Wall hung, fanflue, roomsealed, high efficiency gas boiler

User manual and Installation instructions

RINNOVA ADAPTIVE

Models	G.C. Appl. No.	
M300V.2025 SM	**47-583-46**	**COMBI BOILER**
M300V.2530 SM	**47-583-47**	**COMBI BOILER**
M300V.3035 SM	**47-583-48**	**COMBI BOILER**

CE

BIASI

WARNING

Congratulations on your choice.

The Biasi **RINNOVA ADAPTIVE** are condensing high efficiency sealed chamber fan flue gas boilers. They are fully electronically controlled and have electronic ignition.
The materials they are made of and the control systems they are equipped with give you safety, a high level of comfort and energy savings to allow you to get the greatest benefit out of independent heating.
The Biasi **RINNOVA ADAPTIVE** allow a higher efficiency by reducing the flue gas temperature such that the water vapour formed during the combustion is condensed out.
This allows a gain of useful heat that otherwise would be lost.

benchmark
COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

Biasi UK Ltd is a licensed member of the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.
Benchmark is managed and promoted by the Heating and Hot water Industry Council. For more information visit www.hhic.co.uk.

DANGER: The indications marked with this symbol must be observed to prevent accidents of mechanical or generic origin (e.g.: Injuries or bruises).

DANGER: The indications marked with this symbol must be observed to prevent accidents of electric origin (electrocution).

DANGER: The indications marked with this symbol must be observed to prevent the risk of fire or explosion.

DANGER: The indications marked with this symbol must be observed to prevent accidents of heat origin (burns).

ATTENTION: The indications marked with this symbol must be observed to prevent malfunctioning and/or damage to materials of the appliance or other objects.

ATTENTION: The indications marked with this symbol are important information that must be carefully read.

Remember that...

WARNING

- ✓ **The manual** must be read thoroughly, so that you will be able to use the boiler in a safe and sensible way and must be carefully kept. It may be necessary for reference in the future.
- ✓ **The first firing** must be carried out by a competent and responsible Gas Safe engineer.
- ✓ **The manufacturer**
  - disclaims all liability for any translations of the present manual from which incorrect interpretation may occur;
  - cannot be held responsible for non-observance of instructions contained in this manual or for the consequences of any procedure not specifically described.

Please ensure that the installer has fully completed the Benchmark Checklist on the inside back pages of the installation instructions supplied with the product and that you have signed it to say that you have received a full and clear explanation of its operation. The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England and Wales).
All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Checklist.
This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service.
The Benchmark Checklist will be required in the event of any warranty claim.

- ✓ **Before lighting the boiler** you are advised to have a Gas Safe Registered Engineer check that the installation of the gas supply is
  - gas-tight;
  - of the correct gauge for the flow to the boiler;
  - fitted with all the safety and control devices required by the current Regulations.
- ✓ **Ensure that**
  - the installer has connected and terminated the pressure relief valve in a manner which allows safe discharge. The manufacturers are not responsible for damage caused by opening of the pressure relief valve and consequent escape of water, if this is not connected and terminated.
  - the installer has connected the condensate outlet to a suitable drain pipe.

WARNING

✓ **On detecting the smell of gas:**
- do not operate any electrical switches, the telephone or any device that may produce sparks;
- open the windows and doors at once to create a draught of air which will purge the area;
- shut off the gas cocks;
- get the assistance of a qualified person. Emergency telephone number

Tel. 0800 111999.

✓ **Do not touch the appliance** with parts of the body that are wet or damp and/or bare feet.

✓ **Do not block or modify** the condensate outlet and pipe work.

✓ **In case of structural work** or maintenance near the flue and flue terminal turn off the appliance. On completion of the work, have a professionally qualified person check there efficiency.

✓ **Repairs** (under guarantee) must be carried out only by a Biasi an approved engineer, using genuine spare parts. Thus do no more than switching off the boiler yourself (see the instructions).

✓ **Your boiler** allows heating up of water to a temperature less than boiling point therefore it
- must be connected to a central heating system and/or a hot water supply system, compatible with its performance and output;
- can be used only for those purposes for which it has been specially designed;
- must not be touched by children or by those unfamiliar with its operation;
- must not be exposed to weather conditions.

✓ **During the operation** it is quite normal that the boiler produces a white plume of condensation vapour from the flue terminal. This is due to the high efficiency of the appliance and may be particularly evident with low outdoor temperatures.

Safe handling of substances

Biasi products are manufactured in accordance with ISO 9001 and do not, and will not, contain any hazardous materials or substances such as asbestos, mercury or C.F.C.'s. The appliance packaging does not contain any substances, which may be considered a hazard to health.
When handling or lifting always use safe techniques.

- Keep your back straight, bend your knees, don't twist.
- Move your feet, avoid bending forwards and side ways and keep the load as close to your body as possible.

Where possible transport the boiler using a sack truck or other suitable trolly.
Always grip the boiler firmly, and before lifting feel where the weight is concentrated to establish the centre of gravity, repositioning yourself as necessary.

Combustion chamber panels
Material: mineral fibres
Known hazards - Some people can suffer reddening and itching of the skin. Fibre entry into the eye will cause foreign body irritation, which can cause severe irritation to people wearing contact lenses. Irritation to respiratory tract.
Precautions - Dust goggles will protect eyes. People with a history of skin complaints may be particularly susceptible to irritation. High dust levels are only likely to arise following harsh abrasion. In general, normal handling and use will not present high risk. Follow good hygiene practices; wash hands before, touching eyes, consuming food, drinking or using the toilet.
First aid - Medical attention must be sought following eye contact or prolonged reddening of the skin.

Sharp Edges
Caution should be taken when handling the boiler to avoid sharp edges on the boiler.

Boiler installation and commissioning tips

✓ **The installation** must be carried out by a qualified Gas Safe Registered Engineer who will be responsible for observing the current Regulations and the completion of the Benchmark Gas Boiler System Commissioning Checklist, located at the back of this User manual.

Internally installed mains water meters
Please ensure if the property has had a water meter installed inside the property, that it does not include a non-return valve. Should you find that it does include a non-return valve then provision of a WRAS approved mini expansion vessel must be made.
Biasi optional WRAS approved easy fit 15 mm mini shock arrestor kit BI9999 999 can be obtained through your local Biasi stockist.

WARNING

Installing the boiler...

- ✓ You must ensure that you remove the transit caps and plugs from the boiler connections which are fitted to every boiler.
- ✓ Keep the boiler clear of dust during installation and in particular do not allow any dust or debris to enter the top of the boiler where the flue connection is made. It is recommended that you put a dust sheet over the top of the boiler until you are ready to make the flue connection.
- ✓ Remember to release the auto air purge valve on the pump assembly before filling the boiler. See the instructions to identify the location of this device.
- ✓ This boiler allows you to control the flow temperature of the central heating system at very low levels. For underfloor heating system a temperature limiting device (e.g. a safety thermostat) is recommended to stop the boiler in case that the water temperature exceeds the design temperature.
- ✓ You are strongly advised to flush out the system both hot and cold in order to remove any system and installation debris to the British Standard BS 7593 code of practice.
- ✓ It is also sensible to initially fire and commission the boiler before connecting any external controls such as a room thermostat. By following this procedure, if you have a subsequent problem this method can eliminate the external controls from your fault analysis.
- ✓ Some products incorporate an anti cycling time delay. It is normal when first switching the boiler on for the boiler to operate on heating for a few seconds then switch off. After 3 - 4 minutes has elapsed the boiler will then re ignite and operate perfectly normally. The ignition delay cycle does not prevent normal operation of the boiler to provide D.H.W.
- ✓ If you are in any doubts as to the installation or operation of the boiler please read the instruction manuals thoroughly and then if necessary contact Biasi UK for advice and assistance.
- ✓ Guarantee conditions. The guarantee registration form must be returned within 30 days of purchase, failure to comply will invalidate the guarantee.

Please remember that if you are in any doubt about the installation of this product you can contact our Technical Help line on tel. 01922 714 600.

Appliance category: II2H3P (gas G20 20 mbar, G31 37 mbar)
Country of destination: United Kingdom (GB) Ireland (IE)
This appliance conforms with the following EEC directive:
Regulation (EU) 2016/426 on appliances burning gaseous fuels
Efficiency Directive 92/42/EEC
Electromagnetic Compatibility Directive 2014/30/EU
Low Voltage Directive 2014/35/EU
Ecodesign Requirements Directive 2009/125/EC
The manufacturer, in the continuous process to improve his products, reserves the right to modify the data expressed in the present documentation at any time and without prior notice.
The present documentation is an informative support and it can not be considered as a contract towards third parties.

TABLE OF CONTENTS

Abbreviations used in the manual:
C.H. = Central heating
D.H.W. = Domestic hot water
D.C.W. = Domestic cold water

1 APPLIANCE DESCRIPTION

1.1 Overview

The model and serial number of the boiler is shown on the bottom of the boiler.

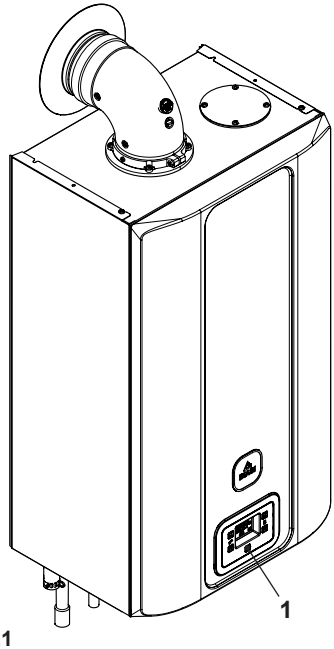


Fig. 1.1

1 Controls panel

1.2 Isolation valves

Install a shut-off cock for the D.H.W. inlet.

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

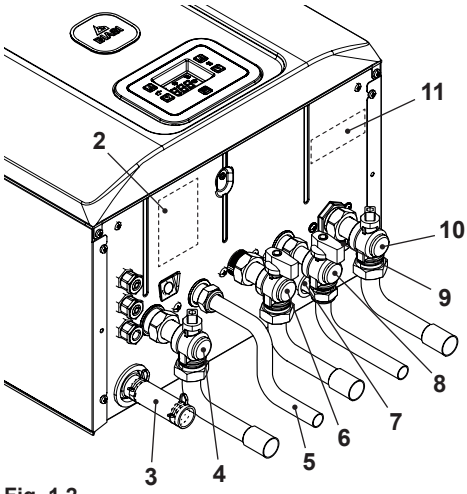


Fig. 1.2

2 Gas supply label
3 Condensate drain pipe
4 C.H. flow valve
5 D.H.W. outlet pipe
6 Gas inlet valve
7 C.H. pressure relief valve pipe
8 D.C.W. inlet valve
9 Main circuit drain valve
10 C.H. return valve
11 Model and serial number of the boiler label

1.3 Control panel

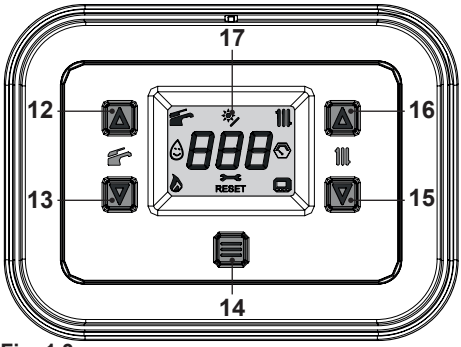


Fig. 1.3

12 D.H.W. temperature increase key
13 D.H.W. temperature reduce key
14 Reset/Stand-by/Winter/Summer key
15 C.H. temperature reduce key
16 C.H. temperature increase key
17 LCD display

RESET that takes all parameters back to the factory value occurs only by setting "parameter P30=04". Reset is displayed by switch on of all symbols present on the display.

1.4 LCD general features

For the boiler technical information refer to the section "TECHNICAL INFORMATION" on page 24.

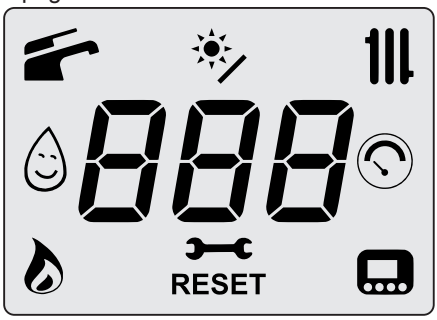


Fig. 1.4

KEY

	All symbols with lines radiating from them indicate that the symbol is flashing.
	Stays on: D.H.W. function enabled. Flashing: D.H.W. function in progress.
	Constantly illuminated: solar control unit connected. Flashing: solar pump operating.
	Stays on: heating function enabled (winter). Flashing: heating function in progress.
	Constantly illuminated: 3 star preheating function active. Flashing: 3 star preheating function in progress.
	Stays on: for 15s only after system loading. Flashing: in the case of low system pressure or if viewing the pressure from the INFO menu.
	Stays on: flame present Flashing: drain upon ignition in progress.
	Stays on: maintenance due pre-warning. Flashing: maintenance required or maintenance due.
RESET	Stays on: lockout error. The boiler can be restarted by the user, by pressing the reset button.
	Stays on: remote control connected. Flashing: request from remote control in progress.

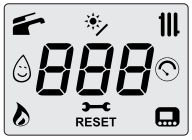
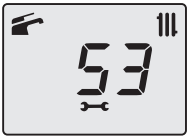
SIGNAL DISPLAYED BY THE LCD

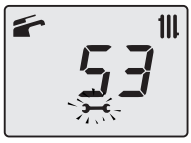
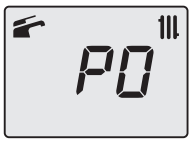
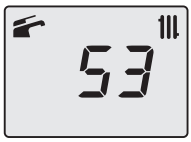
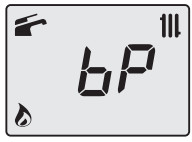
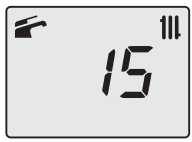
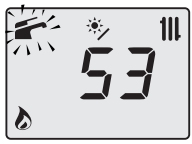
LCD	FUNCTION
E01 + RESET	Safety lockout due to failed ignition.
E02 + RESET	Lockout due to safety thermostat.
E03 + RESET	Generic lockout.
E04 +	Pump circulation failure, insufficient system pressure or water pressure sensor not connected.
E05 +	Control anomaly: fan.
E06 +	NTC heating delivery probe failure.
E07 +	D.H.W. NTC probe failure / Hot water tank sensor failure.

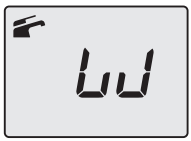
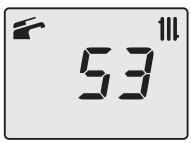
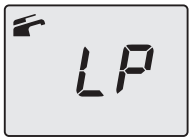
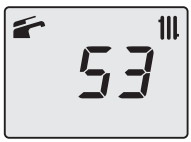
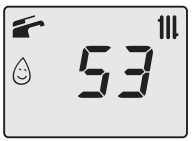
LCD	FUNCTION
E08 + 🔧	External NTC probe failure.
E10 + 🔧	Lockout due to tripping of the flue gas probe and thermal fuse.
E11 + RESET	Parasite flame.
E12 + 🔧	Return NTC probe failure.
E13 + 🔧	Delta T M-R > 40K.
E14 + RESET	Pump fault or primary temperature above 105°C.
E14 + 🔧	Temperature gradient circulation failure (>2K/s).
E18 + RESET	No ΔT heating at start-up.
E19 + 🔧	Auxiliary Input Probe Anomaly.
E20 + RESET	EVG lockout (valve piloting hardware failure).
E21 + RESET	EVG lockout (valve control Relay Failure).
E22 + RESET	EVG lockout (flame after closing valve Ref. EVG).
E23 + 🔧	Gas valve modulator disconnected.

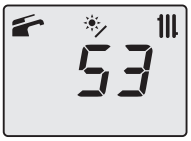
LCD	FUNCTION
E24 + 🔧	Anomaly due to probable chimney obstruction
E25 + RESET	Flame loss for more than 6 consecutive times.
E26 + 🔧	Maximum deviation fault between the 2 heating NTC probes.
E40 + 🔧	Incorrect mains frequency detected
E42 + 🔧	Buttons fault.
E44 + RESET	Fault of cumulative gas valve timeout without flame.
E50 + 🔧	OT communication fault.
E62 + 🔧	Calibration request.
E65 + 🔧	System fails to control combustion and exits modulator control parameters
E68 + 🔧	Probably low gas pressure
E77 + 🔧	System out modulator control parameters
E78 + 🔧	Possible low gas pressure

APPLIANCE DESCRIPTION

LCD	FUNCTION
E79 + 🔧	System out modulator control parameters
E89 + RESET	Internal error (usually hardware) or problems with the mains electrical supply (excessive distortion of waveform).
E91 + RESET	Maximum number of lockouts reached.
E96	Incorrect network frequency.
E97	Power supply voltage low.
E99	Card not configured.
L1	Primary limitation in D.H.W. mode.
- - -	Boiler stand-by, the dashes light up in sequence to simulate a scrolling motion (antifreeze protection activated).
	When powering ON the boiler, all icons and digits light up (for 2 seconds) to check operation of the LCD.
	If the pressure is not correct the value is displayed with the flashing symbol.
	Next maintenance due date (factory setting 12 months). In the event of an error, this has greater priority than maintenance due date.

LCD	FUNCTION
	Maintenance overdue. In the event of an error, this has greater priority than maintenance due date.
 	Pump active for the post-circulation phase (flashing **PO** + flashing temperature).
 	Boiler in antifreeze phase (flashing **bP** + flashing temperature).
	Boiler with D.H.W. power request. The D.H.W. temperature is displayed.
	Boiler with central heating request via room thermostat.
	Boiler with central heating power request with connected remote.

LCD	FUNCTION
	Heating set temperature (all other symbols are disabled).
	D.H.W. set temperature (all other symbols are disabled).
 	Delay burner ignition due to system setting (flashing **uu** + flashing temperature).
 	Boiler in chimney sweep function. To activate the chimney sweep function, set "parameter P32=1 ... 4". The following is displayed: LP = minimum D.H.W. hP = minimum output in heating mode cP = maximum output in heating mode dP = maximum D.H.W. The transition occurs with buttons 16 (increase) and 13 (decrease) D.H.W. temperature.
	3 star preheating function active. When the symbol flashes, the function is in process.

LCD	FUNCTION
	Constantly illuminated: solar control unit connected. When the symbol flashes, the solar circuit pump is in operation.

USE

2 INSTRUCTIONS FOR USE

2.1 Warnings

Biasi UK Ltd support the Benchmark initiative. The Benchmark Checklist is located at the back of this manual and should be completed by the Installing/ Commissioning Engineer and handed over to the User for future reference by other visiting Engineers.

Also included is the Service Interval Record card that should be completed by the Service Engineer following the annual service maintenance of the boiler and system.

All Gas Safe Registered Installers carry a Gas Safe ID card, and have a registration number. Both should be recorded in your Benchmark Checklist. You can check your Installer is registered by calling Gas Safe direct on 0800 408 5500, or go on line at www.GasSafeRegister.co.uk.

In order to guarantee safety and correct operation, it is essential that all the tests are carried out by a competent and responsible service engineer before lighting up the boiler.

The tests are described in the installation instructions in section 7 commissioning.

Ensure that the C.H. circuit is regularly filled with water (even if the boiler is only used for D.H.W. supply).

If the pressure reading on the pressure gauge is below that shown in Fig. 2.2, then the system will require topping up. A filling loop is normally provided by the Installer for this purpose.

If you are in any doubt regarding this procedure you are advised to contact your Installer or an Approved Engineer.

This appliance is provided with a built in anti-freeze system that operates the boiler when the temperature is below 5 °C.

Therefore, when the boiler is not lit or used in cold weather, with consequent risk of freezing do not switch off the boiler at the fused spur isolation switch or close the gas inlet cock.

When you do not expect to use the boiler for a long period and the boiler is not to be used for frost protection then follow the instructions given in section "Switching off" on page 18.

2.2 Refilling procedure

- Isolate the boiler from the electrical supply at the fused spur. Reconnect the filling loop as demonstrated in Fig. 2.1.

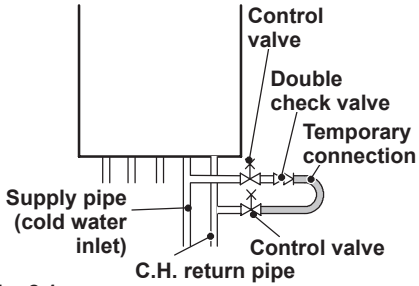


Fig. 2.1

- Press keys 15 and 16 at the same time to access the "INFO" menu (information). The index value "**J00**" will be shown on the display in alternation with the pressure value "**13**" (1.3 bar). The number indicating the pressure is displayed without a decimal point, and the letter indicates the unit of measure (bar) (Fig. 2.2).

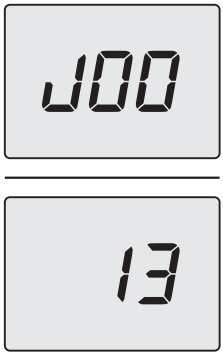


Fig. 2.2

• Open the valves on the filling loop and, at the same time, check the heating circuit pressure on the display.
The pressure must be between 1 bar and 1.5 bar (e.g. 1.3 bar in (Fig. 2.2).

Once done, close the valves on the filling loop.

If you experience any difficulty with the operation of the boiler, switch off the boiler immediately at the fused spur isolation switch and contact your Installer or an approved Service Engineer.

Air introduced into the boiler during this filling process will vent through the automatic air purger fitted to the boiler. You may also find it necessary to vent air from your radiator circuit using your radiator key, however be aware that excessive venting will cause the pressure in the system to drop.

Always ensure that the pressure gauge is set at the required pressure.

2.3 Ignition

• Check that the valves located in the lower part of the boiler are open Fig. 2.3.

