

RINNOVA COND



User manual and
installation
instructions

CE

 **BIASI**

Congratulations on choosing this product.

Your modulating boiler is electronically adjusted and ignited.

- It is highly efficient
- It has a sealed chamber.

Unlike traditional boilers, your condensing boiler makes it possible to recover energy by condensing the water vapour contained in the flue gas. This means that, with equal heat production, it **consumes less gas**, and the flue gas contains **fewer substances that are harmful** to the environment.

The materials used and the control systems offer safety, high levels of comfort and energy savings so you can appreciate the maximum advantages of autonomous heating.



GENERAL WARNINGS



- ✓ This manual contains important information aimed at:
 - Users (section 1);
 - Installers (section 2);
 - Maintenance technicians (section 3).
- ✓ Users must read the instructions in the relevant section carefully (section 1).
- ✓ Users must only perform work on the appliance where explicitly stated in the relevant section.
- ✓ Improper installation or assembly of the appliance and/or components, accessories, kits and devices supplied with the product may cause unforeseeable problems for people, animals or property. Please read the instructions provided with the product for information on how to install the product correctly.
- ✓ This instruction manual contains technical product installation information. As regards other topics related to product installation (e.g. occupational safety, accident prevention and protecting the environment), you must observe the legislation in force and codes of practice.
- ✓ Maintenance must be performed by qualified technicians e.g. at an authorised service centre, so as to guarantee a professional service.
- ✓ Any errors occurring during installation, or while using or servicing the appliance, caused by a failure to observe the technical legislation and regulations in force or the instructions in this manual (or otherwise provided by the manufacturer) will exclude the manufacturer from all contractual and non-contractual liability for any damage caused and will void the appliance warranty.

IMPORTANT

- ✓ **The manual** must be read carefully to ensure rational and safe use of the boiler. It must be stored with care as it may be necessary to consult it in the future. If the unit is transferred to another owner, the manual must accompany the boiler.
- ✓ **The initial switch-on** must be carried out by an Authorised Service Centre; the validity of the warranty starts from the date the product is purchased.
- ✓ **The manufacturer** declines all liability for translations of this manual from which incorrect interpretations may result. It cannot be considered responsible for failure to observe the instructions contained in this manual or the consequences of any actions that have not been specifically described.

DURING INSTALLATION

- ✓ After removing the packaging, make sure that the appliance **is not damaged**. If damaged **do not install or start up** the appliance as it may be dangerous. Contact your retailer or the nearest authorised service centre.
- ✓ **Installation** must be carried out by qualified professionals who are responsible for compliance with all applicable national and local laws and standards:
 - the suitability of the installation site;
 - the robustness of the wall intended for installation;
 - the distance of the appliance from walls and surrounding objects;
 - correct hook-up to the gas system;
 - correct and safe set-up of the of air supply and combustion products evacuation system;
 - correct hook-up to the electrical power supply and earth circuit;
 - compliance with the technical specifications.
- ✓ **The boiler** is used to heat water to a temperature that is lower than boiling point, and must be connected to a heating system and/or a domestic hot water distribution network that is compatible with its performance and power.

The boiler must be supplied with **Methane gas (G20) or LPG (Propane G31)**.
The condensate discharge must be connected to the residential condensate outlet duct and it must be possible to inspect it (UNI 7129-5 and related standards).
The boiler must only be used for the purpose for which it was designed. Furthermore:

 - It must not be exposed to atmospheric agents.
 - The appliance can be used by children no younger than 8 years old, by people with physical, sensory or cognitive disabilities, and by people lacking experience or the necessary knowledge, provided that they are supervised or have received instructions on the safe use of the appliance and understand the inherent risks. Do not let children play with the appliance. Do not allow unsupervised children to perform user maintenance and cleaning.
 - Prevent incorrect use of the boiler.
 - Avoid making adjustments to the sealed devices.
 - Avoid contact with hot parts during operation.

DURING USE

- ✓ **It is prohibited and dangerous** to obstruct, even partially, the air intakes for the ventilation of the room where the boiler is installed (UNI 7129-2 and related standards);
- ✓ **Repairs** must only be carried out by authorised service centres using original spare parts. Therefore, in the case of a problem, deactivate the boiler only (see instructions).
- ✓ **If you smell gas:**
 - Do not turn on electric switches, the telephone or any other object that could create sparks.
 - Immediately open up the doors and windows to create an air current that cleans the room.
 - Close the gas cocks.
 - Request the intervention of professionally qualified personnel.
- ✓ **Before starting the boiler**, have a qualified professional check that the gas supply system:
 - Is perfectly sealed.
 - Is the right size for the required flow rate to the boiler.
 - Is equipped with the safety and control devices required by current standards;
 - Make sure that the installer has connected the safety valve drain to a outlet funnel. The manufacturer is not responsible for damage caused by the water released when the safety valve opens, if it is not correctly connected to a drainage system.
 - Make sure that the installer has connected the condensate siphon drain to a specific outlet funnel (UNI 7129-5 and related standards), which must be implemented in order to avoid the condensate freezing and ensure it is correctly drained.
- ✓ **Near the boiler:**
 - there must be an all-pole disconnection switch to isolate the appliance from the electric power supply;
 - a gas shut-off valve to interrupt the flow of fuel.
- ✓ **Do not touch the unit** with wet or damp body parts and/or in bare feet.
- ✓ **If performing structural work or maintenance** near the flue gas ducts and/or the flue gas exhaust devices or their accessories, turn off the unit and, when the work is complete, have a qualified technician check the efficiency.



DANGER: Instructions marked with this symbol must be observed to prevent mechanical or generic accidents (e.g. injuries or bruises).



DANGER: Instructions marked with this symbol must be observed to avoid electrical accidents (electrocution).



DANGER: Instructions marked with this symbol must be observed to avoid the risk of fire or explosions.



DANGER: Instructions marked with this symbol must be observed to avoid heat-related accidents (burns).



WARNING: Instructions marked with this symbol must be observed to avoid malfunctions and/or material damage to the unit or other items.



WARNING: Instructions marked with this symbol contain important information that must be read carefully.



WARNING: Risk of cutting / stabbing. Protective gloves must be worn.

Appliance category: II2H3P (gas G20 20 mbar, G31 37 mbar)

Destination country: GB

This unit is compliant with the following European Directives:

- Regulation (EU) 2016/426 on appliances burning gaseous fuels
- Boiler Efficiency Directive: Article 7(2) and Annex III of 92/42/EEC
- Electromagnetic Compatibility Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Directive 2009/125/EC Ecodesign requirements of energy-related products
- Regulation (EU) 2017/1369 Energy labelling
- Delegated regulation (EU) no. 811/2013
- Delegated regulation (EU) no. 813/2013
- Delegated regulation (EU) no. 814/2013 (where applicable)

In order to constantly improve its products, the manufacturer reserves the right to change the data provided in this documentation at any time and without notice.

This documentation is provided for information purposes and cannot be considered as a contract with third parties.

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<i>Models</i>	<i>Boiler certification code</i>
RINNOVA COND 24S	M275V.2024 SM
RINNOVA COND 28S	M275V.2428 SM
RINNOVA COND 32S	M275V.2832 SM

BOILER DESCRIPTION

1 BOILER DESCRIPTION

1.1 Assembly view

The boiler model and serial number are printed on the warranty certificate.

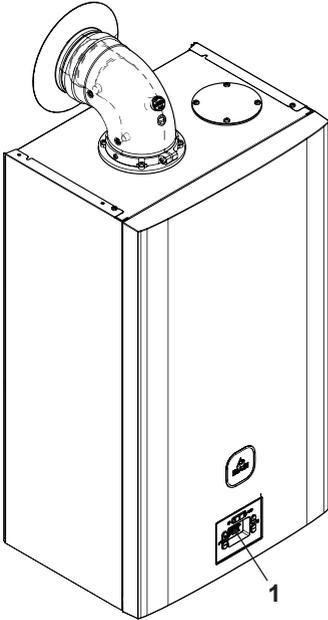


Figure 1.1

- 1 Control panel

1.2 Shut-off valves and cocks

Install a shut-off cock for the DHW inlet.

The figures in this manual only show one of the possible ways of installing cocks, pipes and fittings.

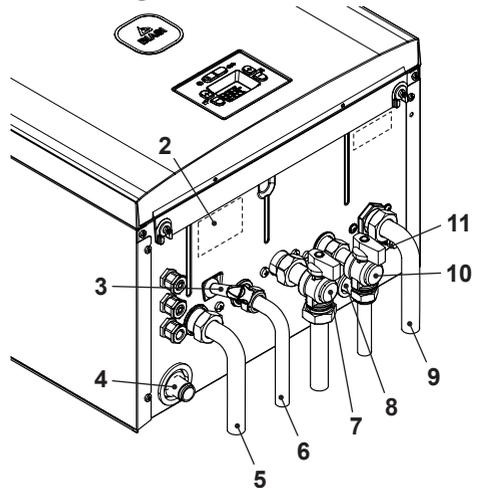


Figure 1.2

- 2 Gas supply label
- 3 Heating circuit filling cock
- 4 Condensate outlet pipe
- 5 Heating delivery pipe
- 6 Domestic hot water outlet pipe
- 7 Gas cock
- 8 Heating circuit safety valve discharge pipe
- 9 Heating return pipe
- 10 Domestic hot water inlet cock
- 11 Heating circuit drain cock

BOILER DESCRIPTION

1.3 Control panel

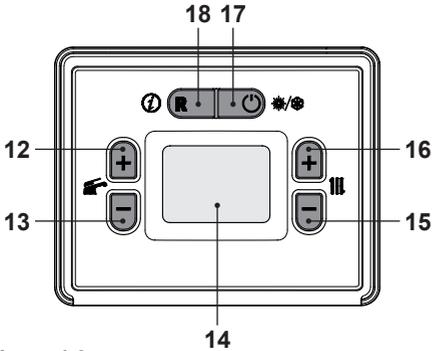


Figure 1.3

- 12 Domestic hot water temperature increase button
- 13 Domestic hot water temperature decrease button
- 14 LCD display
- 15 Heating temperature decrease button
- 16 Heating temperature increase button
- 17 Stand-by/Winter/Summer button
- 18 Reset button

1.4 General LCD characteristics

For the boiler technical specifications, consult the section "TECHNICAL SPECIFICATIONS" on page 18.

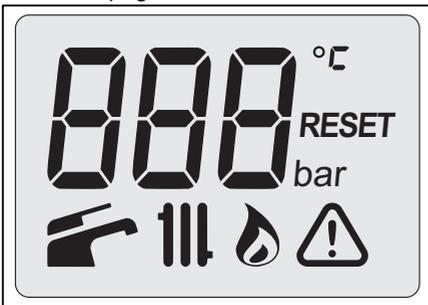


Figure 1.4

KEY

	The symbol indicates a volatile error. The boiler is reactivated automatically once the fault has been resolved
	The symbol indicates that the boiler can be restarted directly by the user by pressing the reset button
	All symbols with lines radiating from them indicate that the symbol is flashing

LCD SIGNALS

LCD	FUNCTION
E01 + RESET	Safety lockout due to failed ignition
E02 + RESET	Lockout due to safety thermostat
E03 + RESET	EEPROM error
E04 + !	Pump circulation failure or insufficient system pressure
E05 + !	Fan control anomaly
E06 + !	Heating NTC probe failure
E07 + !	DHW NTC probe failure
E08 + !	External NTC probe failure
E09 + !	Flue gas NTC probe failure (interruption)
E10 + !	Lockout due to tripping of the flue gas probe
E11 + !	Parasite flame
E12 + !	Return NTC probe failure

BOILER DESCRIPTION

LCD	FUNCTION
E13 + 	High heating pressure
E14 + 	Temperature gradient circulation failure (>2K/s)
E22 + RESET	Heating delivery temperature between 90°C and 100°C
E25 + 	Boiler in antifreeze
E26 + RESET	Gas valve fault
E28 + 	Tank NTC probe failure
E50 + 	Communication with remote control lost
E52 + RESET	Maximum number of remote unlock attempts
E54 + RESET	Heating water filling function ended but pressure is below minimum value for boiler filling
E58 + RESET	Heating water filling function ended but pressure is above maximum value for boiler filling
OFF	Boiler off, (antifreeze protection active)
	Boiler in winter (heating/DHW) and stand-by
	Boiler in summer (DHW only) and stand-by
 45 °C	Boiler with DHW power request. The DHW temperature is displayed.

LCD	FUNCTION
65 °C 	Boiler with heating power request. The temperature of the primary heating circuit is displayed.
	Burner ignition (discharge)
	Flame detected (burner ignited)
 5 °C	Boiler in DHW anti-freeze phase (the  symbol flashes)
 5 °C	Boiler in heating anti-freeze phase (the  symbol flashes)
78 °C 	Heating set (all other symbols are disabled)
46 °C 	DHW set temperature (all other symbols are disabled)
 45 °C	Boiler in chimney sweep function. To activate the chimney sweep function, set "parameter P06≠0". 1 = minimum power 2 = maximum DHW power 3 = maximum heating power
	During the the chimney sweep function, the  and/or  symbols do not flash.

USER INSTRUCTIONS

2 USER INSTRUCTIONS

2.1 Warnings



Check that the heating circuit is correctly filled with water, even if the boiler is only used for producing domestic hot water.

If it is not, proceed with filling; see section "Filling the heating circuit" on page 14.

All boilers have an antifreeze system that is activated if the temperature falls below 5°C; therefore **do not turn off the boiler**.

If the boiler is not used during cold periods, with the resulting risk of freezing, follow the instructions in section "Antifreeze protection" on page 15.

2.2 Ignition

- The boiler cocks and the cocks used during installation must be open (Figure 2.1).

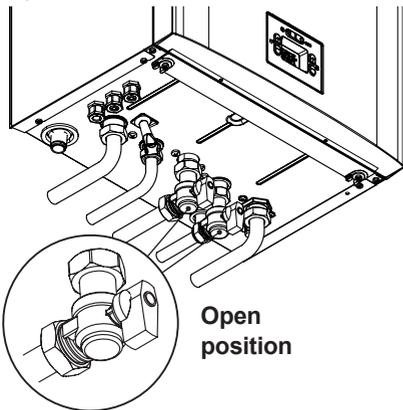


Figure 2.1

- Power the boiler by turning on the multi-way switch fitted during installation. The LCD display shows the **OFF** status (only the heating and DHW antifreeze functions are active) Figure 2.2.



Figure 2.2

Heating/DHW operation

- Press and hold 17 until both symbols  and  appear on the display.

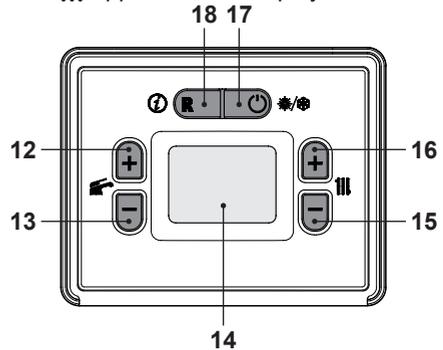


Figure 2.3

The LCD display shows the stand-by status and the  and  symbols (Figure 2.4).

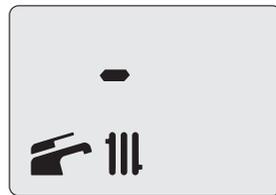


Figure 2.4

Operation with production of hot water only

- Press 17 until the symbol  appears on the display Figure 2.5.

USER INSTRUCTIONS

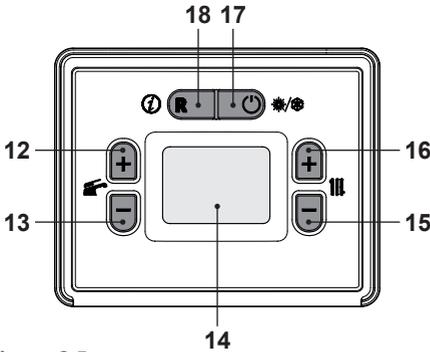


Figure 2.5

The LCD display shows the stand-by status and the  symbol (Figure 2.6).

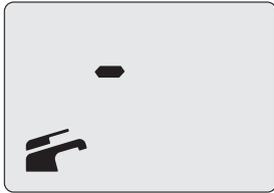


Figure 2.6

2.3 Heating circuit temperature

The heating delivery hot water temperature can be adjusted using the 15 (decrease) and 16 (increase) buttons (Figure 2.5) from a minimum of approx. 25°C to a maximum of approx. 85°C or from a minimum of approx. 50°C to a maximum of 80°C or from a minimum of approx. 25°C to a maximum of 55°C (see "Selecting the heating temperature set" on page 47). The first time one of these two buttons is pressed the "set" value is displayed; the second time it is pressed this can be changed.

Signal on the LCD display:

- the "set" value of the heating delivery hot water temperature and the  symbol (Figure 2.7).

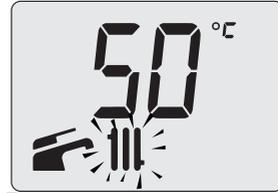


Figure 2.7

Adjusting the heating temperature based on the outdoor temperature (without external sensor)

Adjust the heating delivery hot water temperature as follows:

- from 27 to 35 with an outdoor temperature of between 5°C and 15°C
- from 35 to 60 with an outdoor temperature of between -5°C and +5°C
- from 60 to 80 with an outdoor temperature of below -5°C.

Your qualified installer may suggest more suitable settings for your system.

The set temperature has been reached when the  symbol is not visible on the LCD display.

Heating power demand

When the boiler receives a heating power request, the display shows the  symbol followed by an increase in the heating delivery water temperature. The  symbol flashes (Figure 2.8).

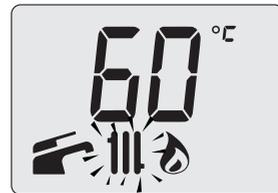


Figure 2.8

Adjusting the heating temperature with an external sensor installed

When the optional external sensor is installed, your boiler will automatically adjust

USER INSTRUCTIONS

the heating system's delivery water temperature according to the outdoor temperature.

In this case, the boiler must be set by a qualified installer (see "Enabling operation with the external sensor and setting the K coefficient" on page 44).

If the room temperature is not comfortable, you can increase or decrease the heating system delivery temperature by $\pm 15^{\circ}\text{C}$ using the 15 (decrease) and 16 (increase) buttons (Figure 2.5).

2.4 Domestic hot water temperature

The domestic hot water temperature can be adjusted using the 12 (increase) and 13 (decrease) buttons (Figure 2.5) from a minimum of approx. 30°C to a maximum of approx. 60°C . The first time one of these two buttons is pressed, the "set" value is displayed. The second time it is pressed, the value can be changed.

Signal on the LCD display:

- the "set" value of the domestic hot water and the  symbol flash. The display background lights up (Figure 2.9).

