

WESTEN

boiler digit

GB

High performance gas-fired wall-mounted boilers with rapid storage boiler
instructions manual for users and fitters

RO

Centrale murale pe gaz cu randament ridicat cu acumulare rapidă
Instrucțiuni pentru instalator i pentru utilizator

HU

Nagyteljesítményű gyorsakkumulációs fali gázkazánok
Felhasználói és szerelői kézikönyv

RU

Настенные газовые котлы высокой производительности быстрого нагрева
Руководство по эксплуатации для пользователя и установщика

GR

Υψηλής απόδοσης λέβητες αερίου επίτοιχης εγκατάστασης με ταχεία συσσώρευση
ΕΓΧΕΙΡΙΔΙΟ ΧΡΗΣΗΣ ΓΙΑ ΤΟ ΧΡΗΣΤΗ ΚΑΙ ΤΟΝ ΕΓΚΑΤΑΣΤΑΤΗ

ES

calderas murales de gas de alto rendimiento con acumulación rápida
manual de uso para el usuario y el instalador

CE 0051



ΜΠ02

Dear Customer,

We are confident your new boiler will meet all your requirements.

All **Baxi** products have been designed to give you what you are looking for: good performance combined with simple and rational use. Please do not put away this booklet without reading it first as it contains some useful information which will help you to operate your boiler correctly and efficiently.

Do not leave any packaging (plastic bags, polystyrene, etc.) within the reach of children as they are a potential source of danger

Baxi S.p.A. declares that these models of boiler bear the CE mark in compliance with the basic requirements of the following Directives:

- Gas Directive 90/396/EEC
- Efficiency Directive 92/42/EEC
- Electromagnetic Compatibility Directive 2004/108/EEC
- Low Voltage Directive 2006/95/EC



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1. INSTRUCTIONS PRIOR TO INSTALLATION

This boiler has been designed to heat water to a temperature lower than boiling point at atmospheric pressure.

It must be connected to a central heating system and to a domestic hot water supply system according to its performance and power output.

Before having the boiler installed by a qualified fitter, check the following:

- a) Make sure that the boiler is adjusted to use the type of gas delivered by the gas supply. To do this, check the markings on the packaging and the rating plate on the appliance.
- b) Make sure that the flue terminal draft is appropriate, that the terminal is not obstructed and that no exhaust gases from other appliances are expelled through the same flue duct, unless the latter has been specially designed to collect exhaust gas from more than one appliance, in compliance with current laws and regulations.
- c) Make sure that, if the boiler is connected to existing flue ducts, these have been thoroughly cleaned as residual products of combustion may detach from the walls during operation and obstruct the flow of fumes.
- d) To ensure correct operation and maintain the warranty, observe the following precautions:

1. DHW circuit:

1.1. If the water is harder than 20 °F (1 °F = 10 mg calcium carbonate per litre of water), install a polyphosphate dispenser or an equivalent treatment system, compliant with current regulations.

1.2. Thoroughly flush the system after installation of the appliance and before use.

2. Heating circuit

2.1. new system

Before proceeding with installation of the boiler, the system must be cleaned and flushed to eliminate residual thread-cutting swarf, solder and any solvents, using suitable proprietary products. To avoid damaging metal, plastic and rubber parts, only use neutral cleaners, i.e. non-acid and non-alkaline. Recommended cleaning products are:

SENTINEL X300 or X400 and FERNOX Regenerator for heating circuits. Use these products in strict compliance with the manufacturers' instructions.

2.2. existing system

Before installing the boiler, drain the system and clean it to remove sludge and contaminants, using suitable proprietary products as described in section 2.1.

To avoid damaging metal, plastic and rubber parts, use only neutral cleaners, i.e. non-acid and non-alkaline such as SENTINEL X100 and FERNOX Protector for heating circuits. Use these products in strict compliance with the manufacturers' instructions.

Remember that the presence of foreign bodies in the heating system can adversely affect boiler operation (e.g. overheating and excessive noise of the heat exchanger).

Failure to observe the above will render the guarantee null and void.

2. INSTRUCTIONS PRIOR TO COMMISSIONING

Initial lighting of the boiler must be carried out by an authorised Service Engineer who must first ensure that: a) the rated data correspond to the supply (electricity, water and gas) data. b) the installation complies with current laws and regulations. c) the appliance is correctly connected to the power supply and earthed.


The names of the authorised Service Centres are indicated in the attached sheet.


Failure to observe the above will render the guarantee null and void.

Prior to commissioning, remove the protective plastic coating from the boiler. Do not use any tools or abrasive detergents to do this as you may damage the painted surfaces.

3. COMMISSIONING THE BOILER


To light the boiler correctly, proceed as follows:

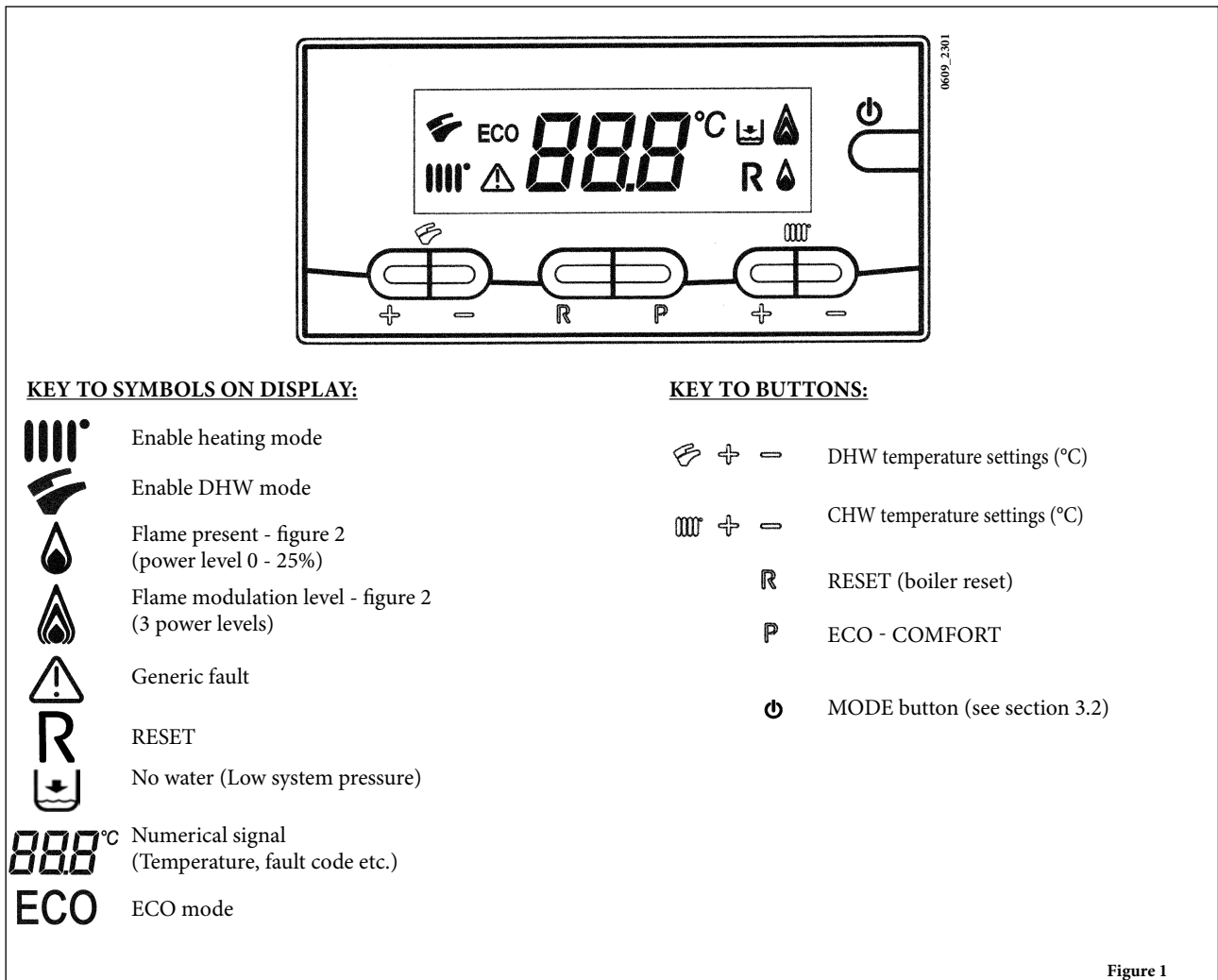
- Power the boiler.
- Open the gas tap;
- Press button  (approx. 2 seconds) to set the boiler operating mode as described in section 3.2.

NOTE: if the SUMMER , mode is set, the boiler will only light during a DHW demand.

- To adjust CHW and DHW temperatures, press the +/- buttons as described in section 4.

WARNING

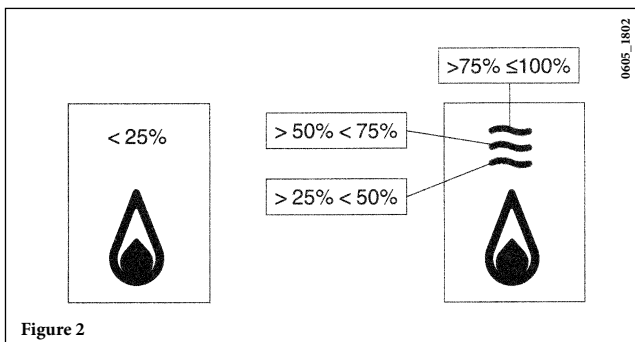
During initial ignition, the burner may not ignite (causing the boiler to shut down) until any air in the gas pipes is vented. In this case, repeat the ignition procedure until gas reaches the burner. Press the RESET button  for at least 2 seconds.



If the optional remote control device is connected, adjust the boiler using this device. See the instructions accompanying this accessory item.

3.1 MEANING OF THE SYMBOL

4 different boiler modulation levels are shown on during boiler operation, as indicated in figure 2.





3.2 OPERATING MODES



There are 4 boiler operating modes:


- OFF (OFF)
- SUMMER 
- WINTER 
- HEATING ONLY 

To set an operating mode, press  for approximately 2 seconds.




In the OFF mode, the display shows neither of the above two symbols . In this mode, only the ambient frost protection function is active while requests for DHW and central heating are not satisfied.

In the SUMMER mode, the display shows . The boiler satisfies requests for DHW only while central heating is NOT enabled (ambient frost protection function active).

In the WINTER mode, the display shows  and . The boiler satisfies requests for both DHW and central heating (ambient frost protection function active).


In the HEATING ONLY mode, the display shows . The boiler satisfies requests for central heating only (ambient frost protection function active).

4. ADJUSTING CHW AND DHW TEMPERATURES


Adjust the heating delivery temperature  and the DHW temperature  by pressing the respective +/- buttons (figure 1). When the burner is lit, the control panel display shows the symbol .

HEATING

The system must be fitted with an ambient thermostat for controlling indoor temperature.

While the boiler is operating in the heating mode, the display shows the flashing symbol , and the heating delivery temperature (°C).


DHW

While the boiler is operating in the DHW mode, the display shows the flashing symbol , and the storage boiler water delivery temperature (°C).


Press **P** to set two different DHW temperature values, **ECO** and **COMFORT**.

To modify the temperatures, proceed as follows:

ECO

Press **P**, the display shows “eco”, and then +/-  to set the required temperature setpoint.


COMFORT

Press **P**, the display shows just the temperature setting, and then +/-  to set the required temperature setpoint.

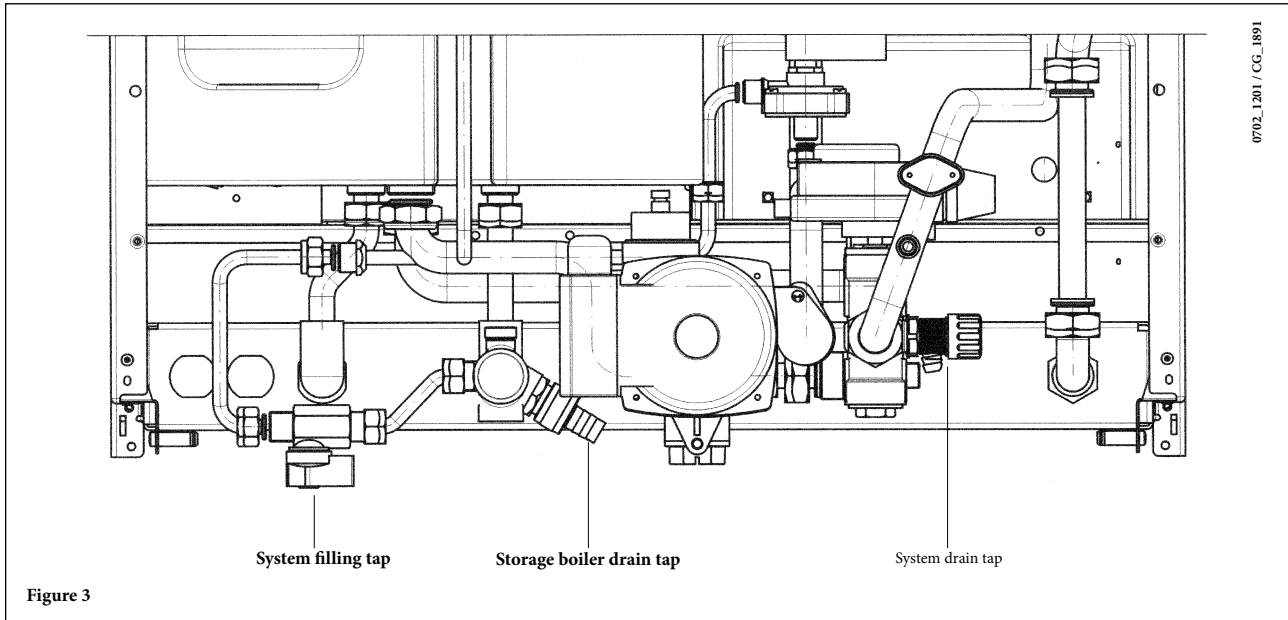
5. FILLING THE SYSTEM

IMPORTANT: Regularly check that the pressure displayed on the pressure gauge (14 - figures 17 and 18) is 0.5 - 1 bar, with the system cold. In case of overpressure, open the boiler drain valve. If pressure is lower, open the boiler filling tap (figure 3).

Open the tap very slowly in order to vent the air.

During this operation, the boiler must be "OFF" (press  - figure 1).

In case pressure drops occur frequently, have the boiler checked by an authorised Service Engineer.



The boiler is fitted with a differential hydraulic pressure gauge which prevents the boiler from working if the pump is blocked or if there is no water.

