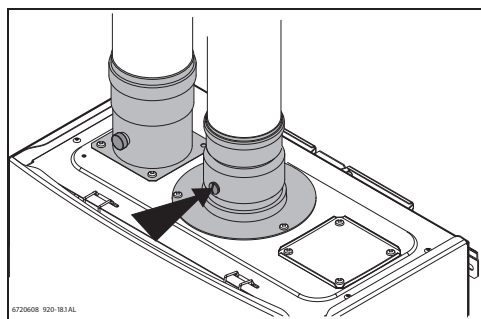


Fig. 43 Measuring port

Insert CO<sub>2</sub> analyser probe into the measuring port. The tip of the probe should be in the center of the flue pipe (approx 40mm inserted). Avoid air gaps between probe and measuring port as they can alter readings.

While holding the Program (P) button, press the ON/OFF button to turn ON the heater (see Fig. 44).

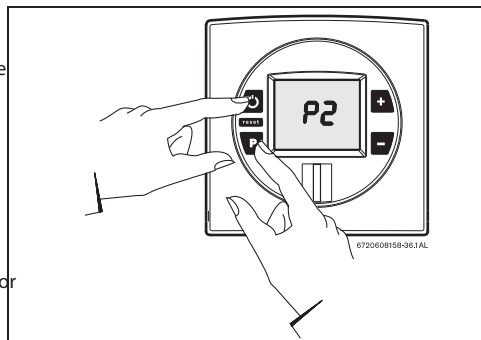


Fig. 44

While holding the Program **P** button, press the ON/OFF button to turn ON the heater. As soon as '188' flashes on the display, release the Program button. The display should now read P2.

Press **+** or **-** button until "P1" appears on display.

Measuring CO<sub>2</sub> (Combustion cover Installed):

Open all hot water taps to achieve flow rate of at least 15 l/ m (1 tub and 2 sinks should be efficient). If heater display reverts back to P2, open more hot water fixtures to allow sufficient flow.

Press **+** until P1 reappears on the display.

Record the CO<sub>2</sub> reading in P1 in the Table 9 below. Analyser reading may take several minutes to stabilize.

Press **+** button until P2 appears. Unit will ramp down to low fire and the water flow should decrease.

Program	CO <sub>2</sub> values
P1	_____ %
P2	_____ %

Table 9

Adjusting CO<sub>2</sub>



Note:P1 adjustment will change the P2 reading. Confirm the P1 value BEFORE adjusting the P2 level

If P1 CO<sub>2</sub> level is out of range:

Loosen yellow painted philips screw (Fig. 45,[1]) and cover should rotate down (Fig. 45,[2]) revealing a recessed brass slotted screw. (Fig. 45, [3]).

Turning the slotted screw counter clockwise, will raise P1 CO<sub>2</sub> levels.

Turning the slotted screw clockwise, will lower P1 CO<sub>2</sub> levels.



Adjustments to the slotted screw (P1) will also change P2 CO<sub>2</sub> levels.

After bringing the P1 CO<sub>2</sub> readings in proper range, press the **+** button to enter the P2 mode.

Verify CO<sub>2</sub> readings in P2 mode.

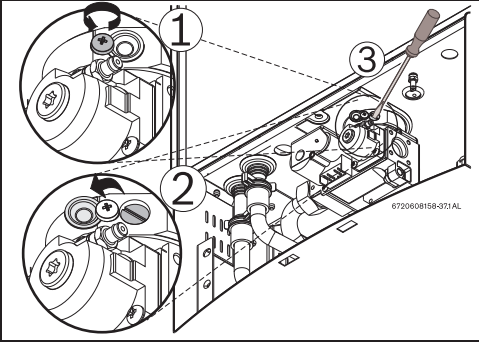


Fig. 45 Adjusting P1 CO<sub>2</sub> level

If P2 CO<sub>2</sub> level is out of range:

Remove yellow painted #40 Torx cover from the front of the gas valve, Fig. 45 . A plastic #40 Torx screw will be revealed.

Turning the plastic #40 Torx screw counter clockwise, will lower P2 CO<sub>2</sub> levels.

Turning the plastic #40 Torx screw clockwise, will raise P2 CO<sub>2</sub> levels.