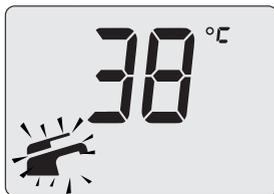


Figure 2.9

Adjustments

Adjust the temperature of the domestic hot water to a value that suits your needs. Limit the need to mix hot water with cold water.

In this way, you can take full advantage of the automatic setting.

If the water is particularly hard, we recom-

mend setting the boiler temperature to below 50°C .

In such cases, we recommend installing a water softener in the DHW system.

If the maximum flow rate of the domestic hot water is too high for a sufficient temperature to be reached, contact an authorised support technician to install a flow rate limiter.

Domestic hot water demand

When the boiler receives a request for domestic hot water, the display shows the  symbol followed by an increase in the temperature of the domestic hot water. The  symbol flashes (Figure 2.10).



Figure 2.10

2.5 Shutdown

Press 17 (Figure 2.11) until the message **OFF** appears on the LCD display (Figure 2.12).

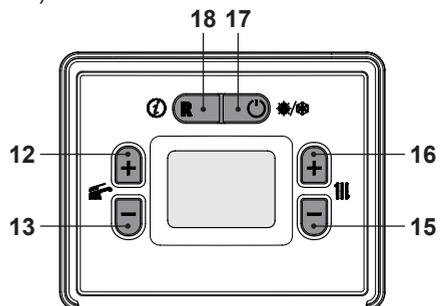


Figure 2.11

USER INSTRUCTIONS



Figure 2.12

In **OFF** mode, the antifreeze protection is active.

If the boiler will be inactive for a long period of time:

- Disconnect the boiler from the electric power supply;
- Close the boiler cocks Figure 2.13;

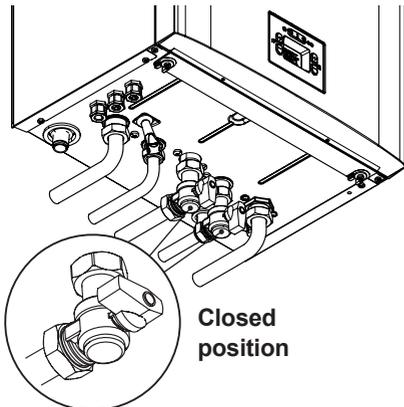


Figure 2.13

- If necessary, empty the hydraulic circuits (see section "Emptying the DHW circuit" on page 62 and section "Emptying the heating circuit" on page 62).

USER

USEFUL TIPS

3 USEFUL TIPS

3.1 Filling the heating circuit

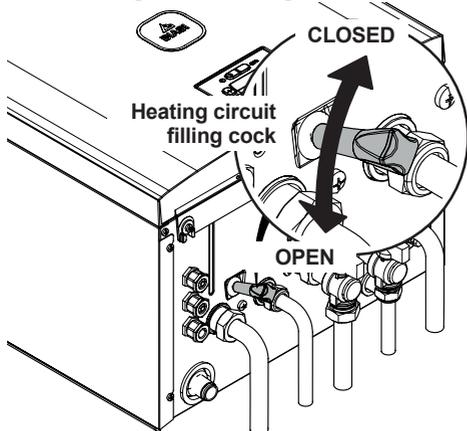


Figure 3.1

Access INFO mode by pressing and holding 18 (Figure 3.2) for 5 seconds until the code n02 shows on the display (Figure 3.3).

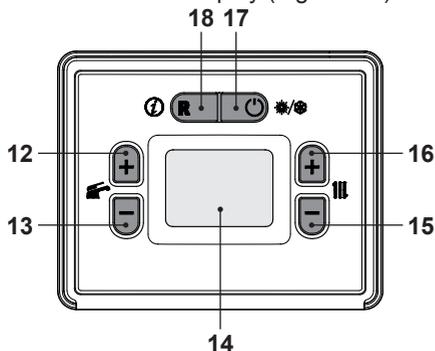


Figure 3.2



Figure 3.3

Press 12 (increase) to scroll through the

values until the code n10 "heating water pressure" and a pressure value of 1.3 bar (Figure 3.4) appear on the display.



Figure 3.4

Open the filling cock in Figure 3.1 located under the boiler and at the same time check the heating circuit pressure on the display. The pressure must be between 1 bar and 1.5 bar (Figure 3.4).

When the operation is complete, close the filling cock and bleed any air from the radiators.

Press 17 and hold for 5 seconds to exit INFO mode (Figure 3.2).

3.2 Heating

For rational and economical service, have a room thermostat installed.

Never turn off the radiator in the room where the room thermostat is installed.

If a radiator (or convector) does not heat up, check if there is any air in the system and make sure that the cock is open.

If the room temperature is too high, do not adjust the radiator cocks but decrease the heating temperature setting using the room thermostat or the heating control buttons 15 and 16 (Figure 3.5).

USEFUL TIPS

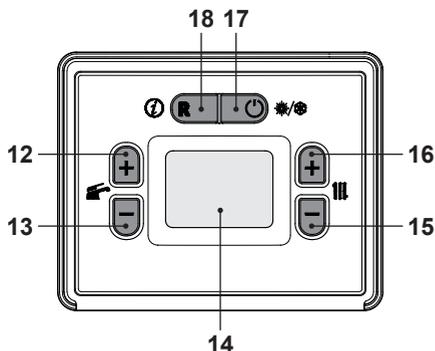


Figure 3.5

3.3 Antifreeze protection

The antifreeze system, and any additional protective devices, safeguard the boiler against possible damage due to freezing. This system does not guarantee protection for the entire hydraulic system.

Where the outdoor temperature could fall below 0°C, it is recommended to leave the entire system on, setting the room thermostat to a low temperature.

The antifreeze function is active even if the boiler is in **OFF** (Figure 3.6).



Figure 3.6

If the boiler is turned off, have a qualified technician empty the boiler (heating and DHW circuit) and empty the heating system and the DHW system.

3.4 Periodic maintenance

For efficient and regular boiler operation, it is recommended that the boiler be serviced and cleaned at least once a year by a technician from an authorised service centre.

During this check, the most important boiler components are inspected and cleaned. This check may be performed within the scope of a maintenance contract.

3.5 External cleaning

Before performing any cleaning operation, disconnect the boiler from the electric mains supply.

To clean, use a cloth soaked in soap and water.

Do not use: Solvents, flammable substances or abrasive substances.

3.6 Operating anomalies

If the boiler is not working and an error code flashes on the display and the  symbol is shown, it is a volatile lockout. The boiler is reactivated automatically once the fault has been resolved (see "General LCD characteristics" on page 8); the boiler is in lockout mode (Figure 3.7).



Figure 3.7

Each fault is classified according to the level of priority. If more than one faults are detected at the same time, the most urgent error code is shown.



Frequent safety lockouts should be reported to an authorised service centre.

USEFUL TIPS

Other possible anomalies shown on the LCD display

If an error code, the  symbol and the **RESET** symbol are shown on the LCD display, the lockout is NOT volatile (Figure 3.8).

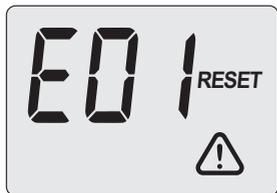


Figure 3.8

To restore operation, press the reset button 18 (Figure 3.5) on the boiler control panel.

Air bubble noises

Check the pressure of the heating circuit and fill it if necessary, see section "Filling the heating circuit" on page 14.

Low system pressure

Add more water to the heating system. To do this, refer to section "Filling the heating circuit" on page 14.

The user is responsible for periodically checking the pressure of the heating system.

If water needs to be added too often, have the technical support centre check if there are any leaks in the heating system or the boiler itself.

Water leaks from the safety valve

Check if the filling cock is closed tightly (see "Filling the heating circuit" on page 14).

Check on the pressure gauge that the heating circuit pressure is not close to 3 bar. Should this be the case, drain a part of the water from the system through the air relief valves in the radiators in order to reduce the pressure to a normal value.

 In the case of malfunctions other than those described above, shut down the boiler as described in section "Shutdown" on page 12 and call a technician from the authorised service centre.

3.7 Displays in INFO mode

INFO mode is used to view boiler status information. In the case of a boiler malfunction, provide this information to the service centre so that they can work out its causes.

To access INFO mode, press 18 (Figure 3.9) and hold for 5 seconds until the code **n02** shows on the display (Figure 3.10).

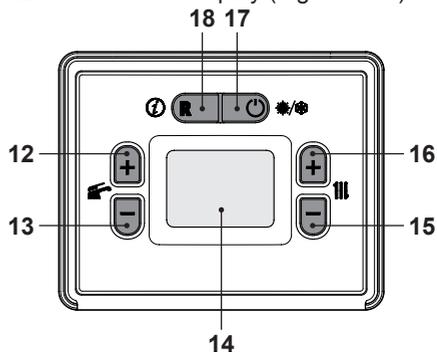


Figure 3.9



Figure 3.10

To scroll through the values, press 12 (increase) and 13 (decrease). Press 17 and hold for 5 seconds to exit INFO mode (Figure 3.9).

The table summarises the possible values visible in INFO mode.

USEFUL TIPS

Table of contents	Value shown
n02	DHW output temp.
n03	NTC return temperature (not present)
n04	Flue gas temperature (not present)
n05	Outdoor temperature
n08	Maximum set fan speed (RPM/100)
n10	Heating circuit pressure
n11	DHW flow rate
n14	PWM pump speed percentage
n15	Fan speed (RPM/100)
n20	(not used)
n21	Last error code
n22	Second-to-last error code
n26	Calculated heating set point (with climatic curve or configured set)
n29	Number of weeks remaining until maintenance due

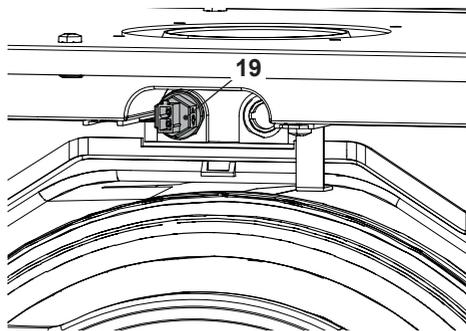


Figure 3.11

3.8 Flue thermal fuse



Tripping of the flue gas thermal fuse involves a safety lockout, and requires resetting by an Authorised Service Centre.

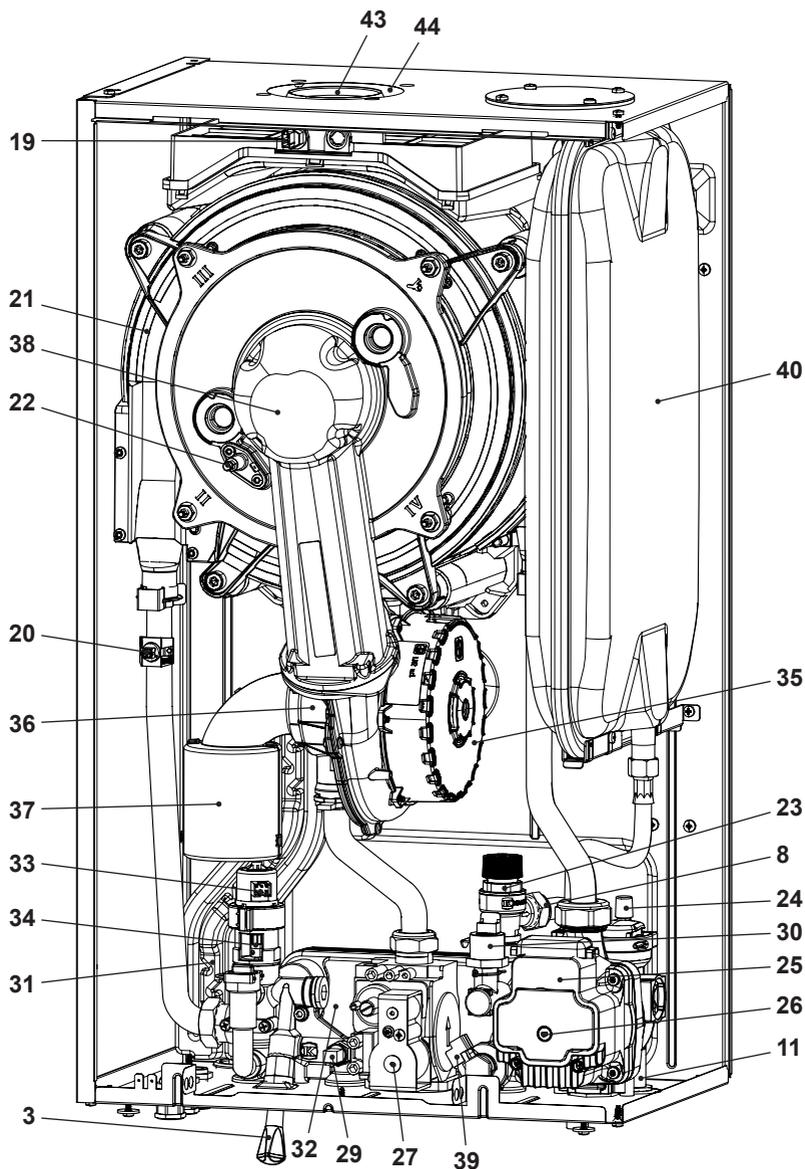
The flue thermal fuse 19, indicated in Figure 3.11, is a safety device that protects the flue gas outlet duct, sending the boiler into safety lockout mode and switching it off.

To restore the normal operation of the boiler, contact the Authorised Service Centre.

TECHNICAL SPECIFICATIONS

4 TECHNICAL SPECIFICATIONS

4.1 Assembly view



INSTALLER

Figure 4.1

TECHNICAL SPECIFICATIONS

4.2 Schematic diagram

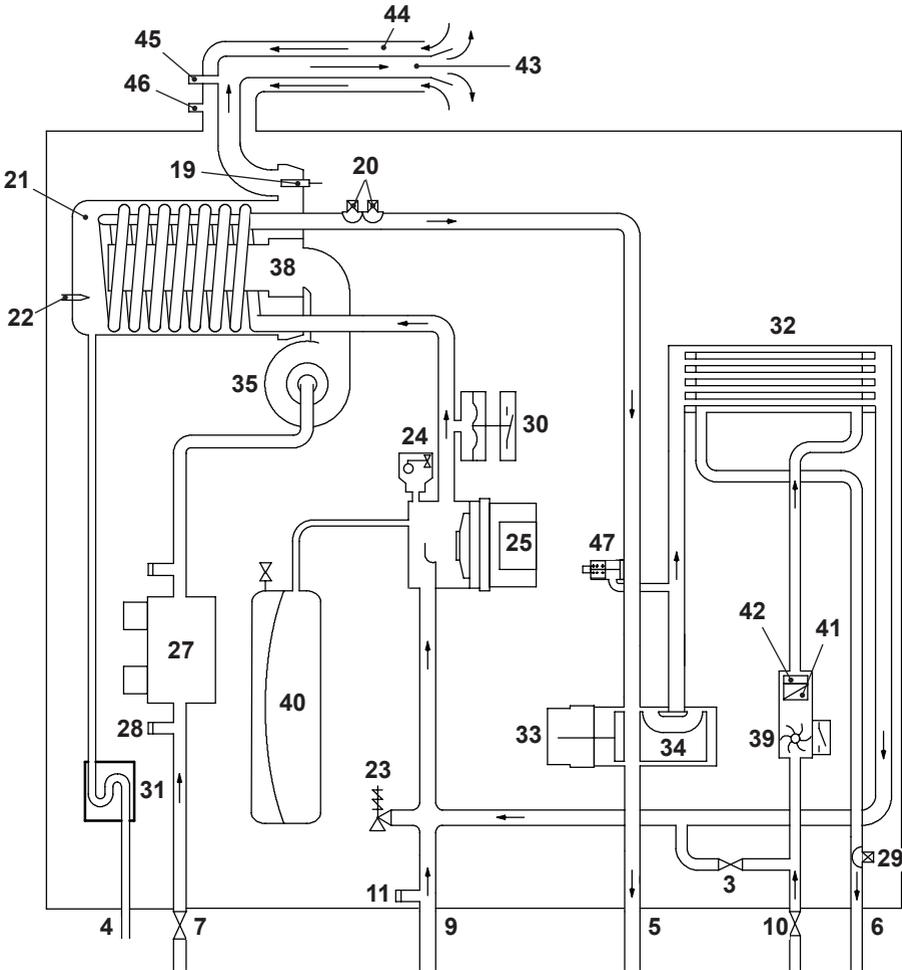


Figure 4.2

- | | |
|---|---|
| 3 Heating circuit filling cock | 10 Domestic hot water inlet cock |
| 4 Condensate outlet pipe | 11 Heating circuit drain cock |
| 5 Heating delivery pipe | 19 Flue thermal fuse |
| 6 Domestic hot water outlet pipe | 20 Heating NTC - Max temperature NTC |
| 7 Gas cock | 21 Primary condensing exchanger |
| 8 Heating circuit safety valve discharge pipe | 22 Flame detection electrode/ignition electrode |
| 9 Heating return pipe | 23 3 bar safety valve |

INSTALLER

TECHNICAL SPECIFICATIONS

- 24 Automatic bleed valve
- 25 Pump
- 26 Pump bleed cap
- 27 Gas valve
- 28 Gas valve inlet tapping point
- 29 DHW NTC probe
- 30 Heating transducer
- 31 Condensate outlet siphon
- 32 DHW exchanger
- 33 Three-way valve
- 34 Three-way valve plug
- 35 Fan
- 36 Air/gas mixer
- 37 Silencer
- 38 Burner
- 39 DHW flowmeter
- 40 Expansion tank
- 41 Domestic hot water filter
- 42 DHW flow rate limiter (optional)
- 43 Flue gas exhaust duct
- 44 Air suction duct
- 45 Flue gas suction inlet
- 46 Air suction inlet
- 47 Integrated by-pass

* To access the *Data plate*, remove the front panel from the body as described in the *Maintenance* section.