6. TURNING OFF THE BOILER

To turn off the boiler, disconnect the electric power supply. With the gas boiler in the "OFF" mode (section 3.2), the electric circuits remain powered and the frost protection function is enabled (section 7).

7. PROLONGED SHUTDOWN. FROST PROTECTION

Do not drain the whole system as filling up with water again causes unnecessary and harmful scale to build up inside the boiler and the heating elements. If the boiler is not used during winter and is therefore exposed to the danger of frost, add some specific anti-freeze to the water in the system (e.g.: propylene glycol coupled with corrosion and scale inhibitors).

The electronic boiler management system includes a "frost protection" function for the heating system which, when delivery temperature falls below 5°C, operates the burner until a delivery temperature of 30°C is reached.

The frost protection function is enabled if:

- * the boiler is electrically powered;
- * the gas tap is open;
- * the system is at the correct pressure;
- * the boiler is not blocked.

8. GAS CONVERSION

The boilers can operate both on natural gas and LPG.

All gas conversions must be made by an authorised Service Engineer.

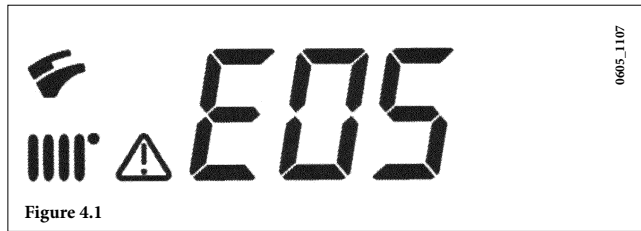
9. TROUBLESHOOTING

Faults are shown on the display with an error code (e.g.: E01):

The faults that can be reset by the user are indicated on the display with the symbol **R** (figure 4).

The faults that cannot be reset by the user are indicated on the display with the symbol **⚠** (figure 4.1).

To RESET the boiler, press and hold down **R** for at least 2 seconds.



CODE DISPLAYED	TYPE OF FAULT	CORRECTIVE ACTION
E01	Ignition failure	Press R . If this fault persists, call the Authorised Service Centre.
E02	Safety thermostat tripped	Press R . If this fault persists, call the Authorised Service Centre.
E03	Flue thermostat/ flue pressure switch tripped	Call the Authorised Service Centre.
E04	Safety error due to frequent flame loss	Call the Authorised Service Centre.
E05	Delivery sensor fault	Call the Authorised Service Centre.
E06	DHW sensor fault	Call the Authorised Service Centre.
E11	Safety thermostat for low temperature system cuts in (if connected)	Call the Authorised Service Centre.
E12	Differential hydraulic pressure switch block	Check that the pressure in the system is correct; See section 5. If this fault persists, call the Authorised Service Centre.
E13	Differential hydraulic pressure switch contract faulty	Check that the pressure in the system is correct; See section 5. If this fault persists, call the Authorised Service Centre.
E25	No water safety trip	Call the Authorised Service Centre.
E31	Communication error between electronic board and remote control unit	Press R . If this fault persists, call the Authorised Service Centre.
E35	Parasite flame (flame error)	Press R . If this fault persists, call the Authorised Service Centre.
E98	Internal board error	Call the Authorised Service Centre.
E99	Internal board error	Call the Authorised Service Centre.

10. ROUTINE MAINTENANCE INSTRUCTIONS

To keep the boiler efficient and safe, have it checked by the authorised Service Centre at the end of every operating period.

Careful servicing ensures economical operation of the system.

Do not clean the outer casing of the appliance with abrasive, aggressive and/or easily flammable cleaners (e.g.: petrol, alcohol, and so on).

Always switch off the appliance before cleaning it (see section 6 Switching off the boiler).

11. GENERAL PRECAUTIONS

The following remarks and instructions are addressed to Service Engineers to help them carry out a faultless installation. Instructions regarding lighting and operation of the boiler are contained in the 'Instructions pertaining to the user' section.

Note that installation, maintenance and operation of the domestic gas appliances must be performed exclusively by qualified personnel in compliance with current standards.

Please note the following:

- * This boiler can be connected to any type of double- or single feeding pipe convector plates, radiators, thermoconvectors. Design the system sections as usual though taking into account the available output / pump head performances, as shown in section 25.
- * Do not leave any packaging components (plastic bags, polystyrene, etc.) within children's reach as they are a potential source of danger.
- * Initial lighting of the boiler must be effected by a Qualified Service Engineer.

Failure to observe the above will render the guarantee null and void.

12. INSTRUCTIONS PRIOR TO INSTALLATION

This boiler has been designed to heat water to a temperature lower than boiling point at atmospheric pressure.

It must be connected to a central heating system and to a domestic hot water supply system according to its performance and power output.

Before having the boiler installed by a qualified fitter, check the following:

- a) Make sure that the boiler is adjusted to use the type of gas delivered by the gas supply. To do this, check the markings on the packaging and the rating plate on the appliance.
- b) Make sure that the flue terminal draft is appropriate, that the terminal is not obstructed and that no exhaust gases from other appliances are expelled through the same flue duct, unless the latter has been specially designed to collect exhaust gas from more than one appliance, in compliance with current laws and regulations.
- c) Make sure that, if the boiler is connected to existing flue ducts, these have been thoroughly cleaned as residual products of combustion may detach from the walls during operation and obstruct the flow of fumes.

To ensure correct operation and maintain the warranty, observe the following precautions:

1. DHW circuit:

1.1. If the water is harder than 20 °F (1 °F = 10 mg calcium carbonate per litre of water), install a polyphosphate dispenser or an equivalent treatment system, compliant with current regulations.

1.2. Thoroughly flush the system after installation of the appliance and before use.

2. Heating circuit

2.1. new system

Before proceeding with installation of the boiler, the system must be cleaned and flushed to eliminate residual thread-cutting swarf, solder and any solvents, using suitable proprietary products. To avoid damaging metal, plastic and rubber parts, only use neutral cleaners, i.e. non-acid and non-alkaline. Recommended cleaning products are:

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2.2. existing system

Before installing the boiler, drain the system and clean it to remove sludge and contaminants, using suitable proprietary products as described in section 2.1.

To avoid damaging metal, plastic and rubber parts, use only neutral cleaners, i.e. non-acid and non-alkaline such as SENTINEL X100 and FERNOX Protector for heating circuits. Use these products in strict compliance with the manufacturers' instructions.

Remember that the presence of foreign bodies in the heating system can adversely affect boiler operation (e.g. overheating and excessive noise of the heat exchanger).

Failure to observe the above will render the guarantee null and void.

13. TEMPLATE FOR FIXING THE BOILER TO THE WALL

After deciding the exact location of the boiler, fix the template to the wall.

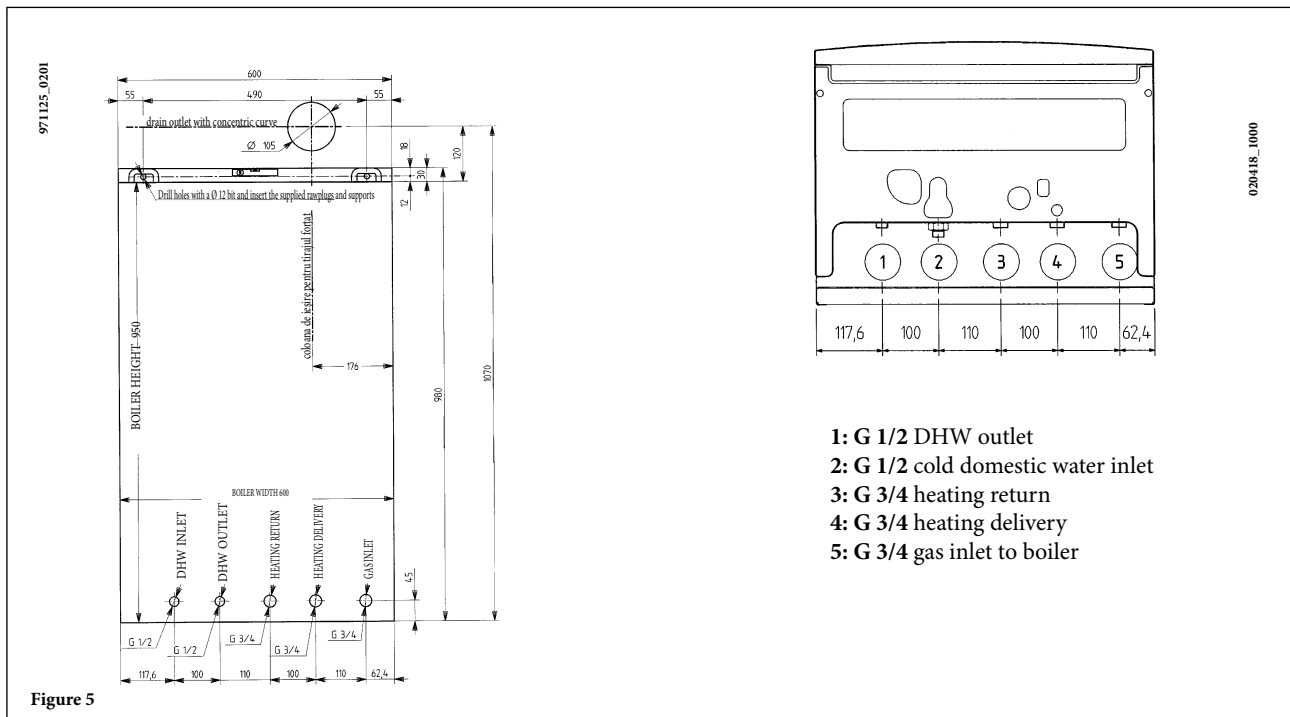
Connect the system to the gas and water inlets present on the lower bar of the template.

Fit two G3/4 taps (delivery and return) on the central heating circuit; these taps make it possible to carry out important operations on the system without draining it completely.

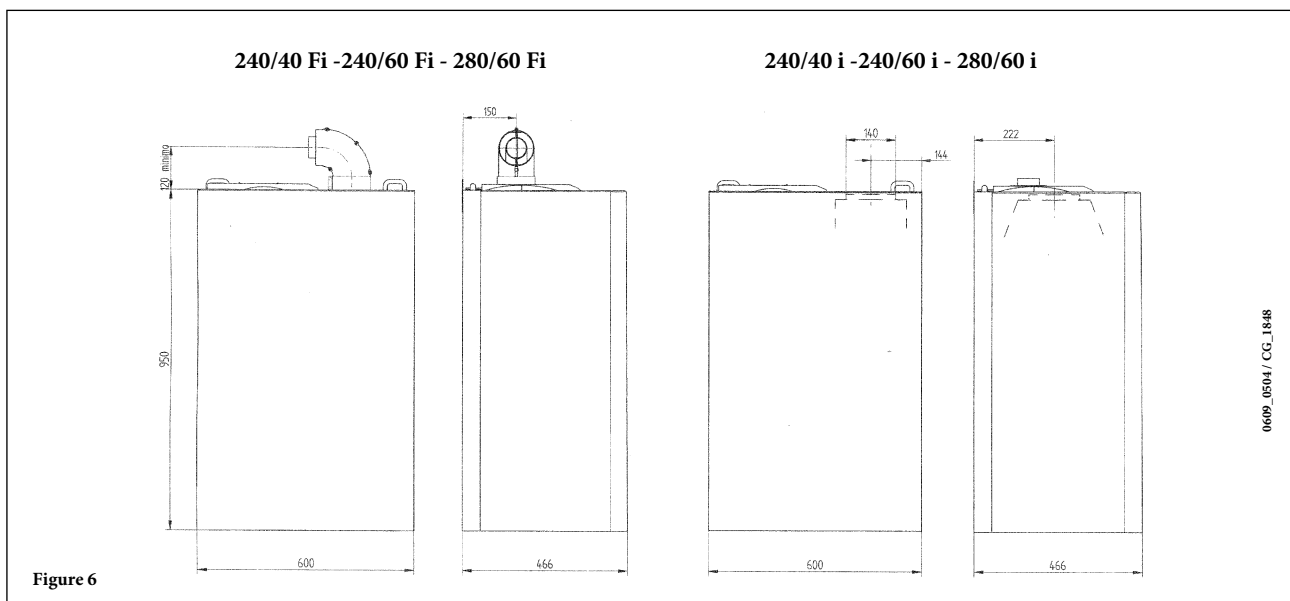
If you are either installing the boiler on an existing system or replacing one, as well as the above, fit a settling tank under the boiler on the system return line in order to collect any deposits and scale circulating in the system after flushing.

After fixing the boiler to the template, connect the flue and air ducts, supplied as accessories, as described in the following sections.

If natural draught boilers are installed, connect them to the flue with a metal pipe resistant to normal mechanical stress, heat, products of combustion and relative condensate.



14. DIMENSIONS OF BOILER



15. CONTENTS OF PACK SUPPLY AS ACCESSORY

- gas tap (1)
- water supply tap (2)
- gaskets
- telescopic joints
- 12 mm rawplugs and supports

BOILER DIGIT 240/40 i -240/40 Fi

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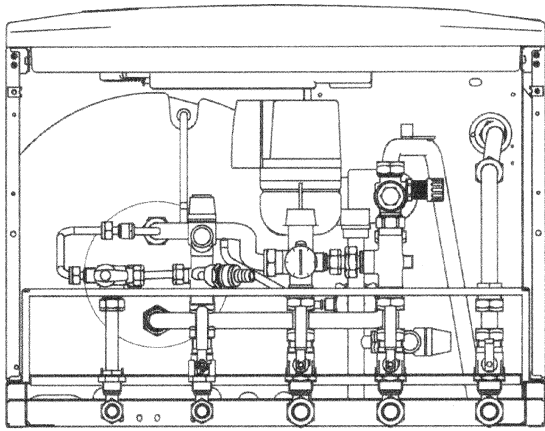
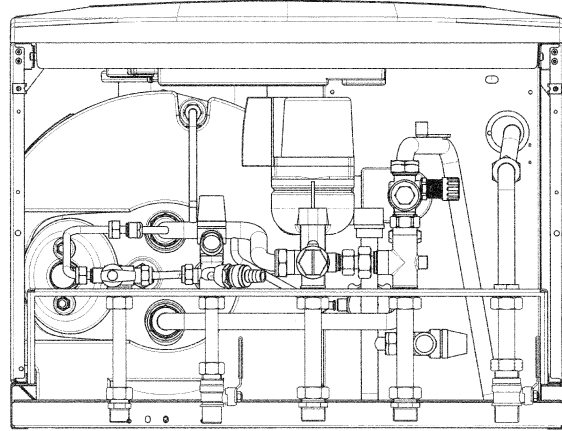


Figure 7

BOILER DIGIT 240/60 i -240/60 Fi - 280/60 i - 280/60 Fi

0702_1202/CC_1892



16. INSTALLATION OF FLUE AND AIR DUCTS

The boiler is easy and flexible to install thanks to the extensive range of available accessories, as described below.