Note: This screw adjustment is very sensitive and should be made in small increments. It may take several minutes for readings to stabilize.

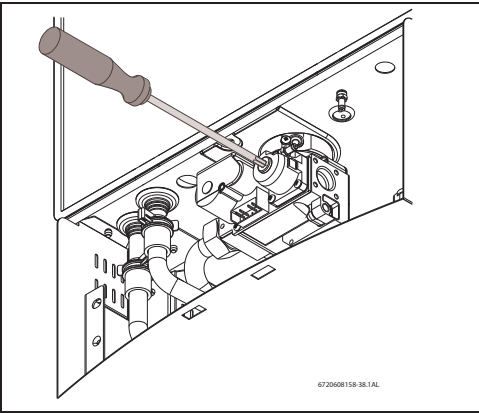


Fig. 46 Adjusting P2 CO<sub>2</sub> level

Verify both P1 and P2 CO<sub>2</sub> readings are within the ranges specified in Table 10 .



Repeat steps 1 and 2 as necessary until CO values are within the specified ranges.  
As soon as the levels of CO are correct, verify the values of CO corresponds to the limits of the Table 10 . If the values exceed the limits, it is necessary to verify the ventilation system and heat exchanger.

CO <sub>2</sub> range (%)			Máx. CO level (measured)
Natural gas			
Max. input	P1	from 7.3% to 7.9%	< 250 ppm
Min. input	P2	from 2.7% to 3.1%	< 60 ppm
Butane			
Max. input	P1	from 8.6% to 9.2%	< 250 ppm
Min. input	P2	from 3.0% to 3.4%	< 60 ppm
Note: Values above are for climate controlled conditions. Inputs such as gas pressure, heating value of the gas, humidity and temperature of combustion air all impact CO and CO <sub>2</sub> values. Changes in these inputs can result in different CO and CO <sub>2</sub> values on the same appliance.			

Table 10 CO<sub>2</sub> & CO target numbers

End of adjustments

Record the final values in Table 11 .

Program	CO <sub>2</sub> values measured	Date
P1	_____ %	
P2	_____ %	

Table 11

Reassemble all parts in reverse order:

- Return slotted screw cover to original position and tighten the philips screw, Fig. 45.
- Reinstall Torx protection cover, Fig. 46.
- Remove CO<sub>2</sub> analyser probe and reinstall flathead screw with gasket in exhaust collar.
- Press ON/OFF button to turn OFF the heater.
- Press ON/OFF button to turn ON the heater.
- Heater is ready for normal operation.

## 8.4 Program values

This section describes details in programming the appliance. For most applications the factory default values will provide robust and stable operation.



**CAUTION:** Misadjusted program values can lead to appliance malfunction, errors, and service calls.

Program	Description	Factory default	Min	Max	Comment
P1	Maximum Power	N. Gas: 40 LPG: 37	21	N. Gas: 40 LPG: 37	See chapter 8.2. Note: reducing P1 values below maximum will reduce maximum power of the appliance.
P2	Minimum Power	N. Gas: 8 LPG: 7	N. Gas: 8 LPG: 7	20	See chapter 8.2.
P3	Remote Controls installed	_0	_0	6	See chapter 4.6.
P4	Access to Diagnostic Mode	E	0d	10f	See chapter 8.5.
P5	Cascade Mode	nO	nO	CC	To activate the cascade mode it's necessary to install the "kit cascade" (cod. 7 736 500 272)
P6	Temperature Unit	°C	°F	°C	See chapter 8.5.
P7	Appliance Type	nO	Cd (condensing)	nO	Condensing / Non-condensing note: incorrect settings will cause errors.
P8	Back light	dE	dE	On	dE: turns back light off after 60 seconds from last button pushed.  ON: turns backlight on permanently.
P9	Fan Purge				Runs secondary fan and primary fan when P9 is selected by depressing the "P" - button
PH	Cascading type	IC	IC	SC	This menu is only available when cascade mode is selected CC.
PC	Master/Slave mode	CS	CS	Cn	

Table 12

8.5 Control board diagnostics

To access the diagnostic menu, proceed as follow:

- Press ON/OFF button to turn off the appliance.
- Press and hold "Program" **P** button and press ON/OFF button to turn appliance ON.
- Release the **P** button when '188' appears on the display. The display should read 'P2' when the program button is released. If not, repeat process.
- Press and release the **+** button on the control panel until the display reads 'P4'. You are now in the diagnostic mode of the control board.
- When the display reads 'P4', press and release the **+** button once again and the display should read 'E'.
- Use the **+** and **-** button on the control board to cycle through different diagnostic modes available.
- Once in the selected diagnostic mode of your choice, press and release the **P** button to display the diagnostic information.