TECHNICAL SPECIFICATIONS

4.3 Wiring diagram

1	Electrical power supply	4	Pump	7	Heating transducer	10	Flue gas thermostat
2	Gas valve	5	Ignition and detection electrode	8	DHW NTC	11	Three-way valve
3	Fan	6	Remote control / room thermostat cable	9	Heating NTC - Max. delivery temperature NTC	12	DHW flowmeter

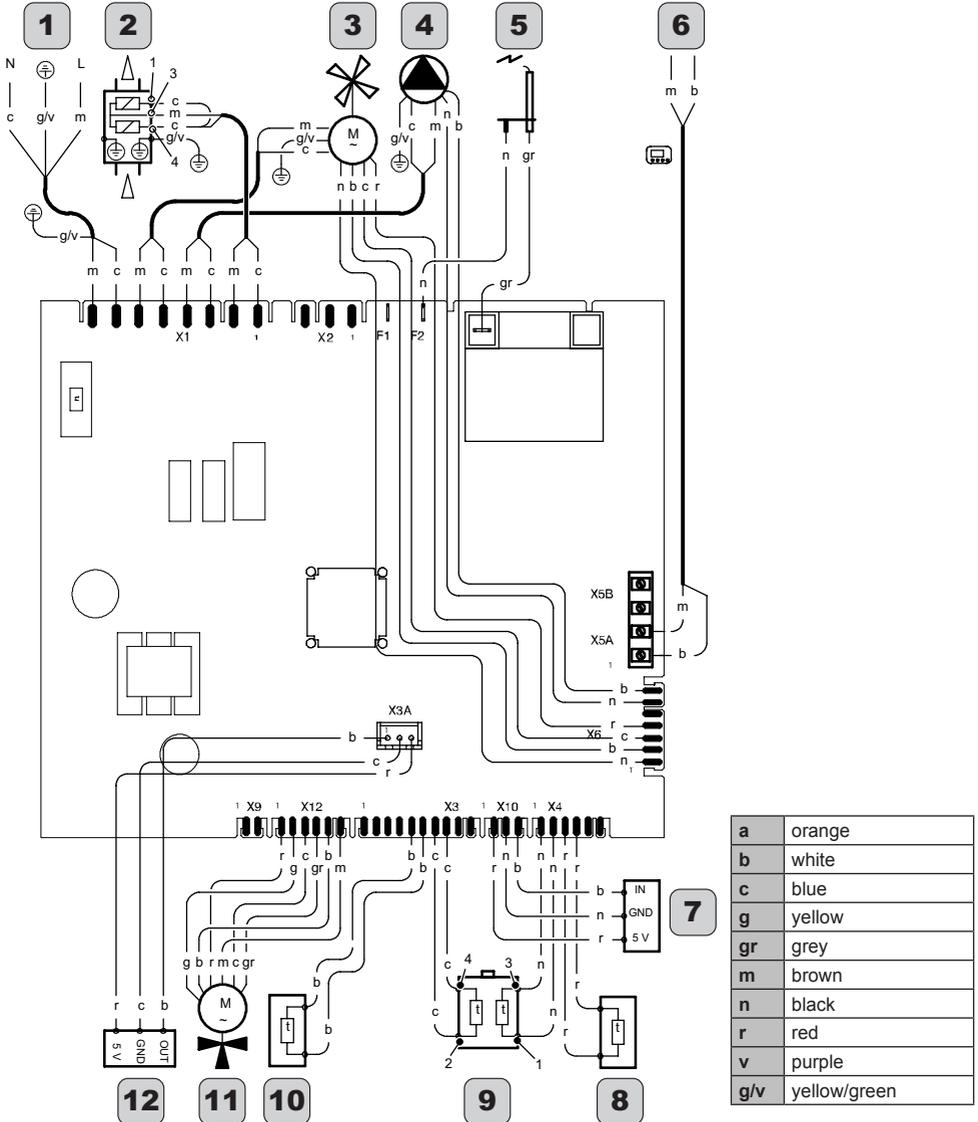


Figure 4.3

INSTALLER

TECHNICAL SPECIFICATIONS

4.4 Technical data M275V.2024 SM

(nom.Q.) Nominal heat input in heating mode (Hi)	kW	21,0
	kcal/h	18057
(nom.Q.) Nominal heat input in d.h.w. mode (Hi)	kW	25,0
	kcal/h	21496
(nom.Q.) Minimum heat input (Hi)	kW	5,1
	kcal/h	4385
* Max. heat input in heating mode 60°/80°C	kW	20,6
	kcal/h	17713
* Max. heat input in d.h.w. mode 60°/80°C	kW	24,6
	kcal/h	21152
* Min. heat input 60°/80°C	kW	4,8
	kcal/h	4127
** Max. heat input in heating mode 30°/50°C	kW	22,6
	kcal/h	19433
** Max. heat input in d.h.w. mode 30°/50°C	kW	26,9
	kcal/h	23130
** Min. heat input 30°/50°C	kW	5,3
	kcal/h	4557

Data in heating mode		
NOx class		6
Weighted NOx ***	mg/kWh	29
	ppm	16
Weighted CO EN483 (0% O2)	ppm	n.a.
CO at nom. Q. (0% O2) ***	ppm	140,0
CO at nom. Q. (0% O2) ***	ppm	15,0
CO2 at nom. Q. with G20	%	9,0 - 9,6
CO2 at min. Q. with G20	%	8,2 - 8,8
CO2 at nom. Q. with G31	%	10,2 - 10,8
	%	9,4 - 10,0
** Condensate quantity at nom.Q. 30°/50°C	l/h	4,0
** Condensate quantity at min.Q. 30°/50°C	l/h	0,8
Condensate pH	pH	4,0

Data in d.h.w. mode		
CO2 at nom. Q. with G20	%	9,1 - 9,7
CO2 at min. Q. with G20	%	8,2 - 8,8
CO2 at nom. Q. with G31	%	10,3 - 10,9
	%	9,4 - 10,0

* With return water temperature that does not permit condensation

** With return water temperature that does permits condensation

*** With coax. flue gas discharge 60/100 0.9 m and METHANE gas G20

Measured efficiency in heating mode		
* Nominal efficiency 60°/80°C	%	98,2
* Min. efficiency 60°/80 C	%	94,1
** Nominal efficiency 30°/50°C	%	107,5
** Min. efficiency 30°/50°C	%	104,9
** Efficiency At 30 % of load	%	109,1
Heat loss at the chimney with burner operating	Pf (%)	1,6
Heat loss at the chimney with burner off ΔT 50°C	Pfbs (%)	0,2
Heat loss towards the environment through the casing with the burner operating	Pd (%)	0,2

Gas supply pressures			
Gas		Pa	mbar
Methane G20	Nom.	2000	20
	Min.	1700	17
	Max.	2500	25
Propane G31	Nom.	3700	37
	Min.	2500	25
	Max.	4500	45

TECHNICAL SPECIFICATIONS

Gas rate maximum - central heating		
Methane G20	m ³ /h	2,22
Propane G31	kg/h	1,63
Gas rate maximum - domestic hot water		
Methane G20	m ³ /h	2,65
Propane G31	kg/h	1,94
Gas rate minimum - ch dhw		
Methane G20	m ³ /h	0,54
Propane G31	kg/h	0,40

Gas diaphragm	Ø mm /100	
Methane G20	465	
Propane G31	370	
Air/gas mixer diaphragm		
Methane G20	18 yellow	18 giallo
Propane G31	18 yellow	18 giallo

Heating		
Adjustable temperature *	°C	25-85
Max. operating temp.	°C	90
Maximum pressure	kPa	300
	bar	3,0
Minimum pressure	kPa	30
	bar	0,3
Available pressure difference (at 1000 l/h)	kPa	38,5
	bar	0,385

* At minimum useful power

Domestic hot water		
Temp. Minimum-Maximum	°C	30 - 60
Maximum pressure	kPa	1000
	bar	10
Minimum pressure	kPa	30
	bar	0,3
Maximum flow rate		
(ΔT=25 K)	l/min	14,3
(ΔT=35 K)	l/min	10,0
Minimum flow rate	l/min	2,5
Specific d.h.w. flow rate (ΔT=30 K) *	l/min	12,0

* Reference standard EN 625

Chimney design #		
Max. flue gas temperature at 60°/80°C	°C	82
Max. flue gas temperature at 30°/50°C	°C	52
Max. flue gas mass flow rate	kg/s	0,0111
Min. flue gas mass flow rate	kg/s	0,0025
Max. air mass flow rate	kg/s	0,0107
Min. air mass flow rate	kg/s	0,0024

Values refer to tests with 80 mm 1 + 1 twin pipe discharge Methane gas G20 and heat input in d.h.w. mode

Electrical data		
Voltage	V	230
Frequency	Hz	50
Output at nominal heat input	W	91
Output in stand-by	W	3
Degree of protection	IPX5D	

INSTALLER

TECHNICAL SPECIFICATIONS

Other characteristics		
Height	mm	703
Width	mm	400
Depth	mm	295
Weight	kg	29,3
Water content in boiler	dm ³	2
Min. ambient temperature	°C	n.a.
Max. ambient temperature	°C	n.a.

Flue gas discharges		
Boiler type		
B23P C13 C33 C43 C53 C63 C83 C93		
Coaxial air/flue gas duct Ø	mm	60/100
Twin pipe air/flue gas duct Ø	mm	80/80
Coaxial air/flue gas duct to roof Ø	mm	80/125

G20 Hi. 34.02 MJ/m³ (15°C, 1013.25 mbar)

G31 Hi. 46.34 MJ/kg (15°C, 1013.25 mbar)

1 mbar corresponds to approx. 10 mm H₂O

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TECHNICAL SPECIFICATIONS

4.5 Technical data M275V.2428 SM

(nom.Q.) Nominal heat input in heating mode (Hi)	kW	25,0
	kcal/h	21496
(nom.Q.) Nominal heat input in d.h.w. mode (Hi)	kW	29,0
	kcal/h	24936
(nom.Q.) Minimum heat input (Hi)	kW	5,1
	kcal/h	4385
* Max. heat input in heating mode 60°/80°C	kW	24,5
	kcal/h	21066
* Max. heat input in d.h.w. mode 60°/80°C	kW	28,4
	kcal/h	24420
* Min. heat input 60°/80°C	kW	4,8
	kcal/h	4127
** Max. heat input in heating mode 30°/50°C	kW	26,9
	kcal/h	23130
** Max. heat input in d.h.w. mode 30°/50°C	kW	31,1
	kcal/h	26741
** Min. heat input 30°/50°C	kW	5,3
	kcal/h	4557

Data in heating mode		
NOx class		6
Weighted NOx ***	mg/kWh	28
	ppm	16
Weighted CO EN483 (0% O2)	ppm	n.a.
CO at nom. Q. (0% O2) ***	ppm	180,0
CO at nom. Q. (0% O2) ***	ppm	15,0
CO2 at nom. Q. with G20	%	9,0 - 9,6
CO2 at min. Q. with G20	%	8,2 - 8,8
CO2 at nom. Q. with G31	%	10,2 - 10,8
	%	9,4 - 10,0
** Condensate quantity at nom.Q. 30°/50°C	l/h	4,6
** Condensate quantity at min.Q. 30°/50°C	l/h	0,8
Condensate pH	pH	4,0

Data in d.h.w. mode		
CO2 at nom. Q. with G20	%	9,1 - 9,7
CO2 at min. Q. with G20	%	8,2 - 8,8
CO2 at nom. Q. with G31	%	10,3 - 10,9
	%	9,4 - 10,0

* With return water temperature that does not permit condensation

** With return water temperature that does permits condensation

*** With coax. flue gas discharge 60/100 0.9 m and METHANE gas G20

Measured efficiency in heating mode		
* Nominal efficiency 60°/80°C	%	98
* Min. efficiency 60°/80 C	%	94,1
** Nominal efficiency 30°/50°C	%	107,4
** Min. efficiency 30°/50°C	%	104,9
** Efficiency At 30 % of load	%	108,9
Heat loss at the chimney with burner operating	Pf (%)	1,8
Heat loss at the chimney with burner off ΔT 50°C	Pfbs (%)	0,2
Heat loss towards the environment through the casing with the burner operating	Pd (%)	0,2

Gas supply pressures			
Gas		Pa	mbar
Methane G20	Nom.	2000	20
	Min.	1700	17
	Max.	2500	25
Propane G31	Nom.	3700	37
	Min.	2500	25
	Max.	4500	45

INSTALLER

TECHNICAL SPECIFICATIONS

Gas rate maximum - central heating		
Methane G20	m ³ /h	2,65
Propane G31	kg/h	1,94
Gas rate maximum - domestic hot water		
Methane G20	m ³ /h	3,07
Propane G31	kg/h	2,25
Gas rate minimum - ch dhw		
Methane G20	m ³ /h	0,54
Propane G31	kg/h	0,40

Gas diaphragm	Ø mm /100	
Methane G20	465	
Propane G31	370	
Air/gas mixer diaphragm		
Methane G20	18 yellow	18 giallo
Propane G31	18 yellow	18 giallo

Heating		
Adjustable temperature *	°C	25-85
Max. operating temp.	°C	90
Maximum pressure	kPa	300
	bar	3,0
Minimum pressure	kPa	30
	bar	0,3
Available pressure difference (at 1000 l/h)	kPa	38,5
	bar	0,385

* At minimum useful power

Domestic hot water		
Temp. Minimum-Maximum	°C	30 - 60
Maximum pressure	kPa	1000
	bar	10
Minimum pressure	kPa	30
	bar	0,3
Maximum flow rate		
(ΔT=25 K)	l/min	16,5
(ΔT=35 K)	l/min	11,5
Minimum flow rate	l/min	2,5
Specific d.h.w. flow rate (ΔT=30 K) *	l/min	13,8

* Reference standard EN 625

Chimney design #		
Max. flue gas temperature at 60°/80°C	°C	85
Max. flue gas temperature at 30°/50°C	°C	56
Max. flue gas mass flow rate	kg/s	0,0129
Min. flue gas mass flow rate	kg/s	0,0025
Max. air mass flow rate	kg/s	0,0124
Min. air mass flow rate	kg/s	0,0024

Values refer to tests with 80 mm 1 + 1 twin pipe discharge Methane gas G20 and heat input in d.h.w. mode

Electrical data		
Voltage	V	230
Frequency	Hz	50
Output at nominal heat input	W	114
Output in stand-by	W	3
Degree of protection	IPX5D	

TECHNICAL SPECIFICATIONS

Other characteristics		
Height	mm	703
Width	mm	400
Depth	mm	295
Weight	kg	31,3
Water content in boiler	dm ³	2
Min. ambient temperature	°C	n.a.
Max. ambient temperature	°C	n.a.

Flue gas discharges		
Boiler type		
B23P C13 C33 C43 C53 C63 C83 C93		
Coaxial air/flue gas duct Ø	mm	60/100
Twin pipe air/flue gas duct Ø	mm	80/80
Coaxial air/flue gas duct to roof Ø	mm	80/125

G20 Hi. 34.02 MJ/m³ (15°C, 1013.25 mbar)

G31 Hi. 46.34 MJ/kg (15°C, 1013.25 mbar)

1 mbar corresponds to approx. 10 mm H₂O

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TECHNICAL SPECIFICATIONS

4.6 Technical data M275V.2832 SM

(nom.Q.) Nominal heat input in heating mode (Hi)	kW	27,5
	kcal/h	23646
(nom.Q.) Nominal heat input in d.h.w. mode (Hi)	kW	32,0
	kcal/h	27515
(nom.Q.) Minimum heat input (Hi)	kW	6,2
	kcal/h	5331
* Max. heat input in heating mode 60°/80°C	kW	27
	kcal/h	23216
* Max. heat input in d.h.w. mode 60°/80°C	kW	31,3
	kcal/h	26913
* Min. heat input 60°/80°C	kW	5,8
	kcal/h	4987
** Max. heat input in heating mode 30°/50°C	kW	29,9
	kcal/h	25709
** Max. heat input in d.h.w. mode 30°/50°C	kW	34,8
	kcal/h	29923
** Min. heat input 30°/50°C	kW	6,6
	kcal/h	5675

Data in heating mode		
NOx class		6
Weighted NOx ***	mg/kWh	33
	ppm	19
Weighted CO EN483 (0% O2)	ppm	n.a.
CO at nom. Q. (0% O2) ***	ppm	190,0
CO at nom. Q. (0% O2) ***	ppm	10,0
CO2 at nom. Q. with G20	%	9,0 - 9,6
CO2 at min. Q. with G20	%	8,2 - 8,8
CO2 at nom. Q. with G31	%	10,2 - 10,8
	%	9,4 - 10,0
** Condensate quantity at nom.Q. 30°/50°C	l/h	5,1
** Condensate quantity at min.Q. 30°/50°C	l/h	1,0
Condensate pH	pH	4,0

Data in d.h.w. mode		
CO2 at nom. Q. with G20	%	9,1 - 9,7
CO2 at min. Q. with G20	%	8,2 - 8,8
CO2 at nom. Q. with G31	%	10,3 - 10,9
	%	9,4 - 10,0

* With return water temperature that does not permit condensation

** With return water temperature that does permits condensation

*** With coax. flue gas discharge 60/100 0.9 m and METHANE gas G20

Measured efficiency in heating mode		
* Nominal efficiency 60°/80°C	%	98,2
* Min. efficiency 60°/80 C	%	94,0
** Nominal efficiency 30°/50°C	%	108,6
** Min. efficiency 30°/50°C	%	105,7
** Efficiency At 30 % of load	%	109,0
Heat loss at the chimney with burner operating	Pf (%)	1,6
Heat loss at the chimney with burner off ΔT 50°C	Pfbs (%)	0,2
Heat loss towards the environment through the casing with the burner operating	Pd (%)	0,2

Gas supply pressures			
Gas		Pa	mbar
Methane G20	Nom.	2000	20
	Min.	1700	17
	Max.	2500	25
Propane G31	Nom.	3700	37
	Min.	2500	25
	Max.	4500	45

TECHNICAL SPECIFICATIONS

Gas rate maximum - central heating		
Methane G20	m ³ /h	2,91
Propane G31	kg/h	2,14
Gas rate maximum - domestic hot water		
Methane G20	m ³ /h	3,39
Propane G31	kg/h	2,49
Gas rate minimum - ch dhw		
Methane G20	m ³ /h	0,66
Propane G31	kg/h	0,48

Gas diaphragm	Ø mm /100	
Methane G20	570	
Propane G31	430	
Air/gas mixer diaphragm		
Methane G20	21 blue	21-blu
Propane G31	21 blue	21-blu

Heating		
Adjustable temperature *	°C	25-85
Max. operating temp.	°C	90
Maximum pressure	kPa	300
	bar	3,0
Minimum pressure	kPa	30
	bar	0,3
Available pressure difference (at 1000 l/h)	kPa	38,5
	bar	0,385

* At minimum useful power

Domestic hot water		
Temp. Minimum-Maximum	°C	30 - 60
Maximum pressure	kPa	1000
	bar	10
Minimum pressure	kPa	30
	bar	0,3
Maximum flow rate		
(ΔT=25 K)	l/min	18,4
(ΔT=35 K)	l/min	12,9
Minimum flow rate	l/min	2,5
Specific d.h.w. flow rate (ΔT=30 K) *	l/min	15,4

* Reference standard EN 625

Chimney design #		
Max. flue gas temperature at 60°/80°C	°C	83
Max. flue gas temperature at 30°/50°C	°C	57
Max. flue gas mass flow rate	kg/s	0,0142
Min. flue gas mass flow rate	kg/s	0,0030
Max. air mass flow rate	kg/s	0,0137
Min. air mass flow rate	kg/s	0,0029

Values refer to tests with 80 mm 1 + 1 twin pipe discharge Methane gas G20 and heat input in d.h.w. mode

Electrical data		
Voltage	V	230
Frequency	Hz	50
Output at nominal heat input	W	106
Output in stand-by	W	3
Degree of protection	IPX5D	

INSTALLER

TECHNICAL SPECIFICATIONS

Other characteristics		
Height	mm	703
Width	mm	400
Depth	mm	295
Weight	kg	31,3
Water content in boiler	dm ³	2,5
Min. ambient temperature	°C	n.a.
Max. ambient temperature	°C	n.a.