The boiler has been designed for connection to a vertical or horizontal coaxial flue-air duct. A splitting kit is also available if separate ducts are required.

Only accessories supplied by the manufacturer must be used for installation!

COAXIAL FLUE-AIR DUCT (CONCENTRIC)

This type of duct is used to discharge exhaust fumes and draw combustion air both outside the building and if a LAS flue is fitted.

The 90° coaxial curve allows the boiler to be connected to a flue-air duct in any direction as it can be rotated by 360°. It can also be used as a supplementary curve combined with a coaxial duct or a 45° curve.

WARNING

to optimise operating safety, make sure the flue ducts are firmly fixed to the wall with suitable brackets.

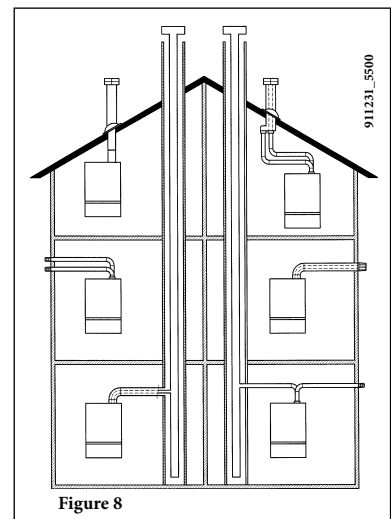


Figure 8

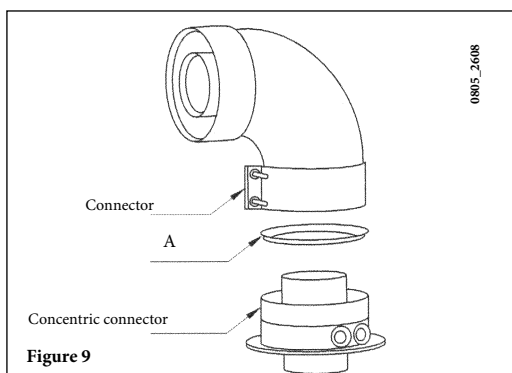


Figure 9

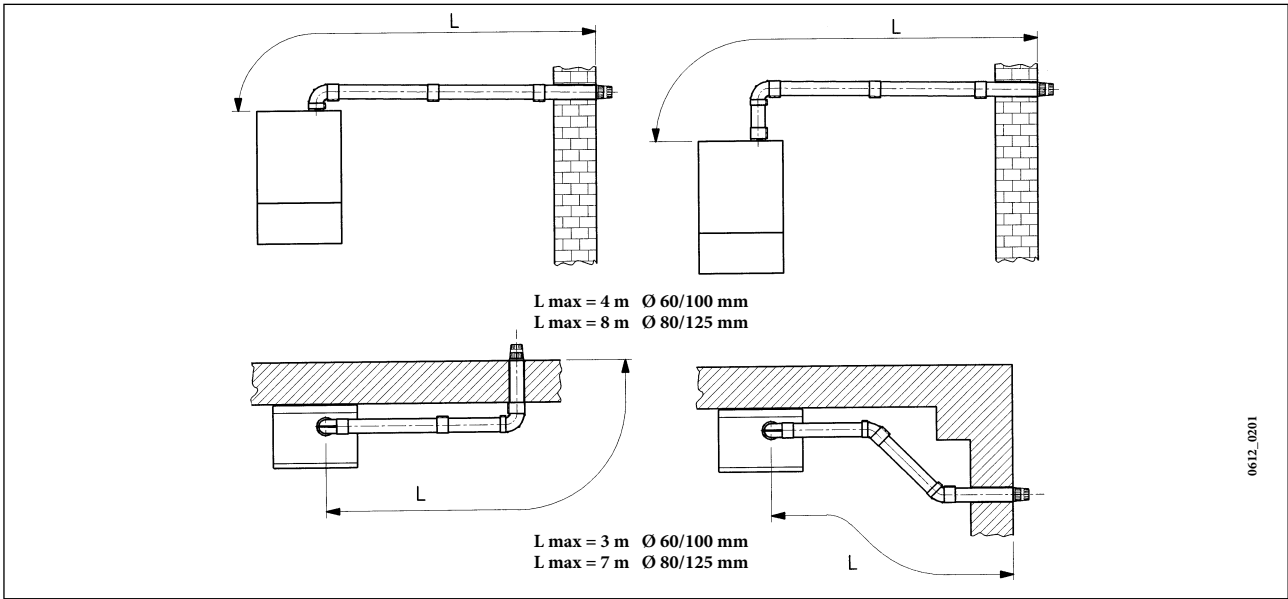
BOILER MODEL	MAX. LENGTH (m)	INLET DIAPHRAGM (A) (mm)
BOILER DIGIT 240/40 Fi - 240/60 Fi	0,5	73
	0,5 ÷ 2	80
	2 ÷ 4	NO
BOILER DIGIT 280/60 Fi	0 ÷ 1	76
	1 ÷ 4	NO

If fumes are discharged outside the building, the flue-air duct must protrude at least 18 mm from the wall to allow an aluminium weathering surround to be fitted and sealed to avoid water infiltrations.

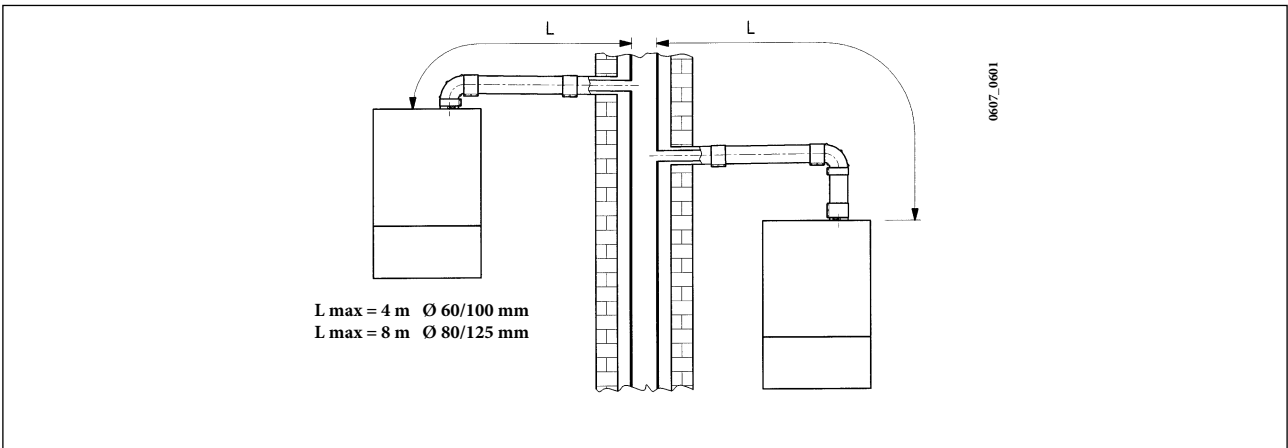
Make sure there is a minimum upward slope towards the outside of 1 cm per metre of duct.

- A 90° curve reduces total duct length by 1 metre.
- A 45° curve reduces total duct length by 0.5 metres.

16.1 HORIZONTAL FLUE INSTALLATION OPTIONS

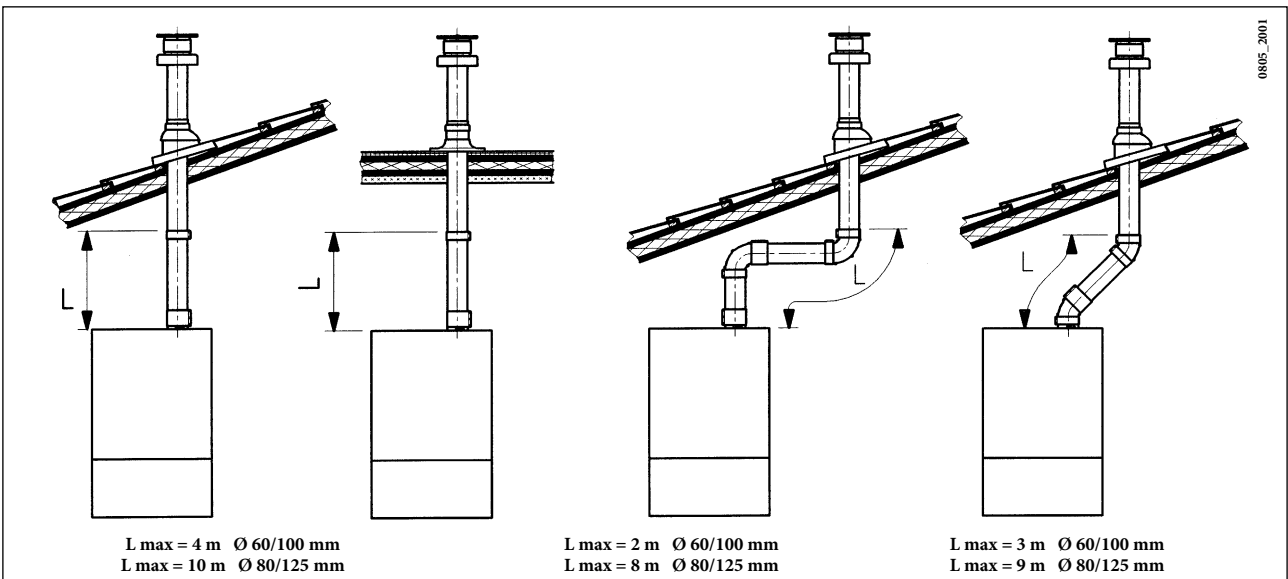


16.2 LAS FLUE DUCT INSTALLATION OPTIONS



16.3 VERTICAL FLUE INSTALLATION OPTIONS

This type of installation can be carried out on either a flat or a pitched roof by fitting a flue terminal and a special weathering surround with sleeve (both available on request).



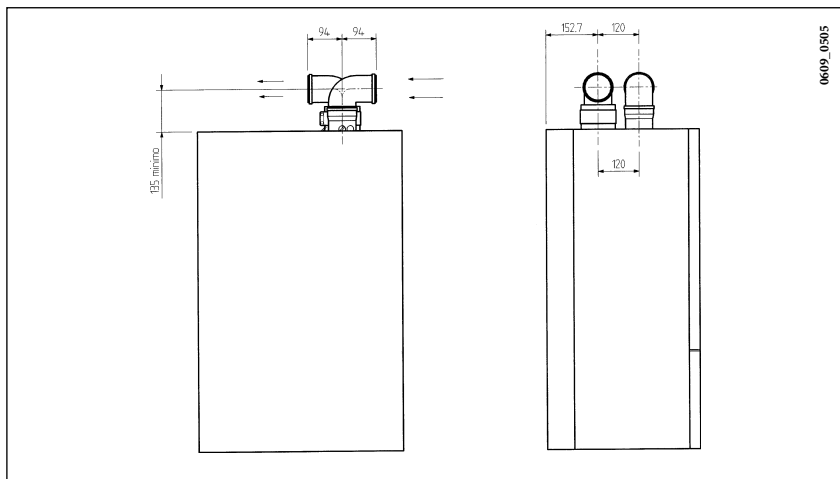
For detailed installation instructions, consult the technical data provided with the accessories.

SEPARATE FLUE AND AIR DUCTS

This type of installation makes it possible to discharge exhaust fumes both outside the building and into single flue ducts. Comburent air can be drawn in at a different location from that of the flue terminal. The splitting kit comprises a flue duct adaptor (100/80) and an air duct adaptor. For the air duct adaptor, fit the screws and seals previously removed from the cap. Remove the diaphragm in the boiler if these types of flue ducts are used.

NOTE: *The first 90° curve is not included when calculating the maximum available length.*

The 90° curve allows the boiler to be connected to a flue-air duct in any direction as it can be rotated by 360°. It can also be used as a supplementary curve combined with a duct or a 45° curve.



- A 90° curve reduces total duct length by 0.5 metres.
- A 45° curve reduces total duct length by 0.25 metres.

Adjusting the air regulator for separate flues

This regulator must be adjusted to optimise combustion efficiency and parameters.

After turning the air intake connector, suitably adjust the excess air according to the total length of the combustion exhaust and inlet flue ducts.

Turn this regulator clockwise to decrease the excess of comburent air and vice-versa to increase it.

To fine tune, use a combustion product analyser to measure the amount of CO₂ in the fumes at maximum heat capacity, and, if a lower value is measured, gradually adjust the air regulator until the amount of CO₂ indicated in the following table is measured.

To mount this device correctly, consult the relative instructions.

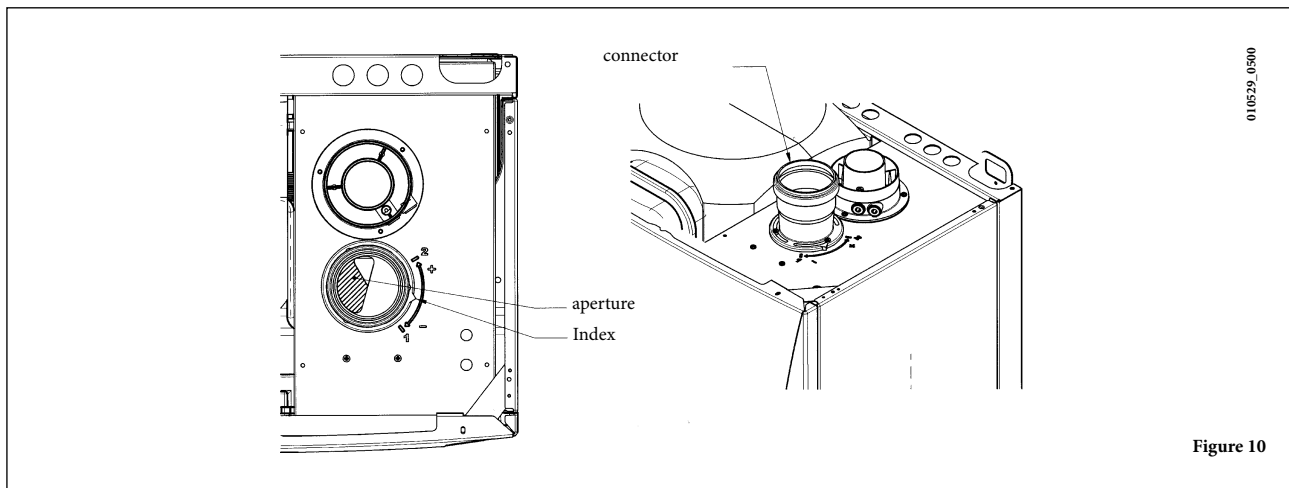


Figure 10

	MAX. LENGTH	GAUGE POSITION	CO2%		
	L1+L2 (m)	AFR	G20	G30	G31
240/40 Fi - 240/60 Fi	0 ÷ 20	1	6,7	8,7	8,7
	20 ÷ 30	2			
280/60 Fi	0 ÷ 20	1	6,0	8,0	8,0
	20 ÷ 30	2			

NOTE: For the C52 type, do not fit the flue and air duct terminals on opposite walls of the building. The maximum length of the air duct is 10 metres.