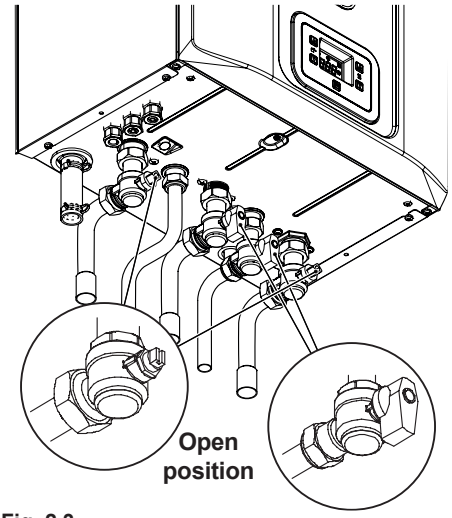
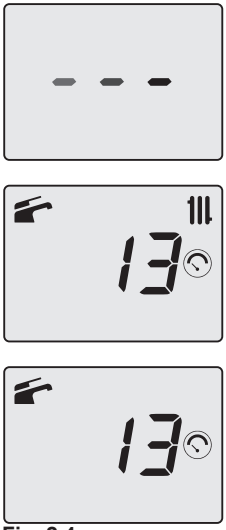


Fig. 2.3

• Turn on the electricity supply to the boiler, switching on the fused spur isolation switch. The LCD display displays the state within which the boiler is found (last memorised) Fig. 2.4.



Stand-by
The dashes light up in sequence to simulate a scrolling motion

Winter

Summer

Fig. 2.4

USE

C.H. / D.H.W. functioning

• Press the key 14 for 1 second until both and symbols appear on the display Fig. 2.5.

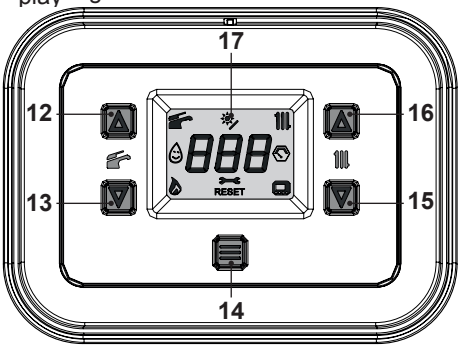


Fig. 2.5

The LCD display displays the boiler temperature (primary circuit) and the and symbols Fig. 2.6.

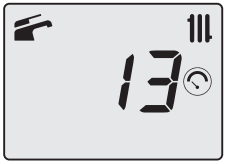


Fig. 2.6

Hot water production functioning only

• Press the key 14 for 1 second until the symbol appears on the display Fig. 2.7.

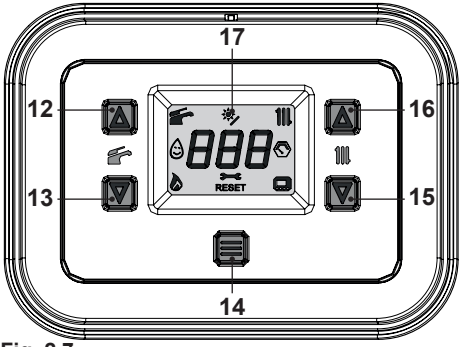


Fig. 2.7

The LCD display displays the boiler temperature (primary circuit) and the symbol Fig. 2.8.

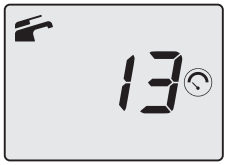


Fig. 2.8

2.4 C.H. circuit temperature

The output temperature of C.H. water can be adjusted by pressing keys 15 (reduce) and 16 (increase) (Fig. 2.7) from a minimum of about 25°C to a maximum of about 80°C. Press one of the two keys once to display the "set" value. Press again to access the modification.

Signal given by the LCD display:

• The heating flow "set" temperature and the symbol flash. The background of the display is illuminated (Fig. 2.9).

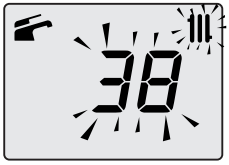


Fig. 2.9

Adjustment of temperature WITHOUT the external temperature probe (optional) fitted

Adjust the C.H. water flow as follows:

• from 25 to 35 with an external temperature included between 5 and 15°C
• from 35 to 60 with an external temperature included between -5 and +5°C
• from 60 to 80 with an external temperature less than -5°C.

Your installer can recommend the best suited settings for your heating system.

You can see the actual flow temperature

from your boiler at all times on the LCD screen.

Power request in C.H. power.
When the boiler has a call for heat in the C.H. mode, the symbol is displayed on the display followed by an increase of the C.H. water flow temperature. The symbol flashes (Fig. 2.10).

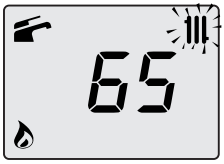


Fig. 2.10

Adjusting the C.H. temperature with the external temp. probe installed
When the external temp. probe (optional) is installed your boiler automatically adjusts the temperature of the C.H. system water flow in relation to the external temperature.
In this case the boiler must be set by a qualified installer (see "Setting the K coefficient of the external temperature probe" on page 65).
However, if the ambient temperature is not comfortable, the flow temperature of the heating system can be adjusted by ± 15°C by pressing on keys 15 (reduce) and 16 (increase) (Fig. 2.7).

2.5 D.H.W. temperature

The temperature of the D.H.W. can be adjusted by pressing keys 12 (increase) and 13 (reduce) (Fig. 2.7) from a minimum of about 35°C to a maximum of about 60°C. Press one of the two keys once to display the "set" value. Press again to access the modification.

Signal given by the LCD display:
- the "set" value of the D.H.W. and the symbol flash. The background of the display is illuminated. (Fig. 2.11).

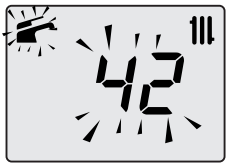


Fig. 2.11

Adjustment
Adjust the D.H.W. temperature to a value suited to your needs.
Reduce the necessity of mixing hot water with cold water.
In this way, the automatic adjustment features will be appreciated.
If water hardness is particularly high, we recommend that the boiler be adjusted to a temperature of less than 50°C.
However in these cases we recommend that a softener is installed on the domestic cold feed.

D.H.W. request
When the boiler has a power request in the D.H.W. mode, the symbol is displayed on the display followed by an increase of the heating water flow temperature. The symbol flashes (Fig. 2.12).

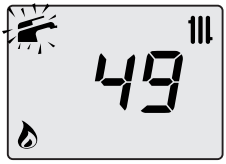


Fig. 2.12

2.6 3 star preheating function

This function diminishes consumption of the domestic water supply at the time of withdrawal, preparing the boiler temperature at the requested temperature.
To activate the 3 star preheating function press keys 12 and 13 together (Fig. 2.14) until the symbol appear on the LCD display (Fig. 2.13).
When the symbol flashes, the function is

in process.

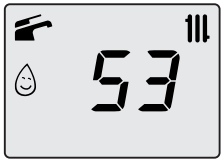


Fig. 2.13

NOTE: Should the power to the boiler fail, wait at least one minute before reactivating the function upon reactivation.

To disable the 3 star preheating function press keys 12 and 13 together (Fig. 2.14) until the symbol appear on the LCD display.

2.7 Switching off

Press the key for 5 seconds 14 (Fig. 2.14) until the - - - symbol appears on the display (the dashes light up in sequence to simulate a scrolling motion) (Fig. 2.15).

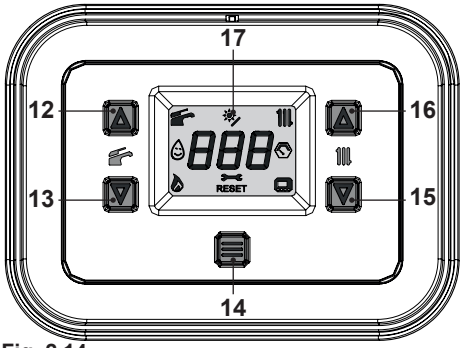


Fig. 2.14

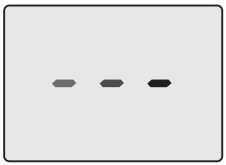


Fig. 2.15

If a long period of inactivity is envisioned:

- Switch off the electricity supply to the boiler, by means of the fused spur isolation switch;
- Shut off the gas supply cock and the valves for the water circuits fitted under the boiler Fig. 2.16;

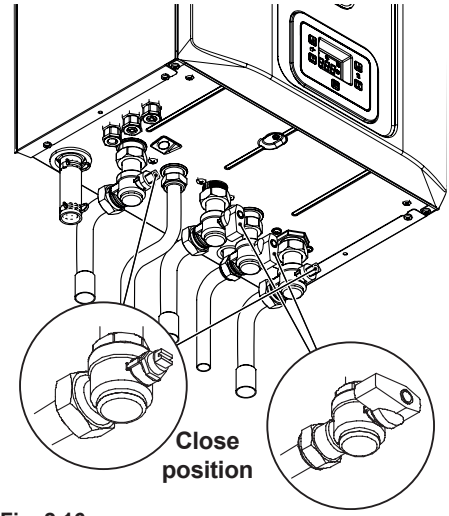


Fig. 2.16

- If necessary, empty the hydraulic circuits see section "Emptying the D.H.W. system" on page 78 and section "Emptying the C.H. system" on page 78.

3 USEFUL ADVICE

3.1 Central Heating

For your comfort and added system control, you can install a room thermostat but you should not shut off the radiator in that room or have a TRV fitted on the radiator.
If a radiator (or a convector) does not heat up, check that no air is present in it and that its valve is open. If the ambient temperature is too high, do not alter the radiator valves. Reduce the central heating temperature instead by means of the room thermostat or by pressing the 15 and 16 heating adjustment keys (Fig. 3.1).

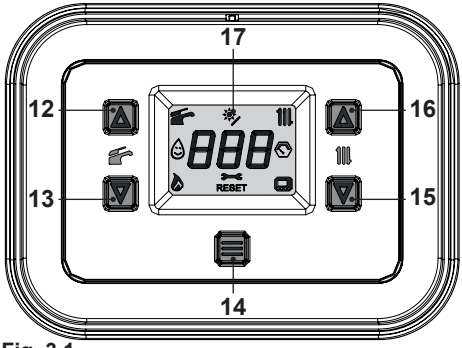


Fig. 3.1

3.2 Frost protection

The built in anti frost system protects the boiler from frost damage but does not provide any protection for the system, an optional external frost protection thermostat can be added and a dedicated connection point is available on the electrical connection block.
The anti-freeze function is also activated with the boiler in stand-by (Fig. 3.2).

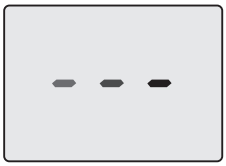


Fig. 3.2

Therefore, when the boiler is not lit and used in cold weather, with consequent risk of freezing do not switch off the boiler at the fused spur isolation switch or close the gas inlet cock.
If the boiler is deactivated, have a qualified technician empty the boiler (heating and domestic hot water circuit), the C.H. system and the D.H.W. system.

3.3 Condensate drain

The condensate drain must not be modified or blocked. Blockage of the condensate drain, caused by debris or freezing, can cause automatic shutdown of the boiler. If freezing is suspected and the pipe run is accessible an attempt may be made to free the obstruction by pouring hot water over the exposed pipe an cleaning any blockage from the end of the pipe.
If this fails to remedy the problem the assistance of a Gas Safe registered installer or in IE a competent person should be sought.

3.4 Periodic maintenance

For efficient and continuous operation of the boiler, it is advisable to arrange maintenance and cleaning by an Authorised Service Centre Engineer, at least once a year.
During the service, the most important components of the boiler will be inspected and cleaned. This service can be part of a maintenance contract. In particular, you are advised to have the following checks carried out:

- domestic hot water heat exchanger;
- condensing heat exchanger;
- burner;
- exhaust fume duct and flue;
- pressurisation of the expansion tank;
- filling up of the central heating circuit;
- bleeding of air from the central heating system;
- general check of the appliance's opera-

tion.
Please refer to the servicing information on section "MAINTENANCE" on page 76.

3.5 External cleaning

Before carrying out any cleaning, disconnect the appliance from the electrical mains, using the fused spur isolation switch fitted adjacent to the appliance.

To clean the external panels, use a cloth soaked in soapy water. Do not use solvents, abrasive powders or sponges.
Do not carry out cleaning of the appliance and/or its parts with readily flammable substances (for example petrol, alcohols, naphtha, etc.).

3.6 Operational faults

If the boiler does not function and a code that alternates between the letter **"E"** and the writing **RESET** (see "LCD general features" on page 10) appear on the LCD display, it indicates that the safety lock-out has stopped the boiler. The display background flashes (Fig. 3.3).

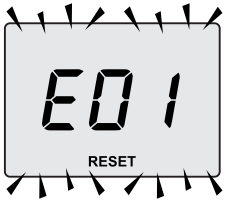


Fig. 3.3

For the first lighting up and following maintenance procedures for the gas supply, it may be necessary to repeat the resetting operation several times so as to remove the air present in the pipe work.
Safety lock-out may occur even in case of a blockage of the condensate drainage (e.g. plugged drain pipe). It is advisable to check the condensate drainage pipe and traps for cleanness.
Press the reset key on the boiler control panel 14 (Fig. 3.1) to reset its functioning.

In this case and in case of persistent lock-out call a competent and responsible Service Engineer.

After three reset attempts made by pressing the reset key 14 (Fig. 3.1), code **"E91"** and the symbol (Fig. 3.4) appear on the LCD display. The boiler is in lockout mode.

Fig. 3.4

To restore boiler operation, disconnect the electrical power supply. Then, reconnect it and press buttons 12, 13 and 14 (Fig. 3.1) on the boiler control panel at the same time for at least 5s.

Other operational faults signalled on the LCD display

If the LCD display displays a code that alternates between the letter **"E"** and the symbol, the boiler has an anomaly that cannot be reset.
The display background flashes (Fig. 3.5).

Fig. 3.5

Another possible signal occurs when the D.H.W. exchanger cannot exchange all of

the power supplied by the boiler.
E.g.: D.H.W. exchanger clogged with lime scale. This happens only when the boiler has a request for D.H.W..

Code **L1** appears on the LCD display. The display background flashes (Fig. 3.6).

Fig. 3.6

In order to reset good functioning of the boiler, call a competent and responsible Service Engineer.

Noise due to air bubbles are heard during operation
You should check that the pressure on the pressure gauge is not below the correct setting.
If required, top up the system correctly, as described in the section "Refilling procedure" on page 14 of this manual. Bleed any air present in the radiators, if necessary.

The pressure has gone down
It is necessary to top up the appliance with water again, so as to raise the pressure to an adequate level as described in the section "Refilling procedure" on page 14 of this manual. If topping up with water has to be done very frequently, have the system checked for leaks.

Water comes out of the pressure relief valve
Check on the pressure gauge that the pressure in the central heating circuit is not close to 3 bars. In this case, temperature rise in the circuit can cause the pressure relief valve to open. So that this does not happen and to decrease the pressure to a normal value, it is advisable to vent some of the water in the appliance through the bleed valves present in the radiators.

Reduced domestic hot water temperature
The likely causes may be impurities caught in the domestic hot water flow switch filter or limescale deposited in the domestic hot water heat exchanger. It is advisable to have the appliance cleaned out by an Authorised Service Centre Engineer.

If before water should occasionally leak from the boiler
Shut off the valves positioned under the boiler to page 18 and call an Authorised Service Centre Engineer.

In this case or in case of problems other than those mentioned here, switch off the boiler, as described in section "Switching off" on page 18 and call a competent and responsible Service Engineer.

3.7 Displaying in INFO mode

The INFO mode allows the display of some information on the boiler functioning status. In case of malfunctioning of the boiler, it may be useful to communicate such information to the Authorised Service Centre Engineer so that the causes can be understood.

In order to access the INFO mode, press keys 15 and 16 (Fig. 3.7) together until the index **"J00"** is shown on the display in alteration with the parameter value (Fig. 3.8).

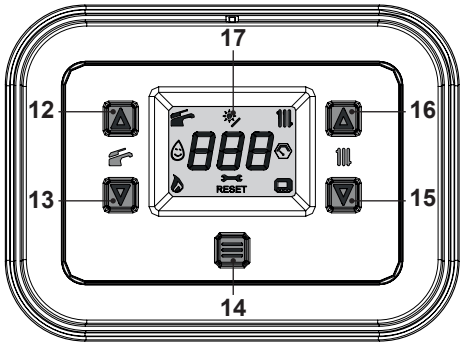


Fig. 3.7

Fig. 3.8

To scroll the values press 13 (previous INFO) and 15 (next INFO) keys.

To exit INFO mode, simply:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press and hold the 13 and 15 keys simultaneously for 5 seconds (Fig. 3.7) (one level up).

The table summarises the possible values visible in INFO mode.

Value visualised	Index
Primary circuit pressure	J00 + value
External temperature	J01 + value
K curve value configured in settings	J02 + value
Offset climatic curve value	J03 + value
Calculated heating set point (with climatic curve or set configured)	J04 + value
Temperature NTC delivery	J05 + value
Temperature NTC return	J06 + value
Domestic set	J07 + value
Temp. D.H.W. input (if foreseen)	J08 + ---
Temp. D.H.W. output	J09 + value
D.H.W. capacity	J10 + value
Flue gas temperature (if foreseen)	J11 + ---
Fan speed	J12 + value
Pressure transducer pressure (if foreseen)	J13 + ---
Ionization value	J14 + value
Number of months to maintenance	J15 + value
3 star status (ON=01, OFF=00)	J16 + value
Modulation percentage	J17 + value
Pump modulation percentage	J18 + value
Delivery 2 temperature (if foreseen)	J19 + value
M.B. version	J20 + value
Main SW version	J21 + value

3.8 Remote anomaly code

If the boiler is connected to remote (optional), a code that indicates a boiler anomaly is displayed in the centre of the display.
The anomaly in progress is indicated by a numeric code followed by the letter **E**.
The anomaly codes sent to the remote are the same as those shown on the display (see "SIGNAL DISPLAYED BY THE LCD" on pag. 10).

3.9 Flue probe and safety thermal fuse

If the flue thermal cut-off fuse is triggered, the boiler goes into safety lockout. To restore normal boiler operation, please contact an Authorized Service Centre.

The flue probe and safety thermal fuse 18 indicated in Fig. 3.9 are a safety device. The flue probe 18 intervenes when the flue temperature exceeds 110°C placing the boiler in safety block switching it off.
To reset normal boiler functioning, just press the 14 (Fig. 3.7) key.

If flue probe 18 does not intervene and, therefore does not send the boiler into security lockout, flue thermal fuse 18 is triggered as an additional safety device to protect the flue outlet pipe.

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

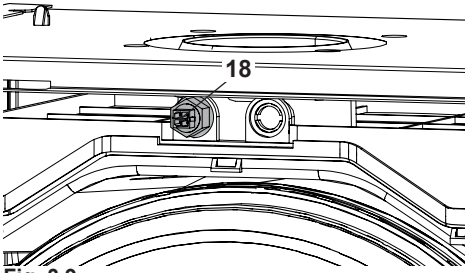


Fig. 3.9

4 TECHNICAL INFORMATION

4.1 Overview

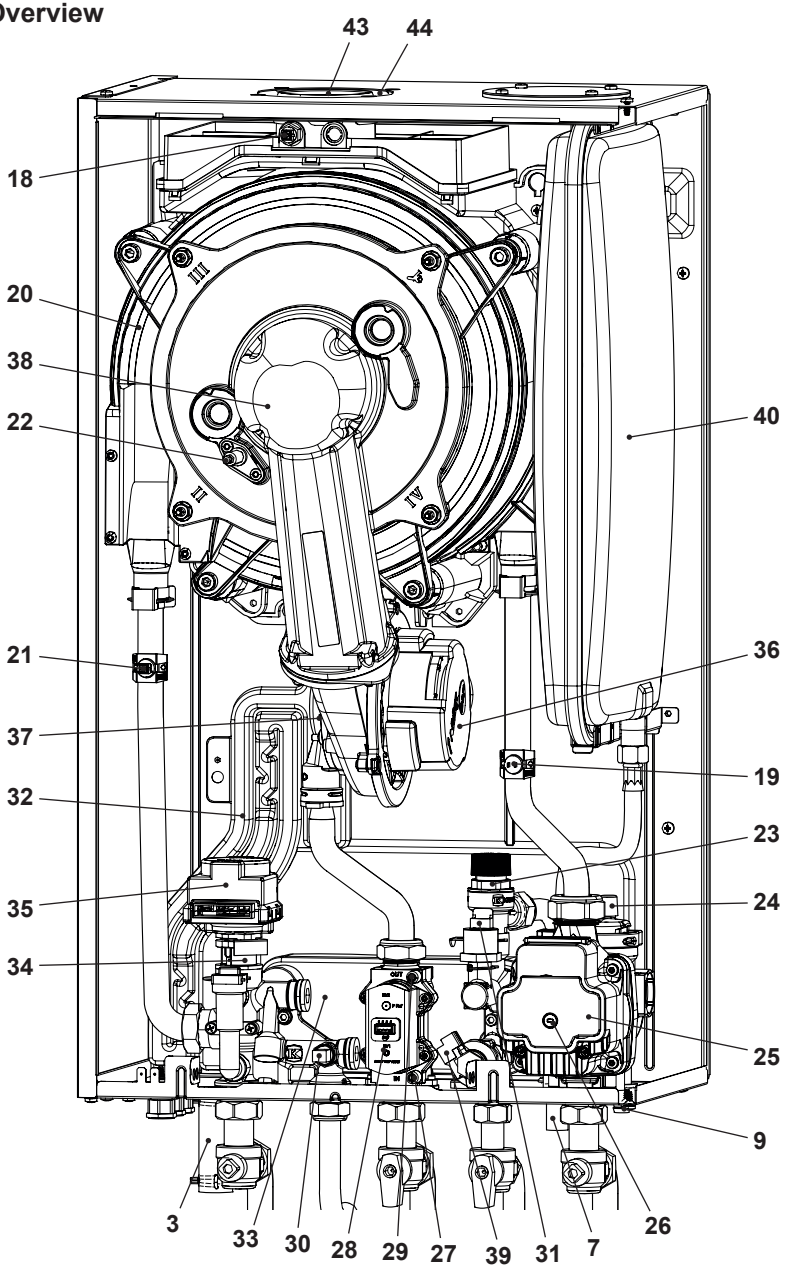


Fig. 4.1

4.2 Main diagram

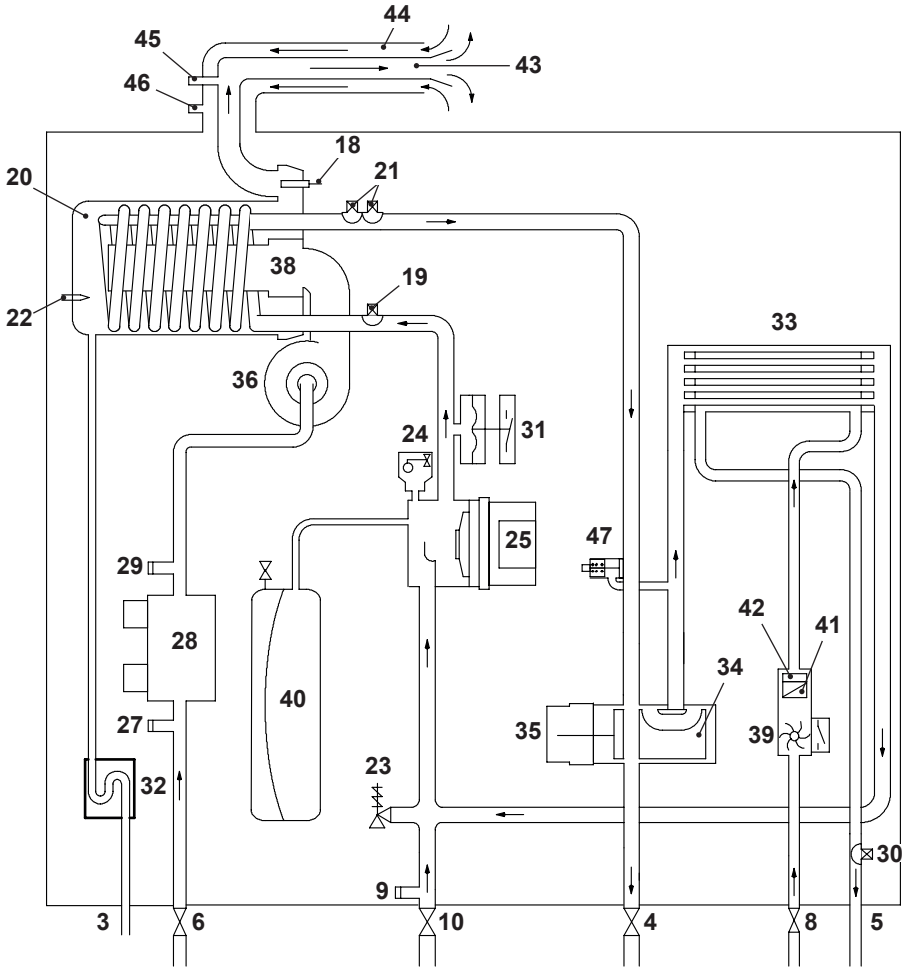


Fig. 4.2

3 Condensate drain pipe
4 C.H. flow valve
5 D.H.W. outlet pipe
6 Gas inlet valve
7 C.H. pressure relief valve pipe
8 D.C.W. inlet valve
9 Main circuit drain valve
10 C.H. return valve
18 Flue temperature probe NTC and Safety thermal fuse
19 C.H. temperature return probe NTC
20 Condensing heat exchanger
21 NTC heating delivery probe - NTC maximum temperature
22 Flame-detecting electrode/Ignition electrode