Flue gas discharges		
Boiler type		
B23P C13 C33 C43 C53 C63 C83 C93		
Coaxial air/flue gas duct Ø	mm	60/100
Twin pipe air/flue gas duct Ø	mm	80/80
Coaxial air/flue gas duct to roof Ø	mm	80/125

G20 Hi. 34.02 MJ/m³ (15°C, 1013.25 mbar)

G31 Hi. 46.34 MJ/kg (15°C, 1013.25 mbar)

1 mbar corresponds to approx. 10 mm H₂O

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TECHNICAL SPECIFICATIONS

4.7 Hydraulic characteristics

The hydraulic characteristics represent the pressure (head) available in the heating system based on the flow rate.

Model M275V.2024 SM

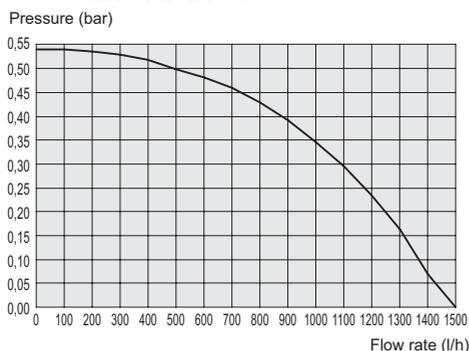


Figure 4.4

Model M275V.2428 SM - M275V.2832 SM

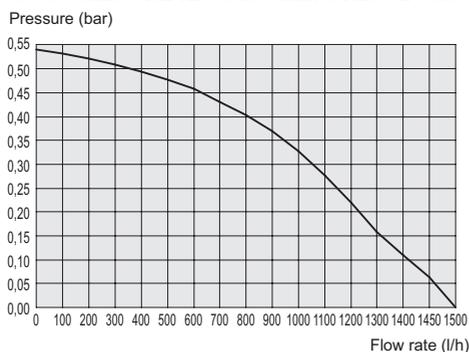


Figure 4.5

The load loss for the boiler has already been subtracted.

Flow rate with the thermostatic cocks closed

The boiler has an automatic by-pass, which protects the primary condensate exchanger. If the circulation of water in the heating system decreases too much or totally stops due to the closure of thermostatic valves or circuit cocks, the by-pass guarantees a minimum circulation of water inside the primary

condensate exchanger.

The by-pass is calibrated for a differential pressure of approx. 0.3-0.4 bar.

4.8 Expansion vessel

The difference in height between the safety valve and the highest point in the system can be max. 10 metres.

If differences are greater, increase the pre-load pressure of the expansion tank and the cold system by 0.1 bar for each 1 metre increase.

Total capacity	l	7.0
Pre-load pressure	kPa	100
	bar	1.0
Useful capacity	l	3.5
Maximum system content *	l	109

Figure 4.6

* In conditions of:

- Max. average system temperature of 85°C
- Initial temperature when filling the system 10°C.



For systems with contents that exceed the maximum system content (indicated in the table), a supplementary expansion tank must be installed.

INSTALLER

INSTALLATION

5 INSTALLATION

5.1 Warnings



Protective gloves must be worn.



The unit must discharge the combustion products directly outside or into a suitable exhaust flue designed for that purpose and in compliance with current national and local standards.

The unit is not suitable for receiving condensate from the combustion product evacuation system.



The combustion air must not contain chlorine, ammonia or alkaline agents.

Installing a boiler near to a swimming pool, washing machine or laundry room results in an aggressive mixture in the combustion air around the boiler.

Before installation, it is **mandatory** to thoroughly wash all of the system pipes with non-aggressive chemical products. The purpose of this procedure is to remove any residues or impurities that could jeopardise good boiler operation.

After washing, the system must be treated.

The conventional warranty does not cover any problems resulting from failure to follow these instructions.

Check:

- That the boiler is suitable for the type of gas supplied (see adhesive label). If it is necessary to adapt the boiler to a different type of gas, see section "GAS CONVERSION" on page 59.
- That the characteristics of the electric, water and gas supply networks comply with those on the plate.

The combustion products may only be discharged using the flue gas exhaust kits provided by the manufacturer, as they are an integral part of the boiler.

For LPG gas (Propane G31), the installation must also comply with the requirements of the distributing companies and with the requirements of current technical standards and laws.

The safety valve must be connected to a suitable discharge duct to avoid flooding if it is triggered.

The condensate outlet siphon must be connected to the residential condensate outlet duct; it must be possible to inspect it and it must be implemented in such a way as to avoid the condensate freezing (UNI 7129-5 and related standards).

The electric installation must comply with technical standards, in particular:

- It is **mandatory** to connect the boiler to an effective earthing system via a specific terminal.
- A multiway switch must be installed near the boiler to allow complete disconnection in conditions of category III over-voltage. For the electrical connections, refer to section "Electrical connections" on page 41.
- **The electric conductors for connecting the ambient thermostat and the external sensor to the boiler** must go through different channels than those for the mains voltage (230 V), as they are supplied with low safety voltage.



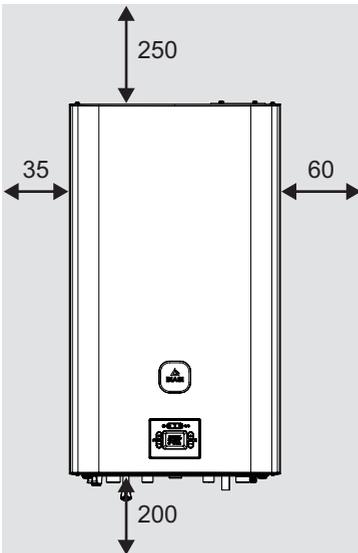
If the power supply cable is damaged, it must only be replaced by a qualified technician.

INSTALLATION

5.2 Precautions for installation

! Follow these installation instructions:

- Mount the boiler on a strong wall.
- Respect the measurements of the flue gas evacuation duct (provided in section "Flue gas outlet dimensions and lengths" on page 36) and the correct systems for installing the duct shown in the instruction sheet provided together with the flue gas evacuation pipe kit.
- Leave the minimum distances indicated in Figure 5.1 around the unit.



All measurements are in mm

Figure 5.1

- Leave 5 cm of free space in front of the boiler if it is inserted in a cabinet, shelter or niche.
- In the case of an old heating system, before installing the boiler, carefully clean it in order to remove any sludgy deposits that have formed over time.
- We recommended installing a purification filter in the system or using a product that conditions the circulating water.

This latter solution, in particular, not only

cleans the system but also provides anti-corrosion protection by forming a protective film on the metal surfaces and neutralising the gases in the water.

! Filling the central heating system:

- If the boiler is installed in rooms where the ambient temperature could fall below 0°C, it is recommended to take the proper precautions in order to prevent damaging the boiler.
- Do not add antifreeze or anticorrosion products to the heating water in the wrong concentrations or use those with chemical/physical characteristics that are incompatible with the boiler's hydraulic components.

The manufacturer does not assume any liability for this type of damage.

Inform the user about the boiler's anti-freeze function and any chemical products added to the heating system.

5.3 Installing the boiler bracket

The boiler is provided with a bracket for assembly.

A paper template that contains all the measurements and information for correctly installing the support is provided.

The hydraulic and gas system must terminate with female fittings, 3/4" for the gas fitting and for the heating delivery and return, and 1/2" for the DHW inlet and outlet, or with welded copper pipes with, respectively, 18 mm \varnothing and 14 mm \varnothing .

For measurements and useful data see section "Dimensions" on page 34, "Fittings" page 34, "Flue gas outlet dimensions and lengths" page 36.

INSTALLATION

5.4 Dimensions

The boiler complies with the following dimensions:

- A** Flue gas exhaust / air suction (coaxial \varnothing 100/60)
- B** Flue gas exhaust (\varnothing 80 twin pipe)
- C** Air suction (\varnothing 80 twin pipe)
- D** Boiler mounting bracket
- E** Area for positioning the electric connection channels
- F** Area for positioning the condensate outlet pipe
- G** MR - Heating delivery
- H** US - DHW output
- I** Gas
- J** ES - DHW inlet
- K** RR - Heating return

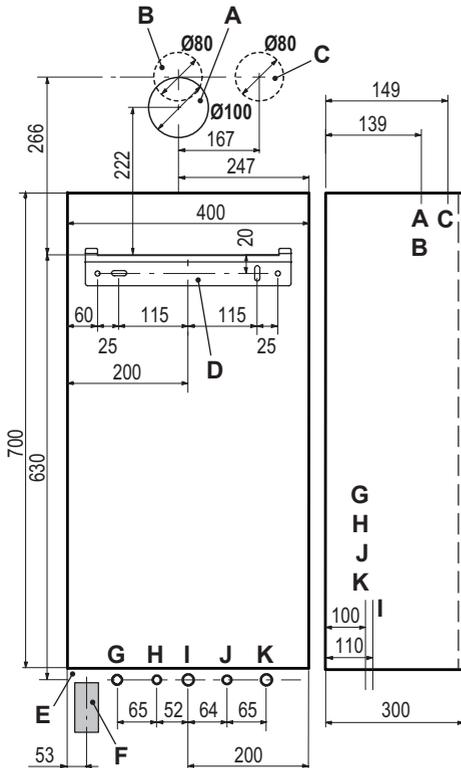


Figure 5.2

5.5 Fittings

The boiler uses the following fittings:

	Cock	Pipe \varnothing
MR		\varnothing 16/18
US		\varnothing 12/14
Gas	G 3/4 MF	\varnothing 16/18
ES	G 1/2 MF	\varnothing 12/14
RR		\varnothing 16/18
G1/2F 3 bar safety valve fitting		

Condensate discharge to be implemented with pipe min. \varnothing 30 mm

5.6 Boiler assembly

- Remove the protective caps from the boiler pipes.
- Hook the boiler onto the bracket.
- Screw the cock on the boiler.
- Fix or weld the flared stub pipes, respectively \varnothing 14 mm for the DHW inlet and outlet, and \varnothing 18 mm for the hydraulic system return, delivery and gas.

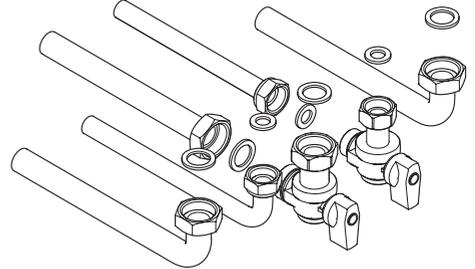


Figure 5.3

- Install a shut-off cock on the DHW inlet. The purpose of the cock is to hydraulically isolate the unit, making normal maintenance possible.
- If the hydraulic heating system is higher than the boiler surface, cocks should be installed in order to disconnect the system for maintenance purposes.
- Block the pipes by placing 1/2" and 3/4" gas-gaskets between the boiler fittings.

INSTALLATION

- Carry out a leakage test for the gas supply system.
- Connect the safety valve discharge 8 (Figure 5.4) to an outlet funnel.

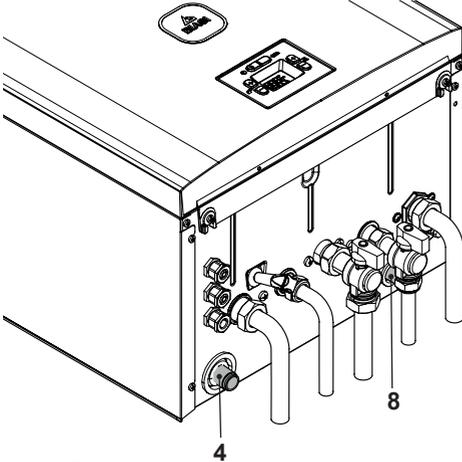


Figure 5.4

- Connect the condensate outlet pipe 4 (Figure 5.4) inside the residential condensate outlet duct or the safety valve outlet funnel if the outlet is resistant to acid condensate.

5.7 Installing the flue gas exhaust duct

Consult the sheet provided together with the preselected kit for information on how to correctly install the flue gas duct.

The horizontal sections of the flue gas pipes must have a slope of approx. 1.5 degrees (25 mm per metre), therefore the terminal must be higher than the boiler side opening.

Only the coaxial pipe with the terminal must be horizontal as the discharge pipe has already been implemented with the correct slope.

CORRECT implementation of a wall-mounted concentric discharge system

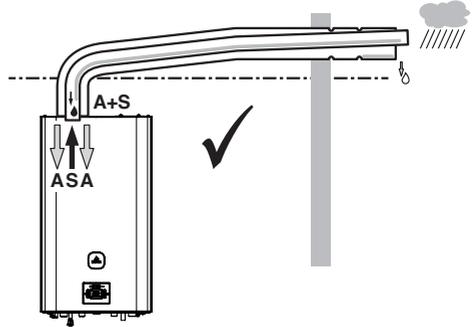


Figure 5.5

A = air suction
S = flue gas outlet

CORRECT implementation of twin flue gas outlet/air suction systems

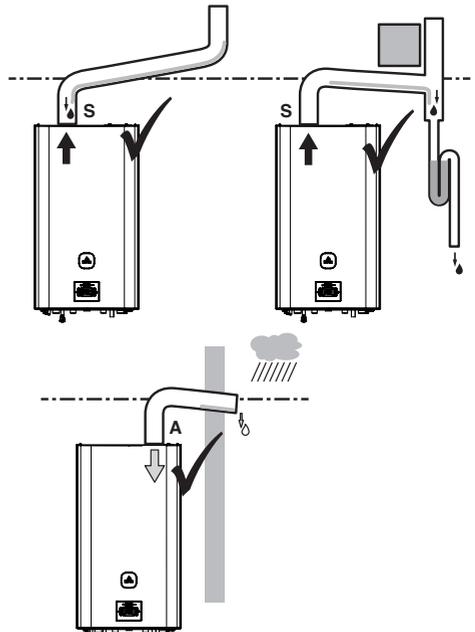


Figure 5.6

A = air suction
S = flue gas outlet

INSTALLATION

INCORRECT implementation of twin flue gas outlet/air suction systems

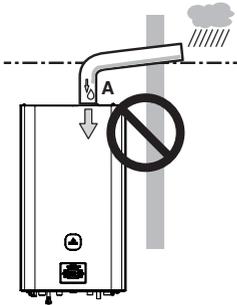
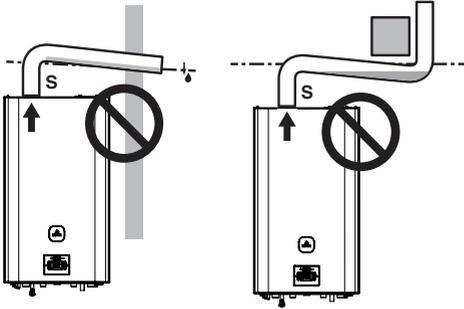


Figure 5.7

A = air suction

S = flue gas outlet

5.8 Flue gas outlet dimensions and lengths

The flue gas outlet/air suction can be set up in the following ways:

C13 C33 C43 C53 C63 C83 C93 B23P

Consult the sheet provided with the selected kit which is packaged separately.

The horizontal sections of the flue gas pipes must have a slope of approx. 1.5 degrees (25 mm per metre).



The terminal must be higher than the boiler side opening.

Only the coaxial pipe with the terminal must be horizontal as the discharge pipe has already been implemented with the correct slope.

The following kits are available for connection to the boiler:

Wall-mounted flue gas outlet kit (Figure 5.8 A)

This kit is used to release flue gases through the wall behind or to the side of the boiler.

Coaxial duct Ø 60/100 mm (A)	
Nominal length	0.915 m
Minimum length	0.5 m
Maximum length	10 m

C13

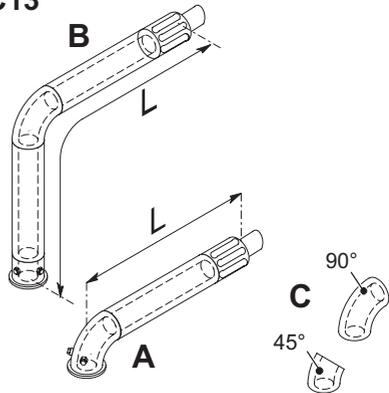


Figure 5.8

Vertical flue gas outlet kit with 90° elbow (Figure 5.8 B)

This kit is used to raise the outlet axis of the boiler by 635 mm.

The terminal must always discharge horizontally.

Coaxial duct Ø 60/100 with 90° elbow (B)	
Nominal length	1.55 m
Minimum length	0.5 m
Maximum length	10 m

Supplementary 45° or 90° elbows (Figure 5.8 C)

Coaxial elbows Ø 60/100 mm.

When these elbows are used in the duct, they

INSTALLATION

reduce the maximum length of the flue gas duct by:

For a 45° elbow loss	0.5 m
For a 90° elbow loss	1 m

Twin pipe suction discharge duct kit Ø 80 mm - (Figure 5.9 - Figure 5.10)

This kit is used to separate the flue gas outlet from the air suction. The terminals can be inserted in exhaust flues designed for this purpose, or discharge flue gas or intake air directly on the wall.

Twin ducts Ø 80	
Minimum length	0.5 m
Maximum length	40 m

N.B.: The terminals of the air suction and flue gas exhaust pipes must not be positioned on opposite walls of the building (EN 483).