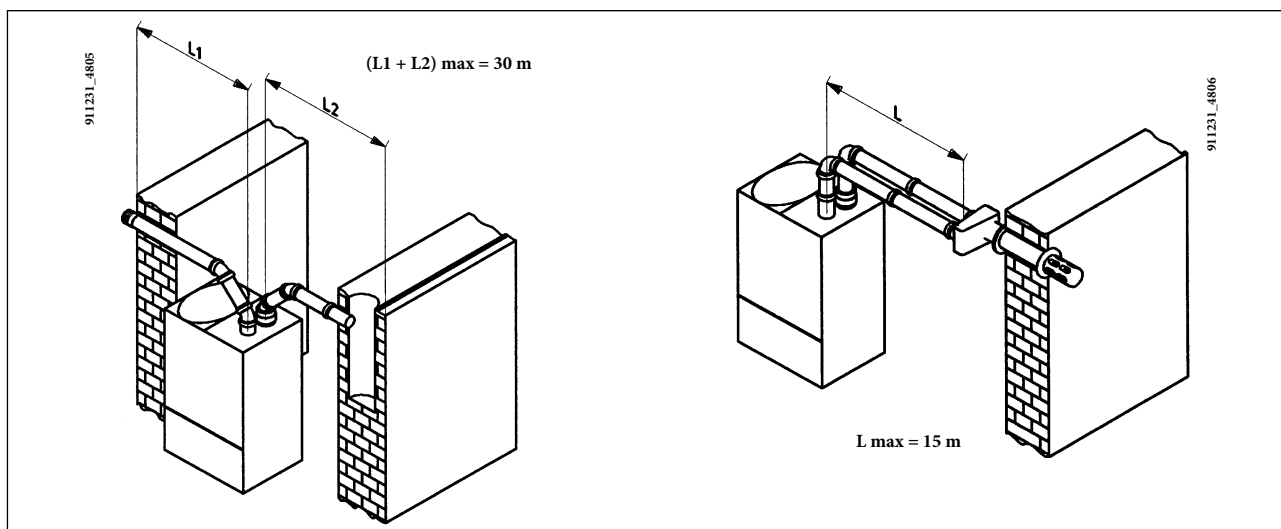
If the discharge duct is longer than 6 metres, install the condensate collection kit, supplied as an accessory, near the boiler.

IMPORTANT: if fitting a single flue duct, make sure it is adequately insulated (e.g.: with glass wool) wherever the duct passes through building walls.

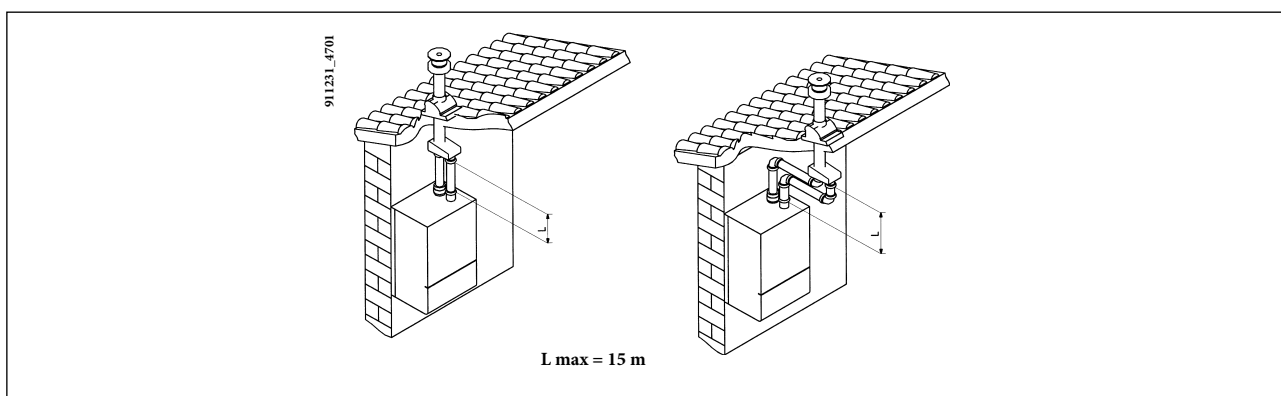
For detailed installation instructions, consult the technical data provided with the accessories.

16.4 INSTALLATION OPTIONS WITH SEPARATE DUCTS

IMPORTANT: Make sure there is a minimum downward slope towards the outside of 1 cm per metre of duct length. If the condensate collection kit is installed, the discharge duct must slope down towards the boiler.



16.5 INSTALLATION OPTIONS WITH SEPARATE VERTICAL DUCTS



17. ELECTRICAL CONNECTIONS

This machine is only electrically safe if it is correctly connected to an efficient earth system in compliance with current safety regulations.

Connect the boiler to a 230V single-phase earthed power supply using the supplied three-pin cable, observing correct LIVE-NEUTRAL polarity.

Use a double-pole switch with a contact separation of at least 3 mm.

When replacing the power supply cable, fit a harmonised HAR H05 VV-F' 3x0.75mm² cable with a maximum diameter of 8 mm.

Access to the power supply terminal block

- disconnect the boiler from the mains power supply using the two-pole switch;
- remove the two screws fixing the control panel to the boiler;
- rotate the control panel;
- remove the cover and access the wiring area (figure 10).

The 2A fast-blowing fuses are incorporated in the power supply terminal block (to check and/or replace the fuse, pull out the black fuse carrier).

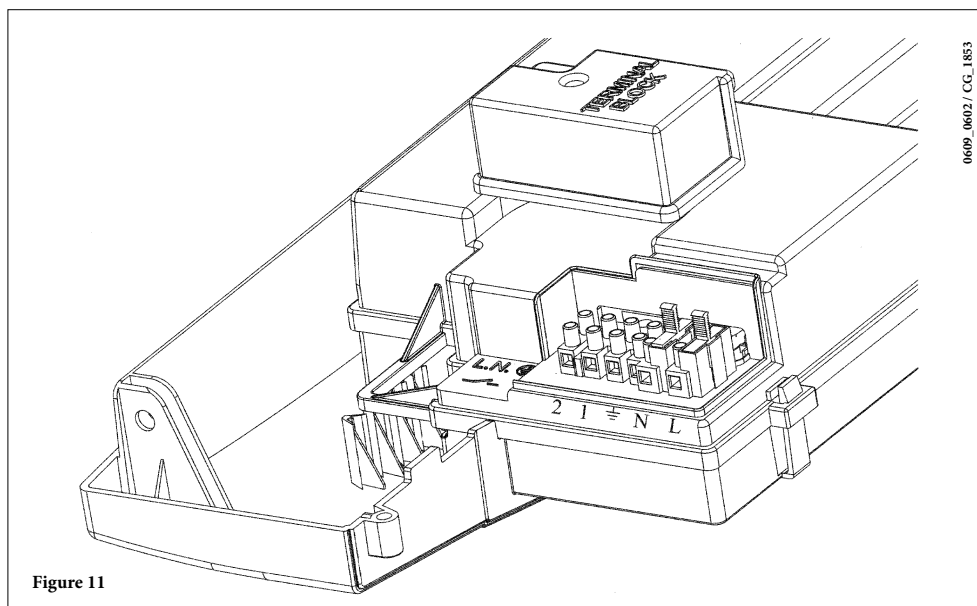
(L) = **Live** (brown)

(N) = **Neutral** (blue)

(⊕) = **Earth** (yellow-green)

(1) (2) = **Contact for ambient thermostat**

IMPORTANT: respect polarity L (LIVE) -N (NEUTRAL).



WARNING

If the appliance is directly connected to a underfloor system, install a safety thermostat to prevent the latter from overheating.

18. CONNECTING THE AMBIENT THERMOSTAT

- access the power supply terminal block (figure 11) as described in the previous section;
- remove the jumper on terminals (1) and (2);
- thread the two-wire cable through the grommet and connect it to these two terminals.

19. GAS CONVERSION METHODS

The authorised Technical Assistance Service can convert this boiler to natural gas (G20) or liquid gas (G31).

Carry out the following operations:

- A) replace the main burner nozzles;
- B) change the modulator voltage
- C) new max. and min. calibration of the pressure regulator

A) Replace the burner injectors;

- carefully pull the burner off its seat;
- replace the burner injectors making sure to fully tighten them to prevent gas leaks. Injector diameters are specified in table 1.

Replacing the diaphragm nozzle (for models 240/40 i - 240/60 i - 240/40 Fi and 240/60 Fi)

- remove the gas inlet hose (1 of Figure 12b);
- replace the diaphragm nozzle mounted on the gas valve (2);
- put back the gas inlet hose.


B) Change the modulator voltage

- set parameter **F02** according to the gas used, as described in section 21.

C) Calibrate the pressure regulator

- connect the positive pressure test point of a differential pressure gauge (possibly water-operated) to the gas valve pressure test point (**Pb**) (figure 12a). For models 240 i/Fi use the pressure tap (3) in the gas inlet hose (figure 12b). Only for models with sealed chambers, connect the negative pressure test point of the pressure gauge to a "T" fitting in order to join the boiler adjustment outlet, the gas valve adjustment outlet (**Pc**) and the pressure gauge. (The same measurement can be made by connecting the pressure gauge to the pressure test point (**Pb**) after removing the front panel of the sealed chamber);
Measuring burner pressure using methods other than those described could lead to incorrect results as the low pressure created by the fan in the sealed chamber would not be taken into account.

C1) adjustment to nominal heat output

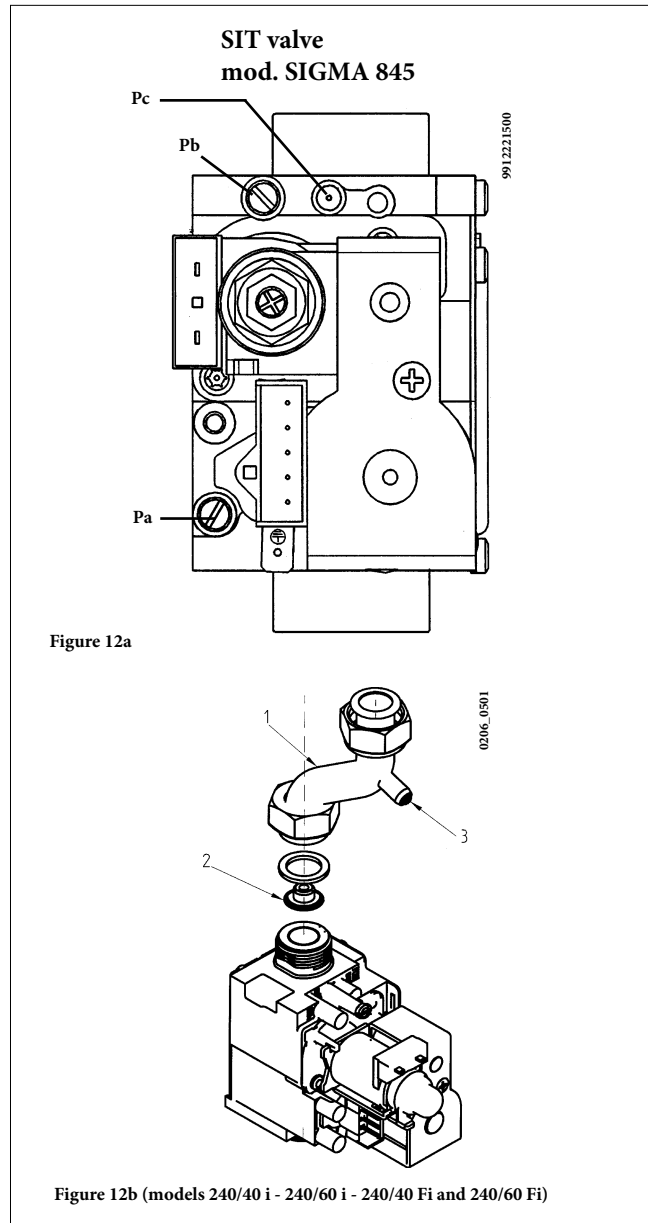
- open the gas tap;
- press  (section 3.2) and switch the boiler to the winter mode;
- open a hot water tap that can provide a flow rate of at least 10 litres a minute or make sure there is maximum heat demand;
- make sure that the dynamic inlet pressure of the boiler, measured at the gas valve pressure test point (**Pa**) (Figure 12a) is correct (30 mbar for butane, 37 mbar for propane or 20 mbar for natural gas).
- remove the modulator cover;
- adjust the brass screw of the sleeve until the pressure values shown in table 1 are obtained;

C2) Adjustment to reduced heat output

- disconnect the modulator power cable and unscrew the red screw until a pressure value corresponding to reduced heat output is achieved (see table 1);
- reconnect the wire;
- mount the modulator cover and seal the screw.

C3) Final checks

- attach the additional plate supplied with the transformer specifying the type of gas and the calibration performed.