23 C.H. pressure relief valve
24 Automatic air purger valve
25 Pump
26 Pump vent plug
27 Gas valve inlet test point
28 Gas valve
29 Gas valve outlet test point
30 D.H.W. temperature probe NTC
31 Primary circuit pressure switch
32 Condensate trap
33 D.H.W. heat exchanger
34 Three-way diverter valve
35 Three-way electric actuator motor
36 Fan
37 Air/gas mixer
38 Burner
39 Domestic hot water flow switch
40 C.H. expansion tank
41 Domestic water circuit filter
42 Domestic hot water flow limiter (optional)
43 Flue outlet pipe
44 Air intake pipe
45 Flue exhaust sampling point
46 Air sampling point
47 By-pass valve

4.3 Hydraulic specifications

The hydraulic specifications represents the pressure (available head for the central heating system) as a function of the flow rate.

Model **M300V.2025 SM**

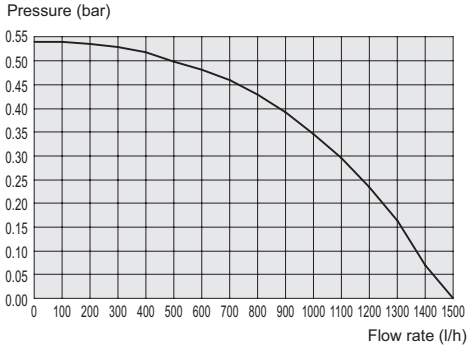


Fig. 4.3

Model **M300V.2530 SM - M300V.3035 SM**

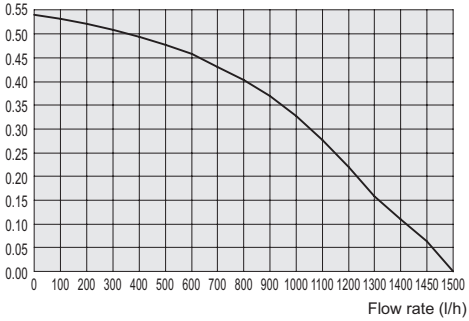


Fig. 4.4

The boiler load loss has already been removed.

Flow rate with closed thermostatic valves

The boiler is equipped with an automatic by-pass, which protects the condensing primary exchanger.

In case of excessive reduction or total stopping of water circulation in the heating system due to the closing of thermostatic valves or circuit elements valves, the by-pass ensures a minimum water circulation inside the condensing primary exchanger.

The by-pass is calibrated to a differential pressure of about 0.3-0.4 bar.

4.4 Expansion vessel

Note: this boiler is designed for operation only in a sealed central heating system.

The height difference between the pressure relief valve and the highest point in the system may be 10 m at most.

For greater differences, increase the pre-load pressure in the expansion vessel and the system, when cold, by 0.1 bar for each additional 1 m.

Total capacity	l	7,0
Pre-load pressure	kPa	100
	bar	1,0
Useful capacity	l	3,5
Maximum volume of water in the system *	l	109

Fig. 4.5

* Where conditions are:

- Average maximum temperature of the system is 85 °C
- Initial temperature when filling up the system is 10 °C

For systems with volumes greater then the one indicated in the above table, an additional expansion vessel must be provided.

4.5 Technical data M300V.2025 SM

Heat input		
Nominal net (A) central heating	kW	21,0
	BTU/h	71655
Nominal net (A) domestic hot water	kW	26,0
	BTU/h	88716
Nominal gross (B) central heating	kW	23,3
	BTU/h	79537
Nominal gross (B) domestic hot water	kW	28,9
	BTU/h	98474
Minimum net (A) C.H. - D.H.W.	kW	3,0
	BTU/h	10236
Minimum gross (B) C.H. - D.H.W.	kW	3,3
	BTU/h	11362

Useful output		
Maximum (central heating)	kW	20,7
	BTU/h	70631
Maximum (domestic hot water)	kW	25,6
	BTU/h	87351
Minimum (C.H. - D.H.W.)	kW	2,8
	BTU/h	9554
Maximum condensing (central heating)	kW	22,8
	BTU/h	77797
Maximum condensing (domestic hot water)	kW	28,2
	BTU/h	96222
Minimum condensing (C.H. - D.H.W.)	kW	3,2
	BTU/h	10919

Central heating		
Min/Max flow temperature settings*	°C	25 - 80
Maximum pressure	kPa	300
	bar	3,0
Minimum pressure	kPa	30
	bar	0,3
Available head (in 1000 l/h)	kPa	34,0
	bar	0,34
Seasonal efficiency G20 (c)	%	n.a.
Seasonal efficiency G31 (c)	%	n.a.

* to the minimum useful output

(A) referred to the net calorific value at 15 °C and 1013,25 mbar: G20 = 34,02 MJ/m^3 - G31 = 46,34 MJ/kg

(B) referred to the gross calorific value at 15 °C and 1013,25 mbar: G20 = 37,78 MJ/m^3 - G31 = 50,37 MJ/kg

(C) The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated have been certified by a notified body.

(D) Values subject to tolerance

Domestic hot water		
Min/Max temperature settings	°C	35 - 55
Maximum pressure	kPa	1000
	bar	10
Minimum pressure	kPa	30
	bar	0,3
Flow rate minimun	l/min	2,5
Flow rate 30° rise (D)	l/min	12,7
Flow rate 35° rise (D)	l/min	10,7
Flow rate 40° rise (D)	l/min	9,3

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

Gas rate maximum - central heating		
Natural G20	m^3/h	2,22
Propane G31	kg/h	1,63
Gas rate maximum - domestic hot water		
Natural G20	m^3/h	2,75
Propane G31	kg/h	2,02
Gas rate minimum – C.H. - D.H.W.		
Natural G20	m^3/h	0,32
Propane G31	kg/h	0,23

Electrical data		
Voltage	V~	230
Frequency	Hz	50
Nominal Power consumption	W	100
Minimum Power consumption	W	12
Stand-by Power consumption	W	3
Protection degree		IPX5D
External fuse rating	A	3
Internal fuse rating	A	N° 2 - 2 AF

Flue design		
Boiler type		
B23P C13 C33 C43 C53 C63 C83 C93		
Ø Coaxial	mm	60/100
Ø Twin split pipes	mm	80/80
Ø Roof	mm	60/100
Ø Roof	mm	80/125
Nominal heat flow rate (A) (E)	kW	26,0
Exhaust temperature (E)	°C	78,0
Mass flow rate (E)	kg/s	0,01

Flue gas figures		
Nominal heat input (A) (E)	kW	26,0
CO_2 content with gas G20	%	8,5 - 9,5
O_2 content with gas G20	%	4,8
CO content with gas G20	ppm	220,0
Exhaust temperature (E)	°C	78,0
NOx class		6
Weighted NOx	ppm	25

(E) *Values refer tests with a 1 m flue working at the nominal heat input*

CO_2 contents - central heating		
Nominal heat input (A) (E)	kW	21,0
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,6 - 10,6
Minimum heat input (A) (E)	kW	3,0
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,5 - 10,5

CO_2 contents - domestic hot water		
Nominal heat input (A) (E)	kW	26,0
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,6 - 10,6
Minimum heat input (A) (E)	kW	3,0
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,5 - 10,5

Other specifications		
Height	mm	700
Width	mm	400
Depth	mm	300
Weight (dry)	kg	31,5
Water volume in the boiler (up to 1 bar)	l (kg)	2,0

(2393)

Model(s):							**M300V.2025 SM**
Condensing boiler:							Yes
Low-temperature boiler (**):							No
B1 boiler:							No
Cogeneration space heater:			No	If yes, equipped with a supplementary heater:			-
Combination heater:							Yes
Item	**Symbol**	**Value**	**Unit**	**Item**	**Symbol**	**Value**	**Unit**
Rated heat output	**P_{rated}**	**21**	**kW**	**Seasonal space heating energy efficiency**	**η_s**	**94**	**%**
				Seasonal energy efficiency class		**A**	
For boiler space heaters and boiler combination heaters: Useful heat output				For boiler space heaters and boiler combination heaters: Useful efficiency			
At rated heat output and high-temperature regime (*)	P_4	20,7	kW	At rated heat output and high-temperature regime (*)	η_4	88,6	%
At 30% of rated heat output and low-temperature regime (**)	P_1	6,9	kW	At 30% of rated heat output and low-temperature regime (**)	η_1	98,9	%
Auxiliary electricity consumption				Other items			
At full load	elmax	0,03	kW	Standby heat loss	P_{stby}	0,11	kW
At part load	elmin	0,01	kW	Ignition burner power consumption	P_{ign}	-	kW
In standby mode	P_{SB}	0,00	kW	Annual energy consumption	Q_{HE}	63	GJ
				Sound power level, indoors	L_{WA}	49	dB
				Emission of nitrogen oxides	NO_x	44	mg/kWh
For combination heaters:							
Declared load profile		XL		**Water heating energy efficiency**	η_{wh}	86	%
Daily electricity consumption	Q_{elec}	0,17	kWh	Daily fuel consumption	Q_{fuel}	22,46	kWh
Annual electricity consumption	AEC	37	kWh	Annual fuel consumption	AFC	17	GJ
Contact details							See manual cover

(*) High-temperature regime means 60°C return temperature at heater inlet and 80°C feed temperature at heater outlet.

(**) Low temperature means for condensing boilers 30°C, for low-temperature boilers 37°C and for other heaters 50°C return temperature (at heater inlet).

4.6 Technical data M300V.2530 SM

Heat input		
Nominal net (A) central heating	kW	26,0
	BTU/h	88716
Nominal net (A) domestic hot water	kW	31,0
	BTU/h	105776
Nominal gross (B) central heating	kW	28,9
	BTU/h	98474
Nominal gross (B) domestic hot water	kW	34,4
	BTU/h	117412
Minimum net (A) C.H. - D.H.W.	kW	3,8
	BTU/h	12966
Minimum gross (B) C.H. - D.H.W.	kW	4,2
	BTU/h	14392

Useful output		
Maximum (central heating)	kW	25,6
	BTU/h	87351
Maximum (domestic hot water)	kW	30,6
	BTU/h	104411
Minimum (C.H. - D.H.W.)	kW	3,6
	BTU/h	12284
Maximum condensing (central heating)	kW	28,3
	BTU/h	96564
Maximum condensing (domestic hot water)	kW	33,7
	BTU/h	114989
Minimum condensing (C.H. - D.H.W.)	kW	4,0
	BTU/h	13649

Central heating		
Min/Max flow temperature settings*	°C	25 - 80
Maximum pressure	kPa	300
	bar	3,0
Minimum pressure	kPa	30
	bar	0,3
Available head (in 1000 l/h)	kPa	32,0
	bar	0,32
Seasonal efficiency G20 (c)	%	n.a.
Seasonal efficiency G31 (c)	%	n.a.

* to the minimum useful output

(A) referred to the net calorific value at 15 °C and 1013,25 mbar: G20 = 34,02 MJ/m^3 - G31 = 46,34 MJ/kg

(B) referred to the gross calorific value at 15 °C and 1013,25 mbar: G20 = 37,78 MJ/m^3 - G31 = 50,37 MJ/kg

(C) The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated have been certified by a notified body.

(D) Values subject to tolerance

Domestic hot water		
Min/Max temperature settings	°C	35 - 55
Maximum pressure	kPa	1000
	bar	10
Minimum pressure	kPa	30
	bar	0,3
Flow rate minimun	l/min	2,5
Flow rate 30° rise (D)	l/min	15,1
Flow rate 35° rise (D)	l/min	12,8
Flow rate 40° rise (D)	l/min	11,1

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

Gas rate maximum - central heating		
Natural G20	m^3/h	2,75
Propane G31	kg/h	2,02
Gas rate maximum - domestic hot water		
Natural G20	m^3/h	3,28
Propane G31	kg/h	2,41
Gas rate minimum – C.H. - D.H.W.		
Natural G20	m^3/h	0,40
Propane G31	kg/h	0,30

Electrical data		
Voltage	V~	230
Frequency	Hz	50
Nominal Power consumption	W	96
Minimum Power consumption	W	11
Stand-by Power consumption	W	3
Protection degree		IPX5D
External fuse rating	A	3
Internal fuse rating	A	N° 2 - 2 AF

Flue design		
Boiler type		
B23P C13 C33 C43 C53 C63 C83 C93		
Ø Coaxial	mm	60/100
Ø Twin split pipes	mm	80/80
Ø Roof	mm	60/100
Ø Roof	mm	80/125
Nominal heat flow rate (A) (E)	kW	31,0
Exhaust temperature (E)	°C	78,0
Mass flow rate (E)	kg/s	0,01

Flue gas figures		
Nominal heat input (A) (E)	kW	31,0
CO_2 content with gas G20	%	8,5 - 9,5
O_2 content with gas G20	%	4,8
CO content with gas G20	ppm	190,0
Exhaust temperature (E)	°C	78,0
NOx class		6
Weighted NOx	ppm	19

(E) *Values refer tests with a 1 m flue working at the nominal heat input*

CO_2 contents - central heating		
Nominal heat input (A) (E)	kW	26,0
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,6 - 10,6
Minimum heat input (A) (E)	kW	3,8
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,5 - 10,5

CO_2 contents - domestic hot water		
Nominal heat input (A) (E)	kW	31,0
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,6 - 10,6
Minimum heat input (A) (E)	kW	3,8
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,5 - 10,5

Other specifications		
Height	mm	700
Width	mm	400
Depth	mm	300
Weight (dry)	kg	36,0
Water volume in the boiler (up to 1 bar)	l (kg)	2,5

(2394)

Model(s):							**M300V.2530 SM**
Condensing boiler:							Yes
Low-temperature boiler (**):							No
B1 boiler:							No
Cogeneration space heater:			No	If yes, equipped with a supplementary heater:			-
Combination heater:							Yes
Item	**Symbol**	**Value**	**Unit**	**Item**	**Symbol**	**Value**	**Unit**
Rated heat output	**P_{rated}**	**26**	**kW**	**Seasonal space heating energy efficiency**	**η_s**	**94**	**%**
				Seasonal energy efficiency class		**A**	
For boiler space heaters and boiler combination heaters: Useful heat output				For boiler space heaters and boiler combination heaters: Useful efficiency			
At rated heat output and high-temperature regime (*)	P_4	25,6	kW	At rated heat output and high-temperature regime (*)	η_4	88,8	%
At 30% of rated heat output and low-temperature regime (**)	P_1	8,6	kW	At 30% of rated heat output and low-temperature regime (**)	η_1	98,8	%
Auxiliary electricity consumption				Other items			
At full load	elmax	0,04	kW	Standby heat loss	P_{stby}	0,11	kW
At part load	elmin	0,01	kW	Ignition burner power consumption	P_{ign}	-	kW
In standby mode	P_{SB}	0,00	kW	Annual energy consumption	Q_{HE}	78	GJ
				Sound power level, indoors	L_{WA}	50	dB
				Emission of nitrogen oxides	NO_x	34	mg/kWh
For combination heaters:							
Declared load profile		XL		**Water heating energy efficiency**	η_{wh}	87	%
Daily electricity consumption	Q_{elec}	0,16	kWh	Daily fuel consumption	Q_{fuel}	22,17	kWh
Annual electricity consumption	AEC	36	kWh	Annual fuel consumption	AFC	17	GJ
Contact details							See manual cover

(*) High-temperature regime means 60°C return temperature at heater inlet and 80°C feed temperature at heater outlet.

(**) Low temperature means for condensing boilers 30°C, for low-temperature boilers 37°C and for other heaters 50°C return temperature (at heater inlet).

4.7 Technical data M300V.3035 SM

Heat input		
Nominal net [A] central heating	kW	31,0
	BTU/h	105776
Nominal net [A] domestic hot water	kW	34,7
	BTU/h	118401
Nominal gross [B] central heating	kW	34,4
	BTU/h	117412
Nominal gross [B] domestic hot water	kW	38,5
	BTU/h	131425
Minimum net [A] C.H. - D.H.W.	kW	3,8
	BTU/h	12966
Minimum gross [B] C.H. - D.H.W.	kW	4,2
	BTU/h	14392

Useful output		
Maximum (central heating)	kW	30,6
	BTU/h	104411
Maximum (domestic hot water)	kW	34,1
	BTU/h	116354
Minimum (C.H. - D.H.W.)	kW	3,6
	BTU/h	12284
Maximum condensing (central heating)	kW	33,6
	BTU/h	114648
Maximum condensing (domestic hot water)	kW	37,7
	BTU/h	128638
Minimum condensing (C.H. - D.H.W.)	kW	4,0
	BTU/h	13649

Central heating		
Min/Max flow temperature settings*	°C	25 - 80
Maximum pressure	kPa	300
	bar	3,0
Minimum pressure	kPa	30
	bar	0,3
Available head (in 1000 l/h)	kPa	32,0
	bar	0,32
Seasonal efficiency G20 [c]	%	n.a.
Seasonal efficiency G31 [c]	%	n.a.

* to the minimum useful output

[A] referred to the net calorific value at 15 °C and 1013,25 mbar: G20 = 34,02 MJ/m^3 - G31 = 46,34 MJ/kg

[B] referred to the gross calorific value at 15 °C and 1013,25 mbar: G20 = 37,78 MJ/m^3 - G31 = 50,37 MJ/kg

[C] The value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated have been certified by a notified body.

[D] Values subject to tolerance

Domestic hot water		
Min/Max temperature settings	°C	35 - 55
Maximum pressure	kPa	1000
	bar	10
Minimum pressure	kPa	30
	bar	0,3
Flow rate minimun	l/min	2,5
Flow rate 30° rise [D]	l/min	16,9
Flow rate 35° rise [D]	l/min	14,3
Flow rate 40° rise [D]	l/min	12,4

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

Gas rate maximum - central heating		
Natural G20	m^3/h	3,28
Propane G31	kg/h	2,41
Gas rate maximum - domestic hot water		
Natural G20	m^3/h	3,67
Propane G31	kg/h	2,70
Gas rate minimum – C.H. - D.H.W.		
Natural G20	m^3/h	0,40
Propane G31	kg/h	0,30

Electrical data		
Voltage	V~	230
Frequency	Hz	50
Nominal Power consumption	W	116
Minimum Power consumption	W	11
Stand-by Power consumption	W	3
Protection degree		IPX5D
External fuse rating	A	3
Internal fuse rating	A	N° 2 - 2 AF

Flue design		
Boiler type		
B23P C13 C33 C43 C53 C63 C83 C93		
Ø Coaxial	mm	60/100
Ø Twin split pipes	mm	80/80
Ø Roof	mm	60/100
Ø Roof	mm	80/125
Nominal heat flow rate (A) (E)	kW	34,7
Exhaust temperature (E)	°C	78,0
Mass flow rate (E)	kg/s	0,02

Flue gas figures		
Nominal heat input (A) (E)	kW	34,7
CO_2 content with gas G20	%	8,5 - 9,5
O_2 content with gas G20	%	4,8
CO content with gas G20	ppm	200,0
Exhaust temperature (E)	°C	78,0
NOx class		6
Weighted NOx	ppm	16

(E) *Values refer tests with a 1 m flue working at the nominal heat input*

CO_2 contents - central heating		
Nominal heat input (A) (E)	kW	31,0
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,6 - 10,6
Minimum heat input (A) (E)	kW	3,8
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,5 - 10,5

CO_2 contents - domestic hot water		
Nominal heat input (A) (E)	kW	34,7
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,6 - 10,6
Minimum heat input (A) (E)	kW	3,8
CO_2 content with gas G20 (range min - max)	%	8,5 - 9,5
CO_2 content with gas G31 (range min - max)	%	9,5 - 10,5

Other specifications		
Height	mm	700
Width	mm	400
Depth	mm	300
Weight (dry)	kg	36,0
Water volume in the boiler (up to 1 bar)	l (kg)	2,5

(2395)

Model(s):							**M300V.3035 SM**
Condensing boiler:							Yes
Low-temperature boiler (**):							No
B1 boiler:							No
Cogeneration space heater:			No	If yes, equipped with a supplementary heater:			-
Combination heater:							Yes
Item	**Symbol**	**Value**	**Unit**	**Item**	**Symbol**	**Value**	**Unit**
Rated heat output	**P_{rated}**	**31**	**kW**	**Seasonal space heating energy efficiency**	**η_s**	**94**	**%**
				Seasonal energy efficiency class		**A**	
For boiler space heaters and boiler combination heaters: Useful heat output				For boiler space heaters and boiler combination heaters: Useful efficiency			
At rated heat output and high-temperature regime (*)	P_4	30,6	kW	At rated heat output and high-temperature regime (*)	η_4	89,0	%
At 30% of rated heat output and low-temperature regime (**)	P_1	10,2	kW	At 30% of rated heat output and low-temperature regime (**)	η_1	99,0	%
Auxiliary electricity consumption				Other items			
At full load	elmax	0,05	kW	Standby heat loss	P_{stby}	0,11	kW
At part load	elmin	0,01	kW	Ignition burner power consumption	P_{ign}	-	kW
In standby mode	P_{SB}	0,00	kW	Annual energy consumption	Q_{HE}	94	GJ
				Sound power level, indoors	L_{WA}	50	dB
				Emission of nitrogen oxides	NO_x	28	mg/kWh
For combination heaters:							
Declared load profile	XXL			**Water heating energy efficiency**	η_{wh}	85	%
Daily electricity consumption	Q_{elec}	0,23	kWh	Daily fuel consumption	Q_{fuel}	28,43	kWh
Annual electricity consumption	AEC	50	kWh	Annual fuel consumption	AFC	22	GJ
Contact details	See manual cover						

(*) High-temperature regime means 60°C return temperature at heater inlet and 80°C feed temperature at heater outlet.