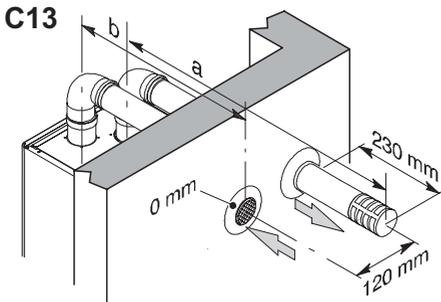


Figure 5.9

90° and 45° elbows with Ø 80 mm are also available which reduce the total max. length of the ducts:

For a 45° elbow loss	0.9 m
For a 90° elbow loss	1.65 m

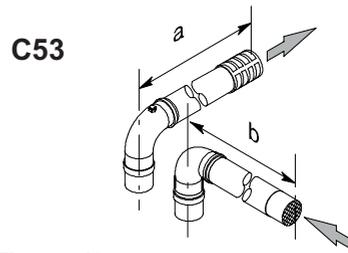
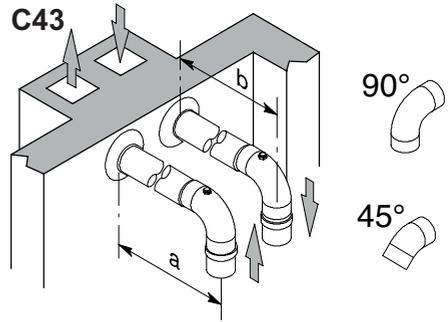


Figure 5.10

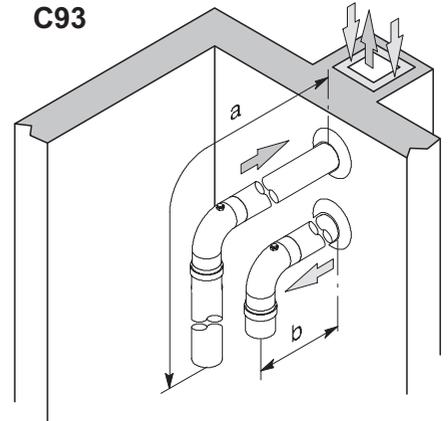


Figure 5.11

TYPE C63

If using ducts and terminals from another manufacturer (type C63), these must be approved and, in the case of a flue gas duct, materials must be used that comply with the condensation products.

When dimensioning the ducts, take into account the residual head at the fan:

INSTALLATION

Useful static pressure at nominal heat input	24 kW	150	Pa
	28 kW	200	Pa
	32 kW	220	Pa
Overheated flue	24 kW	92	°C
	28 kW	95	°C
	32 kW	93	°C
Maximum recirculation of CO ₂ in the suction duct	24 kW	1	%
	28 kW	1,2	%
	32 kW	1,1	%

TYPE C₈₃ (Figure 5.12)

The boiler with this type of outlet installed must take the comburent air from the outside and discharge the flue gas in the individual or collective chimney designed for this purpose.

C83

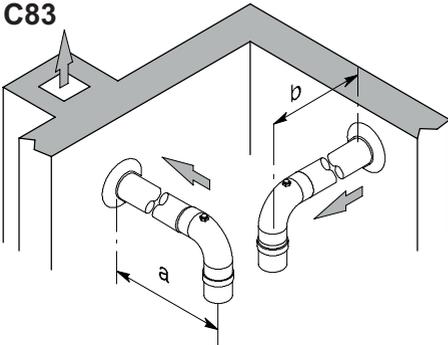


Figure 5.12

Roof-mounted flue gas outlet kit (Figure 5.13)

This kit enables flue gases to be released directly through the roof.

Coaxial duct Ø 80/125 mm	
Nominal length	0.96 m
Maximum length	12 m

C33

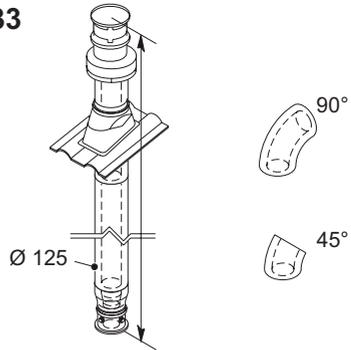


Figure 5.13

Extensions are available for reaching the maximum height.

Coaxial 90° and 45° elbows with Ø 80/125 mm are available that reduce the total max. length of the ducts by:

For a 45° elbow loss	0.5 m
For a 90° elbow loss	1 m

TYPE B_{23P} (Figure 5.14)

This type of flue gas outlet extracts the necessary combustion air from the same room as the boiler is installed in; the combustion products must be released outside and the outlet pipe can be through the wall or a chimney.

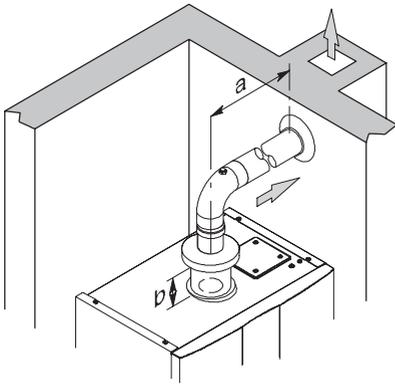
TYPE B _{23P} duct	
Minimum length	0.5 m
Maximum length (A + B)	40 m



There must be a suitable air vent in the room where the boiler is installed for the supply of combustion air and for room ventilation.

For proper operation, the minimum necessary air exchange must be 2 m³/h for each kW of heat input.

INSTALLATION



B23P

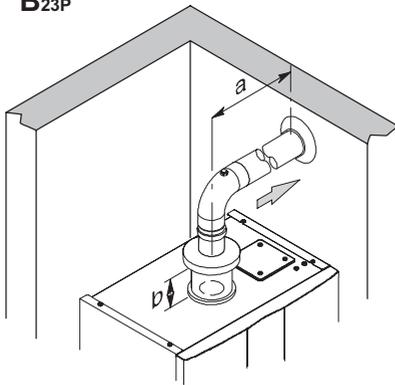


Figure 5.14

90° and 45° elbows with Ø 80 mm are also available which reduce the total max. length of the ducts:

For a 45° elbow loss	0.9 m
For a 90° elbow loss	1.65 m

5.9 C₆₃ exhaust-flue pipework

Exhaust flue pipework with flue-gas kit in smooth propylene or smooth stainless steel

Kits are available in Ø80 mm, Ø60 mm or Ø50 mm for expelling flue gases (a), while the air suction kits (b) are always Ø80 mm.

When setting up any ducted system, the hol-

low cavity between the secondary flue, exhaust flue or ducted pipe and the internal wall of the technical cabinet must only be used for this system exclusively.

All components must be made from materials with class A1 reaction to fire according to standard UNI EN 13501-1. **Note that extendible metal hoses must not be used.**

The flue must receive the flue gas output from the flue gas duct connected to the appliance only. Collective exhaust flues cannot be used and the output from extractor hoods above cooking appliances of any kind or output from other generators cannot be conveyed through the same flue or flue gas duct.

Therefore, if you install a ducted pipe for evacuating combustion products from any type of appliance inside an existing flue, this flue must then be used solely for the ducted pipe system. It cannot contain any other type of pipework (for example gas, heating or solar pipes), nor can it contain cables of any kind (electrical, TV antenna, etc.). However, if there is enough space, it can be used to install other ducted pipes hooked up to appliances powered by other fuels, as long as the minimum clearances required by the regulations are respected.



A condensate siphon must also be installed at the base of the flue-gas kit. This is because the boiler is not built to collect condensate from the system for evacuating combustion products.

	Twin C63		
	80+80 (a+b)	60+80 (a+b)	50+80 (a+b)
24 kW	40.0 m	19.5 m	16.6 m
28 kW	40.0 m	27.0 m	21.7 m
32 kW	40.0 m	27.6 m	15.6 m

For every additional elbow, subtract 1.5 m from the total length.

INSTALLATION

For every tee connection, subtract 1.7 m from the total length.

For double-walled pipes in corrugated propylene or corrugated stainless steel, reduce the effective length by 15%.



The materials the pipes are made from must be suitable for use with this type of appliance.

The straight sections must not be deformed and must be suitably supported.

The joints must be sealed and protected against unthreading. Insert the flue-gas draw stub kit above the boiler.

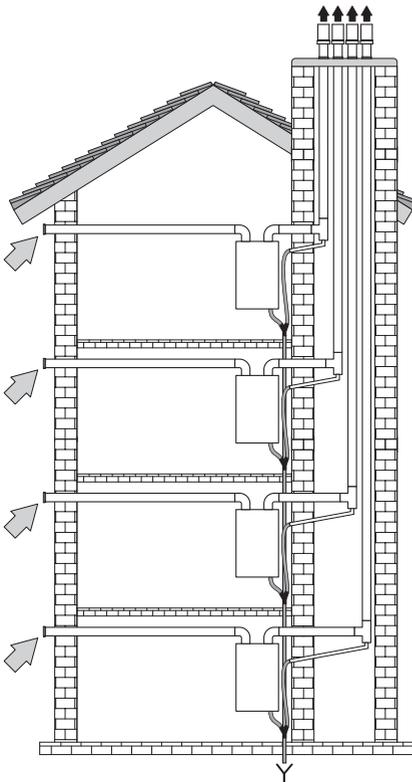


Figure 5.15

5.10 Positioning the draught terminals

The draught terminals must:

- be positioned on the outer perimeter walls of the building or on the roof;
- comply with the minimum distances Figure 5.16 and any national or local regulations.

Position of the terminal	mm
A Under the window or other opening	600
B Next to a window or door	400
B Next to an air vent or ventilation opening	600
C Side of a balcony	1000
D Under the gutter or discharge pipes	300
E Under the eaves	300
F Under balconies	300
G Under the garage roof	NO
H From vertical discharge pipes	300
I From inner corners	300
J From external corners	300
K From the ground or other floor surfaces	2200
L From a front facing surface without openings	2000
M From a front facing opening	3000
N From an opening in the garage	NO
O Between two vertical terminals in the same wall	1500
P Between two horizontal terminals in the same wall	1000
Q Above the pitch of a roof with a slope less than or equal to 30° *	350
Q Above the pitch of a roof with a slope greater than 30° *	600
R Above a flat roof *	300
S From a wall *	600
S From two walls at an angle *	1000

* Roof-mounted terminal

INSTALLATION

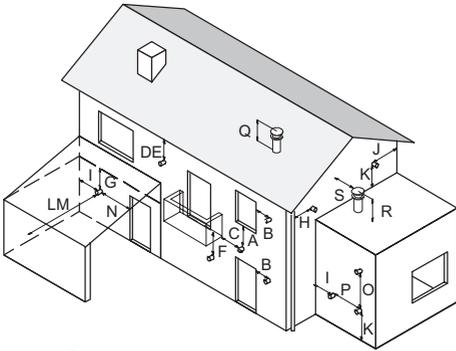


Figure 5.16

5.11 Electrical connections

- Undo the screws **L** and remove the front panel **M** by pulling it towards you and then pushing it upwards in order to release it from the top fastenings Figure 5.17.

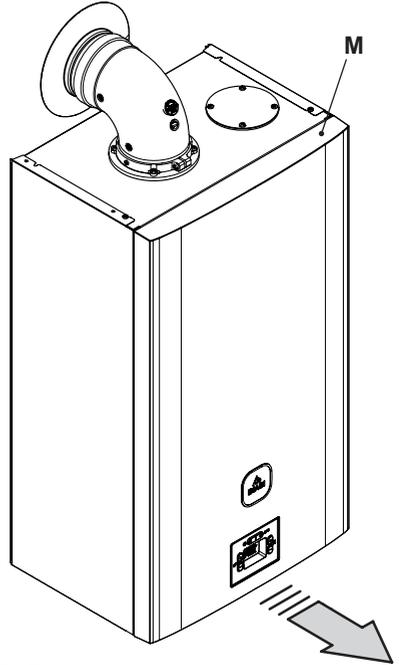
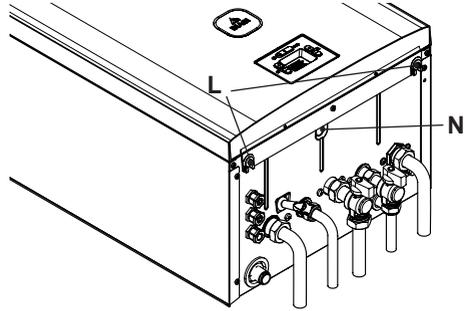


Figure 5.17

- Unscrew the screw **N** (Figure 5.17) and turn the control panel **O**, as shown in Figure 5.18.

To access the electric power supply, remote and external sensor terminal boards and the control board:

- Unscrew the screw **P** and lift the cover **Q** to release the cables from the cable gland (Figure 5.18).
- Loosen the screws **R** and lift the cover **S**

INSTALLER

INSTALLATION

(Figure 5.18).

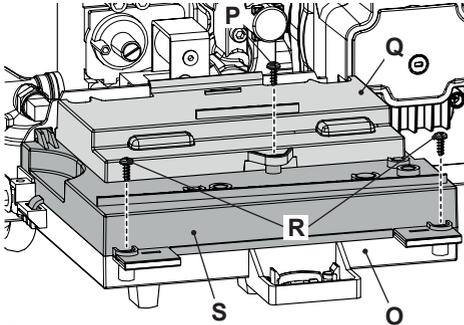


Figure 5.18

Connecting to the electric power supply grid

- Connect the electric power supply cable to the multi-way switch, respecting the correspondence of the power line (brown wire) and the neutral (blue wire) Figure 5.19.
- Connect the earth wire (yellow/green) to an effective earthing system.

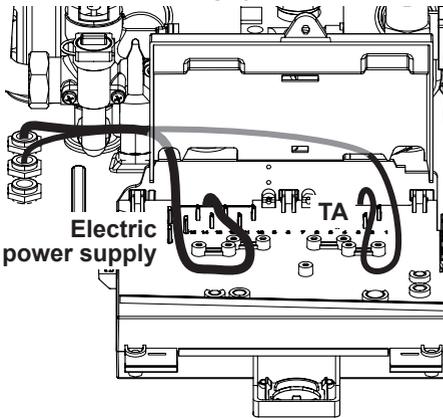


Figure 5.19



The earth wire must be longer than the electric power wires.

The unit's electric power supply cable or wire must have a minimum section of 0.75 mm², be kept away from hot or sharp parts, and comply with current technical standards.

5.12 Connecting a room thermostat or zone valves

Connect the cable for the room thermostat with a label in Figure 5.20.



Do not connect live cables to the room thermostat cable.

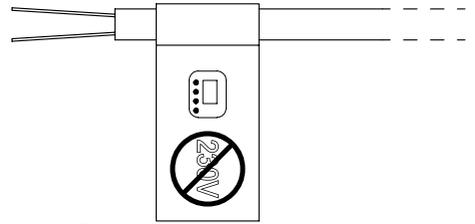


Figure 5.20

The thermostat must have class II insulation (□) or be correctly connected to the earth.

Connecting zone valves controlled by the room thermostat

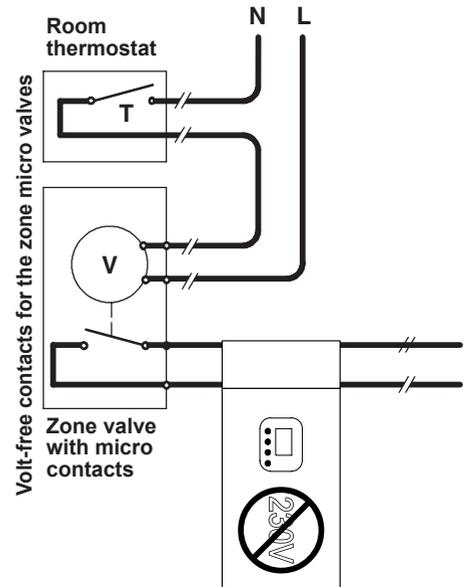


Figure 5.21

Use the room thermostat cable indicated in

INSTALLATION

Figure 5.20 to connect the zone valves. The electric conductors on the zone valve micro contacts must be connected to the ambient thermostat cable wires as shown in Figure 5.21.



Do not connect live cables to the room thermostat cable.

5.13 Electrical connection of the remote control (optional)

Use the ambient thermostat cable marked with a label indicated in Figure 5.20 to connect the remote.

5.14 Accessing installer parameters

Enter “programming mode” by holding down buttons 17 and 18 for 5 seconds at the same time (Figure 5.22). The code **P00** appears on the display, indicating entry into “parameter P00” (Figure 5.23).

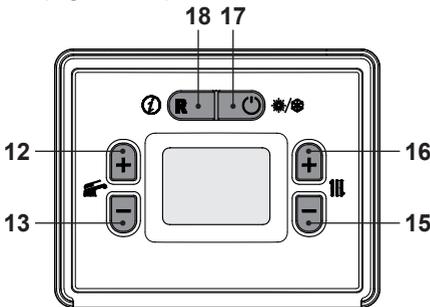


Figure 5.22



Figure 5.23

• Scroll through the various parameters using 12 or 13 until the LCD display shows the

message **Cod**, indicating entry into “parameter Cod” (Figure 5.24), and then displays three dashes “- - -”.

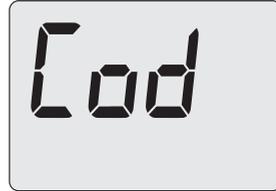


Figure 5.24

- Press 16 to set “1 - -”, then press 12 to confirm the 1 and go to the next segment.
- Press 16 to set “1 9 -”, then press 12 to confirm the 9 and go to the next segment.
- Press 16 to set “1 9 8”, then press 12 to confirm the 8 and go back to the list of parameters.
- Press 12 or 13 to move to the desired parameter and continue configuration (see following paragraph).

5.15 Enabling of operation with remote control (optional)

The boiler leaves the factory with a room thermostat enabled.

To change this setting, enter “programming mode” as described in section “Accessing installer parameters” on page 43.

- Press 12 and hold until the LCD display shows the code **A21**, indicating entry into “parameter A21” (Figure 5.25).



Figure 5.25

- Use 15 or 16 (Figure 5.22) to change the value of parameter A21 (Figure 5.26).

INSTALLATION

- 00 = Room thermostat
- 01 = Remote control



Figure 5.26

- Press 12 or 13 (Figure 5.22) to confirm the value entered and return to the list of parameters (Figure 5.25).
- Press 17 (Figure 5.22) to exit "programming mode".

5.16 Installing the external temperature sensor (optional)

The external sensor must be installed on an external wall of the building avoiding:

- Direct radiation of the sun's rays.
- Damp walls or walls where mould forms.
- Installation near fans, drain outlets or chimneys.

5.17 Electrical connection between the boiler and the external sensor

To connect the external sensor to the boiler, use electric cables with a cross section of no less than 0.50 mm².

The electrical conductors for connecting the external sensor to the boiler must go through different channels to those for the mains voltage (230 V), as they are supplied at a safe low voltage and cannot exceed 20 metres in length.

Use the control board terminals indicated in Figure 5.27 to connect the external sensor. The external sensor connection wires must follow the path indicated of the ambient thermostat and come through the back of the boiler.

er.