Burner pressure table – power output

Type of gas	240/40 i - 240/60 i			240/40 Fi - 240/60 Fi			280/60 i			280/60 Fi		
	G20	G30	G31	G20	G30	G31	G20	G30	G31	G20	G30	G31
Diameter of nozzles (mm)	1,18	0,69	0,69	1,18	0,69	0,69	1,18	0,69	0,69	1,18	0,69	0,69
Burner pressure (mbar*)												
REDUCED PRESSURE (mbar)	1,6	3,9	6,9	1,6	3,9	6,9	1,6	3,8	5,7	1,7	4,3	5,9
Burner pressure (mbar*)												
RATED PRESSURE (mbar)	7,7	19,8	25,6	8,1	20,6	26,3	10,3	27,6	35,4	10,6	28,1	35,6
n°1 diaphragm diameter	4,5	3,5	3,5	4,5	3,5	3,5	-	-	-	-	-	-
N° nozzles	18											

* 1 mbar = 10,197 mm H₂O

Table 1

Power consumption table

Consumption 15 °C - 1013 mbar	240/40 i - 240/60 i			280/60 i		
	G20	G30	G31	G20	G30	G31
RATED POWER	2,87 m ³ /h	2,14 Kg/h	2,11 Kg/h	3,29 m ³ /h	2,45 Kg/h	2,42 Kg/h
REDUCED POWER	1,26 m ³ /h	0,94 Kg/h	0,92 Kg/h	1,26 m ³ /h	0,94 Kg/h	0,92 Kg/h
p.c.i.	34,02 MJ/m ³	45,60 MJ/Kg	46,30 MJ/Kg	34,02 MJ/m ³	45,60 MJ/Kg	46,30 MJ/Kg

Table 2



Consumption 15 °C - 1013 mbar	240/40 Fi - 240/60 Fi			280/60 Fi		
	G20	G30	G31	G20	G30	G31
RATED POWER	2,78 m ³ /h	2,07 Kg/h	2,04 Kg/h	3,18 m ³ /h	2,37 Kg/h	2,34 Kg/h
REDUCED POWER	1,26 m ³ /h	0,94 Kg/h	0,92 Kg/h	1,26 m ³ /h	0,94 Kg/h	0,92 Kg/h
p.c.i.	34,02 MJ/m ³	45,60 MJ/Kg	46,30 MJ/Kg	34,02 MJ/m ³	45,60 MJ/Kg	46,30 MJ/Kg

Table 2


20. INFORMATION ON DISPLAY


20.1 START-UP INFORMATION ON DISPLAY

To light the boiler correctly, proceed as follows:

- Power the boiler.
When the boiler is powered, the display shows the following information for about the first 10 seconds:
 - all symbols on;
 - manufacturer information;
 - manufacturer information;
 - manufacturer information;
 - boiler and gas type (e.g.  ).


The letters displayed have the following meanings:

 = open chamber boiler

 = sealed chamber boiler ;

 = NATURAL GAS used

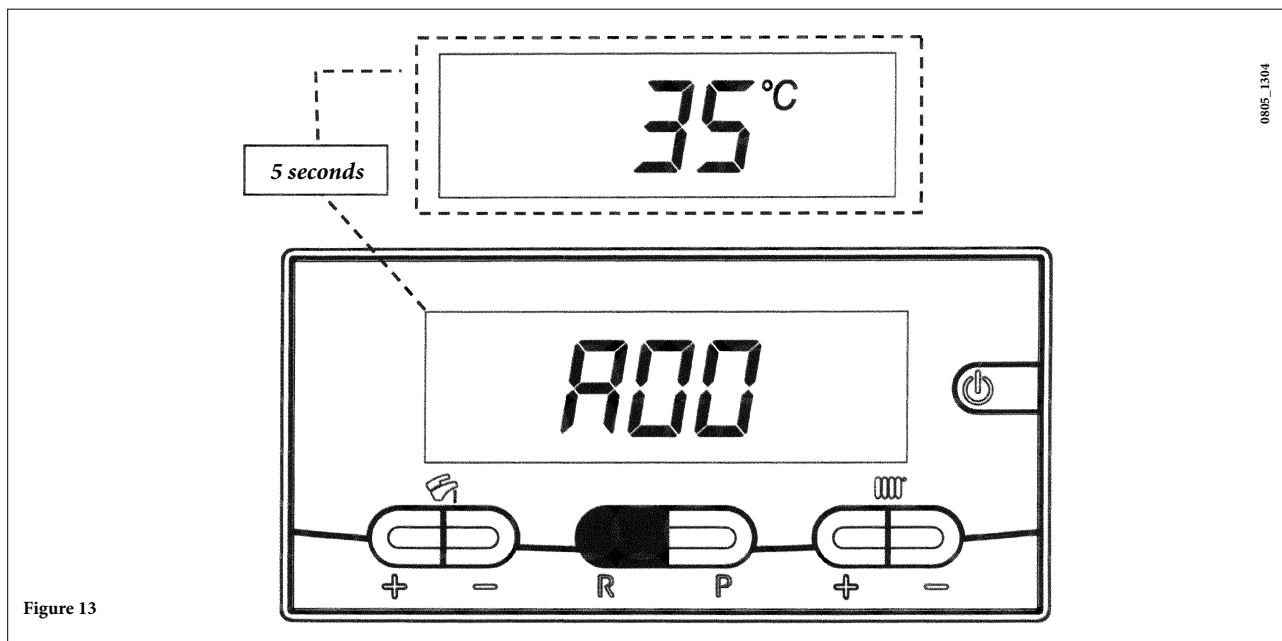
 = LPG used.


- hydraulic circuit setting;
 - software version (two numbers x.x);
- Open the gas tap;
 - Press button  (approx. 2 seconds) to set the boiler operating mode as described in section 3.2.

20.2 OPERATING INFORMATION

To display boiler operating information, proceed as follows:


- Press **R** for approx. 6 seconds. When the function is enabled, the display shows “A00” (...“A07”) alternating with the respective value (figure 13);



- Press the +/- DHW temperature adjustment buttons () to display the following information:


- A00:** instantaneous DHW temperature (°C);
- A01:** instantaneous external temperature (°C) (with external probe connected);
- A02:** current (%) at modulator (100% = 230 mA NATURAL GAS - 100% = 310 mA LPG);
- A03:** power range (%) (MAX R) - Parameter F13 (section 21);
- A04:** heating setpoint temperature (°C);
- A05:** instantaneous heating delivery temperature (°C);
- A06:** not used;
- A07:** flame signal (8-100%).

NOTE: display lines A08 and A09 are not used.

- This function remains active for 3 minutes. To interrupt the “INFO” function, press .

20.3 FAULTS DISPLAY

NOTE: 5 reset attempts can be performed after which the boiler shuts down. To make a new reset attempt, proceed as follows:

- press  selecting “OFF” (as described in section 3.2);
- press **R** for about 2 seconds, the display shows “OFF”;
- reset the boiler operating mode.

Fault codes and descriptions are shown in section 9.

20.4 SUPPLEMENTARY INFORMATION

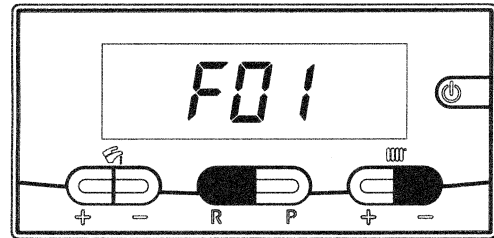
For more detailed technical information, please consult the “SERVICE INSTRUCTIONS”.

21. PARAMETER SETTINGS

To set the boiler parameters, press **R** and - (⏏) together and hold down for at least 6 seconds. When the function is active, the display shows “F01” alternating with the value of the relative parameter.

Change parameters

- To scroll the parameters press +/- (⏏);
- To modify individual parameters press +/- (⏏);
- To save the value press P. “MEM” appears on the display;
- To exit without saving, press ⏏, on the display. “ESC” appears.



0606_2903

	Factory settings	Description of parameters			
		240/40 Fi - 240/60 Fi	240/40 i - 240/60 i	280/60 i	280/60 Fi
F01	Type of boiler 10 = sealed chamber - 20 = open chamber	10	20	20	10
F02	Type of gas 00 = NATURAL GAS - 01 = LPG	00 o 01			
F03	Hydraulic system	06			
F04	Programmable relay 1 setting (02 = zone system - See Service instructions)	02			
F05	Programmable relay 2 setting (See Service instructions)	04			
F06	Ext probe configuration (See Service instructions).	00			
F07...F12	Manufacturer information	00			
F13	CH max. heat output (0-100%)	100			
F14	DHW max. heat output (0-100%)	100			
F15	CH min. heat output (0-100%)	00			
F16	Maximum temperature setpoint (°C) setting 00 = 85°C - 01 = 45°C	00			
F17	Pump overrun time in CH mode (01-240 minutes)	03			
F18	Burner ignition delay in CH mode (00-10 minutes) - 00=10 seconds	03			
F19	Manufacturer information	07			
F20	Manufacturer information	00			
F21	Anti-legionellosis function 00 = Disabled - 01 = Enabled	00			
F22	Manufacturer information	00			
F23	Maximum DHW setpoint	65			
F24	Manufacturer information	35			
F25	No water safety device	01			
F26...F29	Manufacturer information (read-only parameters)	--			
F30	Manufacturer information	10			
F31	Manufacturer information	00			
F32...F41	Diagnostics (See Service instructions)	--			
Final parameter	Calibration function activation (See Service instructions)	0			

WARNING: do not change the “manufacturer information” parameters.

22. ADJUSTMENT AND SAFETY DEVICES

This boiler has been designed in full compliance with European reference standards and, in particular, it is fitted with the following:

- **Air pressure switch for forced-flow models (240/40 Fi - 240/60 Fi and 280/60 Fi)**

This device only allows the main burner to ignite if the exhaust flue duct is in perfect working order.

In the event of one or more of the following faults:

- flue terminal obstructed
- venturi tubes obstructed
- fan blocked
- venturi tube connection - pressure switch tripped

The boiler remains on standby and error code E03 is displayed (see table in section 9).

- **Fumes thermostat for natural draught models (240/40 i - 240/60 i and 280/60 i)**

This device, the sensor of which is positioned to the left of the fumes hood, interrupts the flow of gas to the main burner if the flue is obstructed and/or there is no draught.

In these conditions, the boiler is blocked and only after the fault has been eliminated can it be ignited again (section 9).

- **Safety thermostat**

Thanks to a sensor placed on the heating delivery line, the thermostat interrupts the flow of gas to the burner if the water in the primary circuit overheats. In these conditions, the boiler is blocked and only after the fault has been eliminated can it be ignited again (section 9).

It is forbidden to disable this safety device

- **Flame ionisation detector**

The flame sensing electrode guarantees safety of operation in case of gas failure or incomplete ignition of the main burner.

In these conditions, the boiler blocks. To reset normal operations, see section 9.

- **Hydraulic differential pressure switch**

This device, mounted on the hydraulic unit, only allows the main burner to light if the pump is able to deliver the necessary head. It protects the water-fumes exchanger if there is no water or if the pump blocks.

- **Pump post-circulation**

The electronically-controlled pump post-circulation function lasts 3 minutes and is enabled, in the heating mode, if the ambient thermostat causes the main burner to go out.

- **Frost protection device**

The electronic boiler management system includes a "frost protection" function for the heating system which, when delivery temperature falls below 5°C, operates the burner until a delivery temperature of 30°C is reached. This function is enabled when the boiler is switched on, the gas supply is open and the system is correctly pressurised.

- **Anti-legionellosis function**

The anti-legionellosis function is NOT enabled.

To enable this function, set parameter F21=01 (as described in section 21). When the function is enabled, the electronic management of the boiler, at weekly intervals, heats the water contained in the storage boiler to over 60°C (the function only works if the water has never exceeded 60°C in the previous 7 days).

- **Anti-block pump function**

If no heat demand is received in the heating and/or DHW modes for 24 consecutive hours, the pump will automatically start and operate for 10 seconds. This function is operative when the boiler is powered.

- **Three-way valve anti-blockage function**

If no heat demand is received for a period of 24 hours, the three-way valve performs a complete switching cycle. This function is operative when the boiler is powered.

- **Hydraulic safety valve (heating circuit)**

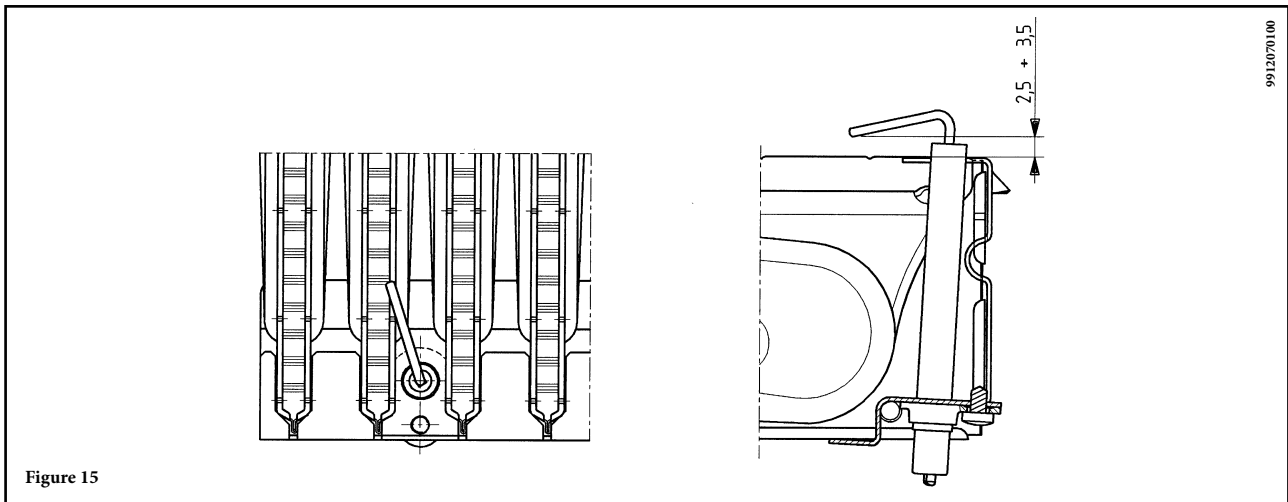
This device is set to 3 bar and is used for the heating circuit.

- **Hydraulic safety valve (DHW circuit)**

This device is set to 8 bar and is used for the DHW circuit (storage boiler).

Connect the safety valves to a drain trap. Do not use it to drain the heating and/or DHW circuit.

23. POSITIONING THE IGNITION AND FLAME-SENSOR ELECTRODE



24. CHECKING COMBUSTION PARAMETERS

To measure combustion performance and the toxicity of the products of combustion, the forced-flow boilers are fitted with two dedicated taps on the concentric connector.

One test point is connected to the exhaust duct and is used to measure combustion efficiency and the toxicity of the products of combustion.

The other is connected to the air intake duct and is used to check for the presence of any products of combustion circulating in installations with co-axial flues.

The following parameters can be measured using the test point connected to the exhaust duct:

- temperature of the products of combustion;
- concentration of oxygen (O₂) or, alternatively, carbon dioxide (CO₂);
- concentration of carbon monoxide (CO).

The temperature of the comburent air must be measured on the tap located on the air flue of the concentric connector.

For natural draught boiler models, a hole must be made in the exhaust duct at a distance from the boiler equal to twice the internal diameter of the flue.

