

Operating Instructions

Wall hung gas fired condensing boiler

Worcester Commercial Boiler Series GB162-50/65/85/100 V2

For central heating systems and indirect fed domestic hot water



6720814332-0.1TD

**These appliances are for use with Natural Gas or L.P.G.
(Cat. II_{2H3P} type C₁₃, C₃₃ & C₅₃)**

	Model	GC Number
Natural Gas	50 kW	41-406-66
	65 kW	41-406-67

If you smell gas:

- ▶ Well away from the building: In Great Britain call the National Gas Emergency Service on 0800 111 999.
In Northern Ireland call 0800 002 001 and in Ireland call 1850 20 50 50
- ▶ L.P.G. boilers: Call the supplier's number on the side of the gas tank.



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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

Instructions for the target group

These operating instructions are intended for the heating system user.

All instructions must be observed. Failure to comply with instructions may result in material damage and personal injury, including possible loss of life.

- ▶ Read and retain the operating instructions (heat source, heating controller, etc.) prior to operation.
- ▶ Observe safety instructions and warnings.

If you smell gas

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

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

Correct use

The wall hung gas fired condensing boiler may only be used in sealed heating systems for central heating and Domestic Hot Water.

Any other use is not permitted. We assume no responsibility for damage caused by incorrect use.

Inspection and servicing

If there is a lack of cleaning, inspection or maintenance, or if these are carried out incorrectly, this may result in material damage and/or personal injury, including possible loss of life.

- ▶ Have work carried out only by an approved installer.
- ▶ Have any defects rectified immediately.
- ▶ Have the heating system inspected once a year by an approved Gas Safe registered contractor, and have any required maintenance or cleaning work carried out.
- ▶ We recommend that you enter into a contract covering an annual inspection and needs-based maintenance with an approved contractor.

Conversion and repairs

Modifications to the heat source or other parts of the heating system can result in personal injury and/or material damage.

- ▶ Have work carried out by an approved Gas Safe contractor only.
- ▶ Never remove the casing of the heat source.
- ▶ Never carry out any modifications to the heat source or to other parts of the heating system.
- ▶ Never close, block or obstruct the outlet of the pressure relief valves. Heating systems with DHW cylinder: During heat-up, water can escape from the pressure relief valve of the DHW cylinder.

Open flue operation

The installation location must be adequately ventilated, if the heat source draws its combustion air from the room.

- ▶ Never cover or reduce the size of ventilation apertures in doors, windows and walls.
- ▶ Consult a contractor to ensure that ventilation requirements are met:
 - if structural modifications are made (e.g. replacing windows and doors)
 - if appliances with an air discharge outside are subsequently installed (e.g. extractor fans, kitchen fans or air conditioning units).

Condensate pipe work

Condensate is produced in this boiler and removed via a condensate pipe to a drain. Modification or blocking of the condensate pipe work is not permitted.

Combustion air/ambient air

The air in the installation room must be free of combustible or chemically aggressive substances.

- ▶ Do not use or store combustible or explosive materials (paper, propellants, thinners, paints, etc.) within the vicinity of the appliance.
- ▶ Do not use or store corrosive substances (solvents, adhesives, chlorinated cleaning agents, etc.) within the vicinity of the appliance.

Appliance operation

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, if they have been given supervision or instruction concerning the use of the appliance, in a safe way, and understand the hazards involved.

Children shall not play with the appliance.

Cleaning and user maintenance shall not be made by children without supervision.

2 Product information

2.1 Declaration of Conformity



The design and operating characteristics of this product comply with the European and national requirements.

The CE marking declares that the product complies with all the applicable EU legislation, which is stipulated by attaching this marking.

The complete text of the Declaration of Conformity is available on the Internet (à address on the back cover of these instructions).

2.2 Appliance types

This document refers to the following appliance types:

- GB162-50 V2
- GB162-65 V2
- GB162-85 V2
- GB162-100 V2

The designation of the boiler comprises the following:

- Worcester: manufacturer
- GB162 V2: product name
- 50, 65, 85 or 100: type name (output)

2.3 Energy efficiency

The following product data satisfy the requirements of the EU Regulations No. 811/2013, No. 812/2013, No. 813/2013 and No. 814/2013 supplementing Directive 2010/30/EU.