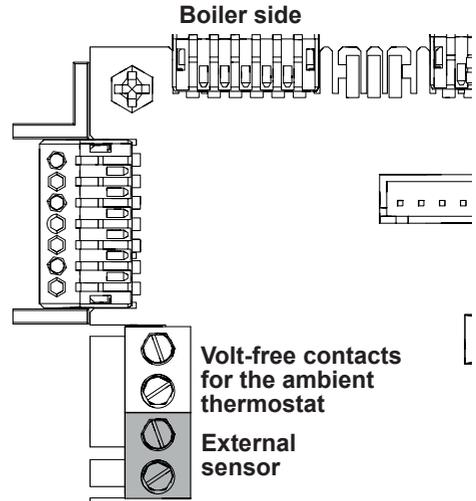


Figure 5.27

5.18 Enabling operation with the external sensor and setting the K coefficient

The boiler is set with a K coefficient of zero for operation without the probe connected.

The K coefficient is a parameter that increases or decreases the boiler delivery temperature as the outdoor temperature varies. When installing the external sensor, this parameter must be set based on the efficiency of the heating system to optimise the delivery temperature.

With heating temperature setting **25-85°C** (Figure 5.28) (factory preset) or temperature setting **25-55°C** (Figure 5.29) or temperature setting **50-80°C** (Figure 5.30) (see "Selecting the heating temperature set" on page 47).

INSTALLATION

Delivery temperature °C (25-85°C)

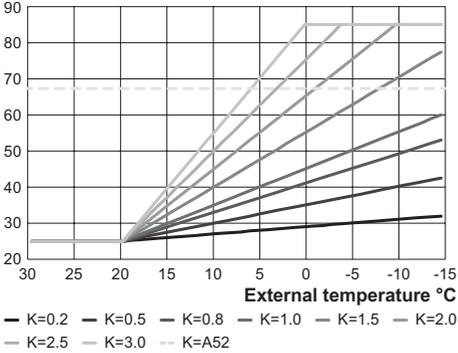


Figure 5.28

Delivery temperature °C (25-55°C)

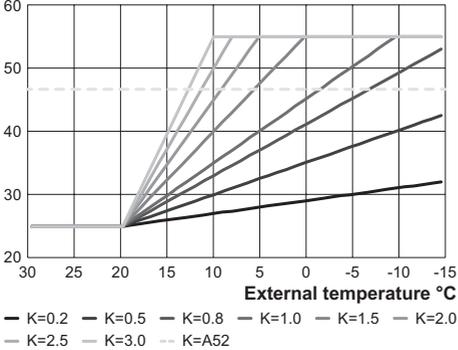


Figure 5.29

Delivery temperature °C (50-80°C)

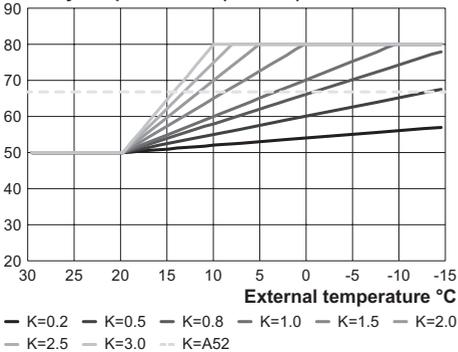


Figure 5.30

17 and 18 for 5 seconds at the same time (Figure 5.31). The code **P00** appears on the display, indicating entry into “parameter P00” (Figure 5.32).

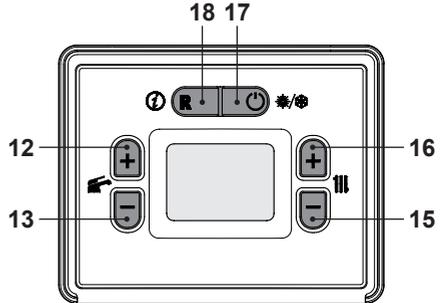


Figure 5.31



Figure 5.32

- Scroll through the various parameters using 12 or 13 until the LCD display shows the code **P07**, indicating entry into “parameter P07” (Figure 5.33).



Figure 5.33

- Press 16 (Figure 5.31) to show the value of parameter P07 on the LCD display (Figure 5.34).

Sequence for setting the K coefficient

- Enter “programming mode” by holding down

INSTALLATION

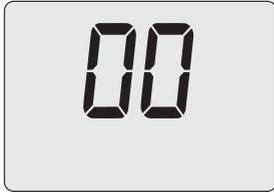


Figure 5.34

- Use 15 or 16 (Figure 5.31) to change the value of parameter P07:
00 = probe disabled (preset)
01 = probe enabled (12kOhm)
02 = probe enabled (10kOhm)
- Press 12 or 13 (Figure 5.31) to confirm the value entered and return to the list of parameters (Figure 5.33).
- Press 17 (Figure 5.31) to exit "programming mode".
- Press 13 and hold until the LCD display shows the code **P08**, indicating entry into "parameter P08" (Figure 5.35).



Figure 5.35

- Use 15 or 16 to change the value of parameter P08 from a minimum of **1.0** to a maximum of **3.0** based on the selected curve of the K coefficient in Figure 5.29 (the values shown on the display is the K coefficient decimal).
- Press 12 or 13 (Figure 5.31) to confirm the value entered and return to the list of parameters (Figure 5.35).
- Press 17 (Figure 5.31) to exit "programming mode".

At this point the system delivery temperature will follow the trend in relation to the set K co-

efficient.

If the room temperature is not comfortable, you can increase or decrease the heating system delivery temperature by $\pm 5^\circ\text{C}$ using the 15 (decrease) and 16 (increase) buttons (Figure 5.31).

With heating temperature setting **25-85°C** (factory preset), the temperature trend for **K 2.0** is shown in Figure 5.36. With temperature setting **25-55°C** the temperature trend for **K 2.0** is shown in Figure 5.37. With temperature setting **50-80°C** the temperature trend for **K 2.0** is shown in Figure 5.38.

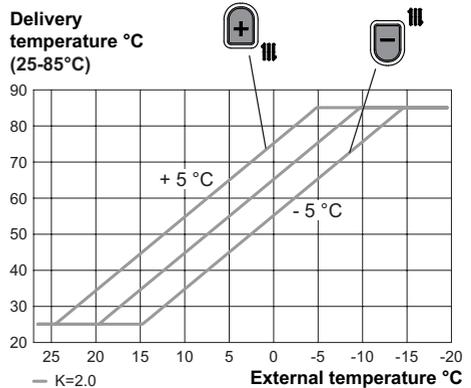


Figure 5.36

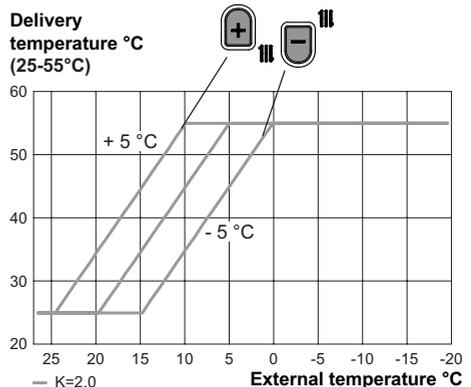


Figure 5.37

INSTALLATION

Delivery temperature °C (50-80°C)

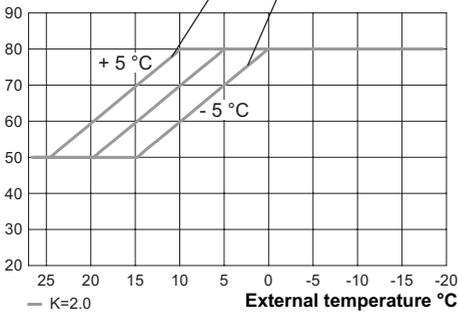


Figure 5.38

5.19 Selecting the maximum heating temperature setpoint with the climatic curve set

Depending on the type of high or low temperature heating system, the maximum climatic curve temperature can be set.

In heating mode, the boiler is set for a temperature range of between a minimum of 25°C and a maximum of 85°C (factory preset), a minimum of 50°C and a maximum of 80°C (high temperature) or a minimum of 25°C and a maximum of 55°C (low temperature). Please see also "Selecting the heating temperature set" page 47. For specific heating system needs, once the climatic curve has been set, the maximum temperature can be lowered.

- Enter "programming mode" by following the procedure indicated in section "Accessing installer parameters" on page 43.

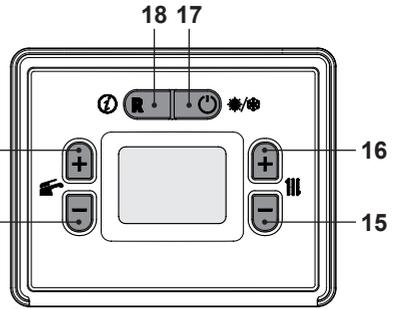


Figure 5.39

- Press 12 and hold until the LCD display shows the code **A52**, indicating entry into "parameter A52" (Figure 5.40).



Figure 5.40

- Use 15 or 16 (Figure 5.39) to change the value of parameter A52:
 - 85°C to 25°C** = complete temperature set (factory setting)
 - 80°C to 50°C** = high temperature
 - 55°C to 25°C** = low temperature
- Press 12 or 13 (Figure 5.39) to confirm the value entered and return to the list of parameters (Figure 5.40).
- Press 17 (Figure 5.39) to exit "programming mode".

5.20 Selecting the heating temperature set

Depending on the type of high or low temperature heating system, the temperature setting range can be set.

In heating mode, the boiler is set for temperatures between 50°C and 80°C. This range can be changed to a minimum of 28°C and a max-

INSTALLATION

imum of 55°C.

- Enter “programming mode” by following the procedure indicated in section “Accessing installer parameters” on page 43.

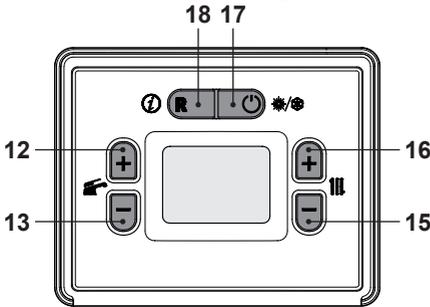


Figure 5.41

- Press 12 and hold until the LCD display shows the code **A02**, indicating entry into “parameter A02” (Figure 5.42).



Figure 5.42

- Use 15 or 16 (Figure 5.41) to change the value of parameter A02:
01 = high temperature (50/80°C)
02 = low temperature (25/55°C)
03 = complete temperature set (25/85°C) (factory setting)
- Press 12 or 13 (Figure 5.41) to confirm the value entered and return to the list of parameters (Figure 5.42).
- Press 17 (Figure 5.41) to exit “programming mode”.

5.21 Setting pump post-circulation

The pump, in heating mode, is set for a post-circulation of about one minute at the end

of each heat request.

This time can be programmed from a minimum of zero to a maximum of 99 seconds.

- Enter “programming mode” by holding down 17 and 18 for 5 seconds at the same time (Figure 5.43). The code **P00** appears on the display, indicating entry into “parameter P00” (Figure 5.44).

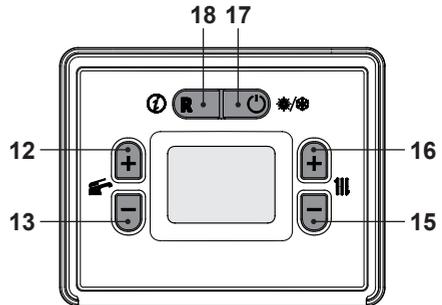


Figure 5.43



Figure 5.44

- Scroll through the various parameters using 12 or 13 until the LCD display shows the code **P03**, indicating entry into “parameter P03” (Figure 5.45).



Figure 5.45

- Press 16 (Figure 5.43) to show the value of parameter P03 on the LCD display (Figure 5.46).

INSTALLATION

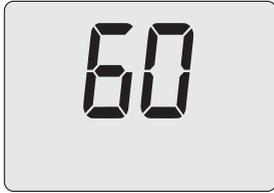


Figure 5.46

- Use 15 or 16 to change the value of parameter 03 from **0** to **99** seconds.
- Press 12 or 13 (Figure 5.43) to confirm the value entered and return to the list of parameters (Figure 5.45).
- Press 17 (Figure 5.43) to exit “programming mode”.

5.22 Selecting re-ignition frequency

When the boiler functions in normal on/off heating mode, the minimum time between two ignitions is set to 1 minute (re-ignition frequency).

This time can be programmed from a minimum of 0 to a maximum of 255 minutes.

- Enter “programming mode” by holding down 17 and 18 for 5 seconds at the same time (Figure 5.47). The code **P00** appears on the display, indicating entry into “parameter P00” (Figure 5.48).

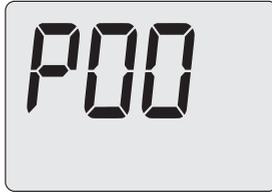


Figure 5.48

- Scroll through the various parameters using 12 or 13 until the LCD display shows the code **P05**, indicating entry into “parameter P05” (Figure 5.49).



Figure 5.49

- Press 16 (Figure 5.47) to show the value of parameter P05 on the LCD display (Figure 5.50).

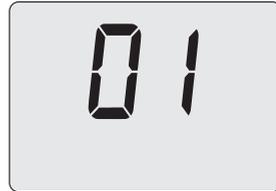


Figure 5.50

- Use 15 or 16 to change the value of parameter P05 from **0** to **255** minutes.
- Press 12 or 13 (Figure 5.47) to confirm the value entered and return to the list of parameters (Figure 5.49).
- Press 17 (Figure 5.47) to exit “programming mode”.

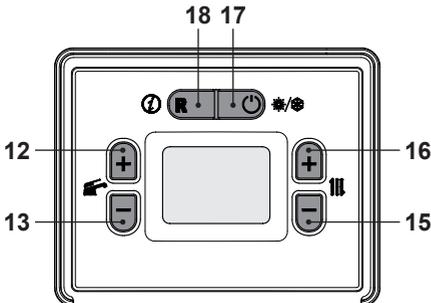


Figure 5.47

INSTALLATION

5.23 Factory reset



RESET restores all parameters to the factory settings.

- Enter “programming mode” by following the procedure indicated in section “Accessing installer parameters” on page 43.

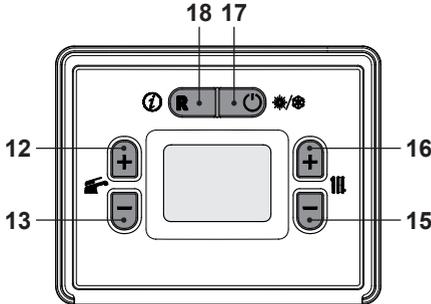


Figure 5.51

- Press 12 and hold until the LCD display shows the code **A49**, indicating entry into “parameter A49” (Figure 5.52).



Figure 5.52

- Use 15 or 16 (Figure 5.51) to change the value of parameter A49:
39 = factory reset
- Press 12 or 13 (Figure 5.51) to confirm the value entered and return to the list of parameters (Figure 5.52).
- Press 17 (Figure 5.51) to exit “programming mode”.

5.24 Examples of hydraulic systems with hydraulic separator (optional)

The hydraulic separator creates a reduced load loss zone that makes the primary circuit and secondary circuit hydraulically independent.

In this case, the flow rate that passes through the circuits depends exclusively on the characteristics of the flow rate of the pumps.

Therefore by using a hydraulic separator, the secondary circuit's flow rate is circulated only when the relative pump is on.

When the pump for the secondary circuit is off, there is no circulation in the corresponding circuit and therefore the flow rate pushed by the pump in the primary circuit is by-passed through the separator.

With a hydraulic separator, the production circuit can have a constant flow rate and the distribution circuit can have a variable flow rate.

Examples of hydraulic systems

High temperature zone + low temperature zone.

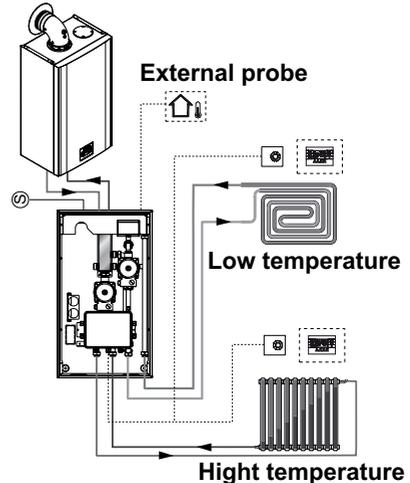


Figure 5.53

INSTALLATION

High temperature zone + 2 low temperature zones.

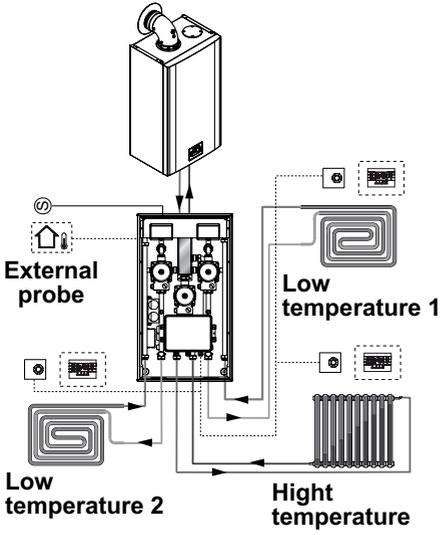


Figure 5.54

INSTALLER

PREPARATION FOR SERVICE

6 PREPARATION FOR SERVICE

6.1 Warnings

Before performing the operations described below, make sure that the installed multi-way switch is in the off position.

6.2 Sequence of operations

Gas supply

- Open the cock for the gas meter and for the boiler 7 in Figure 6.1.

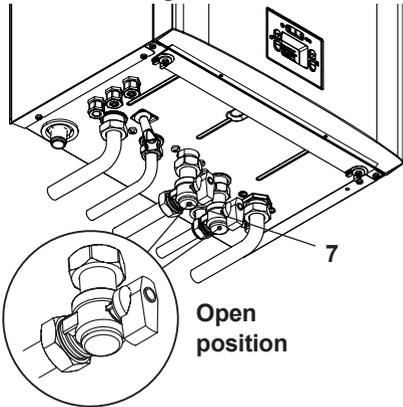


Figure 6.1

- Check for leaks in the gas fitting using a soapy solution or equivalent.
- Close the gas cock 7 in Figure 6.2.

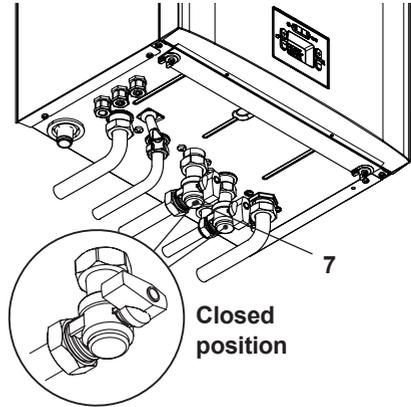


Figure 6.2

Filling the circuit

- Remove the front panel on the body, see section "Removing the body panels" on page 61.
- Open the installed water cocks.
- Open one or more hot water cocks to bleed the pipes.
- Loosen the automatic bleed valve cap 24 in Figure 6.3.