The following parameters can be measured inside this hole:

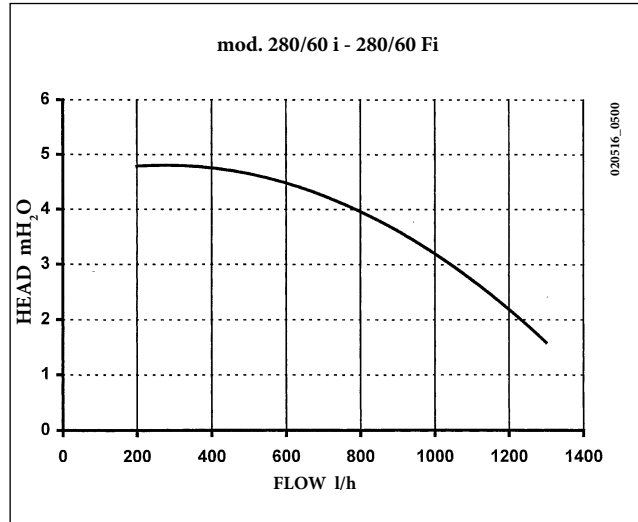
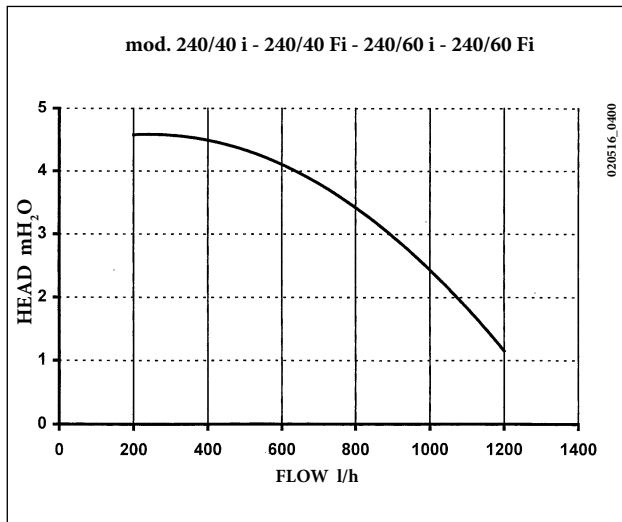
- temperature of the products of combustion;
- concentration of oxygen (O₂) or, alternatively, carbon dioxide (CO₂);
- concentration of carbon monoxide (CO).

The temperature of the combustion air must be measured close to the point where the air enters the boiler.

The hole, which must be made by the person in charge of the system during commissioning, must be sealed so as to ensure that the exhaust duct is airtight during normal operation.

25. OUTPUT/PUMP HEAD PERFORMANCE

A high static head pump, suitable for installation on any type of single- or double-pipe heating system, is used. The automatic air valve incorporated in the pump allows quick venting of the heating system.



NOTE: An oversize pump with the same characteristics as the pump mounted on the Boyler Digit 280 models is available for the Boyler Digit 240 models.

26. DRAINING THE STORAGE BOILER

Drain the water in the storage boiler as follows:

- close the water inlet tap;
- open a user tap;
- unscrew the ring nut from the relative drain tap (Fig. 15);
- loosen the nut on the DHW outlet pipe on the storage boiler,

27. DHW EXPANSION VESSEL (AVAILABLE ON REQUEST)

Expansion vessel kit comprising:

- 1 stainless steel expansion vessel;
- 1 support for expansion vessel;
- 1 connection hose.
- 1 Ø 8 hose connecting the DHW expansion vessel.

Connect the hose (supplied as an accessory in the expansion vessel kit) to the two connectors A and B as shown in figure 15.

The DHW expansion vessel should be mounted if:

- the pressure of the water supply or lifting system is such as to require the installation of a pressure reducer (pressure higher than 4 bar)
- a non-return valve is fitted to the water supply line
- the water supply network is insufficient for the expansion of the water contained in the storage boiler and it is necessary to use the DHW expansion vessel.

Tip

For the efficient operation of the expansion vessel, the pressure of the water supply must be lower than 4 bar. If it is not, install a pressure reducer. Adjust the pressure reducer to obtain a water supply pressure less than 4 bar.

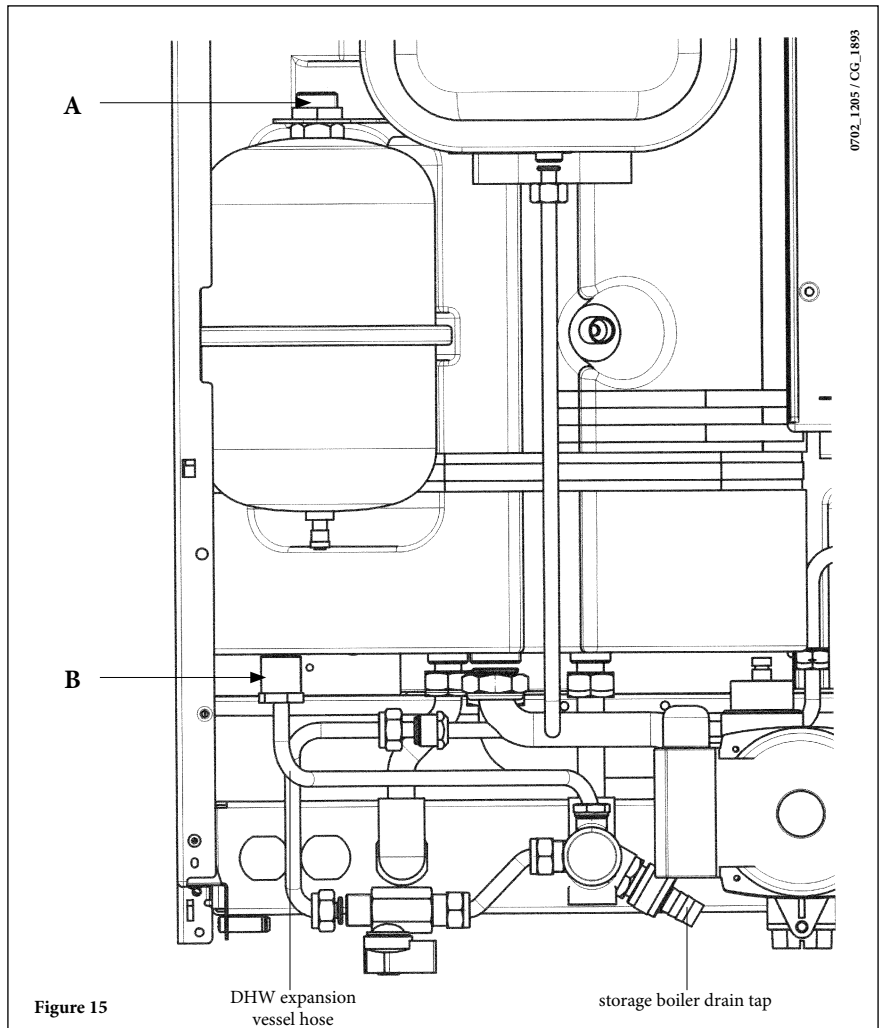


Figure 15

DHW expansion vessel hose

storage boiler drain tap

For special areas, where the water is harder than 25 °F (1 °F = 10 mg calcium carbonate per litre of water), install a polyphosphate dispenser or an equivalent treatment system, compliant with current regulations.

28. CONNECTING THE EXTERNAL PROBE

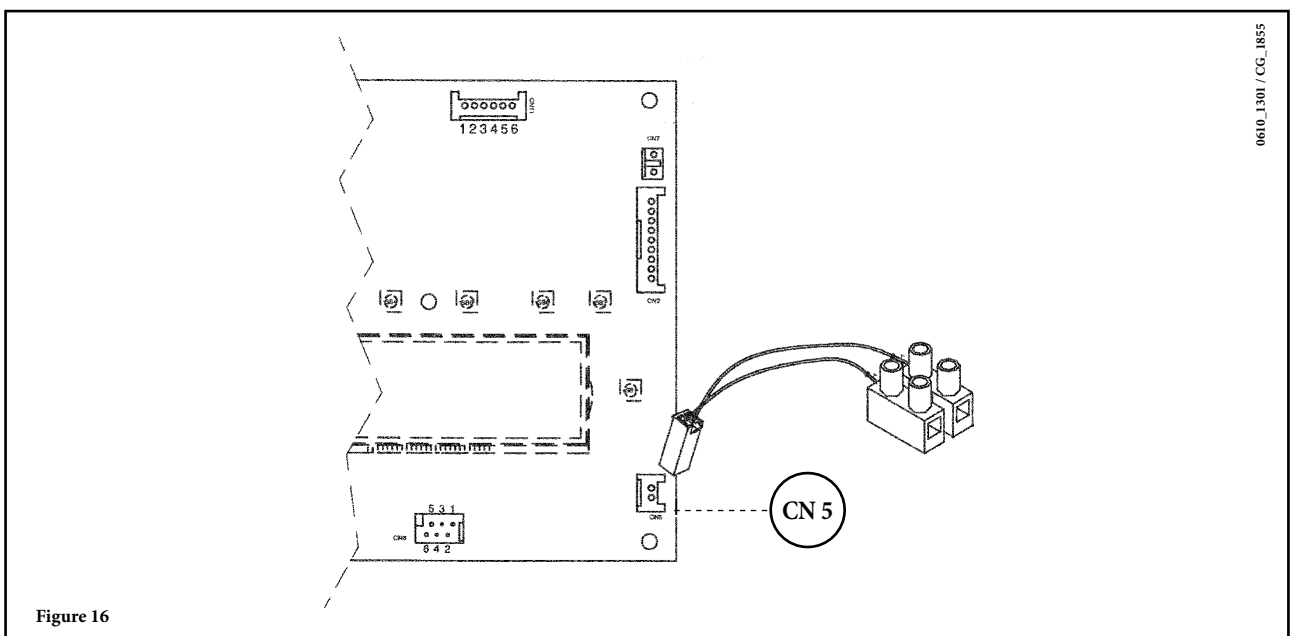


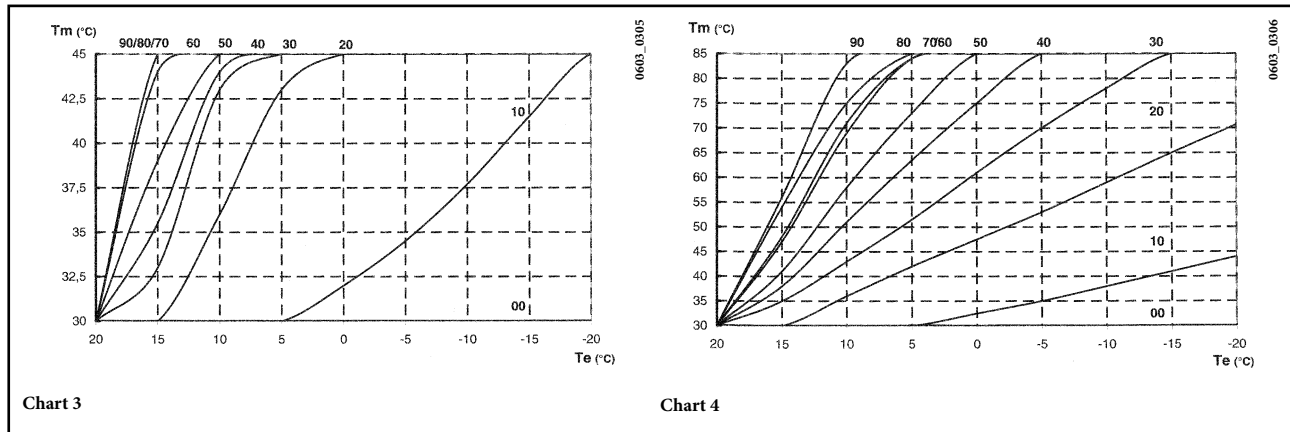
Figure 16

An external probe, supplied as an accessory, can be connected to the boiler.
For connections, see figure 16 and the instructions provided with the probe.

With the external probe connected, buttons +/- adjusting the heating circuit temperature III (figure 1) regulates the coefficient of heat dispersion (1...90). Charts 3 and 4 show the correspondence between the set value and the relative curves. Intermediate curves can also be selected.

IMPORTANT: the delivery temperature **TM** depends on parameter **F16** (see section 21). Max. temperature, in fact, can be set at 85 or 45 °C.

Curve kt



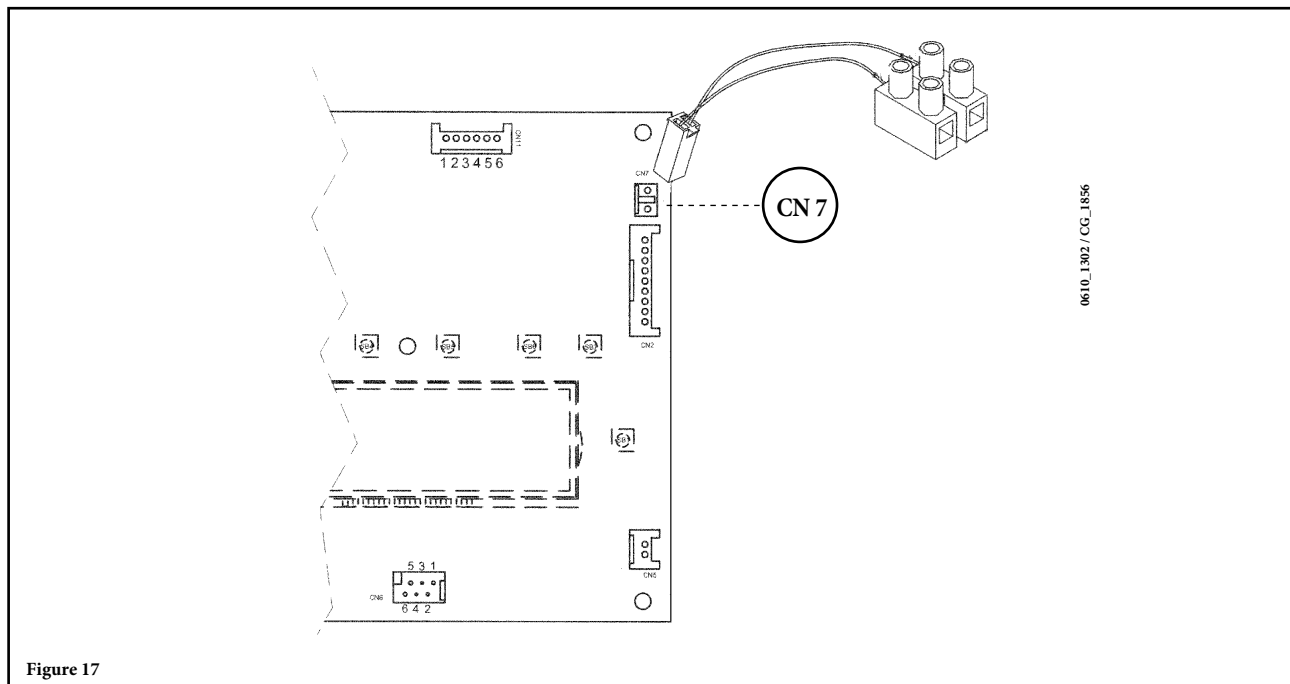
TM = Delivery temperature
Te = External temperature

29. CONNECTING THE REMOTE CONTROL UNIT

(SUPPLIED AS AN ACCESSORY)

The remote control device is not a standard boiler component as it is supplied as an accessory.