Product data	Symbol	Unit	50-V2	65-V2	85-V2	100-V2
Product type	–	–	GB162-50 V2 G20	GB162-65 V2 G20	GB162-85 V2 G20	GB162-100 V2 G20
Condensing boiler	–	–	✓	✓	✓	✓
Low temperature boiler	–	–	✗	✗	✗	✗
B1 boiler	–	–	✗	✗	✗	✗
Cogeneration space heater (CHP)	–	–	✗	✗	✗	✗
Combination heater	–	–	✗	✗	✗	✗
Rated heat output	P_{Rated}	kW	47	63	80	95
Seasonal space heating energy efficiency	η_s	%	93	92	–	–
Energy efficiency class	–	–	A	A	–	–
Useful heat output						
At rated heat output and high temperature regime ¹⁾	P_4	kW	46.5	62.6	80.0	94.5
At 30 % of rated heat output and low temperature regime ²⁾	P_1	kW	15.4	20.8	26.5	31.2
Useful efficiency						
At rated heat output and high temperature regime ¹⁾	η_4	%	88.0	87.7	87.3	87.4
At 30 % of rated heat output and low temperature regime ²⁾	η_1	%	97.4	97.1	97.2	97.2
Auxiliary electricity consumption						
At full load	e_{max}	kW	0.041	0.082	0.100	0.100
At part load	e_{min}	kW	0.018	0.018	0.024	0.024
In standby mode	P_{SB}	kW	0.006	0.006	0.006	0.006
Other items						
Standby heat loss	P_{stby}	kW	0.088	0.088	0.088	0.088
Ignition burner power consumption	P_{ign}	kW	0.000	0.000	0.000	0.000
Emissions of nitrogen oxides	NOx	mg/kWh	15	24	21	35
Sound power level, indoors	L_{WA}	dB(A)	54	61	–	–

Table 2 Product data for energy consumption

1) High-temperature regime is defined as 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.

2) Low temperature for condensing boilers is defined as 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).

3 Operating the boiler

3.1 Overview of components

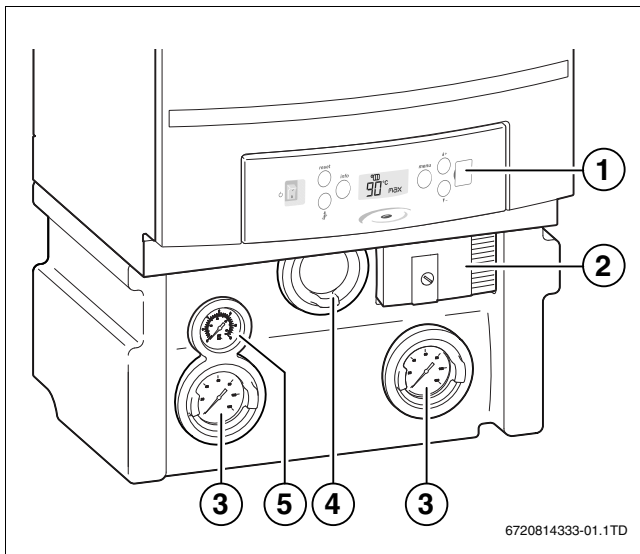


Fig. 1 Overview of components

- [1] Control panel
- [2] Pump
- [3] Hydraulic isolation valves with temperature gauges
- [4] Gas isolation valve
- [5] Pressure gauge

3.2 Opening the gas isolation valve

- ▶ Push the gas isolation valve in and turn anti-clockwise until the valve lines up with the gas line.

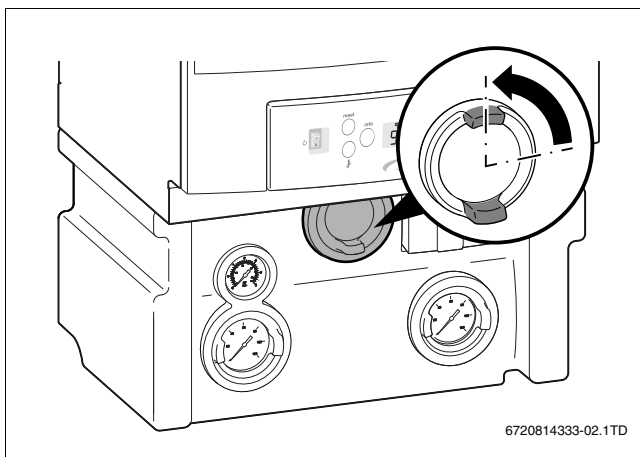


Fig. 2 Opening the gas isolation valve

3.3 Opening service valves

- ▶ Open both service valves so that the tap lines up with pipework.