(**) Low temperature means for condensing boilers 30°C, for low-temperature boilers 37°C and for other heaters 50°C return temperature (at heater inlet).

5 GENERAL REQUIREMENTS

benchmark
COLLECTIVE MARK
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.
Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit www.hhic.co.uk for more information.

Our Company supports the Benchmark initiative. The Benchmark Checklist is located at the back of this manual and should be completed by the Installing/Commissioning Gas Safe Registered Engineer and handed over to the User for future reference by other visiting Engineers. Also included is the Service Interval Record card that should be completed by the Service Engineer following the annual service maintenance of the boiler and system.
For Ireland (IE), it is necessary to complete a "Declaration of Conformity" to indicate compliance to I.S.813.2002.
This appliance must be installed by a competent person in accordance with the Gas Safe (installation & Use) Regulations.

5.1 Related documents

The installation of this appliance must be in accordance with the relevant requirements of the current Gas Safe (Installation & Use) Regulations, the Local Building Regulations, the current I.E.E. Wiring Regulations, the Regulations and by-laws of the local water undertaking, and in Scotland, in accordance with the Building Standards (Scotland) Regulation. Health and safety document n° 635 "Electricity at work regs.".
It should also be in accordance with the British Standard Codes of Practice:
In Ireland (IE). The installation must be carried out by a Competent Person and registered with the RGII and installed in accordance with the current edition of I.S.813.2002 "Domestic Gas Installations" the current Building Regulations and reference should be made to the current ETCI rules for electrical installations.

5.2 Location of appliance

The appliance may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations, and in Scotland, the electrical provisions of the Building Regulations applicable in Scotland, with respect to the installation of the appliance in a room containing a bath or shower.
For Ireland (IE), reference should be made to the current edition of I.S.813.2002 and the current ETCI rules for electrical installations.

Where a room-sealed appliance is installed in a room containing a bath or shower, any electrical switch or appliance control, utilising mains electricity should be so situated that it cannot be touched by a person using the bath or shower.

The location must permit the provision of an adequate flue and termination.
For unusual locations special procedures may be necessary and BS 6798 gives detailed

guidance on this aspect.
A compartment used to enclose the appliance must be designed specifically for this purpose. This appliance is not suitable for external installation.

5.3 Flue system

The provision for satisfactory flue termination must be made as described in BS 5440 part 1.
For Ireland (IE), refer to I.S.813.2002.
The appliance must be installed so that the flue terminal is exposed to external air.
It must not be installed so that the terminal discharges into another room or space as an outhouse or lean-to. It is important that the position of the terminal allows a free passage of air across at all times.
The terminal should be located with due regard for the damage or discoloration that might occur to building products in the vicinity.
In cold and/or humid weather water vapour may condense on leaving the flue terminal; the effect of such ”steaming” must be considered.
Pluming may easily occur at the terminal. Where possible, terminal position which could cause a nuisance should be avoided.
The minimum acceptable spacing from the terminal to obstructions and ventilation openings are specified in Fig. 5.1.

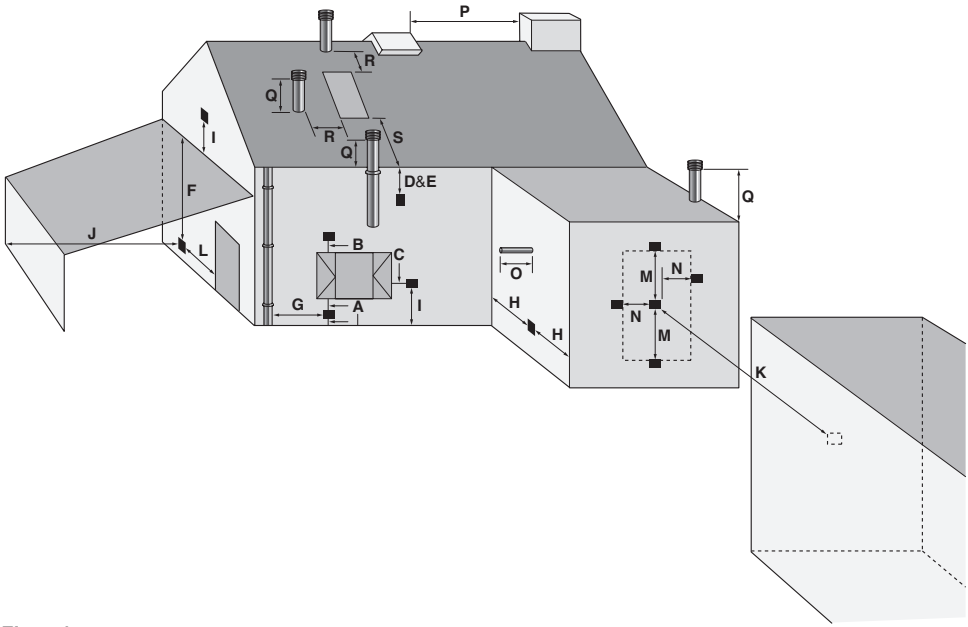


Fig. 5.1

Symbol	Location position	Minimum dimensions (mm)
A *	Directly below an opening, air brick, opening window, etc.	300
B *	Above an opening, air brick, opening window, etc.	300
C *	Horizontally to an opening, air brick, opening window, etc.	300
D **	Below temperature-sensitive building components, e.g. plastic gutter soil pipes or drain pipes	75
E **	Below eaves	200
F	Below balconies	200
G	From a vertical drain pipe or soil pipe	150
H ***	From an internal or external corner	300
I	Above ground, roof or balcony level	300
J	From a surface facing a terminal	600
K	From a terminal facing a terminal	1 200
L	From an opening in the car-port (e.g. door, window) into the dwelling	Not recommended
M	Vertically from a terminal on the same wall	1 500
N	Horizontally from a terminal on the same wall	300
O	From the wall on which the terminal is mounted	Please refer to the flue assembly instructions
P	From a vertical structure on the roof	600
Q	Above intersection with the roof	600
R	From a roof window and terminal	600
S	From a roof window and terminal	2 500

* In addition, for temperature and structural reasons, the terminal should not be near than 150 mm to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a sealed window frame.

** A heat protection shield should also be installed.

*** The reference to external corners does not apply to building protrusions not exceeding 450 mm, such as disused chimneys on external walls.

5.4 Gas supply

The Gas meter is connected to the service pipe by the local gas region or a local gas region contractor.

If the gas supply for the boiler serves other appliances ensure that an adequate supply is available both to the boiler and the other appliance when they are in use at the same time.

Pipework must be of adequate size. Pipes of a smaller size than the boiler inlet connection should not be used.

Installation pipes should be fitted in accordance with BS 6891 and the complete installation should be tested for tightness.

For Ireland (IE), refer to I.S.813.2002.

5.5 Air supply

The room in which the boiler is installed does not require a purpose provided air vent.

5.6 Ventilation

If installed in a cupboard or compartment, it is not necessary to provide additional ventilation for cooling for this particular product. However consideration must be given to clearance requirements for maintenance (section "Precautions for installation" on page 47) and under no circumstances must stored articles be allowed to come into contact with the boiler or flue pipe.

5.7 Condensate drain

Ensure that the condensate discharge complies with the national or local regulations in force.

The condensate pipe must be fitted in accordance with Building Regulations.

Drain pipe material should be resistant to acid as the condensate is slightly acid with a pH less than 6.5.

The boiler includes a trap (32 on page 24) that prevents the combustion products entering the drain.

The boilers incorporate a condensate trap with a 225 mm seal to comply with BS 6798: 2008.

The schematic diagrams of possible connections are given in Fig. 5.2 and Fig. 5.3.

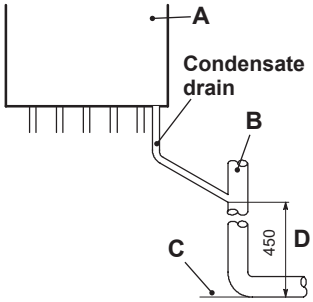
The length of the condensate pipe should be kept to a minimum, any external pipe should not be more than 3 m in 32 mm pipe and insulated to prevent freezing.

To avoid condensate being trapped:

- the drain pipe should be run with a fall of at least 2.5° (45 mm/m) away from the boiler;
- the number of bends and joints should be kept at minimum;
- the drain pipe should be adequately fixed to prevent pipe sagging.

If a part of the drainpipe runs externally this part should be kept as short as possible and protected to reduce the risk of freezing.

Connection of condensate drainage pipe to internal soil and vent stack.

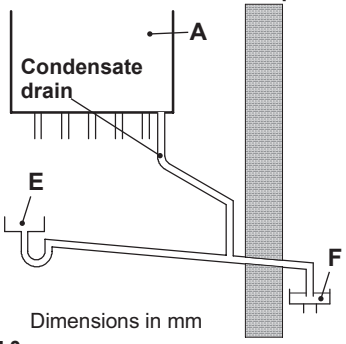


Dimensions in mm

Fig. 5.2

A Boiler
B Internal soil and vent stack
C Invert
D 450 mm up to three storeys

Connection of condensate drainage pipe downstream of a sink waste trap



Dimensions in mm

Fig. 5.3

A Boiler
E Sink
F Open end of condensate drainage pipe direct into gully below grating but above water level

Combined condensate and PRV discharge

It is possible to combine the PRV and condensate discharge pipes providing the following precautions are followed explicitly.

- A WRAS approved dry trap such as the Tesla DTUN 1522 is utilised.
- That the condensate is connected downstream of the trap as shown in the drawing and no copper pipe is utilised below this point.
- That the 32 mm equal T and subsequent downstream connection waist pipe is HT certified and capable of handling the potential short term expected temperature such as HDPE or polypropylene, consideration should also be given to the type of stack and its material in the event of the PRV activating.

At all times during design and component selection a worst case scenario event should be considered e.g. a short term exposure of high flow at high temperature along with normal running conditions of the corrosive nature of the condensate.

Connection combined condensate and PRV discharge.

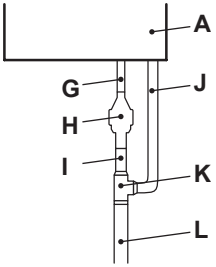


Fig. 5.4

A Boiler
G 15 mm copper PRV discharge pipe work
H WRAS approved dry trap such as the Tesla DTUN1522
I 22 mm copper PRV discharge pipe work
J 21.5 mm solvent condensate discharge pipe work
K High temperature rated equal 32 mm T with required adapters for condensate and PRV inlets
L High temperature rated Waist discharge pipe work with a minimum diameter of 32 mm

5.8 Water circulation (C.H.)

Detailed recommendations are given in BS 6798, BSEN 12828: 2003, BSEN 12831: 2003 & BSEN 14446: 2004; the following notes are given for general guidance.
For Ireland (IE), refer to I.S.813.2002.

Pipework

Copper tubing to BSEN 1057 is recommended for water pipes. Jointing should be either with capillary soldered or with compression fittings. Where possible pipes should have a gradient to ensure air is carried naturally to air release points and water flows naturally to drain taps.
The appliance has a built-in automatic air release valve, it should be ensured as far as possible that the appliance heat exchanger is not a natural collecting point for air.
Except where providing useful heat, pipes should be insulated to prevent heat loss and to avoid freezing.
Particular attention should be paid to pipes passing through ventilated spaces in roofs and under floors.

By-pass

The appliance includes an automatic by-pass valve which protects the main heat exchanger in case of reduced or interrupted water circulation through the heating system due to the closing of thermostatic valves or isolation valves within the system.
The by-pass is calibrated to assure a minimum flow of 200-300 lts/hr through the main heat exchanger.
If you are installing a system that includes thermostatic radiator valves (TRV) and/or small bore (8-10 mm) it may be necessary to fit an external by-pass to facilitate correct operation of the boiler.
The fitting of an external bypass helps to prevent and limit system noise.

Air release points

These must be fitted at all high points where air will natural collect and must be sited to

facilitate complete filling of the system.

Expansion vessel
The appliance has an integral sealed expansion vessel to accommodate the increase of water volume when the system is heated.
Refer to Fig. 4.5 on page 27 for its technical data.
If the heating circuit has an unusually high water content, calculate the total expansion and add an additional sealed expansion vessel with adequate capacity.

Mains water feed: central heating
There must be no direct connection to the mains water supply even through a non return valve, without the approval of the Local Water Authority.

Mains water feed: hot water supply
The domestic section of the boiler is designed to withstand an internal domestic water pressure of 10 bar. Where it is likely that the mains domestic water pressure may exceed 5 bar, it is possible due to internal “water hammer” effects that the pressure within the domestic system can increase to a level in excess of the 10 bar limit.
In these circumstances it is therefore recommended that a 3 bar pressure reducing valve be fitted to the incoming mains water supply and a mini expansion vessel installed on the domestic circuit.
These devices will protect the boiler and the domestic system from damage due to excessive domestic water pressure.

Filling
A method for initially filling the system and replacing water lost during servicing must be provided and it must comply with local water authority regulations.
The correct method is shown in Fig. 5.5.
The temporary connection must be removed immediately after filling.

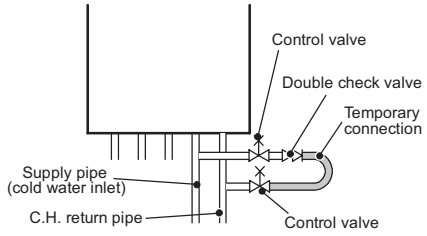


Fig. 5.5

The installer should ensure that no leaks exist either inside the boiler or on the system as frequent filling of the system could cause premature scaling of the heat exchanger.

5.9 Domestic water
The domestic water installation must be in accordance with the relevant recommendations of BS 5546. Copper tubing to BS EN 1057 is recommended for water carrying pipework and must be use for pipework carrying potable water.
For Ireland (IE), refer to I.S.813.2002.

5.10 Water treatment
C.H. circuit
Where a new boiler is fitted to a new system with either plastic or copper pipes, it is important the system is fully flushed, on completion, to ensure flux residues, swarf, oils and other installation debris is removed.
Where a new boiler is fitted to an existing system, it is important the debris from the existing system is fully removed in order to ensure the efficiency of the new appliance is maintained.
Details on flushing procedure are given in the section "Initial filling of the system" on page 58 of this manual.

D.H.W. circuit (scale protection)
In areas where the water is ’hard’ (i.e. more than 200 ppm total hardness as defined by BS 7593: 2006 Table 2) it is recommended that a proprietary scale-reducing device is fitted into

the boiler cold supply, within the requirements of the local water company.

5.11 Electrical supply

Warning, this appliance must be earthed.

External wiring to the appliance must be carried out by a competent person and be in accordance with the current I.E.E. Regulations and any local regulations which apply.

Reference should be made to the current ETCI rules for electrical installations.

For Ireland (IE), refer to I.S.813.2002.

The boiler is supplied for connection to a 230 V~ 50 Hz supply.

The mains supply to this appliance must be protected with a 3A mains fuse, under no circumstance should this fuse rating be exceeded.

The method of connection to the electricity supply must facilitate complete electrical isolation of the appliance by the use of a fused spur isolation switch. Its installation permits a complete switching off in the conditions of the overvoltage category III. Alternatively it can be connected with a 3A fused three pin plug and unswitched shuttered socket outlet both complying with BS 1363.

The point of connection to the electricity supply must be readily accessible and adjacent to the appliance, except where the appliance is installed in a bathroom, this must then be sited outside the bathroom.

6 INSTALLATION

6.1 Warnings

The use of gas appliances is subject to statutory control; it is essential to observe the current regulations and laws in force (see also chapter 5).
The appliance must discharge combustion products directly outside or into a suitable exhaust duct designed for this purpose. Combustion products must be discharged using original flue kits only, since they are integral parts of the boiler.
The appliance is not suitable for receiving condensate coming from the combustion products evacuation system.

Combustion air must avoid contents of chlorine, ammonia, or alkali agents. Installation of a boiler near a swimming pool, a washing machine, or a laundry does expose combustion air to these aggressive contents".

Before installing the boiler on an existing C.H. system, flush it out thoroughly before fitting the boiler.
This procedure is to remove the presence of any residues or impurities that could compromise good functioning of the boiler.
After flushing it is necessary to treat the system.
The conventional warranty does not cover any problems deriving from failure to comply with such provisions.

For Propane, the appliance must also conform with the requirements of the distributors and comply with current Regulations and laws in force.
The safety relief valve and the condensate drain must be connected to a suitable drain, or discharged in a safe manner.

The electrical wiring must conform with current Regulations, in particular:
- the boiler must be earthed using the correct bonding clamp.
- a fused spur isolation switch, must be installed near to the boiler that allows complete isolation in category III over voltage conditions.

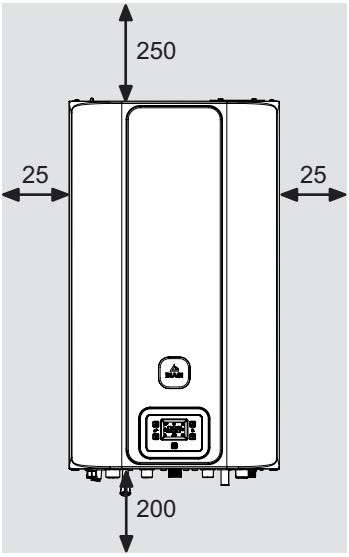
Refer to section "Electric connection" on page 53 in this chapter for the electrical connections.

Under no circumstances will the manufacturer be held responsible if the warnings and instructions contained in this manual have not been complied with.

6.2 Precautions for installation

The following prescriptions must be respected for installation:

- The boiler must be fixed to a strong wall.
- The dimensions for the flue system (detailed in section "Choice of flue" on page 50) and the correct procedures for installing the flue, depicted in the instruction leaflet included with the flue kit, must be complied with during installation.
- To allow maintenance procedures it is necessary to leave the minimum clearances indicated in Fig. 6.1.



All measurements are in mm

Fig. 6.1

- When installing the boiler in a cupboard, cover or alcove allow at least 5 mm permanent clearance from the front face of the boiler. Also ensure sufficient clearance to allow free access for servicing.

- Before installing the boiler on an existing C.H. system, flush it out thoroughly before fitting the boiler, so as to remove system debris.

It is advisable to equip the system with a quality magnetic system filter, you should also use a water-treatment product in the circulating water.
The latter option in particular, has an anti-corrosive effect by promoting formation of a protective skin on metal surfaces and neutralising gases present in the water.
We recommend the use of a suitable Buildcert approved universal inhibitor to protect the C.H. system from corrosion.

Biasi UK strongly recommend that matched system chemicals are used, this will ensure that no unwanted chemical reactions take place as system chemical manufactures ensure own brand compatibility,

6.3 Installing the bracket

Precautions

Before mounting the bracket, check that the dimensions for fitting the flue system are complied with (refer to the leaflet included with the flue kit, packed separately).
Utilise the paper template supplied with the boiler to determine the fixing position for the bracket and boiler. Securely mount the bracket to the wall using appropriate fixings suitable for the type of wall construction and capable of supporting the total (wet) load. Refer to the weight given in the technical data tables specific for each model.

6.4 Overall dimensions

The boiler respects the following dimensions:

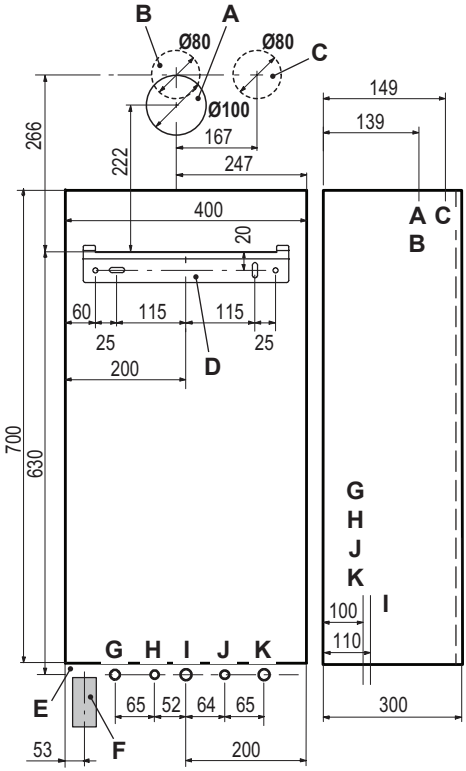


Fig. 6.2

A Flue outlet / air intake pipe (co-axial Ø 100/60)
B Flue outlet pipe Ø 80 mm (twin kit)
C Air intake pipe Ø 80 mm (twin kit)
D Bracket
E Electric connections area
F Condensate drain connection area
G C.H. flow
H D.H.W. outlet
I Gas
J D.C.W. inlet
K C.H. return

6.5 Joints

The boiler uses the following fittings:

Functions	Pipe sizes (o.d)
Gas, C.H. return, C.H. flow	Ø 22 mm
D.C.W. inlet	Ø 15 mm
D.H.W. outlet	Ø 15 mm
Pressure relief valve	Ø 15 mm
Condensate drain	Ø 20 mm (rubber)
sizes in mm o.d.	