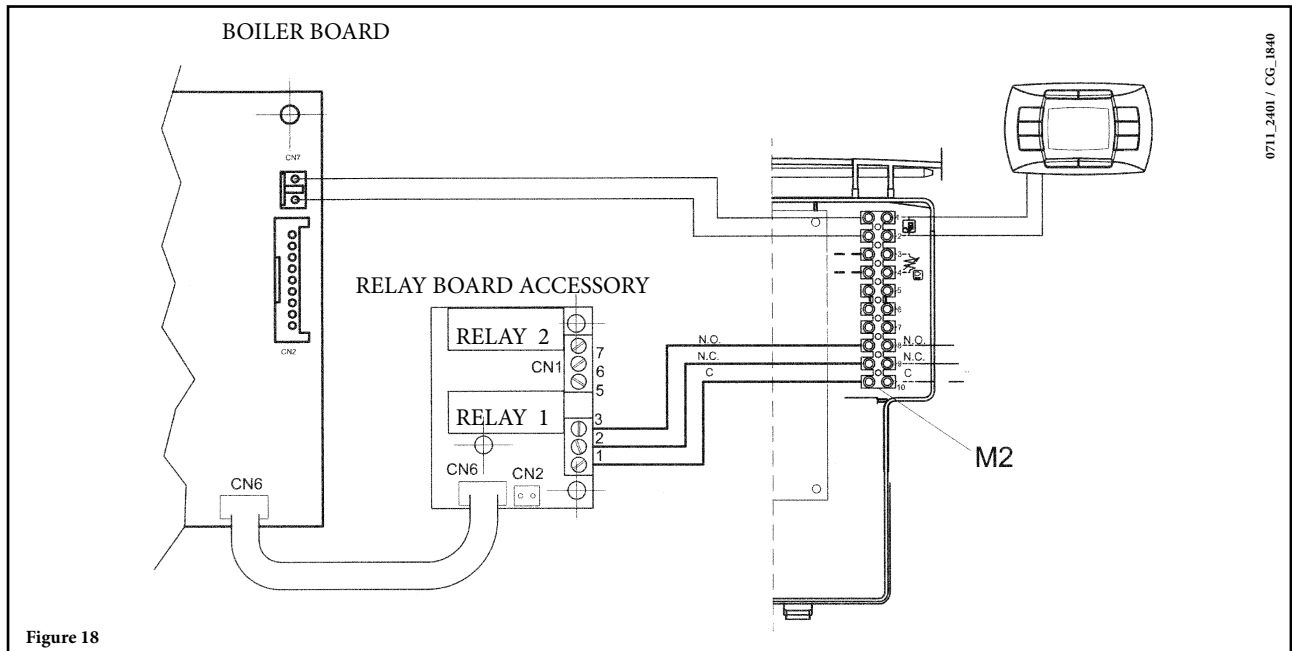
Open the electronic board and connect the cable (supplied together with the two-pin terminal board) to connector Cn7 on the electronic boiler board. Connect the terminals of the remote control device to the two-pin terminal board (figure 17).



30. CONNECTING A ZONE HEATING SYSTEM

30.1 - CONNECTING THE NETWORK BOARD

The relay board is not a standard boiler component and is supplied as an accessory. Connect terminals 1-2-3 of connector CN1 on the relay board, to the respective terminals 10-9-8 of terminal board M2 (figure 18).

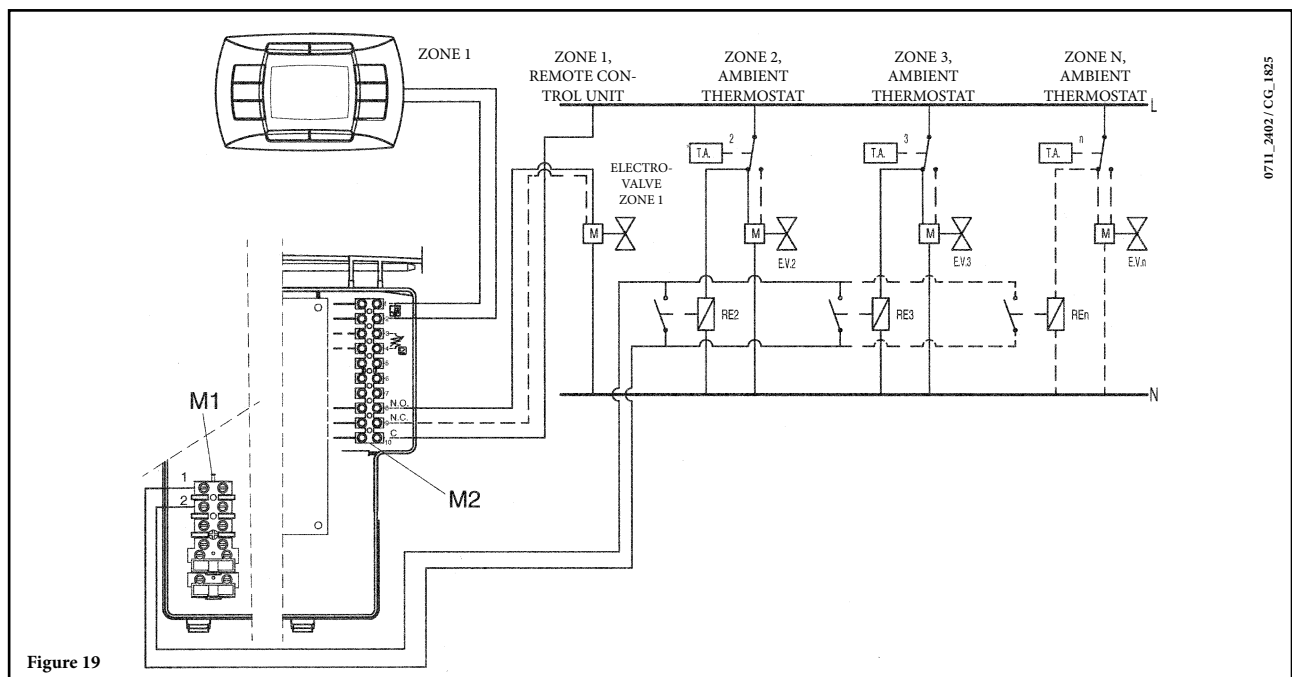


30.2 - CONNECTING THE ZONES

Connect the contact relative to heating requests in zones that are not controlled by the remote control device in parallel to terminals 1-2 "TA" on terminal board M1.

Remove the jumper.

The zone controlled by the remote control device is managed by the zone 1 solenoid, as illustrated in figure 19.



IMPORTANT: make sure parameter F04 = 2 (as per factory setting – section 21).

31. ANNUAL SERVICE

To optimise boiler efficiency, carry out the following annual controls:

- check the appearance and airtightness of the gaskets of the gas and combustion circuits;
- check the state and correct position of the ignition and flame-sensing electrodes;
- check the state of the burner and make sure it is firmly fixed to the aluminium flange;
- check for any impurities inside the combustion chamber. Use a vacuum cleaner to do this;
- check the gas valve is correctly calibrated;
- check for any impurities inside the siphon;
- check the pressure of the heating system;
- check the pressure of the expansion vessel;
- check the fan works correctly;
- make sure the flue and air ducts are unobstructed;
- check the magnesium anode, where present, for boilers fitted with storage boilers.

WARNINGS

Before commencing any maintenance operations, make sure the boiler is disconnected from the power supply. Afterwards, move the knobs and/or operating parameters of the boiler to their original positions.

32. FUNCTIONAL CIRCUIT DIAGRAM

240/40 i - 240/60 i - 280/60 i

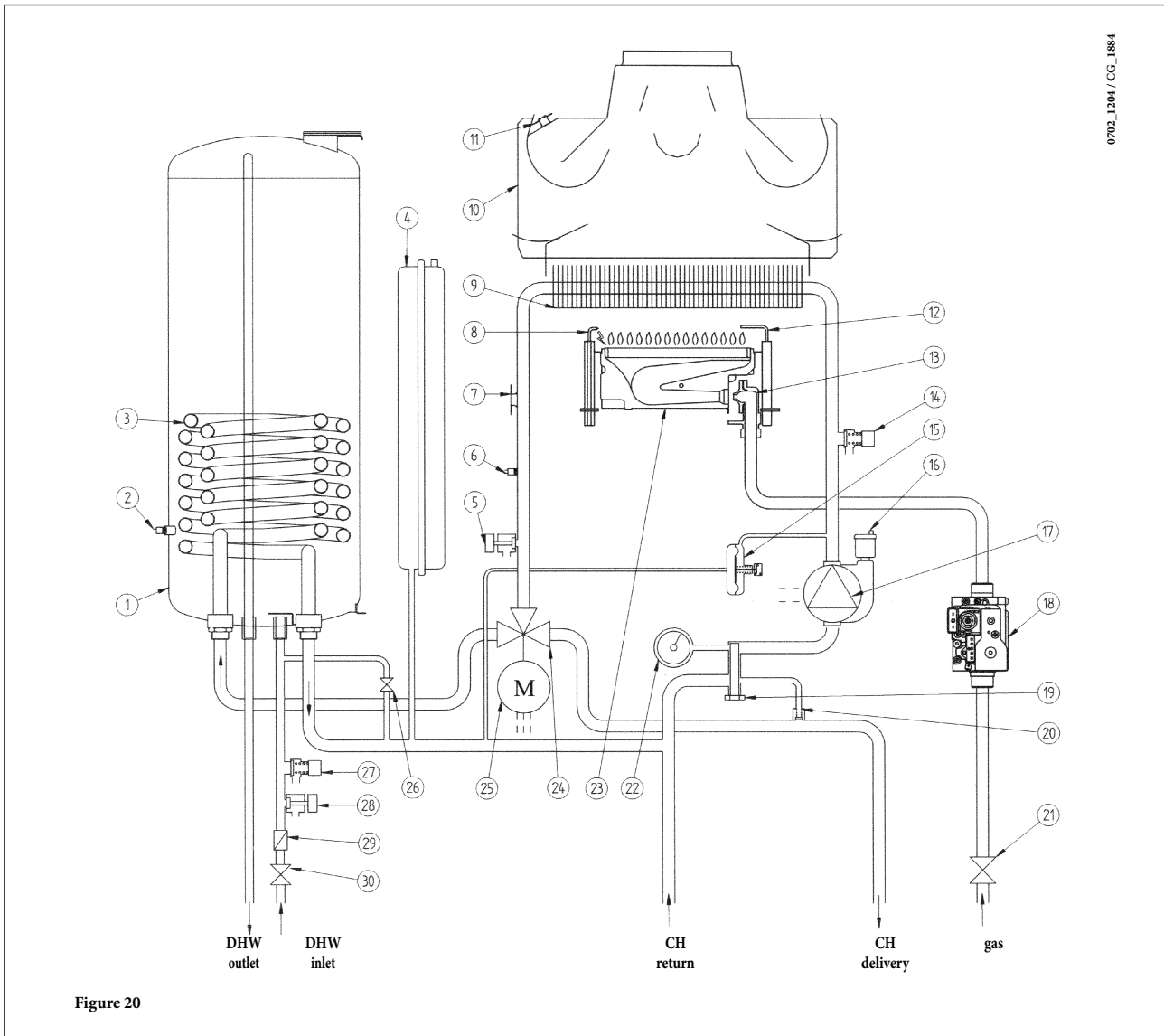


Figure 20

Legend:

- | | |
|---|--------------------------------------|
| 1 boiler | 17 pump with air separator |
| 2 boiler probe | 18 gas valve |
| 3 DHW exchanger | 19 heating return filter |
| 4 expansion vessel | 20 automatic by-pass |
| 5 boiler drain tap | 21 gas tap |
| 6 NTC heating probe | 22 pressure gauge |
| 7 safety thermostat | 23 burner |
| 8 ignition electrode | 24 three-way valve |
| 9 water-fumes exchanger | 25 three-way valve motor |
| 10 fumes hood | 26 boiler filling tap |
| 11 fumes thermostat | 27 safety valve on DHW circuit 8 bar |
| 12 flame detection electrode | 28 boiler discharge tap |
| 13 gas train with injectors | 29 flow adjuster |
| 14 safety valve on heating circuit 3 bar | 30 water supply tap |
| 15 differential hydraulic pressure switch | |
| 16 automatic vent valve | |