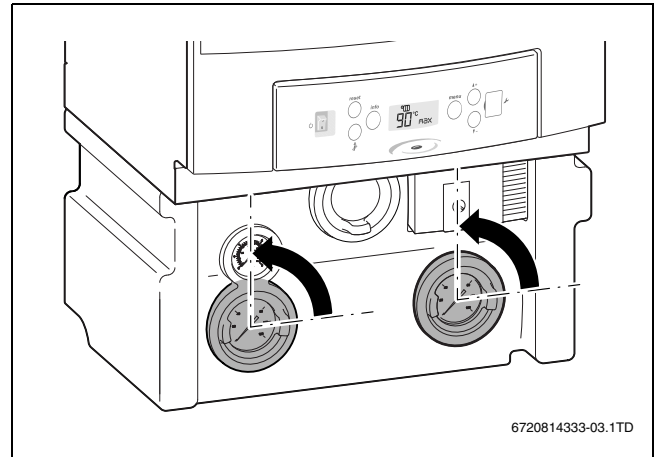


Fig. 3 Opening service valves

3.4 Switch on the boiler

- ▶ Put the on/off switch to position "1" (→ figure 5, [1]).

3.5 Check water pressure

For the boiler to work efficiently, the normal water pressure must be between 1.0 and 2.0 bar.

- ▶ Ask the installer whether a higher pressure is necessary.
- ▶ Read off the water pressure on the display (→ Chapter 4.1, page 6).
- ▶ Top up the heating system if necessary (→ Chapter 5.1, page 8).

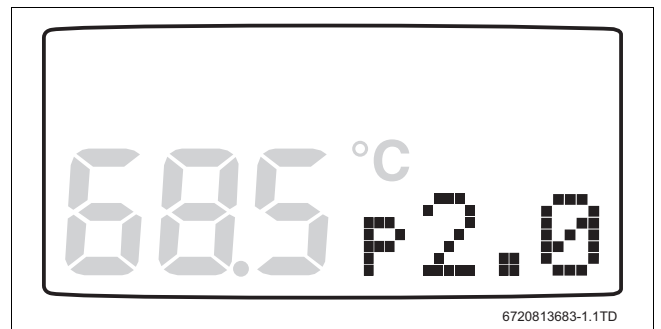


Fig. 4 Read off the water pressure

3.6 Setting the maximum boiler temperature

- ▶ Set the maximum boiler temperature required in the setup menu (→ Chapter 4.2).



The heating and DHW operations can be switched on and off independently of one another.

3.7 Heating controller settings

Some of the functions described in this document change when connecting a heating controller, i.e. room thermostat or weather-compensated controls. The controls exchange parameters with the boiler.

- ▶ You should therefore carefully read the operating instructions for the corresponding heating controls.

4 Operating the appliance

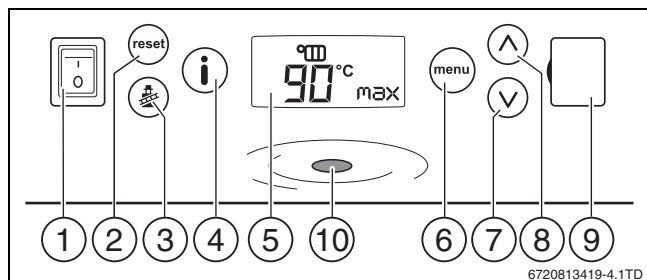


Fig. 5 Control panel


- [1] On/off switch
- [2] Reset key
- [3] Chimney sweep key
- [4] Help key
- [5] Display
- [6] Menu key
- [7] Down key
- [8] Up key
- [9] Diagnostic plug
- [10] Burner LED

The front of the boiler contains a control panel with the following elements:


On/off switch

The boiler can be switched on or off via the on/off switch. The power supply is not interrupted.


Reset key

The boiler can be restarted via the  key in the event of blocking faults (→ Chapter 7 “Display information”).

Chimney sweep key

The boiler can be brought into operation via the  key in order to carry out measurements. Used for servicing.

Info key

The boiler status can be read out via the  key.

Display

Display values, settings and codes can be read off the display. If the boiler is switched on via the mains isolator, all symbols appear briefly in the display.

