



ZANTIA[®]

Inspired by *Comfort!*

INSTRUCTION MANUAL

INSTALLATION, USER AND MAINTENANCE

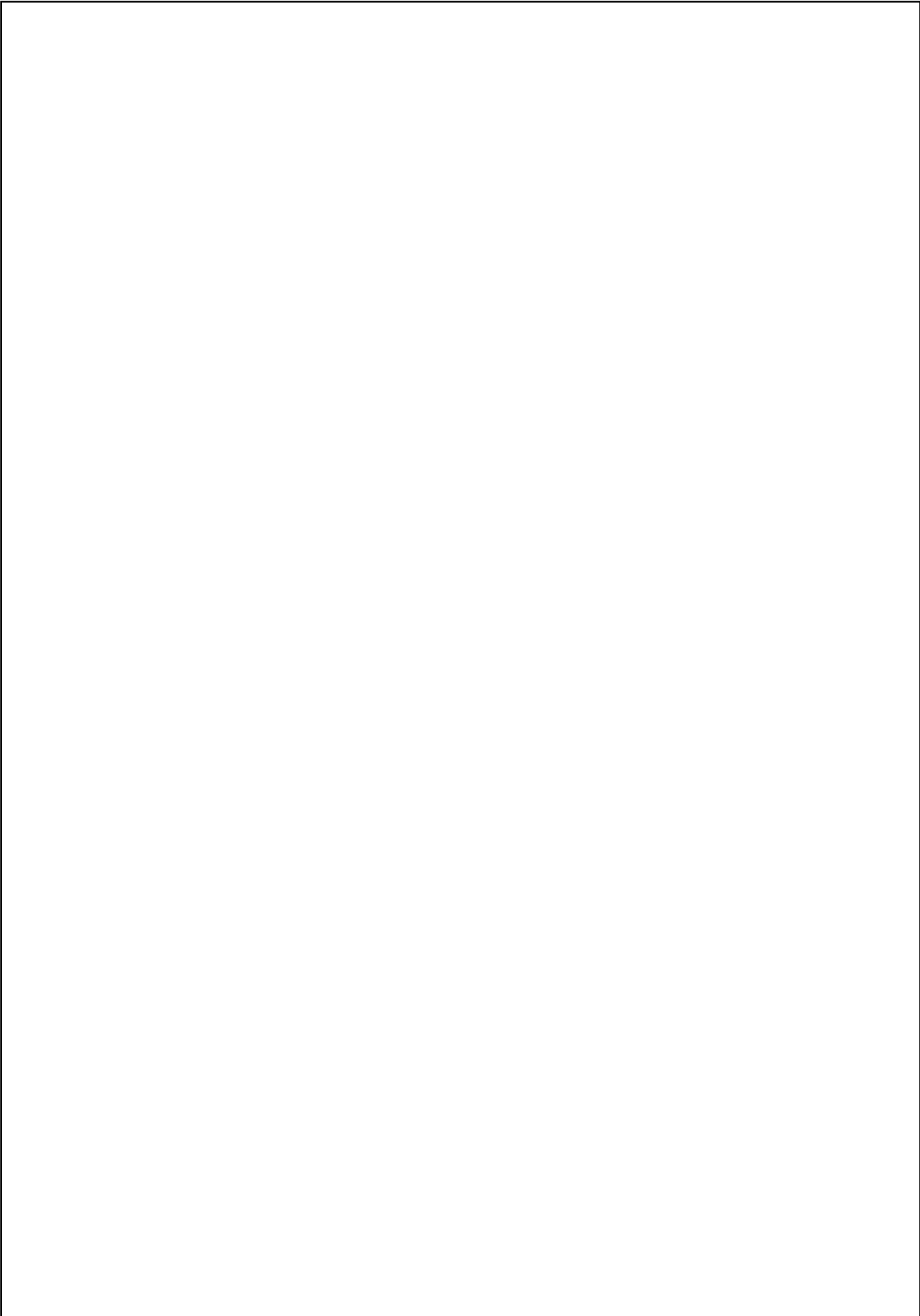


HIGH EFFICIENCY CONDENSING BOILER

ROMA | ROMA R

CENTRAL HEATING AND DOMESTIC HOT WATER

Thank you for purchasing our product. Read this manual carefully before installing or operating your new pellet boiler. Make sure to save this manual for future reference.



HIGH EFFICIENCY CONDENSING BOILER FOR CENTRAL HEATING AND DOMESTIC HOT WATER

This new highly efficient turbo-modulating boiler is designed to meet domestic hot water and central heating requirements at super high efficiency.

POSITION

The appliance is extremely versatile as it can be fitted in almost any room. The appliance is room sealed so there is no contact between the combustion chamber and living accommodation. This guarantees maximum safety and efficiency. Each boiler has been designed and manufactured in our modern plant to exacting ISO 9001 discipline, all boilers carry full CE marking of approval. This product is guaranteed by ZANTIA. Guarantee is a full 24 months from date of purchase providing the appliance has been fitted in accordance with these instructions and relevant codes of practice.

MAJOR COMPONENTS

- Modulating gas valve.
- Modulating pump head suitable for any type of central heating system.
- Burner with flame stabiliser designed to operate under all thermal conditions.
- Unique **condensing heat exchanger** for high thermal flue transfer from gases to water.
- Stainless steel plate heat exchanger for super high heat transfer to domestic hot water supply.
- Built in frost protection.
- Printed circuit board designed to connect to room stat and/or timer.
- Aesthetically pleasing panels and controls.
- On/Off ball valves for shutting off gas, central heating and domestic hot water circuit.
- Safety relief valve (for safety discharge).