240/40 Fi - 240/60 Fi - 280/60 Fi

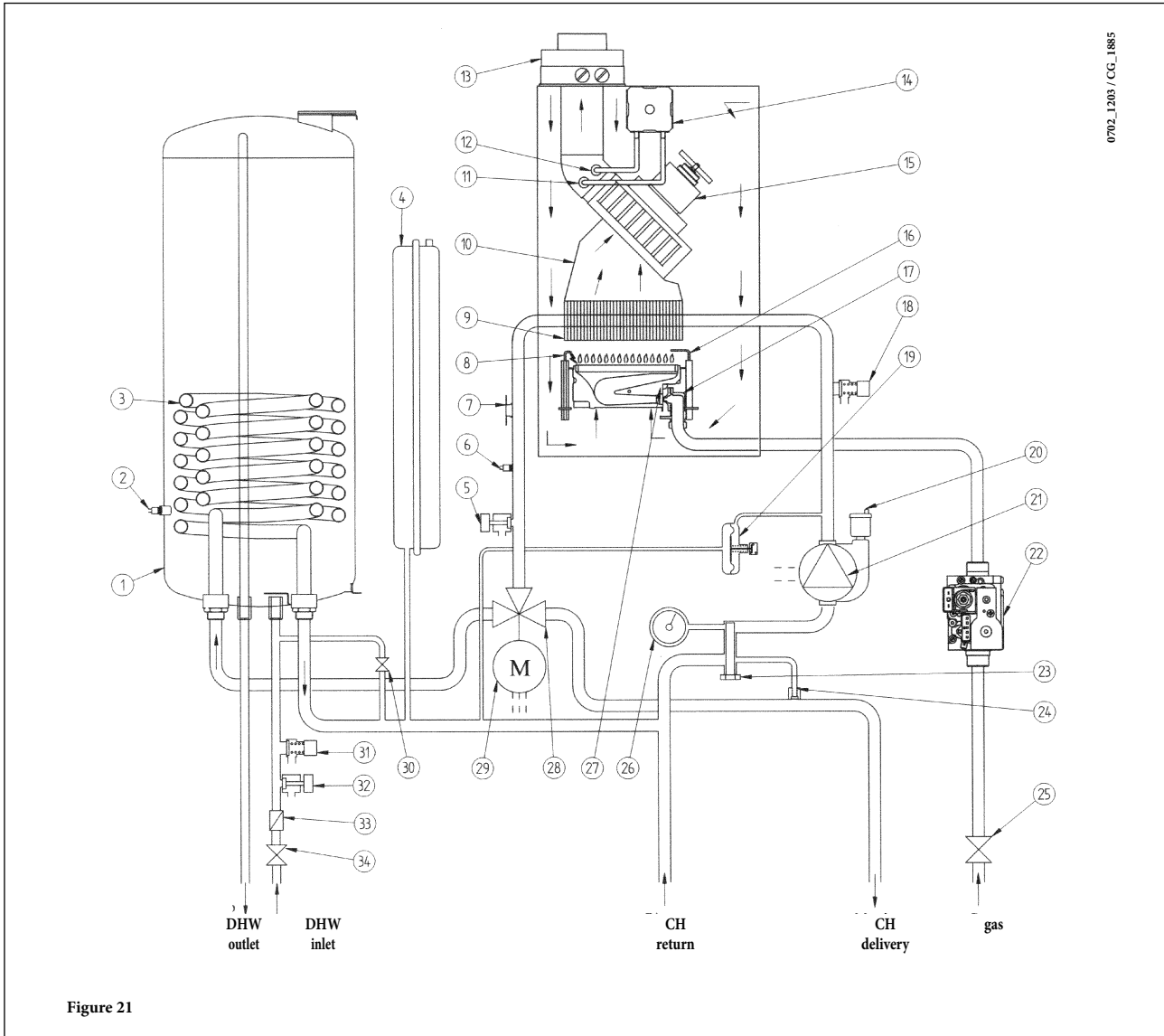


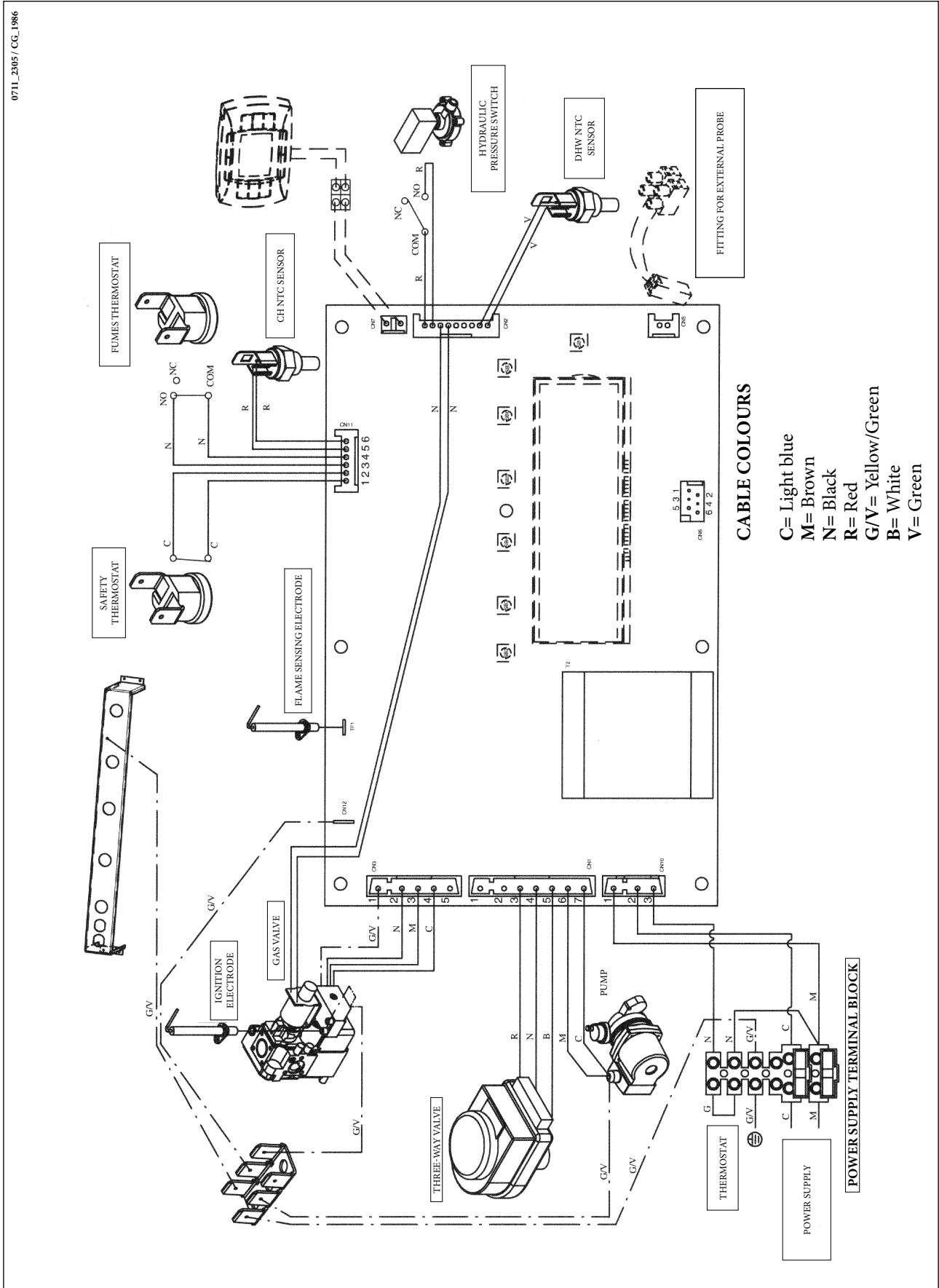
Figure 21

Legend:

- | | |
|------------------------------|---|
| 1 boiler | 18 safety valve on heating circuit 3 bar |
| 2 boiler probe | 19 differential hydraulic pressure switch |
| 3 DHW exchanger | 20 automatic vent valve |
| 4 expansion vessel | 21 pump with air separator |
| 5 boiler drain tap | 22 gas valve |
| 6 NTC heating probe | 23 heating return filter |
| 7 safety thermostat | 24 automatic by-pass |
| 8 ignition electrode | 25 gas tap |
| 9 water-fumes exchanger | 26 pressure gauge |
| 10 fumes conveyor | 27 burner |
| 11 negative pressure point | 28 three-way valve |
| 12 positive pressure point | 29 three-way valve motor |
| 13 concentric connector | 30 boiler filling tap |
| 14 air pressure switch | 31 safety valve on DHW circuit 8 bar |
| 15 fan | 32 boiler discharge tap |
| 16 flame detection electrode | 33 flow adjuster |
| 17 gas train with injectors | 34 water supply tap |

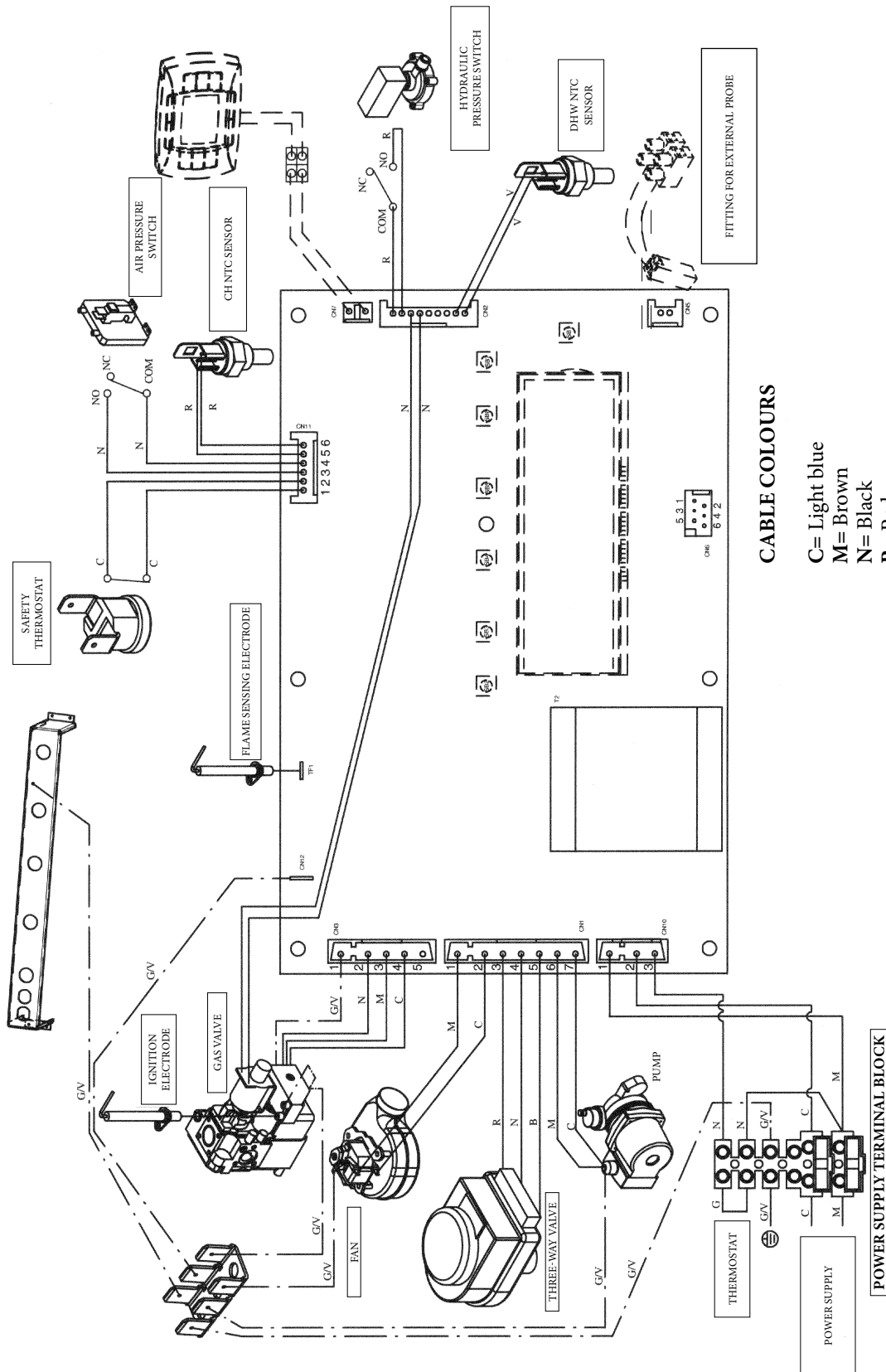
33. ILLUSTRATED WIRING DIAGRAM

240/40 i - 240/60 i - 280/60 i



240/40 Fi - 240/60 Fi - 280/60 Fi

071L_2306 / CG_1985



CABLE COLOURS

- C= Light blue
- M= Brown
- N= Black
- R= Red
- G/V= Yellow/Green
- B= White
- V= Green

34. TECHNICAL CHARACTERISTICS

Boiler model BOYLER DIGIT		240/40 i	240/60 i	280/60 i	240/40 Fi	240/60 Fi	280/60 Fi
Category		II _{2H3+}	II _{2H3+}	II _{2H3+}	II _{2H3+}	II _{2H3+}	II _{2H3+}
Rated heat input	kW	27,1	27,1	31,1	26,3	26,3	30,1
Reduced heat input	kW	11,9	11,9	11,9	11,9	11,9	11,9
Rated heat output	kW	24,4	24,4	28	24,4	24,4	28
	kcal/h	21.000	21.000	24.080	21.000	21.000	24.080
Reduced heat output	kW	10,4	10,4	10,4	10,4	10,4	10,4
	kcal/h	8.900	8.900	8.900	8.900	8.900	8.900
Efficiency according to Directive 92/42/EEC	-	★★	★★	★★	★★★	★★★	★★★
Max. pressure in central heating system	bar	3	3	3	3	3	3
Capacity of expansion vessel	l	7,5	7,5	7,5	7,5	7,5	7,5
Capacity of storage boiler	l	40	60	60	40	60	60
Pressure of expansion vessel	bar	0,5	0,5	0,5	0,5	0,5	0,5
DHW production at outlet ΔT=30°C	l/30min	350	390	450	350	390	450
Max. pressure in DHW system	bar	8	8	8	8	8	8
DHW production at ΔT=25 °C	l/min	14	14	16,1	14	14	16,1
DHW production at ΔT=35 °C	l/min	10	10	11,5	10	10	11,5
Specific output (*)	l/min	14,5	18,2	19	14,5	18,2	19
Type	—	B _{11BS}	B _{11BS}	C12 - C32 - C42 - C52 - C82 - B22			
Diameter of concentric flue duct	mm	—	—	—	60	60	60
Diameter of concentric air duct	mm	—	—	—	100	100	100
Diameter of 2-pipe flue duct	mm	—	—	—	80	80	80
Diameter of 2-pipe air duct	mm	—	—	—	80	80	80
Diameter of flue duct	mm	140	140	140	—	—	—
Max. mass flow of fumes	kg/s	0,022	0,022	0,024	0,022	0,018	0,018
Min. mass flow of fumes	kg/s	0,021	0,021	0,021	0,019	0,017	0,018
Fumes temperature max.	°C	110	110	115	134	134	142
Fumes temperature min.	°C	82	82	82	108	108	108
NOx class	—	3	3	3	3	3	3
Type of gas	—	G20	G20	G20	G20	G20	G20
	—	G30-G31	G30-G31	G30-G31	G30-G31	G30-G31	G30-G31
G20 natural gas supply pressure	mbar	20	20	20	20	20	20
G30 butane supply pressure	mbar	28-30	28-30	28-30	28-30	28-30	28-30
G31 propane supply pressure	mbar	37	37	37	37	37	37
Power supply voltage	V	230	230	230	230	230	230
Input frequency	Hz	50	50	50	50	50	50
Rated electrical input	W	110	110	110	190	190	190
Net weight	kg	60	60	60	70	70	70
Dimensions	height	mm	950	950	950	950	950
	width	mm	600	600	600	600	600
	depth	mm	466	466	466	466	466
Protection against humidity and water penetration (**)	—	IP X5D	IP X5D	IP X5D	IP X5D	IP X5D	IP X5D

(*) according to EN 625

(**) according to EN 60529

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