Condensate drained with Ø 21.5 mm solvent weld pipe

6.6 Mounting the boiler

- Take the protective caps off the boiler pipework.
- Thoroughly clean the connections.
- Fix the water valve "O" (½") to position "J" (Fig. 6.2) using the ½" gasket.
- Fix the C.H. valves "N" to position "G" and "K" (Fig. 6.2) using the ¾" gaskets.
- Fix the gas cock "P" to position "I" (Fig. 6.2), using the ¾" gasket.
- Fix the Ø 22 mm copper pipes “L” to the valves “N – P” using the ¾" gaskets and the Ø 15 mm copper pipe “M” to the valve "O" using the ½" gasket.
- Fix the Ø 15 mm copper pipe "Q" to position "H" (Fig. 6.2) using the ½" gasket.

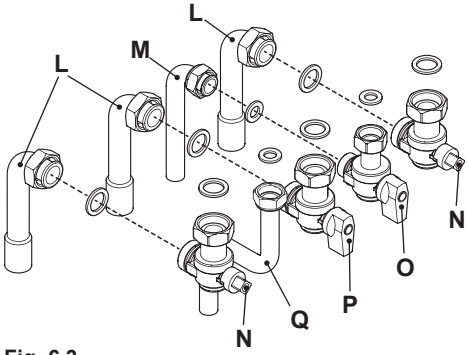


Fig. 6.3

- Connect the pipe 7 (Fig. 6.4) from the pressure relief valve to the safety discharge pipework.
- Fit the condensate drain 3 (Fig. 6.4) in to the drainage pipework.
- See also section "Condensate drain" on page 43 in this manual.

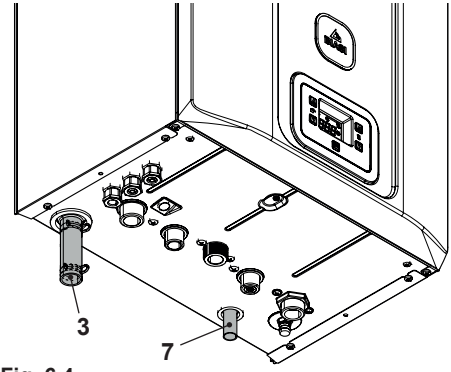


Fig. 6.4

6.7 Fitting the flue system

For a correct installation of the flue pipe, refer to the sheet provided together with the pre-selected kit.

The horizontal run of the flue pipes must incline about 1.5 degrees (25 mm per meter); therefore the terminal must be higher than the intake at the boiler.

The standard horizontal flue kit must be fitted horizontal as the inner flue exhaust pipe is already angled with the correct incline.

CORRECT system for installing the wall flue

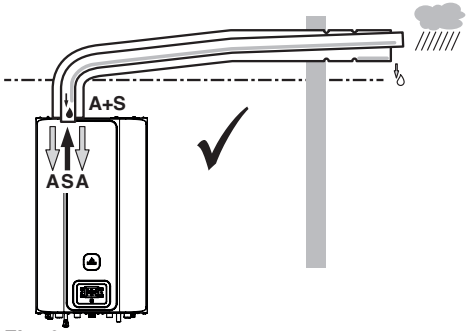


Fig. 6.5

A = air intake

S = flue exhaust

6.8 Choice of flue

The flue exhaust/air intake can be installed in the mode:

C_{13} C_{33} C_{53} C_{63}

The terminal must be higher than the boiler.

The following kits to be connected to the boiler are available:

Wall flue exhaust kit (Fig. 6.6 A)

This kit allows the flues to be exhausted in the rear wall or at the side of the boiler.

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

Type C_{13}

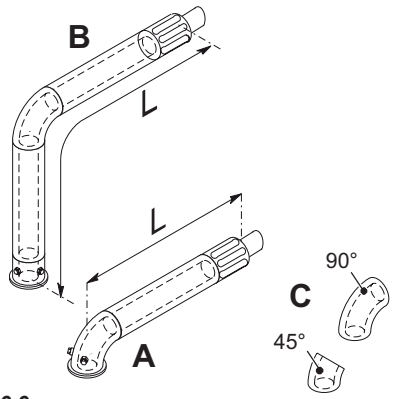


Fig. 6.6

Vertical flue exhaust kit with 90° bend (Fig. 6.6 B)

This kit allows the boiler exhaust axis to be lifted by 635 mm.

The terminal must always exhaust horizontally.

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

Additional bends at 45° or 90° (Fig. 6.6 C)

Coaxial bends Ø 60/100 mm.

These bends when used with the pipe reduce the maximum length of the flue pipe by:

For the bend of 45° loss	0.5 m
For the bend of 90° loss	1 m

Exhaust intake split pipes kit Ø 80 mm - (Fig. 6.7) - (Fig. 6.8)

This kit allows the flue exhaust to be separated from the air intake.

Split pipes kit Ø 80 mm	
Minimum length	0.5 m
Maximum length (a + b)	40 m

N.B: The air intake and the flue outlet must not terminate on opposite sides of the building (EN 483).

Type C_{13}

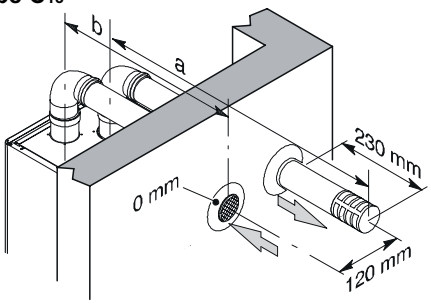


Fig. 6.7

Bends of Ø 80 mm at 90° and at 45° are available that reduce the maximum total length of the pipes by:

For the bend of 45° loss	0.9 m
For the bend of 90° loss	1.65 m

Type C_{53}

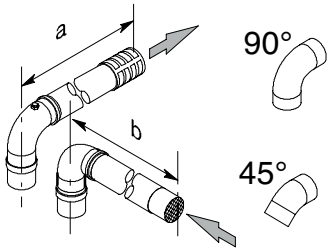


Fig. 6.8

Roof flue exhaust kit (Fig. 6.9)

This kit exhausts directly to the roof.

Coaxial pipe	Ø 60/100 mm	Ø 80/125 mm
Nominal height	0.96 m	0.96 m
Maximum height	10 m	10 m

Type C_{33}

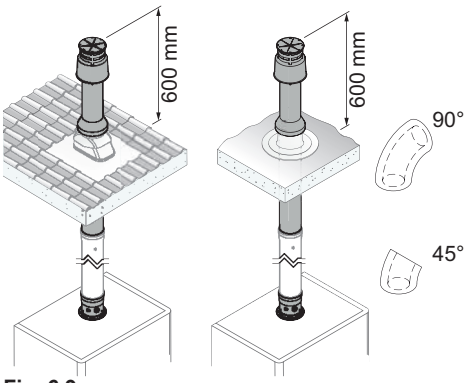


Fig. 6.9

Extensions are available for reaching the maximum height.

Bends at 90° and at 45° are available that reduce the maximum total length of the pipes by:

For the bend of 45° loss	0.5 m
For the bend of 90° loss	1 m

Pluming kit A (Fig. 6.10)

Coaxial Ø 60/100 mm + vertical part Ø 60 mm (flue outlet).

Coaxial Ø 60/100 mm (b) + vertical part Ø 60 mm (a)	
Telescopic coaxial flue	0.45-0.95 m
Maximum length (a + b)	15 m

This kit allows the products of combustion to be discharged at a different location to the air intake to avoid nuisance issues.

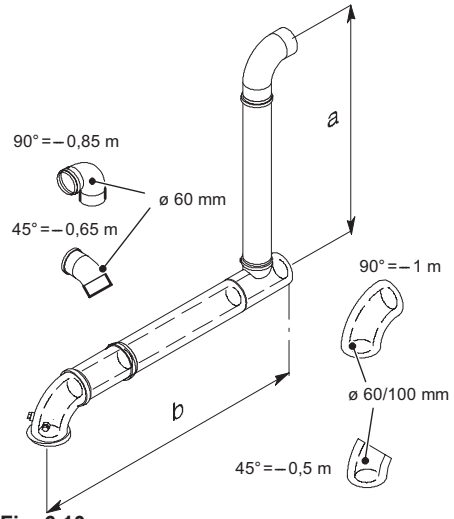


Fig. 6.10

60 mm elbows and extensions can be added to the vertical section.

Each additional elbow reduces the overall acceptable length of the flue system as follows:

For the bend of 45° (60/100 mm) loss	0.5 m
For the bend of 90° (60/100 mm) loss	1 m
For the bend of 45° (60 mm) loss	0.65 m
For the bend of 90° (60 mm) loss	0.85 m

Pluming kit B (Fig. 6.11) (Fig. 6.12)

Push on type Ø 60 mm vertical plume management kit

This kit allows the products of combustion to be discharged at a different location, when used with the standard horizontal flue kit.

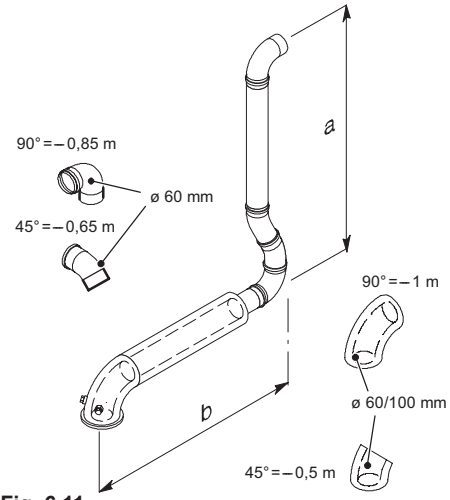


Fig. 6.11

Each additional elbow reduces the overall acceptable length of the flue system as follows:

For the bend of 45° (60/100 mm) loss	0.5 m
For the bend of 90° (60/100 mm) loss	1 m
For the bend of 45° (60 mm) loss	0.65 m
For the bend of 90° (60 mm) loss	0.85 m

The chart Fig. 6.12 gives the maximum allowed value for **a + b** of (Fig. 6.11).

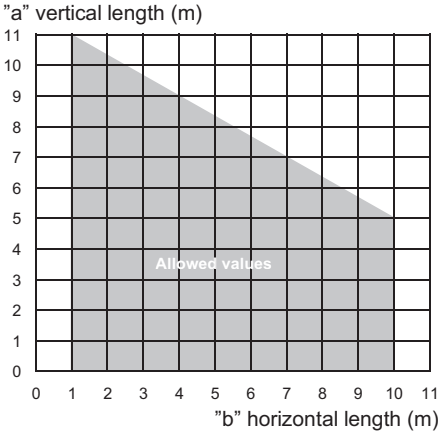


Fig. 6.12

A Plume deflector is available to assist in overcoming boundary nuisance issues.

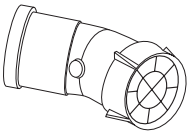


Fig. 6.13

6.9 Electric connection

- Unscrew screws "R" and remove the front panel "S" by pulling it and pushing it towards the top so that it is freed from the top housing Fig. 6.14.

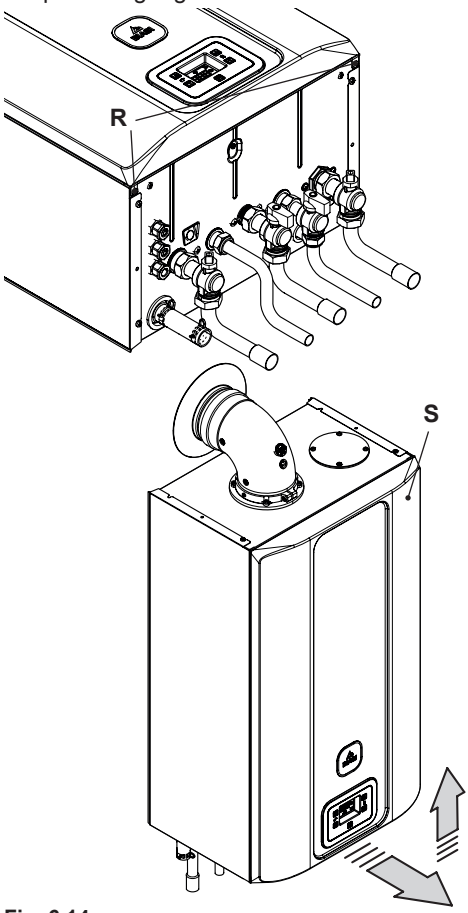


Fig. 6.14

- Unscrew the screw "T" (Fig. 6.15).

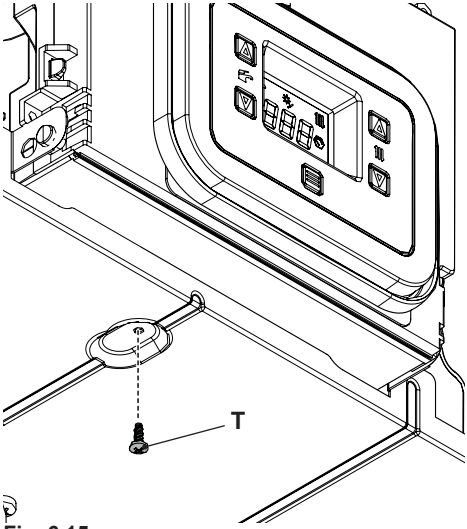


Fig. 6.15

- Turn the control panel "U", as shown in Fig. 6.16.
- Unscrew the screw "V" and lift the cover "W" to access the electric power supply terminal block, remote and external sensor (Fig. 6.16).

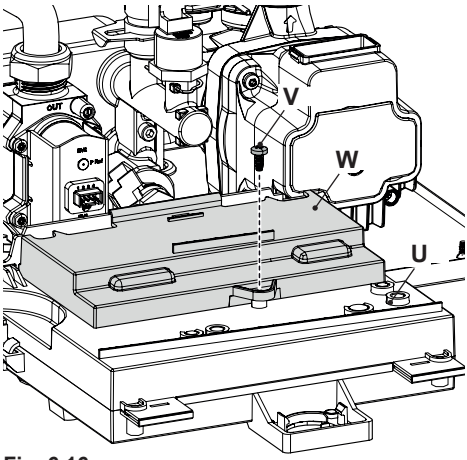


Fig. 6.16

Electric power supply connection

- Connect the electric power supply cable coming from the fused spur isolation switch to the power supply terminal block of the boiler Fig. 6.17 keeping the same connections for the live (brown wire) and the neutral (blue wire). External 3A fuse or fused plug with same current rating is recommended.
- **Connect the earth cable (yellow/green) to an effective earth plant.**

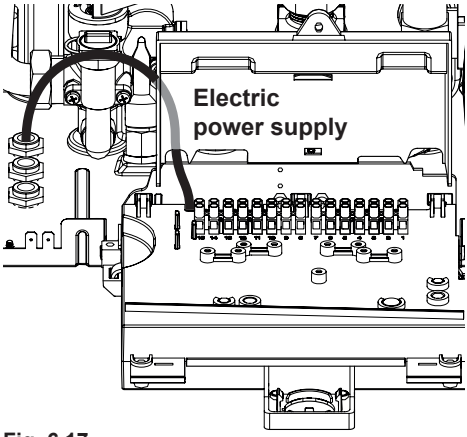


Fig. 6.17

The earth cable must be the longest of the electric power supply cables.

The appliance's electric power supply cable or wire must have a section no less than 0.75 mm^2, it must be kept away from hot or sharp parts and however conform to the technical regulations in force.

Allow the cables to exit the boiler by using the relevant cable clamps "X" (Fig. 6.18).

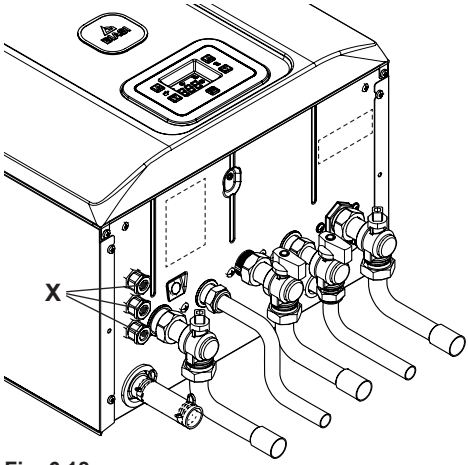


Fig. 6.18

6.10 Connecting the room thermostat or zone valves

Use the clamps indicated in Fig. 6.17 to connect the ambient thermostat.

Remove the electric jumper present between "A and B" when connecting any type of ambient thermostat.

The electric cables of the ambient thermostat are inserted between clamps "A and B" as in Fig. 6.19.

Do not connect live wires to terminals to which the room thermostat must be connected.

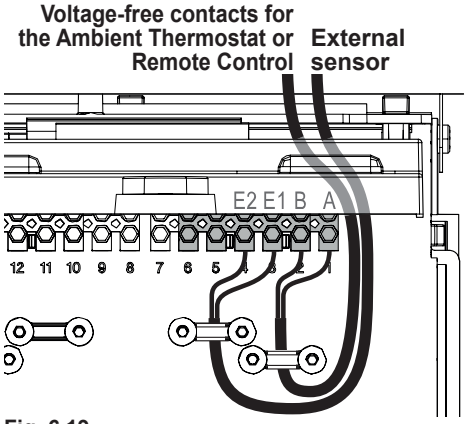


Fig. 6.19

The thermostat must be insulation class II (⧈) or must be correctly connected to earth.

Allow the cables to exit the boiler by using the relevant cable clamps "X" (Fig. 6.18).

Connecting the zone valves controlled by the ambient thermostat

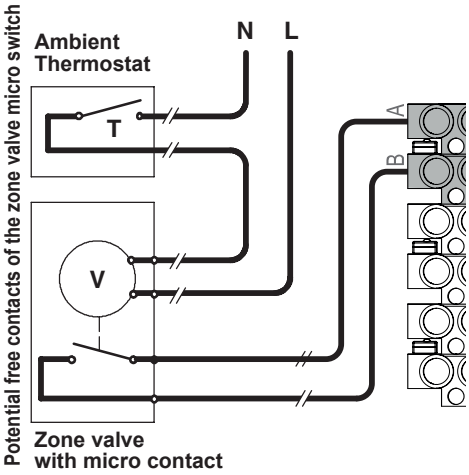


Fig. 6.20

Use the ambient thermostat's clamps indicated in Fig. 6.19 to connect the zone valve. Insert the electric cables of the zone valve's

micro switch contacts in clamps “A and B” of the ambient thermostat's terminal block as in Fig. 6.19.

Remove the electric jumper between “A and B”.

Allow the cables to exit the boiler by using the relevant cable clamps "X" (Fig. 6.18).

6.11 Installation of the external temperature probe (optional)

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

- Direct sunlight.
- Humid walls or walls subject to the formation of mildew.
- Installation near to fans, drain outlets or chimneys.
- It is recommended to be installed on a north aspect wall at least 1 m below any eaves and at least 2 m above ground.

6.12 Electric connection between the boiler and the external probe

To connect the external probe to the boiler use electric cables with a section no less than 0.50 mm^2.

The electric cables for connecting the external probe to the boiler must cover different channels to the voltage ones (230 V), since they are powered at a safety low voltage and their maximum length must not exceed 20 meters.

Use the clamps indicated in Fig. 6.21 to connect the external probe.

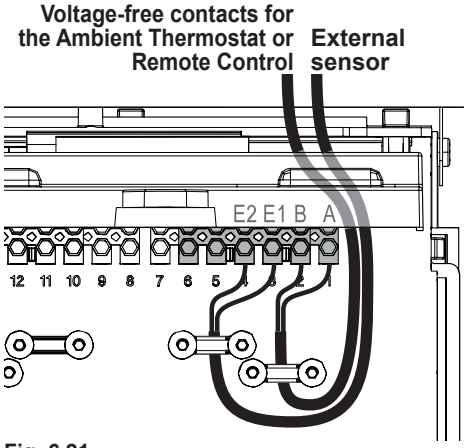


Fig. 6.21

Allow the cables to exit the boiler by using the relevant cable clamps "X" (Fig. 6.18).

6.13 Remote electric connection (optional)

Use the clamps indicated in Fig. 6.21 to connect the remote.

To connect the remote control to the boiler, refer also to the REMOTE CONTROL booklet.

Do not remove the electric jumper connected on the ambient thermostat terminal block between “A and B” Fig. 6.21.

Allow the cables to exit the boiler by using the relevant cable clamps "X" (Fig. 6.18).

6.14 Example of hydraulic systems with hydraulic separator (optional)

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

In this case the flow rate that passes through

the circuits depends exclusively on the features of the pumps flow rate.
Therefore, by means of a hydraulic separator, the secondary circuit's flow rate is put into circulation only when the relative pump is on.
When the pump of the secondary is off, there is no circulation in the corresponding circuit and therefore, the entire flow rate pushed by the primary is by-passed through the separator.
Thus, with the hydraulic separator, it is possible to have a constant flow rate production circuit and a variable flow rate distribution circuit.

Hydraulic system examples

Top zone + low temperature zone.

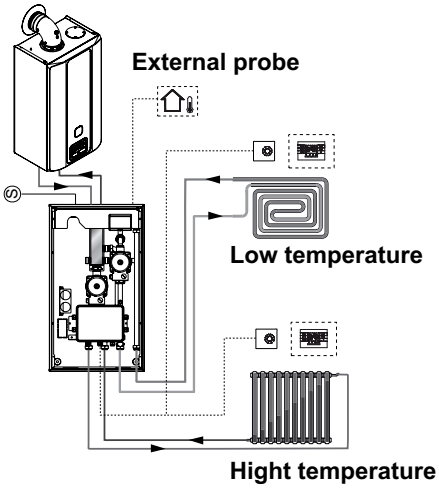


Fig. 6.22

Top zone + 2 low temperature zones.