Example: to read the flow rate in liters per minute while the unit is flowing water, cycle to the '3d' mode and press the **P** button. A reading of 25 on the display would indicate the heater is reading a flow rate of 2.5 liters/minute.

- Once the information is obtained,
- Press the **P** button again to return to the diagnostic mode menu.
  - Press **+** or **-** buttons until the letter "E" appears on the display, to leave the diagnostic menu.
  - Press **P** button and in the display appear 'P4'.
  - Press ON/OFF button to turn off the appliance.
  - Press ON/OFF button to turn ON the appliance.
  - Heater is ready for normal operation.

Diagnostic menu	
E	Entry/Exit into sub-modes
0d	Set-point temperature (°C)
1d	Inlet water temperature (°C)
2d	Outlet water temperature (°C)
3d	Water flow (gallons/min) (l/min)
4d	Gas type (LP or NG)
5d	Fan speed (Hz)
6d	Burner power (%)
7d	Maximum power (kW)
8d	Back flow temperature (°C)
9d	Exhaust temperature (°C)
1F	Most recent error/failure
2F	2nd most recent error

Table 13

Diagnostic menu	
3F	3rd most recent error
4F	4th most recent error
5F	5th most recent error
6F	6th most recent error
7F	7th most recent error
8F	8th most recent error
9F	9th most recent error
10F	10th most recent error
H0	Numbers of hours - mode 0
H1	Numbers of hours - mode 1
H2	Numbers of hours - mode 2

Table 13

1) Only available condensing models

8.5.1 Working hours

To see how many hours the appliance has worked, please enter the "Diagnostic menu";

- Select the sub-mode "H0".
- Write the number that shows in the display.
- Select the sub-mode "H1".
- Write the number that shows in the display.
- Select the sub-mode "H2".
- Write the number that shows in the display.

After checking the sub-modes H0, H1 and H2, introduce the values in the table below;

Working hours		
Number in H0	_____	_____ +
Number in H1	_____ (X 100) =	_____ +
Number in H2	_____ (X 10 000) =	_____ +
(H0 + H1 + H2) = Total of hours		_____

Table 14

## 8.6 Fan speed adjustment



After installing the appliance, the minimum power fan speed must be adjusted to compensate for variation in vent pipe length.

Before adjusting the fan speed it is necessary to verify the admission / exhaust system, calculating the total length of the exhaust pipes and quantity of elbows.

Pressure drop equivalence of the conducts and exhaustion accessories.

Description	Equivalence in meters Ø80/80mm
30° elbow	0.4m
45° elbow	0.5m
90° elbow	1m
exhaust pipe per meter	1m
Horizontal vent kit	-

Table 15

### 8.6.1 Total equivalent vent length calculation Ø80 mm

How to calculate the total length of the exhaust conduct:

Determine the total length of all straight sections of vent pipe and enter in Table 16, line 1.

Count the number of 90° elbows used, multiply by 1m, and enter that value in Table 16, line 2. (Do not count non-concentric terminals and first elbow used on intake and exhaust).

Count the number of 45° elbows used, multiply by 0.5m, and enter that value in Table 16, line 3.

Count the number of 30° elbows used, multiply by 0.4m, and enter that value in Table 16, line 4.



Do not count non-concentric terminals and first elbow used on intake and exhaust.

Repeat the previous procedure to calculate the total length of the admission of air conduct. Insert values in Table 17.

Sum the total of the Table 16 with the total of the Table 17 and to put the result in the line 6 of the Table 17.

This is the total equivalent vent length.