Status display	
Display when the boiler is switched on (approx. 1 second)	
	20.0 Current flow temperature [°C]
	p2.0 Operating pressure [bar] (display flashes if the operating pressure is too low)
	Chimney sweep mode (service operation)
	Burner in operation
	Central heating
	DHW
	Pump running
	Outside temperature display
	service An interlocking fault has occurred or the boiler requires a service.

Table 3 Readings on the display

Menu key

To change the settings, open the menu via the  key.

Down and up keys

You can navigate the various menus via the arrow keys. Press an arrow key to change a setting or value.


Diagnostic plug

An external diagnostic tool can be connected here.





Burner LED

The Burner LED lights up when the burner is firing.

4.1 Information menu

 After a few minutes of inactivity, the menu closes automatically and the home screen is displayed.

Information on the status of the boiler can be read out via the information menu. Proceed as follows:

- ▶ Press  to open the information menu.
- ▶ Navigate the menu with  and  keys in order to read out the required data.
- ▶ Press  to exit the information menu.


Information menu	
	“info” is displayed for 1 second.
	Maximum boiler flow temperature set [°C] during heating mode and chimney sweep mode. “OFF” appears in the display when heating mode is switched off.
	No information about DHW mode is shown here.
	Display of service code. This information is only displayed if the boiler requires a service intervention. For a comprehensive overview of the display codes and corresponding explanations see Chapter 7.
	Displays an operating code or fault code. For a comprehensive overview of the display codes and corresponding explanations see Chapter 7.
	Current operating pressure [bar].
	Current boiler flow temperature [°C].
	Outside temperature [°C]. Only displayed with weather-compensated control.
	Calculated boiler flow temperature (setpoint) [°C] during heating mode  .

Table 4 Information menu

Information menu	
	Current ionisation current [μ A].
	Current burner output [%] during heating mode . Mod = modulation
	Current pump speed [%]. Mod = modulation

Table 4 Information menu

4.2 Setup menu

The boiler settings can be displayed and modified via the setup menu. Proceed as follows:

- ▶ Press to open the setup menu.
- ▶ Navigate the menu with and keys.
- ▶ Press and hold to access a setting. Once the setting flashes it can be modified.
- ▶ Change the setting via and keys.
- ▶ Press to save the setting. The setting no longer flashes.

The display values shown are the default settings.

Setup menu	
	"menu" is displayed for 1 second.
	Heating mode is switched on. Setting: On, Off.
	<ul style="list-style-type: none"> ▶ Set the maximum boiler flow temperature based on the heating system type. Adjustment range: 30 - 90 °C. Examples of settings: <ul style="list-style-type: none"> • 40 °C underfloor heating system • 75 - 85 °C radiators • 85 - 90 °C convectors
	<ul style="list-style-type: none"> ▶ Set the maximum output of the heating system. The output is displayed in % when modifying the setting. Adjustment range: 0 - 100%.
	No information about DHW mode is shown here.
	<ul style="list-style-type: none"> ▶ Change the minimum pump speed if required. Adjustment range: 30 % - max. (setting max. parameter). <ul style="list-style-type: none"> ▶ Increase the minimum pump speed if parts of the heating system do not become hot enough.

Table 5 Setup menu

Setup menu	
	<ul style="list-style-type: none"> ▶ Change the maximum pump speed if required. Adjustment range min. (setting min. parameter): <ul style="list-style-type: none"> • 50-V2 - 57% • 65-V2 - 65% • 85-V2 - 65% • 100-V2 - 83% <ul style="list-style-type: none"> ▶ Reduce the maximum pump speed if aggravating flow noises can be heard.
	Pump over-run time following end of heating demand [Min]. Adjustment range: 1 - 60 min./24 hours.

Table 5 Setup menu

4.3 Anti-Freeze Protection

Parts of the line may freeze during the cold season. Water permanently flows through the heating system which significantly reduces the probability of freezing.

- ▶ Check whether all radiator valves are open.
- ▶ Press to open the setup menu.
- ▶ Set the pump over-run time to 24 hours (→ Chapter 4.2).

If the boiler is switched off, see Chapter 6.2.

4.4 Key lock

The setup menu can be locked to prevent the settings from being changed by unauthorised personnel. Proceed as follows:

Activation

- ▶ Press the and keys simultaneously for 5 seconds. The word "Lock" is displayed for 5 seconds. The information menu remains readable.