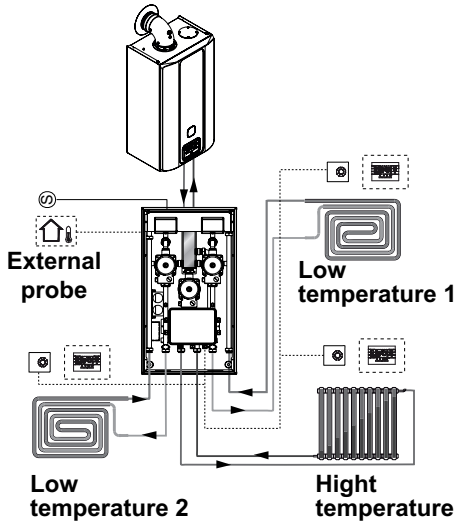


Fig. 6.23

7 COMMISSIONING

7.1 Warnings

The commissioning of this boiler and system must only be undertaken by a Gas Safe Registered Engineer in accordance with the requirements of the Gas Safe Installation and Use Regulations and be approved by Gas Safe.

Ensure that the Benchmark Checklist is satisfactorily completed during the commissioning process. The Checklist is located at the end of this manual. This manual should be handed to the user following completion of the installation and commissioning process. Failure to comply with these requirements may invalidate the manufacturers guarantee.

For Ireland (IE), it is necessary to complete a "Declaration of Conformity" to indicate compliance to I.S.813.2002.

7.2 Electrical installation

Preliminary electrical system checks to ensure electrical safety shall be carried out by a competent person. i.e. polarity, earth continuity, resistance to earth and short circuit.
If a fault has occurred on the appliance the fault finding procedure should be followed as specified in the service manual.

7.3 Gas supply installation

- Inspect the entire installation including the gas meter, test for tightness and purge, all as described in BS 6891;
  For Ireland (IE), refer to I.S.813.2002.
- Open the gas cock 6 (Fig. 7.1) on the appliance and check the gas connector on the appliance for leaks.

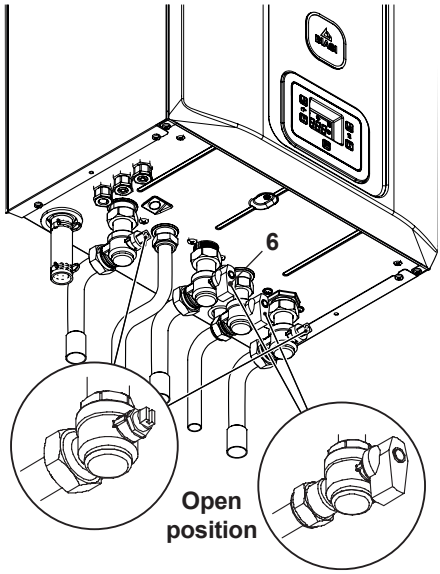


Fig. 7.1

7.4 Filling the D.H.W. system

- Close all hot water draw-off taps.
- Open the valves located in the lower part of the boiler (Fig. 7.1).
- Slowly open each draw-off tap and close it only when clear water, free of bubbles, flows out.

7.5 Initial filling of the system

- Open the C.H. flow and return valves.
- Remove the front and side panels of the case (section "Dismantling the external panels" on page 77) and the sealed chamber lid.
- Loosen the cap on the automatic air purger valve 24 in Fig. 7.2 and leave open permanently.

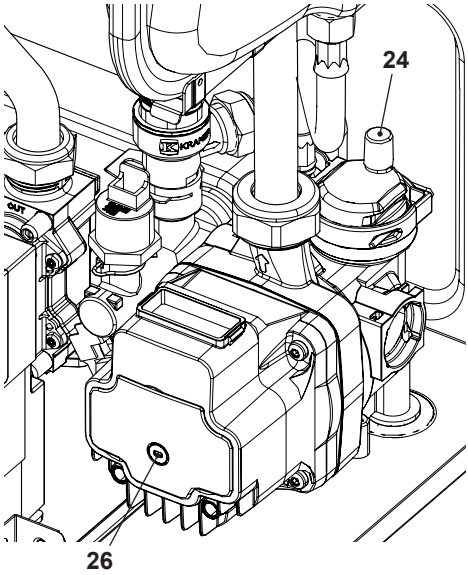


Fig. 7.2

- Gradually open stopcock at the filling point connection to the C.H. system until water is heard to flow; do not open fully.
- Open each radiator air vent starting at the lowest point of the system and close it only when clear water, free of bubbles, flows out.
- Purge the air from the pump by unscrewing the pump plug 26 (Fig. 7.2); release the pump shaft by turning in the direction indicated by the arrow on the information plate.
- Replace the pump plug.
- Continue filling the system. The actual reading should ideally be 1,3 bar and not less than 0,3 bar.
- Close all air release valves on the C.H. system.
- Inspect the boiler and the system for water tightness and remedy any leaks discovered.
- Cold flush the system to remove any loose particles and any system debris before starting the boiler for the first time.

The flushing procedure must be in line with BS7593:2006 Treatment of Water in D.H.W. & C.H. Systems.

When the installation and second filling are completed turn on the C.H. system and run it until the temperature has reached the boiler operating temperature. The system must then be immediately flushed through. This procedure must be repeated twice more.

During this operation a C.H. flushing detergent must be used in the quantities as specified by the appropriate manufacturer, whose function it is to dissolve any foreign matter which may be in the system.

INHIBITION (Primary Heating Circuit)

On the final refilling of the heating system it is important to ensure the system water is treated with a suitable scale and corrosion inhibitor in accordance with the manufacturers instructions.

Only inhibitors that carry the Buildcert approved label should be used.

- Electrically power the boiler by switching on the double pole isolation switch. The LCD will display, the – – – symbol (the dashes light up in sequence to simulate a scrolling motion) (Fig. 7.3).

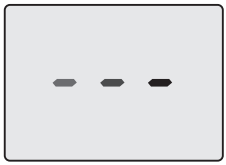


Fig. 7.3

- Press the 14 key for 5 seconds until both and symbols appear on the display (Fig. 7.4).

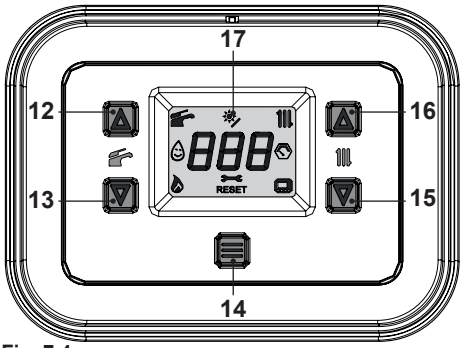


Fig. 7.4

The LCD display displays the boiler temperature (primary circuit) and the and symbols (Fig. 7.5).

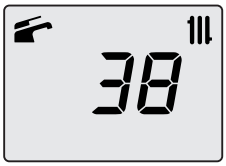


Fig. 7.5

- Make sure that the ambient thermostat is in the “heat demand” position.
- Check that the boiler with the gas cock shut-off goes into ignition lockout (E01) and, in the meantime, check the pump release.
- Once the pump has been released, open the gas cock and check that the boiler operates correctly both in domestic hot water and heating modes.
- Check the gas pressures and flow rates as shown in section "GAS CONVERSION" on page 74 of this booklet.
- Check that the condensate produced during functioning fills the syphon and is regularly drained in the draining pipe.
- Switch off the boiler by pressing the 14 (Fig. 7.4) key for 5 seconds until the symbol appears on the LCD display (Fig. 7.3).

7.6 Condensate pipe and traps

The full length of the condensate pipe should be check for leaks.

Before running the boiler, ensure that the built in condensate trap and any other trap in the drain system is correctly filled with water.

Fill the built in condensate trap by removing the flue elbow and pouring a cupful of water into the flue outlet (Fig. 7.6).

Warning do not allow water to enter the outer air intake

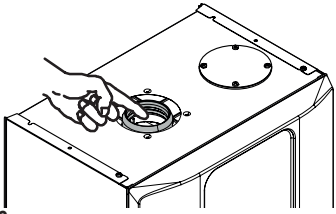


Fig. 7.6

An alternative, to the removal of the flue elbow, pour the water through the flue sampling point (Fig. 7.7).

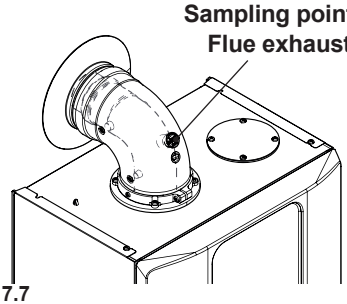


Fig. 7.7

7.7 Checking the gas supply pressure

This boiler has been factory tested to the highest quality control standards and set for the minimum and maximum gas working pressures, connected to a 1 m flue and a gas supply pressure of 20 mbar.

Any variation in gas supply pressure or flue length may result in the customer ex-

periencing a harmonic noise from the boiler. In these circumstances, it may be necessary to reset the burner gas pressures in accordance with section 11 Gas Valve of the Service Manual.
It should be noted that a Flue Gas Analyser is required for this procedure.

7.8 Checking the inlet pressure

- Remove the boiler front panel, see section "Dismantling the external panels" on page 77.
- With the boiler switched on at full rate (maximum output power), check the supply pressure by using the 27 point in Fig. 7.8 and compare the value with that reported on the Gas supply pressure table (minimum inlet pressure) in the "Technical Data" section (page 28 **M300V.2025 SM**, (page 32 **M300V.2530 SM** and (page 36 **M300V.3035 SM**).
- Ensure the test nipple 27 in Fig. 7.8 is firmly closed.

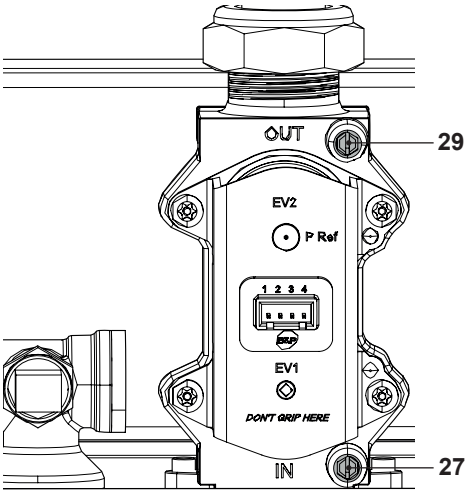


Fig. 7.8

If it does not comply with the required pressure check the gas supply line and governor for faults and/or correct adjustment.

Where the boiler is connected to a gas supply which has a zero set governor then it is necessary under the Gas Safe (Installation and Use) Regulations 26.9. to perform a combustion analysis test for CO/CO_2 (The limits for the boiler is given in "Technical Data" section (page 28 M300V.2025 SM, (page 32 M300V.2530 SM and (page 36 M300V.3035 SM: CO_2 contents / other flue gas figures) and complete the Certificate of Exemption section of the Benchmark.

Important: after the checks all of the test points must be sealed and tested for tightness.

7.9 Lighting the boiler

Some products incorporate an anti cycling time delay. It is normal when first switching the boiler on for the boiler to operate on heating for a few seconds then switch off. After 3-4 minutes has elapsed the boiler will then re ignite and operate perfectly normally. The ignition delay cycle does not prevent normal operation of the boiler to provide D.H.W.

If external controls are fitted (e.g. Timeclock, room thermostat) ensure they ”call for heat”.

- Electrically power the boiler by switching on the double pole isolation switch. The LCD will display, the – – – symbol (Fig. 7.9).

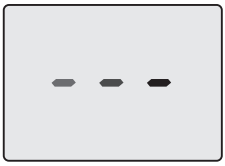


Fig. 7.9

- Press the 14 key for 5 seconds until both and symbols appear on the display Fig. 7.10.

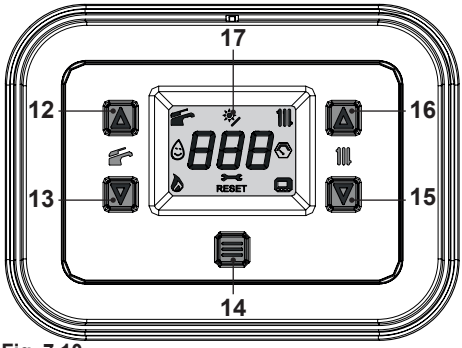


Fig. 7.10

The LCD display displays the boiler temperature (primary circuit) and the and symbols Fig. 7.11.

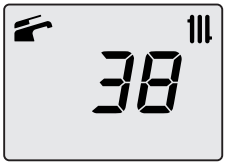


Fig. 7.11

- Open the gas cock.
- Make sure that the ambient thermostat is in the “heat request” position”.
- Check the correct functioning of the boiler both in domestic hot water mode and in heating mode.
- Check the gas pressures and flow rates as shown in section "GAS CONVERSION" on page 74 of this booklet.
- Check that the condensate produced during operation fills the syphon and is regularly drained in the draining pipe.
- Switch off the boiler by pressing the 14 (Fig. 7.10) key for 5 seconds until the symbol appears on the LCD display (Fig. 7.9).

- Press the 14 key for 5 seconds until both and symbols appear on the display Fig. 7.10.
  The LCD display displays the boiler temperature (primary circuit) and the and symbols Fig. 7.11.

The boiler will now go through an ignition sequence and the burner will light.
If after four ignition attempts (about four minutes) the boiler does not function and a code that alternates between the letter **"E"** and the writing **RESET** appear on the LCD display, it indicates that the safety lock-out has stopped the boiler. The display background flashes (Fig. 7.12).

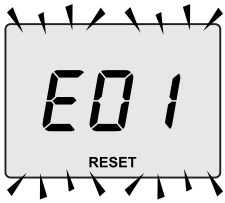


Fig. 7.12

Press the reset key on the boiler control panel 14 (Fig. 7.10) to reset its functioning.

For the first lighting up and following maintenance procedures for the gas supply, it may be necessary to repeat the resetting operation several times so as to remove the air present in the pipework.

After five consecutive resetting attempts the reset button is inhibited. To restore its function it is necessary to switch the boiler off and on from the electrical mains, using the fused spur isolation switch fitted adjacent to the appliance.

7.10 Checking the ignition device

With the burner on high flame close the gas cock.
After four ignition attempts (about four minutes) the boiler does not function and a code that alternates between the letter **"E"** and the writing **RESET** appear on the LCD display, it indicates that the safety lock-out has stopped the boiler. The display background flashes

(Fig. 7.13).

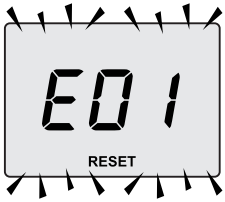


Fig. 7.13

Press the reset key 14 on the boiler control panel to reset its functioning.

7.11 Checking the flue system

The flue system should be visually checked for soundness. Check all clamps, gaskets and fixing are secure and tight.
Ensure that the flue terminal is sited correctly in accordance with the flue fitting instructions and Fig. 5.1 on page 41 of this manual.
To carry out a combustion check refer to the instructions given in the section "Combustion analysis check" on page 81 of this manual.
Reference figures are given in the "Technical Data" section, page 28 M300V.2025 SM, (page 32 M300V.2530 SM and (page 36 M300V.3035 SM (Flue gas figures).

7.12 Checking the condensate drain pipe

Check the soundness and integrity of the condensate drain pipe.
Verify the cleanness and correct filling of the condensate traps.

7.13 Instructing the user

Hand over this combined User & Installation manual and the Service manual to the end user and explain how to use the unit in both C.H. and D.H.W. modes.
Take the User step by step through the lighting instructions.
Show the User how to switch off the appliance quickly and indicate the position of the electric supply isolator.
Explain the proper use and adjustment of all system controls; this will ensure the greatest possible fuel economy.
Explain the function and use of the function selector.
Explain and demonstrate the function of time and temperature controls (if fitted).
Explain how to turn off the appliance for both short and long periods and advise on the precautions necessary to prevent damage should the appliance be inoperative when freezing conditions may occur.
Fill in the details required on the Boiler Guarantee Certificate and hand to the User advising them to return the correct section for boiler Guarantee registration.
Finally, advise the User that, for continued safe and efficient operation, the appliance must be serviced by a competent person at least once a year.
The user is responsible for keeping the documentation integral and within reach for consultation.

8 ADVANCED COMMISSIONING

8.1 Selecting the type of external sensor

The boiler is set to operate without an external sensor.
If an external sensor (optional) **IS CONNECTED** to the boiler, the correct parameter must be set according to the type of probe installed.

Sequence for setting the type of external sensor

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.1) until **HiS** (Boiler History) appears on the LCD display (Fig. 8.2).

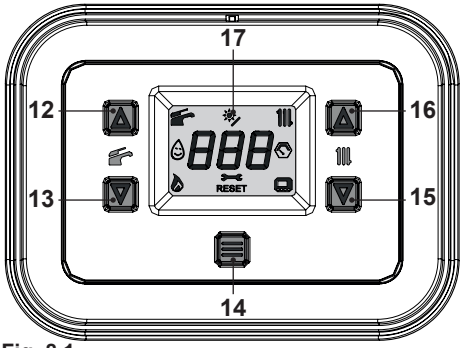


Fig. 8.1

Fig. 8.2

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **PAr** (Parameters menu) appears on the LCD display (Fig. 8.3).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 8.3

- Scroll through the various parameters by pressing the keys 13 (back) or 15 (forward), until **P57**, which alternates with the parameter value, appears on the LCD display (Fig. 8.4).

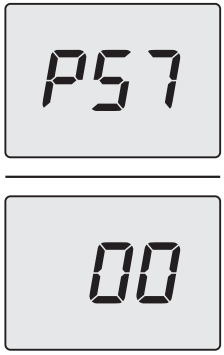


Fig. 8.4

- Press the 14 key for 1 second (Fig. 8.1) to enter the selected parameter. The display will show the following (Fig. 8.5).

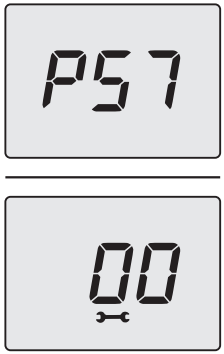


Fig. 8.5

- Use keys 13 or 15 to modify the value of parameter 57 according to the type of probe installed (Fig. 8.6).

INSTALLATION

PAR.	VALUE	DESCRIPTION
P57	00	Sensor not present (factory settings)
	01	External sensor with 12 kOhm NTC
	02	External sensor with 10 kOhm NTC

Fig. 8.6

- Press button 14 (Fig. 8.1) to confirm the value entered. The display will show the following (Fig. 8.7) for 5 seconds, then move up to the next level.

Fig. 8.7

- Press the keys 13 and 15 simultaneously (Fig. 8.1) to exit the level without changing the value (return to the previous level).

To exit the parameters menu:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.1) (return to previous level).

8.2 Setting the K coefficient of the external temperature probe

The boiler is set with a K coefficient equal to zero for boiler functioning without the probe connected.

If the boiler is **EQUIPED** with the remote control (optional) refer to Fig. 8.8.
In this case K setting must be done from the remote control.

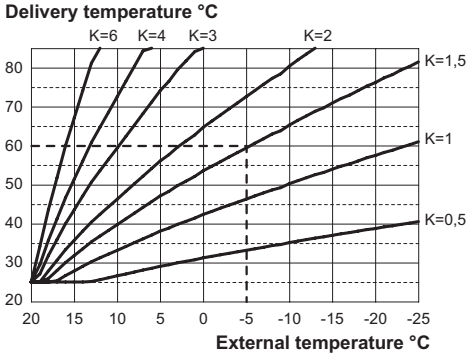


Fig. 8.8

The K coefficients is a parameter that increases or reduces the boiler flow temperature when the outside temperature changes. When installing the external probe it is necessary to set this parameter based on the efficiency of the heating system in order to optimise the flow temperature (Fig. 8.8).

E.g. In order to have a flow temperature at the heating system of 60°C with an external temperature of -5°C, set a K at 1.5 (sectioned line in Fig. 8.8).

Sequence for setting the K coefficient

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.9) until **HiS** (Boiler History) appears on the LCD display (Fig. 8.10).

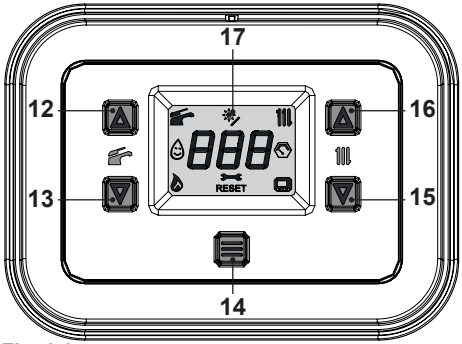


Fig. 8.9

Fig. 8.10

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **PAr** (Parameters menu) appears on the LCD display (Fig. 8.11).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 8.11

- Scroll through the various parameters by pressing the keys 13 (back) or 15 (forward), until **P14**, which alternates with the parameter value, appears on the LCD display (Fig. 8.12).

Fig. 8.12

- Press the 14 key for 1 second (Fig. 8.9) to enter the selected parameter. The display will show the following (Fig. 8.13).

Fig. 8.13

- Pressing the 13 or 15 keys, it is possible to change the value of parameter **14** from a minimum of **00** to a maximum of **60** based on the selected curve of the K coefficient in Fig. 8.8 (the value shown on the display, in Fig. 8.14, corresponds to **K = 1.5**).

Fig. 8.14

- Press button 14 (Fig. 8.9) to confirm the value entered. The display will show the following (Fig. 8.15) for 5 seconds, then move up to the next level.

Fig. 8.15

- Press the keys 13 and 15 simultaneously (Fig. 8.9) to exit the level without changing the value (return to the previous level).

To exit the parameters menu:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.9) (return to previous level).

At this point the system flow temperature will follow the trend in relation to the K coefficient set.
However, if the ambient temperature is not comfortable, the flow temperature of the heating system can be increased or reduced by ± 15°C by pressing the keys 15 (reduce) and 16 (increase) (Fig. 8.9).

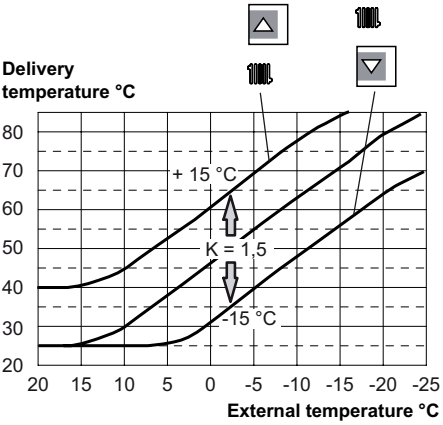


Fig. 8.16

The temperature trend when changing the setting made with keys 15 and 16 for a **K 1,5** is shown in Fig. 8.16.