Exhaust			
1	Straight section length	___ x 1 =	_____
2	90° elbows (qty)	___ x 1 =	_____
3	45° elbows (qty)	___ x 0.5 =	_____
4	30° elbows (qty)	___ x 0.4 =	_____
5	Sub-total:		_____

Table 16

Intake			
1	Straight section length	___ x 1 =	_____
2	90° elbows (qty)	___ x 1 =	_____
3	45° elbows (qty)	___ x 0.5 =	_____
4	30° elbows (qty)	___ x 0.4 =	_____
5	Sub-total:		_____
6	Total equivalent vent length=		_____

Table 17

Example

Exhaust:

- 5 units of 1m straight sections
- 1 unit of 1m straight sections
  - Total length = 6 meters
- 2 - 90° elbows

Intake:

- 4 units of 1m straight sections
  - Total length = 5 meters
- 2 - 90° elbows

Example table:

Exhaust			
1	Straight section length	6 x 1 =	6
2	90° elbows (qty)	2 x 1 =	2
3	45° elbows (qty)	0 x 0.5 =	0
4	30° elbows (qty)	0 x 0.4 =	0
5	Sub-total:		7

Table 18

Intake			
1	Straight section length	$\_4\_ \times 1 =$	4
2	90° elbows (qty)	$\_1\_ \times 1 =$	1
3	45° elbows (qty)	$\_0\_ \times 0.5 =$	0
4	30° elbows (qty)	$\_0\_ \times 0.4 =$	0
5	Sub-total:		5
6	Total equivalent vent length=		12

Table 19

Note: Do not count terminals and elbow used on intake and exhaust.



Total maximum length for separate tubes (exhaust/admission) must not exceed 16 meters.

Fan speed for separate tubes Ø80/80 mm

Mode	Conduct length <sup>1)</sup>	Fan speed	
		GN	LPG
P2	From 1 m until 6 m	8	7
	from 6.1 m until 14 m	9	8
	from 14.1m until 16 m	10	9

Table 20

1) Total conducts lengths of Table 17. Do not count with the first elbow and the accessory of wind/rain protection.



Do not set P2 to greater then 10.

8.6.2 Adjusting fan speed

After obtaining the total sum of the conducts, proceed as follow:

- Press ON/OFF button into OFF.
- Press and hold "Program" button and press ON/OFF button to turn appliance ON (see Fig. 47 ).

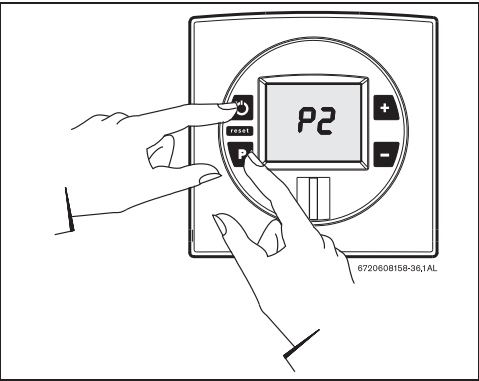


Fig. 47

- As soon as '188' is displayed, release "Program" button **P**, and the display should read P2.
- Press one time **P** to access the program P2. In the LCD display is visible the attributed value (factory value: GN: 8, LPG:7).
- Press **+** or **-** to choose the fan speed suitable with your installation, see tab.20 for separate tubes admission/ exhaust Ø 80/80 mm.
- Press and hold ( 5 sec.) "Program" button **P** until the display flashes.
- Selected value is memorized.

## 9 Maintenance

To ensure that gas consumption and the environmental load (pollution, etc.) remain as negative as possible over a longer period of time, we recommend that you assure to have the appliance maintained on an annual basis (inspection) or if necessary (maintenance).



Your appliance must only be serviced by a qualified technician.



### DANGER: Electrical discharge!

Always disconnect the electrical current (fuse, safety power switch) before working on the electrical installation.

Your appliance must only be serviced by a Bosch Technical Assistance delegate.

Use only genuine accessories.

Order accessories according to the list of accessories provided with the appliance.

Substitute dismantled joints and o-rings with new ones.

Only the following lubricants must be used:

- On hydraulic parts: Unisilikon L 641 (8 709 918 413)
- Threaded joints: HfT 1 v 5 (8 709 918 010).



### WARNING: Burner damage!

The burner surface is very fragile.

Do not touch the burner surface, take extra caution during the maintenance operations!

Inspect the burner annually and clean as necessary.

Check the burner through the observation window if there are liquids or fissures.

Verify if the flame is stable and blue without signs of yellow flames.