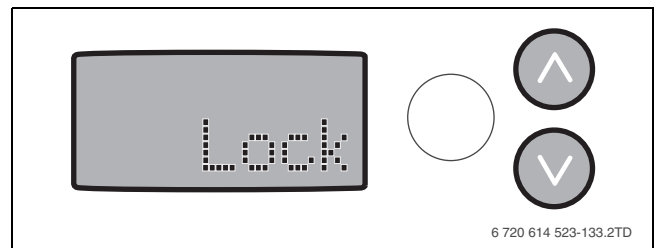


Fig. 6 Display - Lock

Disable

- ▶ Press the and keys again simultaneously for 5 seconds to remove the key block; the word "Lock" disappears.

5 Inspection and servicing

The user is responsible for ensuring the general safety and annual servicing of the heating system.

Recommendations:

- ▶ To ensure the boiler functions correctly, maintenance should be carried out annually by a certified installer.
- ▶ To do this, organise a maintenance and inspection contract.

5.1 Refilling the heating system

Every heating system is refilled with heating water in different ways, depending on the water quality.

- ▶ You should therefore ask the installer to explain the refilling process to you at system handover.
- ▶ If persistent refilling is required then please contact a qualified contractor, it is likely that a leak exists

5.2 Cleaning the casing

- ▶ Only clean the casing of the boiler with a damp cloth and possibly a mild detergent.

6 Shutdown

6.1 Standard shutdown

- ▶ Put on/off switch in position "0".
- ▶ Close the gas isolation valve under the boiler (→ figure 2).

6.2 Shutting down when there is a risk of frost

If the boiler stays on:

- ▶ Set the pump over-run time to 24 hours (→ Chapter 4.2).
- ▶ Make sure that sufficient flow to all radiators is possible.

If the boiler is switched off:

- ▶ Put on/off switch in position "0".
- ▶ Close the gas isolation valve under the boiler.
- ▶ Drain the entire heating system.

7 Display information

7.1 Display codes

A display code provides information about the status of the boiler. Fault codes are either shown in the display directly or can be called up via the information menu. Proceed as follows:

- ▶ Navigate the menu to the fault code level. Press and toggle with and .
- ▶ Identify the fault code and search for the corresponding explanation (→ table 6).
- ▶ Implement the solution to eliminate the fault.

There are 3 types of code:

- normal operating code
- blocking fault code
- interlocking fault code

For safety reasons, the boiler shuts down and locks as soon as a fault occurs. This is indicated by an illuminated fault code. The boiler must be reset in order to unlock it. Proceed as follows:

- ▶ Hold pressed down until "rE" appears in the display.
In most cases, the boiler will work again normally following the reset.

If the fault code still persists contact your installer, stating the appliance type and fault code. Alternatively please contact Worcester Technical Support (contact details on the back cover of this guide).

Code	Explanation	Corrective measure
-- 2 0 0	The boiler is in heating mode.	
-- 2 0 1	The boiler is in DHW mode.	
-- 2 0 2	The boiler cannot transfer the heat to the heating system.	<ul style="list-style-type: none"> • Check whether a sufficient number of radiator valves are open. • Bleed radiators/heating system. • Reset the boiler.
-- 2 0 3	The boiler is in standby mode, there is no heat demand.	
-- 2 0 4	The boiler cannot transfer the heat to the heating system.	
-- 2 1 2	The sensors inside the boiler detected unexpected temperatures.	<ul style="list-style-type: none"> • Check whether a sufficient number of radiator valves are open. • Bleed radiators and vent heating system. • Reset the boiler.
-- 2 6 0		
-- 2 6 5	The boiler is waiting. The boiler duly switches on in order to satisfy the heat demand.	
-- 2 7 0	The boiler starts.	
-- 2 8 3		
-- 2 8 4		
[E 2 0 7	The water pressure is too low.	<ul style="list-style-type: none"> • Check the water pressure of the boiler and top up if necessary. • Reset the boiler.
[E 2 6 6	The sensors inside the boiler detected unexpected temperatures.	<ul style="list-style-type: none"> • Check the water pressure of the boiler and top up if necessary. • Check whether a sufficient number of radiator valves are open. • Bleed radiators and vent heating system. • Reset the boiler.
d 4 2 1 3	The sensors inside the boiler detected unexpected temperatures.	<ul style="list-style-type: none"> • Check whether a sufficient number of radiator valves are open. • Bleed radiators and vent heating system. • Reset the boiler.
d 4 3 4 7		
E 9 2 1 9	The sensors inside the boiler detected unexpected temperatures.	<ul style="list-style-type: none"> • Check whether a sufficient number of radiator valves are open. • Bleed radiators and vent heating system. • Reset the boiler.
E 9 2 2 0		