8.3 Setting the pump post-circulation

The pump, in heating function, is set for a post-circulation of about one minute at the end of each heat request.

This time can be changed from a minimum of 10 seconds to a maximum of 20 minutes in programming mode, using either the control panel or the remote.

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.17) until **HiS** (Boiler History) appears on the LCD display (Fig. 8.18).

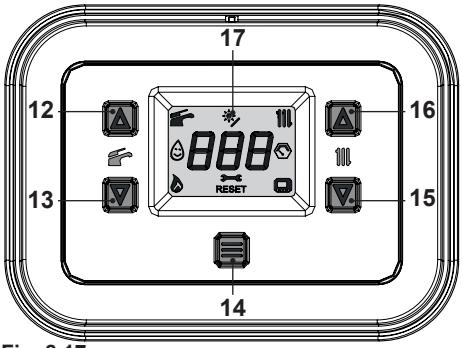


Fig. 8.17

Fig. 8.18

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **PAr** (Parameters menu) appears on the LCD display (Fig. 8.19).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 8.19

- Scroll through the various parameters by

pressing the keys 13 (back) or 15 (forward), until **P12**, which alternates with the parameter value, appears on the LCD display (Fig. 8.20).

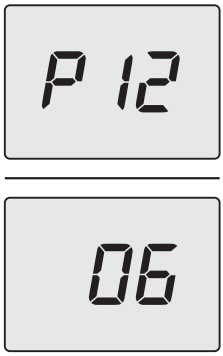


Fig. 8.20

- Press the 14 key for 1 second (Fig. 8.17) to enter the selected parameter. The display will show the following (Fig. 8.21).

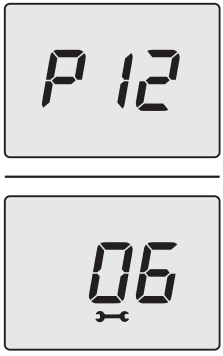


Fig. 8.21

- It is possible to modify the value of parameter **12** from **01=**10s to **120=**1200s by pressing the 13 or 15 keys (each unit increase or decrease on the display corresponds to 10 seconds).
- Press button 14 (Fig. 8.17) to confirm the value entered. The display will show the following (Fig. 8.22) for 5 seconds, then move up to the next level.

Fig. 8.22

- Press the keys 13 and 15 simultaneously (Fig. 8.17) to exit the level without changing the value (return to the previous level).

To exit the parameters menu:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.17) (return to previous level).

8.4 Selecting the reignition frequency

When the boiler functions in normal on/off heating mode, the minimum time between two ignitions is set at three minutes (re-ignition frequency).
This time can be changed by a minimum of 10 seconds to a maximum of 20 minutes in programming mode, using either the control panel or the remote.

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.23) until **HiS** (Boiler History) appears on the LCD display (Fig. 8.24).

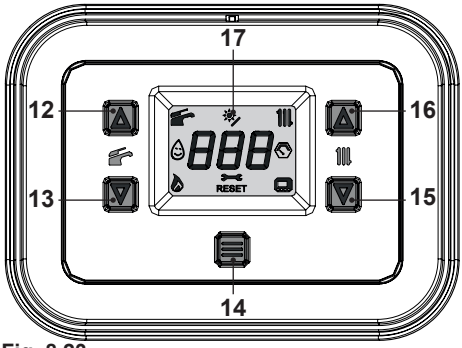


Fig. 8.23

Fig. 8.24

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **PAr** (Parameters menu) appears on the LCD display (Fig. 8.25).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 8.25

- Scroll through the various parameters by pressing the keys 13 (back) or 15 (forward), until **P10**, which alternates with the parameter value, appears on the LCD display (Fig. 8.26).

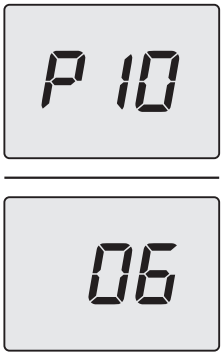


Fig. 8.26

- Press the 14 key for 1 second (Fig. 8.23) to enter the selected parameter. The display will show the following (6=60 seconds) (Fig. 8.27).

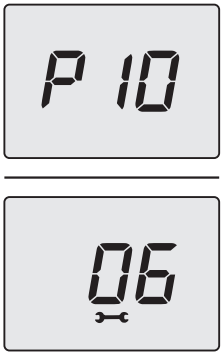


Fig. 8.27

- It is possible to modify the value of parameter **10** from **1=**10s to **120=**1200s by pressing the 13 or 15 keys (each unit increase or decrease on the display corresponds to 10 seconds).
- Press button 14 (Fig. 8.23) to confirm the value entered. The display will show the following (Fig. 8.28) for 5 seconds, then move up to the next level.

Fig. 8.28

- Press the keys 13 and 15 simultaneously (Fig. 8.23) to exit the level without changing the value (return to the previous level).

To exit the parameters menu:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.23) (return to previous level).

8.5 Boiler adjustment record

Important: at the end of the settings operation it is important to update the table with new settings (Fig. 8.29).
This is to allow the correct setting of this boiler in case of replacement of the main control p.c.b.

PARAMETER	DIGIT	VALUES
Boiler model/type	**P01**	
Gas type	**P02**	
User interface	**P03**	
Type of D.H.W. exchanger	**P04**	
Type of primary circuit control device	**P05**	
Type of D.H.W. flow control device	**P06**	
C.H. delivery maximum Temperature (°C)	**P07**	
C.H. delivery minimum temperature (°C)	**P08**	
C.H. maximum output (%)	**P09**	
C.H. re-ignition frequency (*10 sec.)	**P10**	
Adjusting the minimum pump speed (%)	**P11**	
Pump post-circulation	**P12**	
Pump mode operation	**P13**	
Value of the external sensor K	**P14**	
Correct C.H. system pressure (*10 bar)	**P15**	
Maximum C.H. system pressure limit	**P16**	
ΔT C.H. delivery/return due to reduction of pump speed	**P17**	
D.H.W. adjusting maximum temperature	**P18**	
D.H.W. adjusting minimum temperature	**P19**	
Minimum closing flow rate of the D.H.W. flow switch (ON)	**P20**	
Minimum opening flow rate of the D.H.W. flow switch (OFF)	**P21**	
Ignition delay in D.H.W. mode	**P22**	
Burner shut-off as a function of D.H.W. temperature	**P23**	
Burner ignition as a function of D.H.W. temperature	**P24**	
D.H.W. pre-heating mode	**P25**	
D.H.W. post-heating mode (at end of D.H.W.) (**01**=M300V.2025 SM - M300V.2530 SM, **02**=M300V.3035 SM)	**P26**	

PARAMETER	DIGIT	VALUES
Adjusting output power in D.H.W. mode (%)	**P27**	
Adjusting maximum D.H.W. temperature in anti-legionella function (°C) (only for boilers with a sensor)	**P28**	
Anti-legionella function activation frequency (days)	**P29**	
Reset (restores factory settings)	**P30**	
Chimney sweep	**P31**	
Adjusting the minimum power in D.H.W. mode (%)	**P32**	
Regulation of the minimum power in C.H. mode (%)	**P33**	
Maintenance intervals (months)	**P34**	
Antifreeze activation temperature	**P35**	
Antifreeze deactivation temperature	**P36**	
Antifreeze activation temperature with external sensor	**P37**	
External relay operating mode 1 (**0**=OFF, **1**=Zone by remote, **2**=Alarm)	**P38**	
External relay operating mode 2 (**0**=OFF / TA2=OFF, **1**=Zone heat. 2 / TA2 active, **2**= EVG ext / TA2 Active, **3**= Anomaly / TA2 Active, **4** =Remote filling / TA2 active)	**P39**	
Size shown on the display during operation (**0**=T.CH or T.DHW, **1**=only T.CH, **2**=only T.DHW, **3**=CH pressure, **4**=T.ext)	**P40**	
Messages display (**0**=all, **1**=boiler status and errors, **2**=boiler status only)	**P41**	
Not used	**P42**	----------
Not used	**P43**	----------
Not used	**P44**	----------
Not used	**P45**	----------
Not used	**P46**	----------
Not used	**P47**	----------
Not used	**P48**	----------
Not used	**P49**	----------
Not used	**P50**	----------
Not used	**P51**	----------
Chimney diaphragm	**P52**	
Fan speed at maximum	**P53**	
Fan speed at minimum	**P54**	
Ignition power	**P55**	
Gas valve management	**P56**	
Type of external sensor	**P57**	

Fig. 8.29

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.30) until **HiS** (Boiler History) appears on the LCD display (Fig. 8.31).

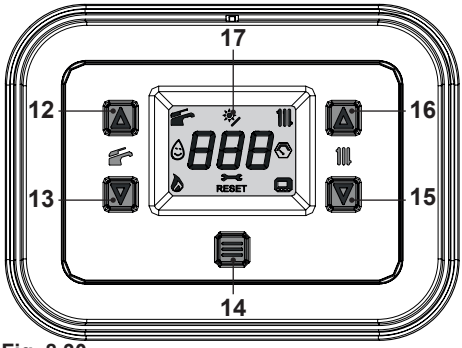


Fig. 8.30

Fig. 8.31

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **PAr** (Parameters menu) appears on the LCD display (Fig. 8.32).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 8.32

- Press the 14 key for 1 second (Fig. 8.30) to enter the selected menu.

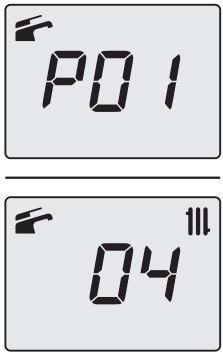


Fig. 8.33

- Press the 14 key for 1 second (Fig. 8.30) to enter the selected parameter. The display will show the following (**13**=M300V.2025 SM, **14**=M300V.2530 SM or **15**=M300V.3035 SM) (Fig. 8.34).

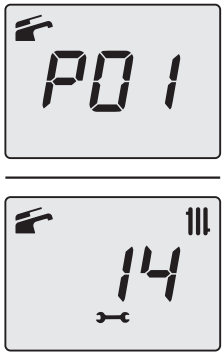


Fig. 8.34

- Press the keys 13 and 15 simultaneously (Fig. 8.30) to exit the level without changing the value (return to the previous level Fig. 8.33).
- Scroll the various parameters using keys 13 (back) or 15 (forward), until **P02**, which alternates with the parameter value, appears on the LCD display.
- Repeat all the above setting sequences in order to visualize the parameters and their values.
- Set the following parameter:

PARAMETER	LCD	VALUE
Gas type	**P02**	G20 = 00
		G31 = 01
User interface	**P03**	00
Type of D.H.W. exchanger	**P04**	00
Type of primary circuit control device	**P05**	03
Type of D.H.W. flow control device	**P06**	03
D.H.W. post-heating mode (at end of D.H.W.) (M300V.2025 SM - M300V.2530 SM)	**P25**	01
D.H.W. post-heating mode (at end of D.H.W.) (M300V.3035 SM)		02

To exit the parameters menu:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 8.30) (return to previous level).

Enter the **CAF** menu (Automatic calibration) and start calibration. See instructions given in the Service manual, section Gas valve - Automatic calibration of the gas valve.

9 GAS CONVERSION

9.1 Warnings

The commissioning of this boiler and system must only be undertaken by a Gas Safe Registered Engineer, qualified to work on Liquefied Petroleum Gas (LPG) in accordance with the requirements of the Gas Safe Installation and Use Regulations.
Components used to adapt it to the type of gas available must be genuine parts only.
Factory setting = Natural gas.

9.2 Operations and gas setting

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

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 9.1) until **HiS** (Boiler History) appears on the LCD display (Fig. 9.2).

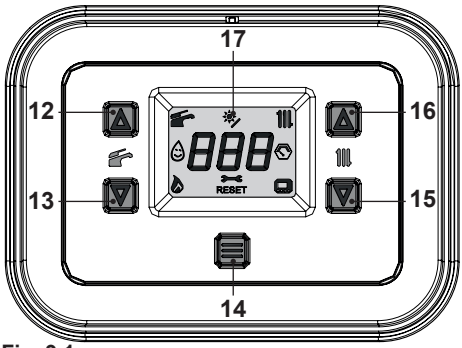


Fig. 9.1

Fig. 9.2

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **PAr** (Parameters menu) appears on the LCD display (Fig. 9.3).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 9.3

- Scroll through the various parameters by pressing the keys 13 (back) or 15 (forward), until **P02**, which alternates with the parameter value, appears on the LCD display (Fig. 9.4).

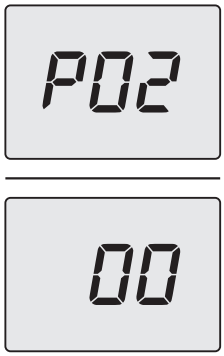


Fig. 9.4

- Press the 14 key for 1 second (Fig. 9.1) to enter the selected parameter. The display will show the following (Fig. 9.5).

MAINTENANCE

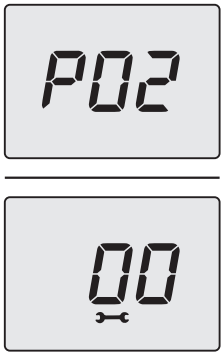


Fig. 9.5

- The value of parameter 02 can be changed from **00=G20** to **01=G31**, which is compatible with LPG, using the 13 or 15 keys (Fig. 9.6).

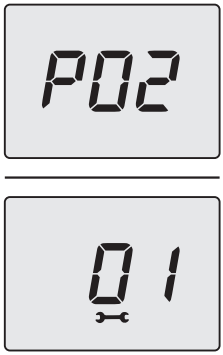


Fig. 9.6

- Press button 14 (Fig. 9.1) to confirm the value entered. The display will show the following (Fig. 9.7) for 5 seconds, then move up to the next level.

Fig. 9.7

- By pressing the keys 13 and 15 simultaneously (Fig. 9.1) exits the level without changing the value (return to the previous level Fig. 9.4).

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **CAF** appears on the LCD display Fig. 9.8).

Fig. 9.8

For calibration, see the instructions given in the Service manual, section Gas valve - Automatic calibration of the gas valve.

To exit the parameters menu:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 9.1) (return to previous level).

- Apply the label indicating the type of gas and the pressure value for which the unit is set. The self-adhesive label is contained in the documentation envelope attached to the boiler.

"Warning if during any PCB re programming you disengage the power supply to the boiler you may corrupt the software setup, ensure you wait at least 10 seconds after any re programming before any power isolation event takes place".

10 MAINTENANCE

10.1 Warnings

The procedures detailed in this chapter **must be carried out only by a Gas Safe Registered Engineer**. Thus you are advised to contact an Authorised Service Agent.

For Ireland (IE), the servicing work must be carried out by a competent RGII registered Person.

For efficient and continuous operation of the boiler you are advised to have, at least once a year, maintenance and cleaning done by an Approved Service Engineer.

Isolate the appliance from the electricity supply by turning off the fused spur isolation switch adjacent to the appliance.

Turn off the gas cock, before carrying out any procedures, whatsoever, for cleaning, maintenance, opening or dismantling boiler panels.

Other devices i.e. external controls may lead dangerous voltage inside the appliance as well. Ensure they are isolated.
In case of doubt turn off the general system switch.

The Engineer should complete the Service Interval Record at the back of the manual.

10.2 Programming the maintenance period

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 10.1) until **HiS** (Boiler History) appears on the LCD display (Fig. 10.2).

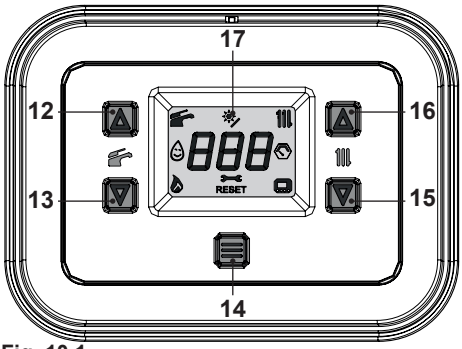


Fig. 10.1

Fig. 10.2

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **PAr** (Parameters menu) appears on the LCD display (Fig. 10.3).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 10.3

- Scroll through the various parameters by pressing the keys 13 (back) or 15 (forward), until **P34**, which alternates with the parameter value, appears on the LCD display (Fig. 10.4).

Fig. 10.4

- Press the 14 key for 1 second (Fig. 10.1) to enter the selected parameter. The display will show the following (Fig. 10.5).

Fig. 10.5

- It is possible to modify the value of parameter **34** from **00** to **49** months, using the 13 or 15 keys. It is possible to set parameter **35** to **99** thereby disabling the maintenance request (symbol will disappear from the display).
- Press button 14 (Fig. 10.1) to confirm the value entered. The display will show the following (Fig. 10.6) for 5 seconds, then move up to the next level.

Fig. 10.6

To exit the parameters menu:
- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 10.1) (return to previous level).

10.3 Dismantling the external panels

Front panel

- Unscrew screws "A" and remove the front panel "D" by pulling it and pushing it towards the top so that it is freed from the top housings (Fig. 10.7 and Fig. 10.8).

Side panels

Loosen screws "B - F" and "C - H" in Fig. 10.7 and remove the two side panels "E" and "G" by pulling towards the outside.

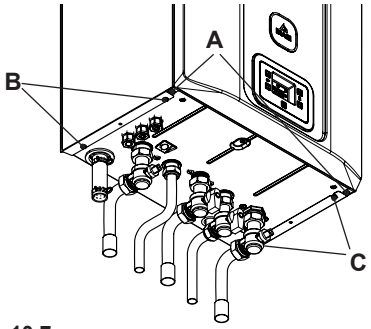


Fig. 10.7

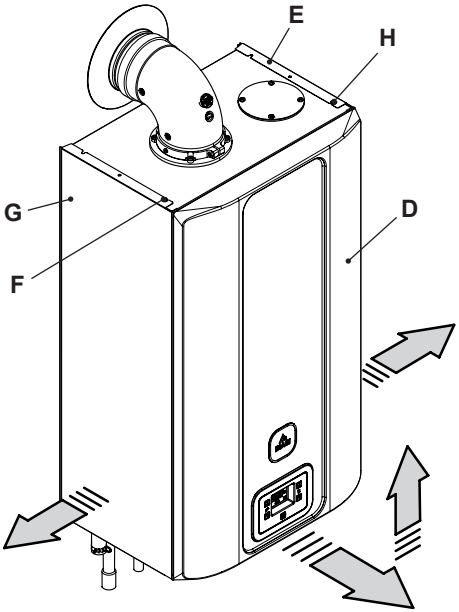


Fig. 10.8

Control panel

Remove screws "I" and turn the controls panel "J", as shown in figure Fig. 10.9, to access in an optimal manner the components inside the boiler.

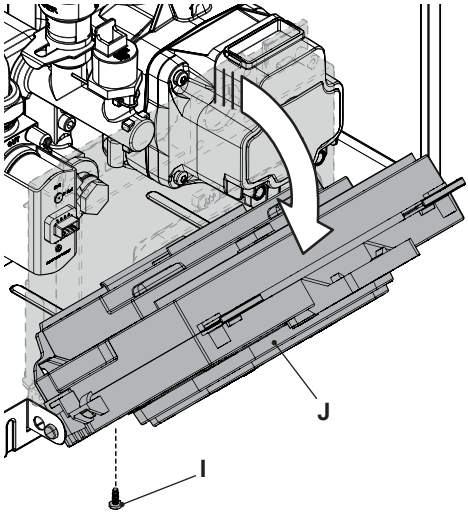


Fig. 10.9

10.4 Reassembly the external panels

Side panels

Fit the external panels "E" and "G" in the reverse order to that described on section "Dismantling the external panels" on page 77.

Front panel

- Fit the front panel "D" in the reverse order to that described on section "Dismantling the external panels" on page 77.

10.5 Emptying the D.H.W. system

- Turn off the D.C.W. .inlet isolating valve 8 (Fig. 10.10).

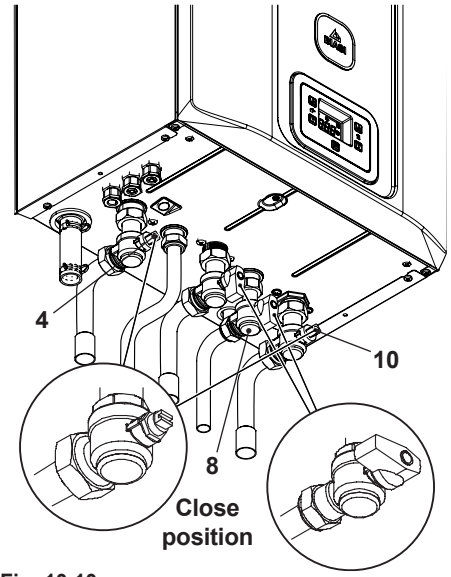


Fig. 10.10

- Turn on the hot water taps and any drain cocks.

10.6 Emptying the C.H. system

- Close the C.H. isolating valves (4 and 10 in Fig. 10.10).
- Loosen the central heating drain cock 9

indicated in Fig. 10.11.

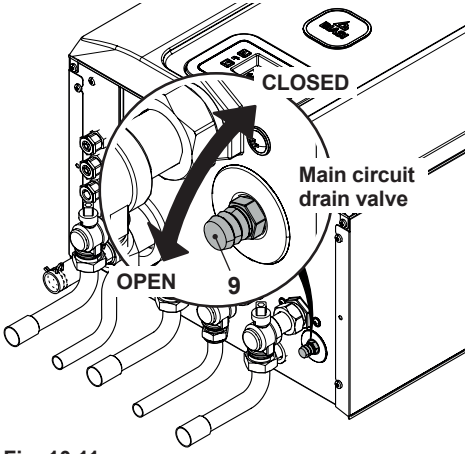


Fig. 10.11

• To make draining easier, lift the plug 24 of the automatic relief valve in Fig. 10.12.

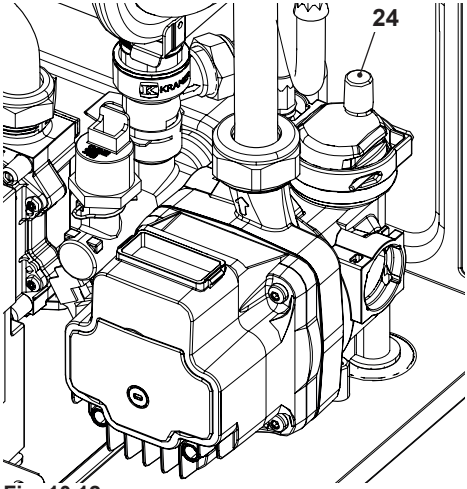


Fig. 10.12

10.7 Cleaning the condensing primary exchanger and the burner

Removing the fan burner unit 38 in Fig. 10.13.