Yellow burner flames are an indication of improper combustion. Assure that the installation of the exhaustion conduct and of admission of air fulfil the manufacturer's requirements.

Verify CO<sub>2</sub> levels (see chapter 8.3) and correct it if necessary.

### Water filter

Close the water inlet supply valve.

Clean the water filter, see Fig. 48.

## 9.1 Periodic maintenance tasks

### Functional checks

Ensure that all safety, regulatory and checking elements are in good working order.

### Heat exchanger

Inspect the heat exchanger.

If it is dirty:

- Dismantle the chamber and remove the regulator.
- Clean the chamber with a pressurized water jet.

If the dirt resists: soak soiled parts in hot water with detergent and clean carefully.

If necessary: de-scale the interior of the heat exchanger and connection tubes.

Reassemble the heat exchanger using new joints.

Remount the regulator on its support.

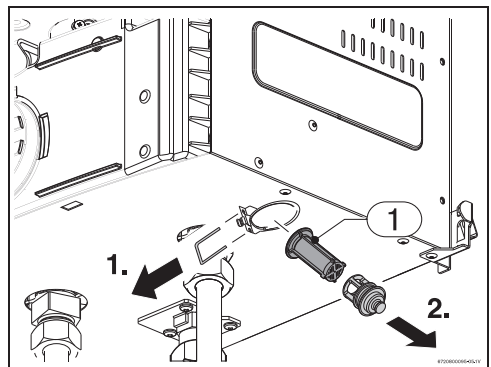


Fig. 48

[1] Water filter

## 9.2 Verify the fuses in the control board

To check fuses, proceed as follows;

Remove the front cover, see Fig. 23.

Remove the three screws from the control unit (Fig. 49 and Fig. 50, [2]).

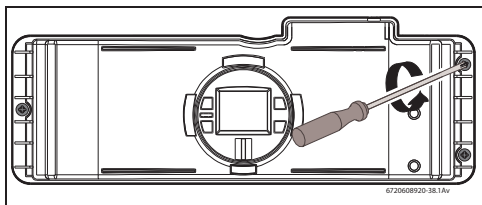


Fig. 49

Remove the six screws from the back cover of the control unit, see Fig. 50, [2].

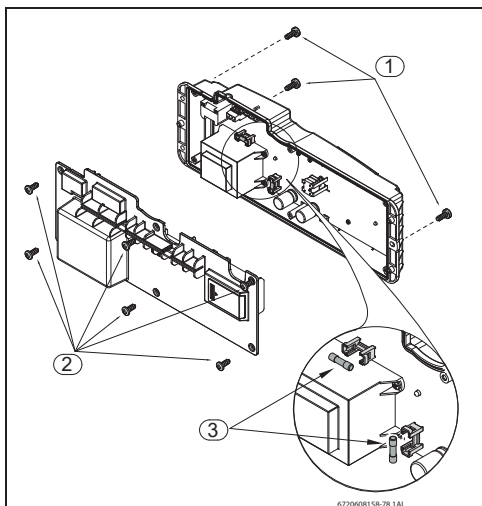


Fig. 50 Fuses position

After checking the fuses, re-install all parts in reverse order.

### 9.3 Startup after maintenance

Check all water and gas joints.

Read chapter 4 "Operating instructions" and/or chapter 8 "Installation instructions".

Check gas pressure (burner pressure).

Make sure combustion cover is securely fastened.


Ensure the exhaust vent adaptor is properly sealed.

Check for gas leakage.

Check for water leakage.

10 Problem solving

10.1 Problem/Cause/Solution



To remove error code from the display, press the reset button.