Table 6 Operating and fault codes

Code	Explanation	Corrective measure
E 9 2 2 4	The temperature measured by a thermostat in the boiler is too high.	<ul style="list-style-type: none"> • Check the water pressure of the boiler and top up if necessary. • Check whether a sufficient number of radiator valves are open. • Bleed radiators and vent heating system. • Reset the boiler.
E R 2 2 7	No burner ignition.	<ul style="list-style-type: none"> • Check that the gas isolator is open. • Reset the boiler.
E 9 2 7 6 E 9 2 8 5	The temperature measured by the sensors in the boiler is too high.	<ul style="list-style-type: none"> • Check the water pressure of the boiler and top up if necessary. • Check whether a sufficient number of radiator valves are open. • Bleed radiators and vent heating system. • Reset the boiler.
E F 3 4 5	The sensors inside the boiler detected unexpected temperatures.	<ul style="list-style-type: none"> • Check whether a sufficient number of radiator valves are open. • Bleed radiators and vent heating system. • Reset the boiler.
F d 2 3 7	The power was briefly interrupted during a fault.	<ul style="list-style-type: none"> • Reset the boiler.
H 0 7	The water pressure is too low.	<ul style="list-style-type: none"> • Check the water pressure of the boiler and top up if necessary.
r E	The boiler is reset.	

Table 6 Operating and fault codes

7.2 A fault has occurred but no fault code is displayed

It is possible that even though a fault code is not displayed the boiler does not operate according to your expectations. You should then check the following:

Heating system does not heat up.

- ▶ Check in the information menu whether a fault code is displayed and try to remedy the fault.
- ▶ Check the set boiler temperature in the setup menu.
- ▶ Check the settings of the heating controller by referring to its manual.

If the fault code still persists contact your installer.

- ▶ Note the fault code.
- ▶ State the appliance type and serial number. These are listed on the right-hand side of the boiler.

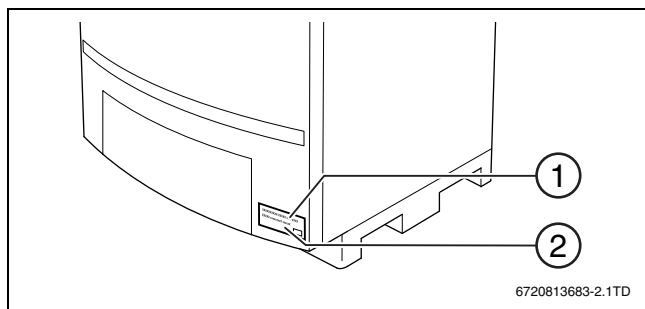


Fig. 7 Right-hand side of the boiler

- [1] Serial number
- [2] Device type

8 Energy saving and environmental protection

8.1 Energy savings

Efficiency optimised

The boiler has been designed to keep gas consumption and environmental pollution to a minimum and to maximise comfort. The gas supply to the burner is controlled according to the heat demand of the heating system.

The boiler operates with a "modulating control." This control adjusts the gas consumption in relation to the existing heat energy demand. The modulating control reduces temperature fluctuations so the heat is distributed evenly in the rooms.

The modulating control enables the boiler to still use less gas when burning continuously than a boiler which is continuously being switched on and off.

Underfloor heating system

- ▶ Never set the flow temperature higher than the maximum flow temperature recommended by the installer.

Living space ventilation

Do not ventilate by leaving the windows slightly open. This draws heat continuously from the room without significantly improving the quality of the room air.

- ▶ Ventilate the room intermittently. Close the doors of the room to be ventilated.
- ▶ Turn down the thermostatic valves of the radiator(s) in the room when ventilating it.

8.2 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 cost-effectiveness.

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.

Old appliance

Old appliances contain recyclable materials. The assemblies are easily separated and the types of plastic are clearly marked. In this way the individual components can be easily sorted and directed to recycling or disposal.

Notes

Notes

Worcester, Bosch Group
Cotswold Way, Warndon, Worcester WR4 9SW.
Tel. 0330 123 9559

Worcester, Bosch Group is a brand name of Bosch Thermotechnology Ltd.
worcester-bosch.co.uk

6720814333

WORCESTER, BOSCH GROUP:

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SPARES: 0330 123 9779
LITERATURE: 0330 123 9119
TRAINING: 0330 123 0166
SALES: 0330 123 9669