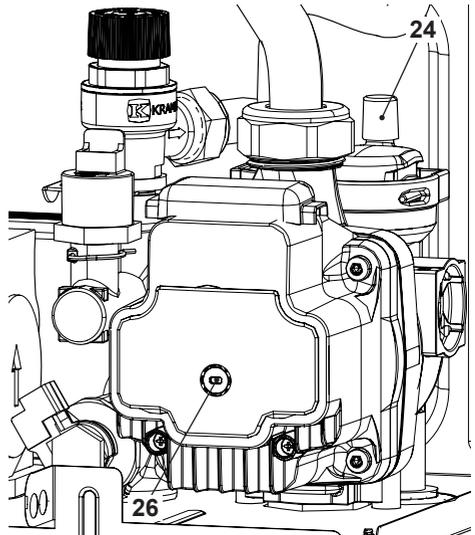


Figure 6.3

- Open the radiator cocks.

PREPARATION FOR SERVICE

- Fill the heating circuit, see section "Filling the heating circuit" on page 14.
- Bleed the radiators and the various high points of the installation, then close any manual bleeding devices again.
- Remove the cap 26 in Figure 6.3 and release the pump by turning the impeller using a screwdriver.
- Bleed the pump during this operation.
- Close the pump cap.
- Finish filling the heating system.
The installation as well as the pump must be bled multiple times.



Fill the condensate discharge siphon with a half litre of water to prevent smoke from exiting at first ignition.

The flue gas intake positioned on the flue gas outlet can be used for this operation (Figure 6.4).

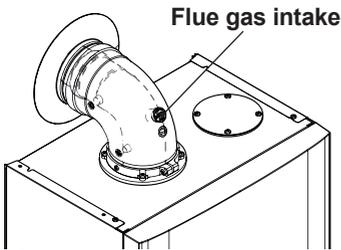


Figure 6.4

- Assemble the front panel of the body.
- Electrically power the boiler by activating the installed bipolar switch. The LCD display will show the message **OFF** (Figure 6.5).



Figure 6.5

- Press and hold 17 until both symbols  and  appear on the display.

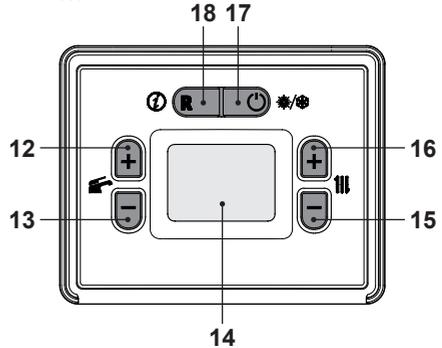


Figure 6.6

The LCD display shows the stand-by status and the  and  symbols (Figure 6.7).

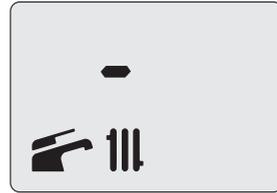


Figure 6.7

- Open the gas cock.
- Make sure that the ambient thermostat is in the "heat request" position.
- Check the correct operation of the boiler, both in DHW mode and in heating mode.
- Check the gas pressures and flow rates as shown in section "CHECKING THE GAS SETTING" on page 55 of this manual.
- Check that the condensate produced during operation fills the siphon and is drained correctly in the system discharge pipe.
- Press 17 (Figure 6.6) until the message **OFF** appears on the LCD display (Figure 6.5).

In **OFF** mode, the antifreeze protection is active.

PREPARATION FOR SERVICE

- Show the user how to use the appliance correctly and also explain:
 - ignition;
 - shut off;
 - making adjustments.

The user is responsible for keeping the documentation together and intact, and within reach for consultation.

CHECKING THE GAS SETTINGS

7 CHECKING THE GAS SETTING

7.1 Warnings



Each time after measuring the gas pressure, fully close all tapping points that were used.

After each gas adjustment, the valve adjustment components must be sealed.



Warning: risk of electrocution.

The boiler is live during the operations described in this section.

Never touch any electrical parts.

7.2 Gas operations and setting

- Remove the front panel on the boiler body, see section "Removing the body panels" on page 61.

Checking the network pressure.

- With the boiler turned off (out of service), check the supply pressure using the tapping point 28 in Figure 7.8 and compare the value read with those shown in the Gas supply pressure table in section "Technical data M275V.2024 SM" on page 22, "Technical data M275V.2428 SM" page 25 and "Technical data M275V.2832 SM" page 28.
- Fully close the tapping point 28 in Figure 7.8.

Check minimum burner pressure

- Connect a flue analyser to the flue gas analysis outlets on the flue gas exhaust on the boiler Figure 7.1.

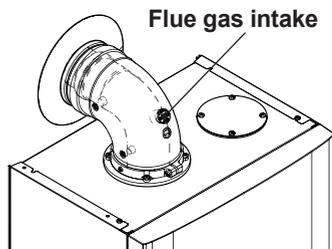


Figure 7.1

- Make sure that the room thermostat is in the "heat request" position.
- Draw off an abundant amount of DHW by opening the cocks.
- Enter "programming mode" by holding down buttons 17 and 18 for 5 seconds at the same time (Figure 7.2). The code **P00** appears on the display, indicating entry into "parameter P00" (Figure 7.3).

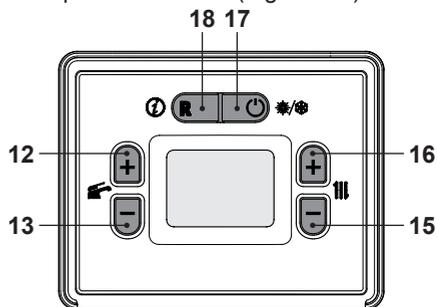


Figure 7.2



Figure 7.3

- Scroll through the various parameters using 12 or 13 until the LCD display shows the code **P06**, indicating entry into "parameter P06" (Figure 7.4).

CHECKING THE GAS SETTINGS



Figure 7.4

- Press 16 (Figure 7.2) to show the value of parameter P06 on the LCD display (Figure 7.5).



Figure 7.5

- Press 16 and the LCD display shows the number **01**, indicating activation of the "chimney sweep function" at minimum output (Figure 7.6).
- Press 12 (Figure 7.2) to confirm the value entered and activate the function.



Figure 7.6

- Press 17 (Figure 7.2) to exit "programming mode" (Figure 7.7).

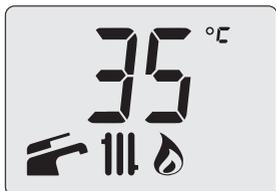


Figure 7.7

- Compare the value of CO_2 read on the

flue gas analyser with the one in the "Data in DHW mode" table and the values of CO_2 at Q.min. section "Technical data M275V.2024 SM" on page 22, "Technical data M275V.2428 SM" page 25 and "Technical data M275V.2832 SM" page 28.



If the boiler starts up as expected, it is already within the limits indicated; move on to checking the maximum pressure.

Otherwise, follow the instructions below.

- To calibrate the boiler CO_2 (gas pressure at the burner) unscrew the protective brass cap B completely and turn the underlying ϕ 4 mm hex head socket screw Figure 7.8. Turn it clockwise to increase the CO_2 .

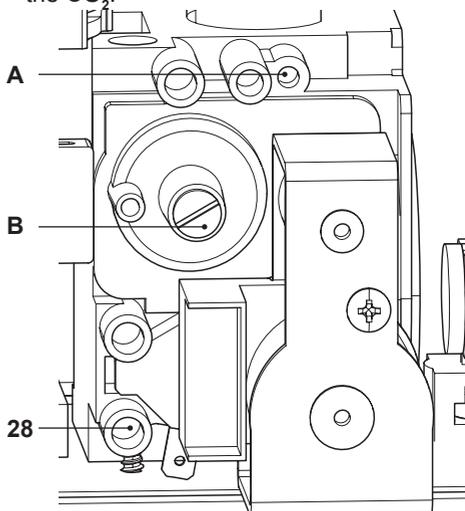


Figure 7.8

Check maximum burner pressure

- Enter "programming mode" by holding down 17 and 18 for 5 seconds at the same time (Figure 7.2). The code **P00** appears on the display, indicating entry into "parameter P00" (Figure 7.9).

CHECKING THE GAS SETTINGS



Figure 7.9

- Scroll through the various parameters using 12 or 13 until the LCD display shows the code **P06**, indicating entry into “parameter P06” (Figure 7.10).



Figure 7.10

- Press 16 (Figure 7.2) to show the value of parameter P06 on the LCD display (Figure 7.11).



Figure 7.11

- Press 16 and the LCD display shows the number **02**, indicating activation of the “chimney sweep function” at maximum DHW output.
- Press 12 (Figure 7.2) to confirm the value entered and activate the function (Figure 7.12).



Figure 7.12

- Press 17 (Figure 7.2) to exit “programming mode” (Figure 7.13).

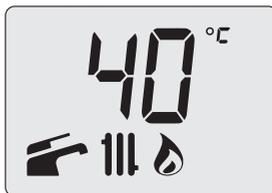


Figure 7.13

- Compare the value of **CO₂** read on the flue gas analyser with the **CO₂** value at **Q.nom** in DHW mode as stated in section “Technical data M275V.2024 SM” on page 22, “Technical data M275V.2428 SM” page 25 and “Technical data M275V.2832 SM” page 28.
- If the two values do not coincide, turn the RQ maximum adjustment screw (A in Figure 7.8) for the gas valve and calibrate the **CO₂** to the same value specified in the section “Technical data M275V.2024 SM” on page 22, “Technical data M275V.2428 SM” page 25 and “Technical data M275V.2832 SM” page 28. Turn it clockwise to decrease the **CO₂**.

! After setting the **CO₂** to the maximum (**CO₂** at **Q.nom.**), **CO₂** at the minimum (**CO₂** at **Q.min.**) must be checked.

- To exit the chimney sweeper, reset parameter **P06** to **00** or wait 15 minutes with the boiler off (**OFF**).

CHECKING THE GAS SETTINGS

- Close the domestic hot water cocks.
- Turn the boiler off by pressing 17 (Figure 7.2) until the message **OFF** appears on the LCD display (Figure 7.14).



Figure 7.14

During the operations to check maximum and minimum pressure at the burner, check the flow rate of gas to the meter and compare its value with the gas flow rate data; see section "Technical data M275V.2024 SM" on page 22, "Technical data M275V.2428 SM" page 25 and "Technical data M275V.2832 SM" page 28.

Reclose the flue gas analysis outlets.

GAS CONVERSION

8 GAS CONVERSION

8.1 Warnings

-  The operations to adapt the boiler to the type of gas available must be carried out by an authorised service centre.

The components used for adapting to the type of gas available must only be original spare parts.

For instructions regarding calibrating the boiler gas valve, refer to section "CHECKING THE GAS SETTING" on page 55.

8.2 Gas operations and setting



Check that the gas cock mounted on the gas piping to the boiler is closed and that the unit is not powered.

- Remove the front panel of the body and turn the control panel towards you as shown in section "Maintenance" on page 61.
- Unscrew the swivel joint **B** and remove the gas pipe **A** (Figure 8.1).

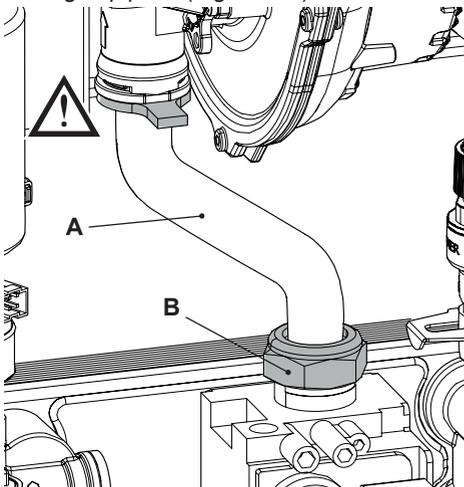


Figure 8.1

- Convert the type of gas by correctly replacing the gas diaphragm (Figure 8.2), referring to section "Technical data M275V.2024 SM" on page 22, "Technical data M275V.2428 SM" page 25 and "Technical data M275V.2832 SM" page 28.

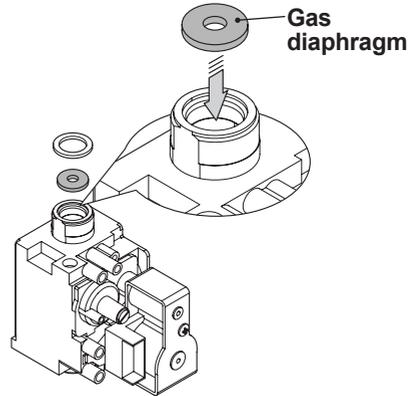


Figure 8.2



Note: to reassemble, repeat the operations in reverse order, being careful not to damage the gas pipe OR gasket when the pipe is inserted in the gas/air mixer. Carry out the gas tightness test after tightening the gas pipe swivel joint (Figure 8.1).

The boiler is factory set to operate with natural gas (G20).

To set boiler operation to **LPG gas (G31)**:

- Enter "programming mode" by following the procedure indicated in section "Accessing installer parameters" on page 43.

GAS CONVERSION

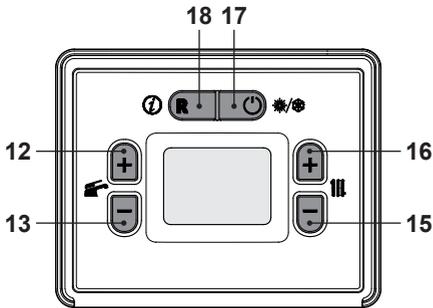


Figure 8.3

- Reposition the control panel and reassemble the front panel of the body.
- Apply the label indicating the type of gas and the pressure value for which the unit is set. The self-adhesive label is included in the conversion kit.

- The code **A01** appears on the display, indicating entry into "parameter A01" (Figure 8.4).



Figure 8.4

- Use 15 or 16 (Figure 8.3) to change the value of parameter A01 (Figure 8.5).
00 = Methane gas (G20)
01 = Propane gas - LPG (G31)



Figure 8.5

- Press 12 or 13 (Figure 8.3) to confirm the value entered and return to the list of parameters (Figure 8.4).
- Press 17 (Figure 8.3) to exit "programming mode".
- Calibrate the gas valve according to the instructions in section "CHECKING THE GAS SETTING" on page 55.

MAINTENANCE

9 MAINTENANCE

9.1 Warnings



Protective gloves must be worn.



Cool down the appliance by shutting off the gas cock and withdrawing a large quantity of water by opening the system's DHW cocks.



The operations described in this section must only be performed by professionally qualified personnel, therefore you are advised to contact an authorised service centre.

For efficient and continuous boiler operation, the user must have maintenance and cleaning carried out once a year by an authorised service centre technician. If these operations are not carried out, damage to components and boiler operation problems will not be covered by the standard warranty.

Before performing any cleaning or maintenance, or before opening or removing the boiler panels, **isolate the unit from the electric power supply** using the multi-way switch installed in the system and **close the gas cock**.

9.2 Removing the body panels

Front panel

Unscrew the screws **A** and remove the front panel **D** by pulling it towards you and then pushing it upwards in order to free it from the upper seats (Figure 9.1 and Figure 9.2).

Side panels

Loosen screws **B** and **G** in Figure 9.1 and Figure 9.2, then remove the two side pan-

els **E** and **F** by pulling them outwards and forwards to release them from the rear supports.

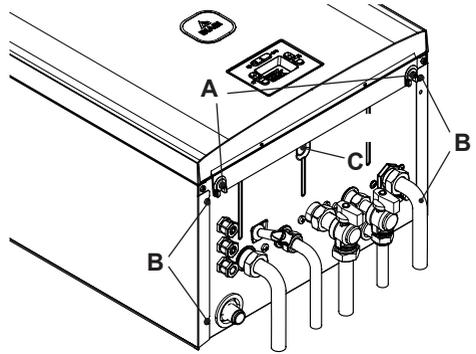


Figure 9.1

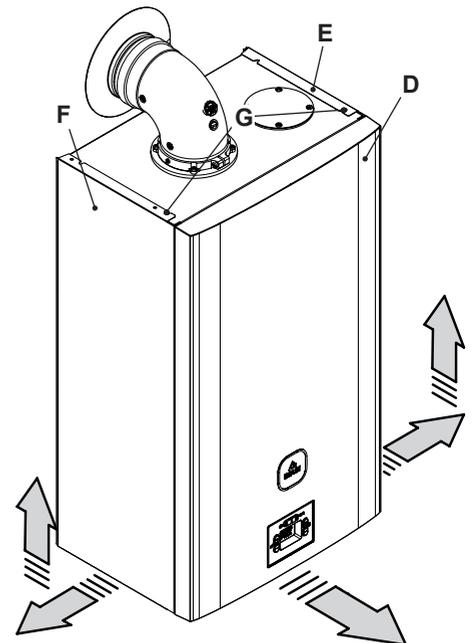


Figure 9.2

Control panel

- Unscrew the screw **C** in (Figure 9.1).
- Turn the control panel **H**, as shown in Figure 9.3 for easy access to the components inside the boiler.

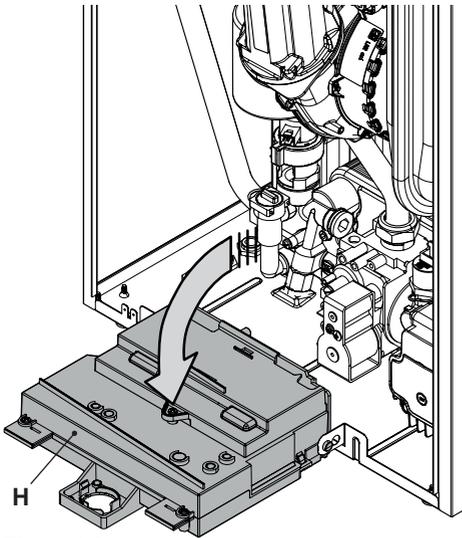


Figure 9.3

9.3 Emptying the DHW circuit

- Close the installed DHW inlet cocks .
- Open the system's DHW cocks.

9.4 Emptying the heating circuit

- Close the installed heating system delivery and return cocks.
- Loosen the heating circuit drain cock 11 indicated in Figure 9.4.

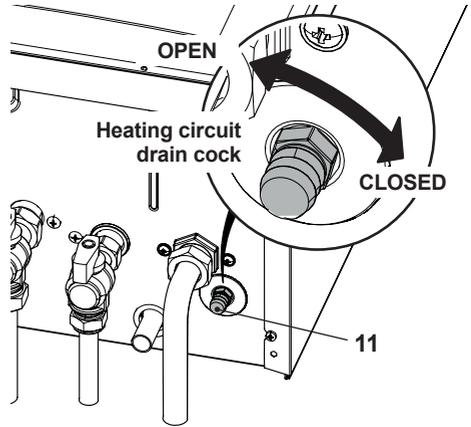


Figure 9.4

- To make draining easier, unscrew the automatic bleed valve cap 24 in Figure 9.5.