Display	Cause	Solution
	Fault in the flue gas limiter. Temperature above 110 °C inside the cabinet.	<ol style="list-style-type: none"><li>1. Check continuity of the flue gas limiter (normally closed).</li><li>2. Check for flue gas leakage around the top and bottom seals of heat exchanger, use mirror to check around the rear as well as the viewing window.</li><li>3. Check venting specifications are met: long vent lengths, venting with more than three elbows, blocked vent or combination venting may cause this failure.</li><li>4. Check that flue gas limiter connector and spade connections are secure.</li><li>5. Unplug heater and check the wiring harness connections on the control board.</li></ol>
	Resistance connections are not correct.	<ol style="list-style-type: none"><li>1. Check resistance connection, see Fig. 2, [9].</li></ol>
	Backflow temperature sensor defect - happens if sensor is disconnected or short circuit.	<ol style="list-style-type: none"><li>1. Check backflow temperature sensor connection, see Fig. 2, [13].</li><li>2. Replace exhaust temperature sensor.</li></ol>
	Outlet temperature sensor fault (Temperature below 0 °C or above 98 °C).	<ol style="list-style-type: none"><li>1. Check red wire connections at hot water temperature sensor. Clean terminals with an eraser. If badly corroded, replace sensor and wire harness.</li><li>2. Sensor may trip if water temperature drops below 0 °C to protect heater from freezing conditions. Any damage due to freezing conditions is not covered under warranty.</li><li>3. Clean the water filter, any dirty hot water faucets and also all the water filters of the installation.</li><li>4. In areas where water has a high mineral content, periodic descaling may be necessary.</li><li>5. Check sensor.</li></ol>

Table 21

\* By installer or service technician only.








Display	Cause	Solution
(Flashing) 	Outlet temperature sensor not sensing expected output temperature. (Status message not an error)	1. Check that the sensor is firmly attached to the vertical section of the hot water pipe. 2. Ensure that hot water sensor is not placed on any bends in the hot water pipe or misreading may occur. 3. Check gas pressure. Low gas pressure may prevent the heater from reaching desired output temperature. 4. Check supply voltage. 5. Possible defective control unit, call the Technical Assistance. 6. Clean the water filter on the installation and taps.
	Primary fan rotation too low in operation.	1. Disconnect power supply cord and check wire connections on back side of fan and the two connectors on the control board. 2. Check supply voltage. 3. Check venting specifications are met. Long vent lengths, venting with more than three elbows, blocked vent or combination venting may cause this failure. 4. Ensure intake and exhaust terminations maintain the required clearances stated in the manual. Cross contamination between intake and exhaust may cause the fan to alter its rotational speed. 5. Check gas pressure. Low gas pressure may cause the fan to change its speed to meet desired temperature. 6. Possible defective control unit, call the Technical Assistance.
	No rotational speed sensor signal from primary fan.	1. Disconnect power supply cord and check wire connections on back side of fan and the two connectors on the control board. 2. Check supply voltage. 3. Possible defective component in fan or defective control unit, call the Technical Assistance.
(Flashing) 	Water flow signal over specified maximum value. Water flow > 37 l/min.	1. Disconnect power supply cord and check wire connections on water valve and the two connectors on the control board. 2. Excessive water pressure and flow. Ensure water pressure is less than 10 bar and flow rate is below 37 Liters per minute.
	Software/hardware failure.	1. Disconnect power supply cord and check the two wire and ground connections on control board as well as ground connection on heater chassis. 2. Pressing the wrong combination of buttons on the control unit can create confusion among the microprocessors inside. In this case, the error code should not happen more than once or twice. Turn off the water heater. Turn water heater back on and try resetting error code. Use the reset button (A) to reset any error codes. 3. Possible defective control unit, call the Technical Assistance.

Table 21

\* By installer or service technician only.