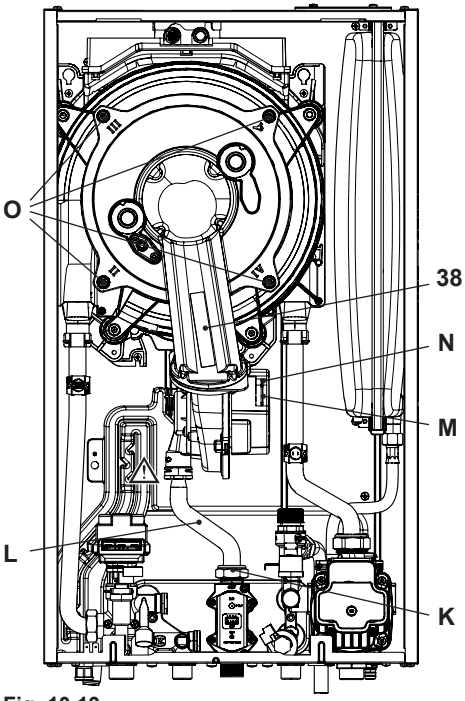


Fig. 10.13

- Remove the front panel and lower the controls panel (see "Dismantling the external panels" on page 77).
- Disconnect the wiring of the ignition and detection electrodes.
- Unscrew the connector "K" and remove the pipe "L".
- Disconnect the connector "M" by pulling it downwards (Fig. 10.13).
- Disconnect the fan connector "N" by pulling it downwards (Fig. 10.13).
- Unscrew screws "O" and remove the fan burner unit 38 (Fig. 10.13).
- Extract the burner casing by pulling it outwards.
- The silicon seal on the front wall of the combustion chamber Fig. 10.14 must be replaced if worn.

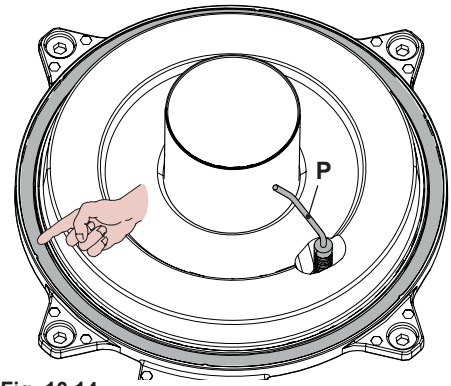


Fig. 10.14

- The detection electrode "P" in Fig. 10.14 also functions as a sensor for the correct drainage of the condensate.
  Should the mentioned electrode come into contact with the condensate water present within the combustion chamber it sends the boiler into safety lockout. Therefore, should the insulation be wet or deteriorated, provide for the substitution of the same.

Remove any limescale from the ignition/detection electrode and replace it if worn.

Caution: After any periodical servicing or disturbance the combustion chamber silicon seal Fig. 10.14 must be fully inspected and replaced at the discretion of the service engineer.

After any disturbance to the chamber door seal the appliance must undergo a full analytical combustion performance check.

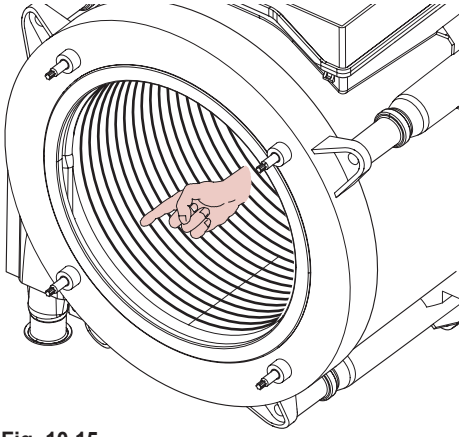


Fig. 10.15

If the condensate primary exchanger elements are dirty (notable only after removing the burner body), brush them using a bristle brush and remove the dirt using a suction device.

The burner does not require any particular maintenance, just remove dust using a bristle brush.
More specific maintenance will be valuated and carried out by a competent Gas Safe Registered Engineer.

Attention, to reassemble repeat the operations carried out in reverse order. Be careful not to damage the OR gasket of the gas pipe when inserting the pipe in Air box.
After any service operation on the components of the gas circuit check all the connections for gas leaks.

10.8 Check the pressure of the heating expansion vessel

Drain the heating circuit as described in section "Emptying the C.H. system" on

page 78 and check that the expansion vessel pressure is not less than 1 bar.
If the pressure is less, see to correct pressurisation.

10.9 Cleaning the domestic hot water exchanger

Descaling the domestic hot water exchanger will be valued by an approved Service Engineer, who will carry out any cleaning using specific products.

10.10 Checking the flue system

Have the integrity of the flue outlet and air intake pipe, checked periodically, at least once a year. For all the above maintenance operations it is advisable to call an approved Service Engineer.

10.11 Combustion analysis check

It is recommended that a combustion analysis check is made. Remove the plug as indicated in Fig. 10.16 and carry out combustion analysis check and adjustment if necessary as described in the section "Gas valve - Adjustment - Chimney Sweep Mode" of the Service manual.

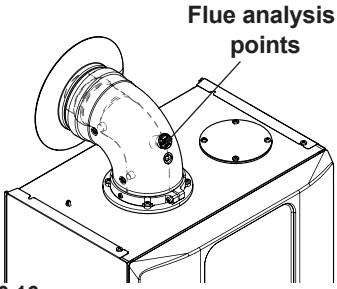


Fig. 10.16

- Make sure that the ambient thermostat is in the position “call for heat”.
- Withdraw an abundant amount of D.H.W. by opening the taps.
- Activate the “flue sweep function” at maximum heating power (see "Setting the boiler flue sweep function" on page 83).
- Check the combustion of the boiler using the outlets located on the flue tubes (Fig. 10.16) and compare the data measured with that following.

Model M300V.2025 SM		
Nominal heat input (A) (E)	kW	21,0
Nominal efficiency	%	98,4
Combustion efficiency	%	98,7
Air index	n	1,3
Flue gas CO_2 content	%	8,5 - 9,5
Flue gas O_2 content	%	4,8
Flue gas CO content	ppm	220
Flue gas temperature	°C	78,0

Values refer to tests with a an 80 mm double exhaust split by 1 + 1 m and natural gas G20 and a supply / return heating temperature of 60°/80°C.

Fig. 10.17

Model M300V.2530 SM		
Nominal heat input (A) (E)	kW	26,0
Nominal efficiency	%	98,6
Combustion efficiency	%	98,8
Air index	n	1,3
Flue gas CO_2 content	%	8,5 - 9,5
Flue gas O_2 content	%	4,8
Flue gas CO content	ppm	190
Flue gas temperature	°C	78,0

Values refer to tests with a an 80 mm double exhaust split by 1 + 1 m and natural gas G20 and a supply / return heating temperature of 60°/80°C.

Fig. 10.18

Model M300V.3035 SM		
Nominal heat input (A) (E)	kW	31,0
Nominal efficiency	%	98,8
Combustion efficiency	%	99
Air index	n	1,7
Flue gas CO_2 content	%	8,5 - 9,5
Flue gas O_2 content	%	4,8
Flue gas CO content	ppm	200
Flue gas temperature	°C	78,0

Values refer to tests with a an 80 mm double exhaust split by 1 + 1 m and natural gas G20 and a supply / return heating temperature of 60°/80°C.

Fig. 10.19

The values in the tables are measured at the nominal useful power with factory calibration.

10.12 Checking the condensate drain pipe

The condensate drain pipe 32 (Fig. 10.20) does not require any particular maintenance but just check:

- That no solid deposits have formed, if so remove them.
- That the condensate drain piping is not clogged.

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

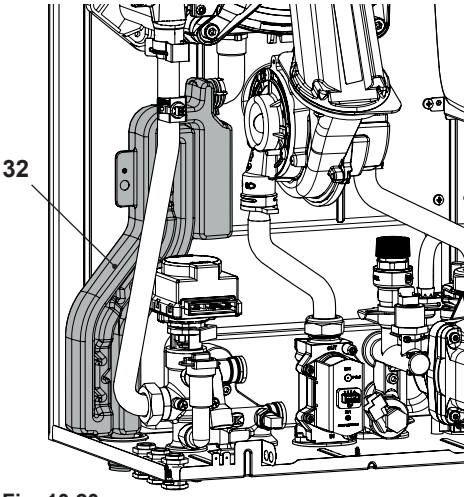


Fig. 10.20

10.13 Visual inspection of appliance

Visually inspect all water joints, seals and connections for any evidence of leakage and retighten, grease or replace them as necessary.

10.14 Checking the gas supply pressure

Check appliance for gas tightness.

Re-check operational pressures as described in section "Checking the gas supply pressure" on page 60 of this manual.

10.15 Water inhibitor concentration

Where chemical products are used the level of water treatment should be checked on an annual basis and re treated after full or partial drain down.

A conductivity meter can be used to check the correct concentration of inhibitor in the heating water.

10.16 Setting the boiler flue sweep function

With the boiler set in flue sweep mode, it is possible to exclude some boiler automatic functions making check and control operations easier.

- Enter “programming mode” by pressing the 13 and 15 keys simultaneously for 5 seconds (Fig. 10.21) until **HiS** (Boiler History) appears on the LCD display (Fig. 10.22).

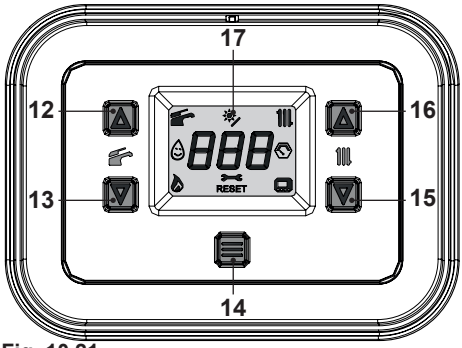


Fig. 10.21

Fig. 10.22

- Scroll through the various menus by pressing the keys 13 (back) or 15 (forward), until **ChS** (Chimney sweep) appears on the LCD display (Fig. 10.23).
- Press the 14 key for 1 second to enter the selected menu.

Fig. 10.23

Flue sweep function at minimum output in domestic hot water mode

- Press keys 13 and 15 (Fig. 10.21) at the same time until the LCD display displays the letters **LP** that alternate with the heating water temperature value (e.g.**45**), indicating the activation of the "flue sweep function" at minimum output (Fig. 10.24).

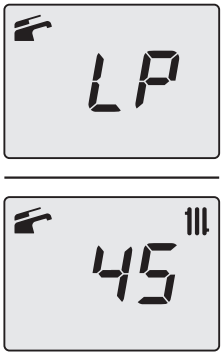


Fig. 10.24

Flue sweep function at minimum output in heating mode

- By pressing 15 (Fig. 10.21) it is possible to change power in flue sweep mode: with the letters **hP** on the LCD display which alternate between the heated water temperature (i.e.**32**), we are in the “flue sweep function” at the minimum power during heating (Fig. 10.25).

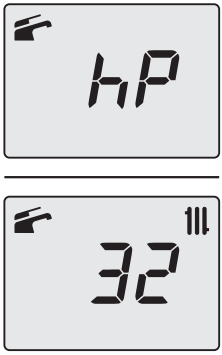


Fig. 10.25

Flue sweep function at maximum output in heating mode

- Press key 15 to vary the output in chimney sweep mode: when the LCD display displays the letters **cP** that alternate with the heating water temperature value (e.g.**60**), the "flue sweep function" is at maximum (eventually range rated) output in heating mode (Fig. 10.26).

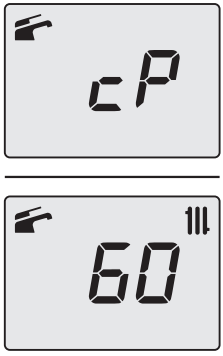


Fig. 10.26

Flue sweep function at maximum output in domestic hot water mode

- Press further key 15 to vary again the output in flue sweep mode: when the LCD display displays the letters **dP** that alternate with the heating water temperature value (e.g.**60**), the "flue sweep function" is at maximum output in domestic hot water mode (Fig. 10.27).

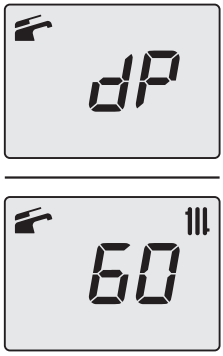


Fig. 10.27

- Press keys 13 and 15 simultaneously (Fig. 10.21) for 1 second to exit "chimney sweep mode" and return to the menu list.

To exit the parameters menu:

- wait 15 minutes without pressing any key;
- switch off the electric power supply;
- press the 13 and 15 keys simultaneously for 5 seconds (Fig. 10.23) (return to previous level).

Note to service engineers

It is required that the burner seal lip seal and mixing chamber seal along with the flame detection electrode are inspected every year and replaced if required.
Failure to inspect the flame detection probe, seals and replace as required may render the guarantee void.

Benchmark Commissioning & Warranty Validation Service Record

It is a requirement that the boiler is installed and commissioned to the manufacturers' instructions and the data fields on the commissioning checklist completed in full.

To instigate the boiler warranty the boiler needs to be registered with the manufacturer within one month of the installation. The warranty rests with the end-user (consumer), and they should be made aware it is ultimately their responsibility to register with the manufacturer, within the allotted time period.

It is essential that the boiler is serviced in line with the manufacturers' recommendations, at least annually. This must be carried out by a competent Gas Safe registered engineer. The service details should be recorded on the Benchmark Service and Interim Boiler Work Record and left with the householder. Failure to comply with the manufacturers' servicing instructions and requirements will invalidate the warranty.

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This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission according to the manufacturers' instructions and complete this Benchmark Commissioning Checklist will invalidate the warranty. This does not affect the customer's statutory rights.

* All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

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GAS BOILER SYSTEM COMMISSIONING CHECKLIST & WARRANTY VALIDATION RECORD

Address:					
Boiler make and model:					
Boiler serial number:					
Commissioned by (PRINT NAME):			Gas Safe registration number:		
Company name:			Telephone number:		
Company email:			Company address:		
				Commissioning date:	
Heating and hot water system complies with the appropriate Building Regulations?				Yes	
Optional: Building Regulations Notification Number (if applicable):					
Time, temperature control and boiler interlock provided for central heating and hot water				Yes	
Boiler Plus requirements (tick the appropriate box(s))					
Boiler Plus option chosen for combination boiler in ENGLAND	Weather compensation		Smart thermostat with automisation and optimisation		
	Load compensation		Flue Gas Heat Recovery		
Time and temperature control to hot water	Cylinder thermostat and programmer/timer		Combination boiler		
Zone valves	pre-existing		Fitted		Not required
Thermostatic radiator valves	pre-existing		Fitted		Not required
Automatic bypass to system	pre-existing		Fitted		Not required
Underfloor heating	pre-existing		Fitted		Not required
Water quality					
The system has been flushed, cleaned and a suitable inhibitor applied upon final fill, in accordance with BS7593 and boiler manufacturers' instructions				Yes	
What system cleaner was used?		Brand:		Product:	
What inhibitor was used?		Brand:		Product:	
Primary water system filter	pre-existing		Fitted		Not required
CENTRAL HEATING MODE measure and record (as appropriate)					
Gas rate (for combination boilers complete DHW mode gas rate)		m^3/hr	or	ft^3/hr	
Central heating output left at factory settings?		Yes		No	
If no, what is the maximum central heating output selected?				kW	
Dynamic gas inlet pressure				mbar	
Central heating flow temperature				°C	
Central heating return temperature				°C	
System correctly balanced/rebalanced?				Yes	
COMBINATION BOILERS ONLY					
Is the installation in a hard water area (above 200ppm)?		Yes		No	
Water scale reducer/softener	pre-existing		Fitted		Not required
What type of scale reducer/softener has been fitted?		Brand:		Product:	
Water meter fitted?		Yes		No	
If yes- DHW expansion vessel	pre-existing		Fitted		Not required
Pressure reducing valve	pre-existing		Fitted		Not required
DOMESTIC HOT WATER MODE Measure and record					
Gas rate		m^3/hr	or	ft^3/hr	
Dynamic gas inlet pressure at maximum rate				mbar	
Cold water inlet temperature				°C	
Hot water has been checked at all outlets		Yes		Temperature	°C
CONDENSATE DISPOSAL					
The condensate drain has been installed in accordance with the manufacturers' instructions and/or BS5546/BS6798				Yes	
Point of termination		Internal		External (only where internal termination impractical)	
Method of disposal		Gravity		Pumped	
ALL INSTALLATIONS					
Record the following	At max rate:	CO ppm	CO_2 %	CO/CO_2 Ratio	
	At min rate (where possible)	CO ppm	CO_2 %	CO/CO_2 Ratio	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?				Yes	
The operation of the boiler and system controls have been demonstrated to and understood by the customer				Yes	
The manufacturers' literature, including Benchmark Checklist and Service Record, has been explained and left with the customer				Yes	
Commissioning Engineer's signature					
Customer's signature (To confirm satisfactory demonstration and receipt of manufacturers' literature)					

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SERVICE & INTERIM BOILER WORK RECORD

It is recommended that your boiler and heating system are regularly serviced and maintained, in line with manufacturers' instructions, and that the appropriate service / interim work record is completed.

Service provider

When completing a service record (as below), please ensure you have carried out the service as described in the manufacturers' instructions. Always use the manufacturers' specified spare parts.

SERVICE/INTERIM WORK ON BOILER delete as appropriate			Date:
Engineer name:		Company name:	
Telephone Nº:		Gas Safe registration Nº:	
Max rate	CO ppm	CO_2 %	CO/CO_2
Min rate	CO ppm	CO_2 %	CO/CO_2
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"		yes	
Gas rate:	m^3/h	OR	ft^3/h
Were parts fitted? delete as appropriate		Yes	No
Parts fitted:			
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *		yes	n/a
Comments:			
Signature:			

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate			Date:
Engineer name:		Company name:	
Telephone Nº:		Gas Safe registration Nº:	
Max rate	CO ppm	CO_2 %	CO/CO_2
Min rate	CO ppm	CO_2 %	CO/CO_2
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"		yes	
Gas rate:	m^3/h	OR	ft^3/h
Were parts fitted? delete as appropriate		Yes	No
Parts fitted:			
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *		yes	n/a
Comments:			
Signature:			

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Telephone Nº:		Gas Safe registration Nº:	
Max rate	CO ppm	CO_2 %	CO/CO_2
Min rate	CO ppm	CO_2 %	CO/CO_2
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"		yes	
Gas rate:	m^3/h	OR	ft^3/h
Were parts fitted? delete as appropriate		Yes	No
Parts fitted:			
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *		yes	n/a
Comments:			
Signature:			

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Min rate	CO ppm	CO_2 %	CO/CO_2
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"		yes	
Gas rate:	m^3/h	OR	ft^3/h
Were parts fitted? delete as appropriate		Yes	No
Parts fitted:			
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *		yes	n/a
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Min rate	CO ppm	CO_2 %	CO/CO_2
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"		yes	
Gas rate:	m^3/h	OR	ft^3/h
Were parts fitted? delete as appropriate		Yes	No
Parts fitted:			
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *		yes	n/a
Comments:			
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Telephone Nº:		Gas Safe registration Nº:	
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Min rate	CO ppm	CO_2 %	CO/CO_2
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"		yes	
Gas rate:	m^3/h	OR	ft^3/h
Were parts fitted? delete as appropriate		Yes	No
Parts fitted:			
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *		yes	n/a
Comments:			
Signature:			

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Engineer name:		Company name:			
Telephone Nº:		Gas Safe registration Nº:			
Max rate	CO ppm	CO_2 %		CO/CO_2	
Min rate	CO ppm	CO_2 %		CO/CO_2	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"				yes	
Gas rate:	m^3/h	OR		ft^3/h	
Were parts fitted? delete as appropriate		Yes		No	
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *				yes	n/a
Comments:					
Signature:					

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate				Date:	
Engineer name:		Company name:			
Telephone Nº:		Gas Safe registration Nº:			
Max rate	CO ppm	CO_2 %		CO/CO_2	
Min rate	CO ppm	CO_2 %		CO/CO_2	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"				yes	
Gas rate:	m^3/h	OR		ft^3/h	
Were parts fitted? delete as appropriate		Yes		No	
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *				yes	n/a
Comments:					
Signature:					

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SERVICE/INTERIM WORK ON BOILER delete as appropriate				Date:	
Engineer name:		Company name:			
Telephone Nº:		Gas Safe registration Nº:			
Max rate	CO ppm	CO_2 %		CO/CO_2	
Min rate	CO ppm	CO_2 %		CO/CO_2	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"				yes	
Gas rate:	m^3/h	OR		ft^3/h	
Were parts fitted? delete as appropriate		Yes		No	
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *				yes	n/a
Comments:					
Signature:					

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SERVICE/INTERIM WORK ON BOILER delete as appropriate				Date:	
Engineer name:		Company name:			
Telephone Nº:		Gas Safe registration Nº:			
Max rate	CO ppm	CO_2 %		CO/CO_2	
Min rate	CO ppm	CO_2 %		CO/CO_2	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"				yes	
Gas rate:	m^3/h	OR		ft^3/h	
Were parts fitted? delete as appropriate		Yes		No	
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *				yes	n/a
Comments:					
Signature:					

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate				Date:	
Engineer name:		Company name:			
Telephone Nº:		Gas Safe registration Nº:			
Max rate	CO ppm	CO_2 %		CO/CO_2	
Min rate	CO ppm	CO_2 %		CO/CO_2	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"				yes	
Gas rate:	m^3/h	OR		ft^3/h	
Were parts fitted? delete as appropriate		Yes		No	
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *				yes	n/a
Comments:					
Signature:					

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate				Date:	
Engineer name:		Company name:			
Telephone Nº:		Gas Safe registration Nº:			
Max rate	CO ppm	CO_2 %		CO/CO_2	
Min rate	CO ppm	CO_2 %		CO/CO_2	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"				yes	
Gas rate:	m^3/h	OR		ft^3/h	
Were parts fitted? delete as appropriate		Yes		No	
Parts fitted:					
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *				yes	n/a
Comments:					
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