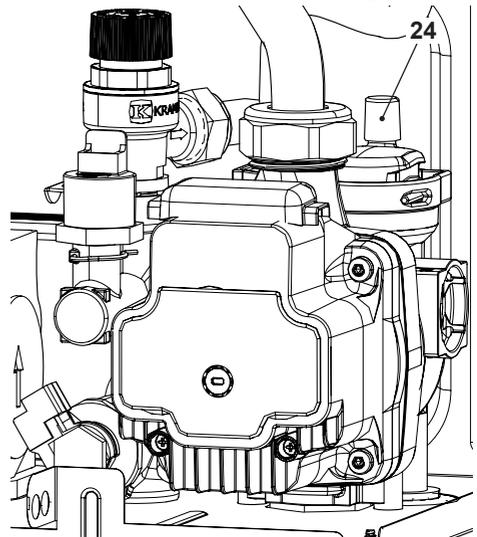


Figure 9.5

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9.5 Cleaning the primary condensate exchanger and the burner

Removing the burner fan unit 38 in Figure 9.6.

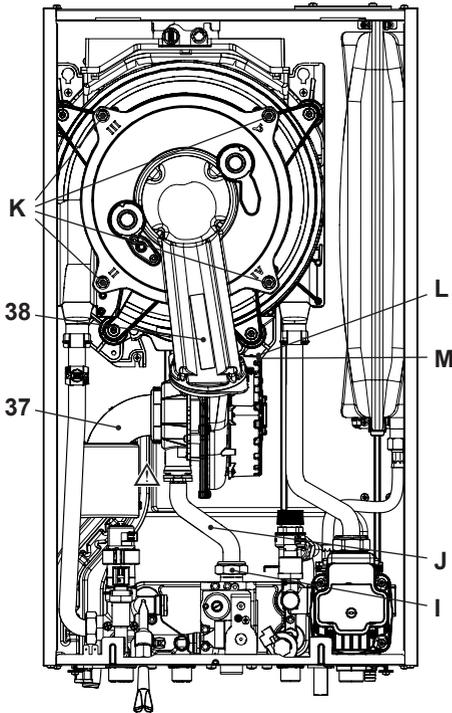


Figure 9.6

- Remove the front panel of the body and turn the control panel (see "Removing the body panels" on page 61).
- Disconnect the silencer 37 (Figure 9.6).
- Disconnect the ignition/detection electrode wiring.
- Unscrew the gas swivel joint I and remove the pipe J.
- Disconnect the connector L by pulling it (Figure 9.6 - Figure 9.7).
- Disconnect the fan connector M by pressing the plastic hook located below the connector (Figure 9.6 - Figure 9.7).

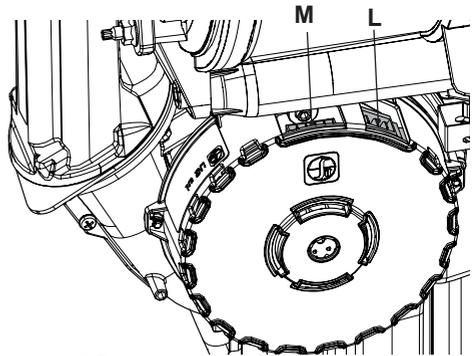


Figure 9.7

- Loosen the nuts K and remove the fan burner unit 38 (Figure 9.6).
- Extract the burner casing by pulling it outwards.
- The silicon gasket on the front panel of the combustion chamber Figure 9.8 must be changed if it becomes worn.

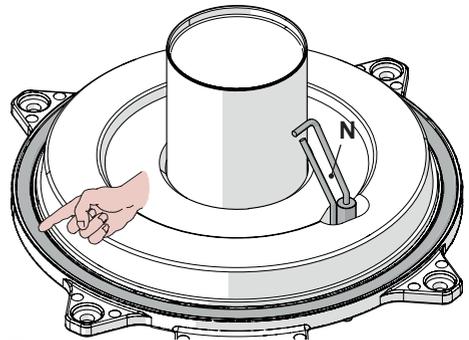


Figure 9.8

- The ignition/detection electrode N in Figure 9.8 also serves as a sensor for correctly draining the condensate. If this electrode comes into contact with the condensate water in the combustion chamber, the boiler goes into safety lock-out. Replace the insulation where wet or worn.

Remove any build-up from the detection electrode or replace it if damaged. In any case, it must

MAINTENANCE

be replaced every 2 years.

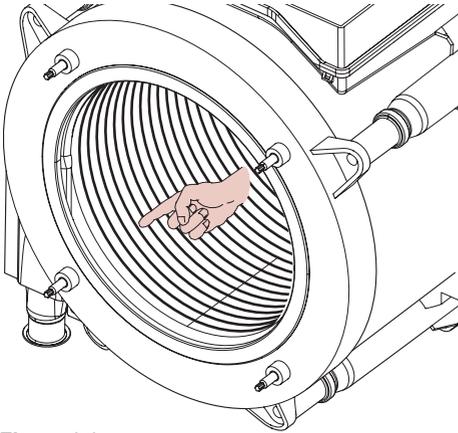


Figure 9.9

If there is any dirt on parts of the primary condensate exchanger (which can be seen after removing the burner casing), brush them with a bristle brush and then remove the dirt using a vacuum cleaner.

The burner does not require any particular maintenance. Remove any dust using a bristle brush.

More specific maintenance will be assessed and performed by a technician from an Authorised Service Centre.



For reassembly, repeat the operations in reverse order, being careful not to damage the gas pipe OR gasket when the pipe is inserted in the gas/air diaphragm. Carry out the gas tightness test after tightening the gas pipe swivel joint.

9.6 Check the pressure in the heating expansion tank

Empty the heating circuit as described in section "Emptying the heating circuit" on page 62 and check that the expansion

tank pressure is not less than 1 bar. If the pressure is lower, correct the pressure.

9.7 Cleaning the domestic hot water exchanger

Descaling the domestic hot water exchanger will be assessed by a technician from an Authorised Service Centre, who will perform the cleaning using specific products.

9.8 Checking the flue gas expulsion duct

Have a technician from an authorised service centre periodically check the condition of the flue gas exhaust duct, the air duct and the efficiency of the flue gas safety circuit (at least once a year).

9.9 Checking boiler efficiency

Carry out performance checks at the intervals anticipated by the regulations in force.

- Connect a flue analyser to the flue gas analysis outlets on the flue gas exhaust on the boiler Figure 9.10.

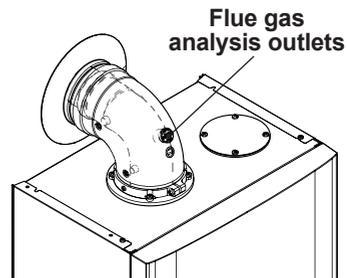


Figure 9.10

- Make sure that the room thermostat is in the "heat request" position.
- Draw off an abundant amount of DHW by opening the cocks.
- Activate the "chimney sweep function" at maximum output in DHW mode (see "Set-

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ting the boiler's chimney sweep function" on page 66)

- Check the boiler combustion using the outlets located on the flue pipes (Figure 9.10) and compare the data measured with the following.

Model M275V.2024 SM		
Nominal heat input in d.h.w. mode	kW	25,0
Nominal efficiency in d.h.w. mode	%	98,0
Combustion efficiency	%	98,4
Air index	n	1,2
Composition of CO ₂ fumes	%	9,0 - 9,6
Composition of O ₂ fumes	%	4,1
Composition of CO fumes	ppm	140
Flue gas temperature	°C	82

Values refer to tests with 80 mm 1 + 1 m twin pipe discharge and Methane gas G20 and with heating delivery/return temperature of 60°/80°C

Figure 9.11

Model M275V.2428 SM		
Nominal heat input in d.h.w. mode	kW	29,0
Nominal efficiency in d.h.w. mode	%	97,7
Combustion efficiency	%	98,2
Air index	n	1,2
Composition of CO ₂ fumes	%	9,0 - 9,6
Composition of O ₂ fumes	%	4,1
Composition of CO fumes	ppm	180
Flue gas temperature	°C	85

Values refer to tests with 80 mm 1 + 1 m twin pipe discharge and Methane gas G20 and with heating delivery/return temperature of 60°/80°C

Figure 9.12

Model M275V.2832 SM		
Nominal heat input in d.h.w. mode	kW	32,0
Nominal efficiency in d.h.w. mode	%	97,9
Combustion efficiency	%	98,4
Air index	n	1,2
Composition of CO ₂ fumes	%	9,0 - 9,6
Composition of O ₂ fumes	%	4,1
Composition of CO fumes	ppm	190
Flue gas temperature	°C	83

Values refer to tests with 80 mm 1 + 1 m twin pipe discharge and Methane gas G20 and with heating delivery/return temperature of 60°/80°C

Figure 9.13

9.10 Checking the condensate discharge siphon

The condensate discharge siphon 31 (Figure 9.14) does not require any particular maintenance. Check:

- that solid deposits have not formed and remove them if necessary
- that the condensate outlet pipes are not obstructed.

To clean the inside of the siphon, remove it and turn it upside down to eliminate any impurities.

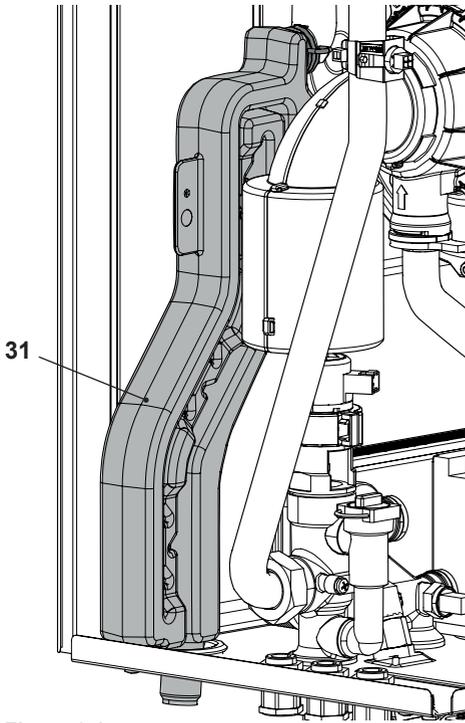


Figure 9.14

9.11 Setting the boiler's chimney sweep function

With the boiler set to chimney sweep mode, some automatic boiler functions can be disabled, which makes checking and monitoring operations easier.

- Enter “programming mode” by holding down 17 and 18 for 5 seconds at the same time (Figure 9.15). The code **P00** appears on the display, indicating entry into “parameter P00” (Figure 9.16).

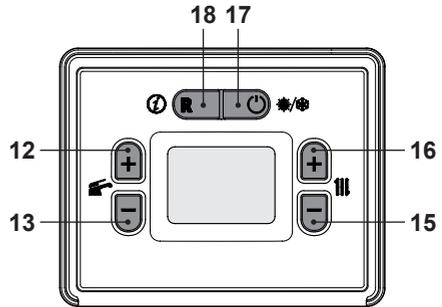


Figure 9.15



Figure 9.16

Chimney sweep function at minimum output in domestic hot water mode

- Scroll through the various parameters using 12 or 13 until the LCD display shows the code **P06**, indicating entry into “parameter P06” (Figure 9.17).



Figure 9.17

- Press 16 (Figure 9.15) to show the value of parameter P06 on the LCD display (Figure 9.18).



Figure 9.18

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- Press 16 and the LCD display shows the number **01**, indicating activation of the “chimney sweep function” at minimum output (Figure 9.19).
- Press 12 (Figure 9.15) to confirm the value entered and activate the function.

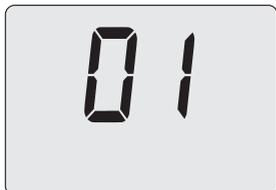


Figure 9.19

Chimney sweep function at maximum output in domestic hot water mode

- Press 16 and the LCD display shows the number **02**, indicating activation of the “chimney sweep function” at maximum DHW output.
- Press 12 (Figure 9.15) to confirm the value entered and activate the function (Figure 9.20).



Figure 9.20

Chimney sweep function at maximum output in heating mode

- Press 16 and the LCD display shows the number **03**, indicating activation of the “chimney sweep function” at maximum heating output.
- Press 12 (Figure 9.15) to confirm the value entered and activate the function (Figure 9.21).



Figure 9.21

Exiting the chimney sweep function

- To exit the chimney sweeper, reset parameter **P06** to **00** or wait 15 minutes with the boiler off (**OFF**).
- Turn the boiler off by pressing 17 (Figure 9.15) until the message **OFF** appears on the LCD display (Figure 9.22).



Figure 9.22

9.12 Settings for changing the control board

For information on replacing and configuring the control board, please contact an authorised service centre.

- Enter “programming mode” by holding down buttons 17 and 18 for 5 seconds at the same time (Figure 9.23). The code **P00** appears on the display, indicating entry into “parameter P00” (Figure 9.24).

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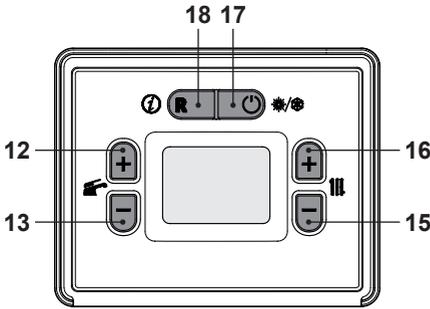


Figure 9.23



Figure 9.24

- Scroll through the various parameters using 12 or 13 until the LCD display shows the message **Cod**, indicating entry into “parameter Cod” (Figure 9.25), and then displays three dashes “- - -”.



Figure 9.25

- Press 16 to set “2 -°-”, then press 12 to confirm the 2 and go to the next segment.
- Press 16 to set “2°7 -”, then press 12 to confirm the 7 and go to the next segment.
- Press 16 to set “2°7°5”, then press 12 to confirm the 5 and go back to the list of parameters.
- The code **P10** appears on the display, indicating entry into “parameter P10” (Figure 9.26).

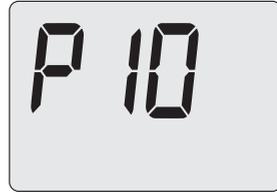


Figure 9.26

- Use 15 or 16 (Figure 9.23) to change the value of parameter P10 (Figure 9.27):
03 = M275V.2024 SM
04 = M275V.2428 SM
05 = M275V.2832 SM



Figure 9.27

- Press 12 or 13 (Figure 9.23) to confirm the value entered and return to the list of parameters (Figure 9.26).
- Press 12 or 13 and hold until the LCD display shows the code **P02**, indicating entry into “parameter P02” (Figure 9.28).



Figure 9.28

- Use 15 or 16 (Figure 9.23) to change the value of parameter P02 (Figure 9.29).
78 = Default
83 = Correct

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Figure 9.29

- Press 12 and hold until the LCD display shows the code **P09**, indicating entry into “parameter P09” (Figure 9.30).



Figure 9.30

- Use 15 or 16 (Figure 9.23) to change the value of parameter P09 (Figure 9.31).
03 = Default
01 = Correct



Figure 9.31

- Press 12 or 13 (Figure 9.23) to confirm the value entered and return to the list of parameters (Figure 9.28).
- Press 12 and hold until the LCD display shows the code **A01**, indicating entry into “parameter A01” (Figure 9.32).

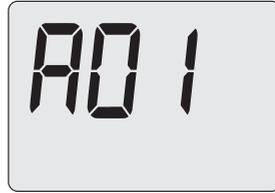


Figure 9.32

- Use 15 or 16 (Figure 9.23) to change the value of parameter A01 (Figure 9.33).
00 = Methane gas (G20)
01 = Propane gas - LPG (G31)

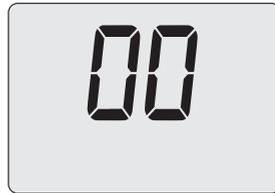


Figure 9.33

- Press 12 or 13 (Figure 9.23) to confirm the value entered and return to the list of parameters (Figure 9.32).
- Press 12 and hold until the LCD display shows the code **A02**, indicating entry into “parameter A02” (Figure 9.34).



Figure 9.34

- Use 15 or 16 (Figure 9.23) to change the value of parameter A02:
01 = high temperature (50/80°C)
02 = low temperature (25/55°C)
03 = complete temperature set (25/85°C) (factory setting)
- Press 12 or 13 (Figure 9.23) to confirm the value entered and return to the list of pa-

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parameters (Figure 9.34).

- Press 12 and hold until the LCD display shows the code **A12**, indicating entry into “parameter A12” (Figure 9.35).



Figure 9.35

- Use 15 or 16 (Figure 9.23) to change the value of parameter A12 (Figure 9.36).

03 = Default
04 = Correct



Figure 9.36

- Press 12 (Figure 9.23) to confirm the value entered and return to the list of parameters (Figure 9.35).
- Press 12 and hold until the LCD display shows the code **A21**, indicating entry into “parameter A21” (Figure 9.37).



Figure 9.37

- Use 15 or 16 (Figure 9.23) to change the value of parameter A21 (Figure 9.38).
00 = Room thermostat
01 = Remote control

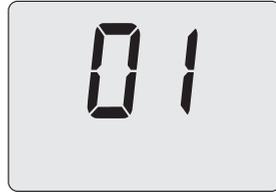


Figure 9.38

- Press 12 (Figure 9.23) to confirm the value entered and return to the list of parameters (Figure 9.37).

- Press 12 and hold until the LCD display shows the code **A38**, indicating entry into “parameter A38” (Figure 9.39).



Figure 9.39

- Use 15 or 16 (Figure 9.23) to change the value of parameter A38 (Figure 9.40).

60 = Default
10 = Correct



Figure 9.40

- Press 12 or 13 (Figure 9.23) to confirm the value entered and return to the list of parameters (Figure 9.39).

- Press 17 (Figure 9.23) to exit “programming mode”.

BOILER DISPOSAL AND RECYCLING

10 BOILER DISPOSAL AND RECYCLING

The boiler and any accessories must be disposed of correctly, recycling the different materials where possible.

The installer must dispose of the packaging used to transport the boiler.



Please observe the regulations currently in force regarding recycling and disposing of the boiler and any accessories.

For electronic appliances specifically, please see Directive 2012/19/EU and ANNEX IX of the Italian Decree transposing this Directive, DL49/14.





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This manual replaces previous versions.

In order to constantly improve its products, BSG Caldaie a Gas S.p.A. reserves the right to change the data provided in this manual at any time and without notice. Product warranty pursuant to Leg. Decree. no. 24/2002