Display	Cause	Solution
	Hot water temperature sensor (NTC) at the exit of the appliance detect a high temperature of the hot water. Temperature > 85°C	<ol style="list-style-type: none"> <li>1. Check the correct position and fixation of the NTC sensor.</li> <li>2. Check the electric connections and connectors of the hot water temperature sensor. Clean terminals if the terminals are rusted, replace the sensor and cables. Check resistance (see Fig. 3, [2]).</li> <li>3. Clean the water filter, any dirty time faucets and also all the water filters of the installation.</li> <li>4. In areas where water has a high mineral content, periodic descaling may necessary.</li> </ol>
	Cold water temperature sensor fault.	<ol style="list-style-type: none"> <li>1. Check connector on wires coming from top of water valve for a secure connection.</li> <li>2. Sensor may trip if water temperature drops below 2 °C. Protect heater from freezing conditions as any damage to freezing conditions is not covered under warranty.</li> <li>3. Check sensor.</li> </ol>
	Backflow temperature sensor over 150 °C. The appliance will close the burner and lock (non-volatile)	<ol style="list-style-type: none"> <li>1. Check inlet/outlet vent pipes.</li> <li>2. Check if secondary fan connections are disconnected.</li> <li>3. Check if venting specifications are met. Long vent lengths, venting with more than three elbows, blocked vent or combination venting may cause this failure.</li> <li>4. Call the Technical Assistance.</li> </ol>
	Overheat sensor (ECO) open circuit (resets when cooler temperatures are detected 104 °C).	<ol style="list-style-type: none"> <li>1. Disconnect power supply cord and check wire connections on the overheat sensor and the two connectors on the control board. see Fig. 2, [7].</li> <li>2. Check white wire connections to the overheat sensor. Clean terminals with an eraser. If badly corroded, replace sensor and wire harness.</li> <li>3. Check that venting specifications are met. Long vent lengths, venting with more than three elbows, blocked vent or combination venting may cause this failure.</li> <li>4. Clean the water filter, any dirty time faucets and also all the water filters of the installation.</li> <li>5. In areas where water has a high mineral content, periodic descaling may necessary.</li> <li>6. Unplug power supply cord to the water heater. Open a hot water tap for several minutes to allow cold water to pass through heat exchanger. Close hot water tap and disconnect wires to overheat sensor. Using a multimeter, check continuity through overheat sensor contacts. Replace sensor if open.</li> </ol>

Table 21

\* By installer or service technician only.





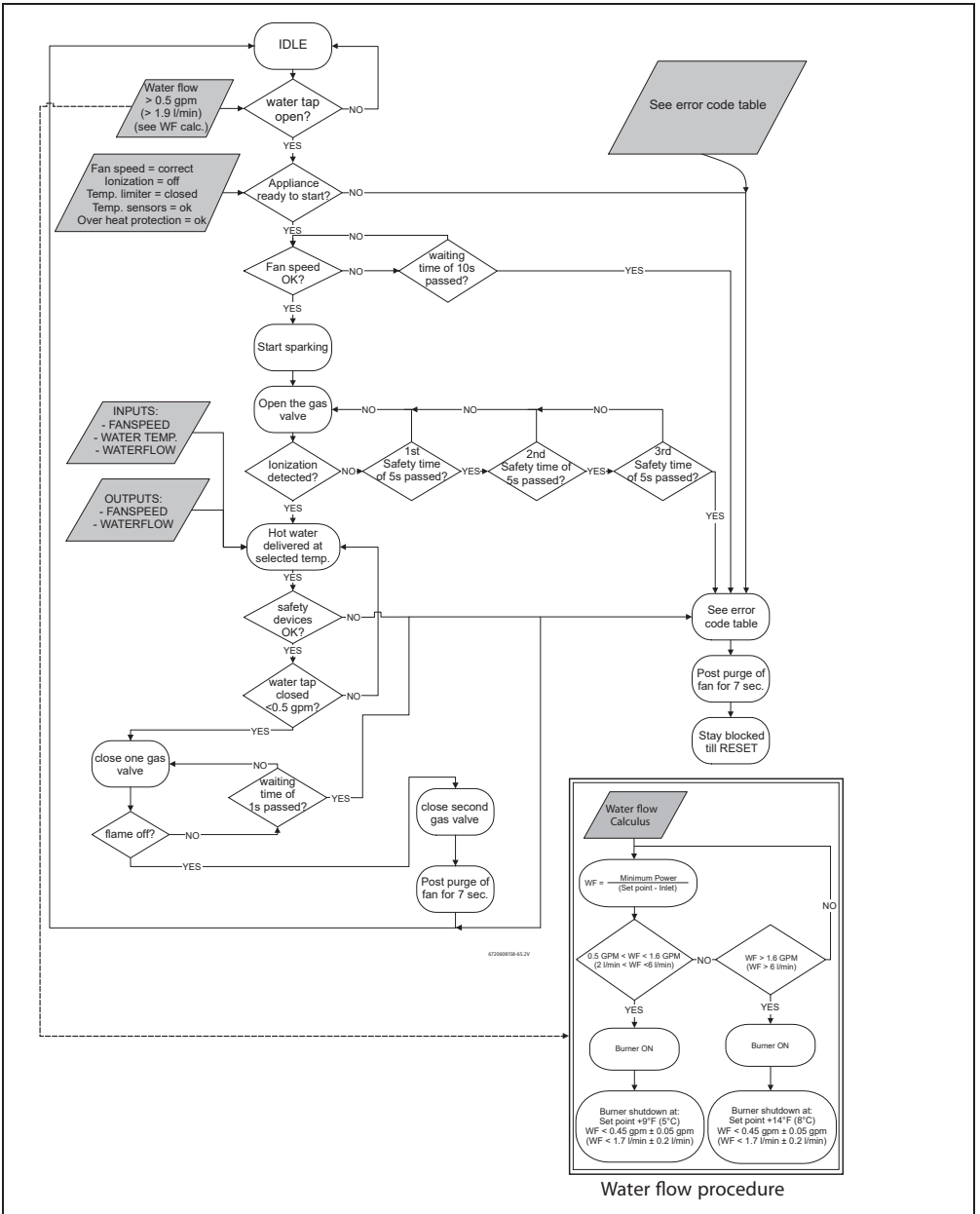
Display	Cause	Solution
	No flame ionization detected with water flow.	<ol style="list-style-type: none"><li>1. Verify that all manual shut off valves are open.</li><li>2. Check gas type.</li><li>3. Check gas pressure.</li><li>4. Reset error code and open a water tap to cycle the heater in an effort to purge air. Cycling hot water tap on and off multiple times may be necessary. If heater still faults with E1 error code, have a licensed gas technician properly purge air out of gas line leading to the water heater.</li><li>5. Check three wire connections on the lower front of the heat exchanger are secure.</li><li>6. Check venting specifications are met. Improper venting may cause premature failure of the flame sensor rod.</li><li>7. Check that the minimum power fan speed has been adjusted to the proper value. See chapter 8.6.</li><li>8. Observe inside the viewing window of the heat exchanger when a hot water tap is opened. Sparking should be followed by a steady blue flame. If flame is unstable/yellow with proper gas pressure, confirm CO readings.</li></ol>
	Ionization failure during operation.	<ol style="list-style-type: none"><li>1. Check gas type.</li><li>2. Check gas pressure.</li><li>3. Check three wire connections to ignition group on the lower front of the heat exchanger are secure.</li><li>4. Verify that venting specifications are met. Improper venting may cause premature failure of the flame sensor rod.</li><li>5. Check that the minimum power fan speed has been adjusted to the proper value. See chapter 8.6.</li><li>6. Check and adjust CO readings.</li></ol>
	Ionization error at standby.	<ol style="list-style-type: none"><li>1. Loose connection to the flame ionization rod. Verify that the thinner wire leading from the control unit is securely connected to the set of electrodes located on the lower front of the heat exchanger.</li><li>2. Flame ionization rod or control unit may be damaged. Call the Technical Assistance.</li></ol>
	Gas leakage error, gas valve circuit not closing properly.	<ol style="list-style-type: none"><li>1. Disconnect power supply cord and check wire connections on gas valve and the two connectors on the control board.</li><li>2. Flow water out of a hot water tap above the minimum activation point (1.9 l/m). Measure voltage at the gas valve wire plug connection. The voltage should measure 24VDC between the left pair of wires and 24VDC between the right pair of wires when the unit is operating. If voltage is not proper, call the Technical Assistance.</li><li>3. Gas valve may be defective, call the Technical Assistance.</li></ol>

Table 21

\* By installer or service technician only.

# 11 Functional scheme



## 12 Environmental protection

Environmental protection is a basic strategy of our company. The quality of our products, profitability and environmental protection are equal-ranking goals for us. Laws and regulations concerning environmental protection are strictly observed. We use the best possible technology and materials, under economic considerations, to protect the environment.

### Packaging

We participate in the recycling program of the respective country to ensure optimal recycling.

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

### Old appliances

Old appliances contain valuable materials that should be recycled.

The assemblies can be easily detached and synthetic materials are marked accordingly. The assemblies can therefore be sorted out and passed on for recycling or disposal.

I

## 13 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 and is 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 by 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.

## Notes



6720800095

Give It Gas - operates solely as an ONLINE BUSINESS

Tel: (011) 646 9439

Cell: (082) 452 4488

Email: [penny@giveitgas.co.za](mailto:penny@giveitgas.co.za)

[www.giveitgas.co.za](http://www.giveitgas.co.za)