NOTE: Due to the high efficiency of this boiler a plume of water vapour will form at the flue terminal during operation.

COSHH - CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH IMPORTANT

It is the Users/Installers responsibility to ensure that the necessary personal protective clothing is worn when handling this appliance, and where applicable the pertinent parts that contain any materials that could be interpreted as being injurious to health and safety.

GENERAL INFORMATION:

GLUES AND SEALANTS - exercise caution - if these are still in liquid form.

Zantia use only high quality material for production of this product, in an effort to protect the environment wherever possible components should be recycled.

WARNING: when installing the appliance, care should be taken to avoid any possibility of injury when handling sheet metal parts.

Users instructions

Sections	Page	Sections
1 Users guide	6	5 Installation
1.1 Introduction	6	5.1 Warning
1.2 Clearances around the appliance	6	5.2 Delivery
1.3 Operating safety checks to protect your appliance (checking the system pressure)	6	5.3 Unpacking of boiler
1.4 Control panel	7	5.4 Positioning of the boiler
		5.5 Flue terminal position
		5.6 Optional extras
		5.7 Plume management kit
		5.8 Installing the appliance for outlet
		5.9 Installing the appliance for outlet
2 General layout	9	Template drawing
2.1 Operating scheme	10	5.10 Completing horizontal flue
2.2 Introduction	11	5.11 Intake and exhaust termir components
2.3 Description of control system and sequence of operation	11	5.12 In-line flue bend and flue
2.4 Domestic hot water mode	11	5.13 Vertical flue instructions
2.5 Central heating mode	11	5.14 Installation instructions fo pipe
2.6 General function	11	5.15 Twin flue instructions
2.7 Overall dimension	12	5.16 Exhaust / suction system concentric pipes for flat or roofs.
2.8 Safety device	12	Extensions with two sepa
2.9 Available pump head	12	5.17 Exhaust / suction system separate rated 80 dia. pip exhaust on flat or sloping from vertical wall
3 Technical data ROMA 21 Nat gas	13	5.18 Exhaust / suction system separate pipes through a vertical wall
3.1 Technical data ROMA 21 LPG	14	5.19 Installation instructions fo concentric flue system
3.2 Technical data ROMA 25 Nat gas	15	5.20 Assemble boiler
3.3 Technical data ROMA 25 LPG	16	5.21 Fitting valve pack
3.4 Technical data ROMA 29 Nat gas	17	5.22 Gas connection
3.5 Technical data ROMA 29 LPG	18	5.23 Central heating connectio
3.6 Technical data ROMA 33 Nat gas	19	5.24 Domestic hot water conne
3.7 Technical data ROMA 33 LPG	20	5.25 Position of water/gas con
4 General requirements	21	5.26 Safety valve discharge
4.1 Safety	21	5.27 Condensate drain connec
Gas safety (Installation and use)		5.28 External controls
4.2 General information	21	5.29 Outdoor sensor
4.3 Location of boiler	22	
4.4 Clearances around the appliance	22	6 Commissioning
4.5 Important notice	22	6.1 Gas supply installation
4.6 Gas supply	22	6.2 Electrical installation
4.7 Flue system	23	6.3 Initial filling of the system
4.8 Air supply	23	6.4 Setting the heating system design pressure
4.9 Water circulation (central heating)	23	6.5 Filling the hot water syste
4.10 Pipework	24	6.6 Lighting the boiler
4.11 Boiler interlock control	24	6.8 Check the gas pressure
4.12 Draining tap	24	
4.13 Air release points	25	
4.14 Mains water feed: central heating	25	
4.15 Sizing of additional expansion vessel	26	
4.16 Installation to an existing central heating system	26	
4.17 Water treatment	26	
4.18 Hard water areas	27	
4.19 Domestic water	27	
4.20 Electrical supply	27	

Sections	Page	Sections	Page
6.9	44	10	57
6.10	45	Electrical system diagram	
6.11	45		
6.12	45		
6.13	45		
6.14	45		
6.15	46		
6.16	46		
6.17	46		
7	47		
7.1	47		
7.2	48		
8	49		
8.1	49		
8.2	49		
8.3	49		
8.4	49		
8.5	50		
8.6	50		
8.7	50		
8.8	51		
8.9	51		
8.10	51		
8.11	51		
8.12	52		
8.13	52		
8.14	52		
8.15	52		
8.16	52		
8.17	53		
8.18	53		
8.19	53		
8.20	53		
8.21	53		
8.22	54		
8.23	54		
8.24	54		
8.25	54		
9	55		
9.1	56		
9.2	56		

1 USERS GUIDE

It is the law that all gas appliances are installed by a competent person, in accordance with the gas safety installation and to the current Gas Safety (Installation and Use) Regulations B.S.5440:2-(2009).

Do NOT search for gas leaks with a naked flame.

WARNING: This appliance must be earthed.

1.1 INTRODUCTION

Please carefully read the information given in this booklet to help you gain maximum control from your appliance with minimum trouble and cost.

Your Zantia Condensing Low Nox combination boiler has been designed to supply your Central Heating and Domestic Hot Water directly from one unit.

When Central Heating is operating, the circulation will be interrupted when Domestic Hot Water is being drawn off (domestic hot water has priority).

This will normally not affect the level of Heating.

PLEASE NOTE:

Due to the high efficiency of this appliance and resulting low flue gas exhaust temperature a white plume of condensation vapour (cool steam) will be emitted from the flue outlet terminal, this is quite normal. It will be particularly evident during periods of low outdoor temperature or when the boiler is working at its optimum performance (Plume Management kits are available on request).

IMPORTANT:

In the unlikely event of the exhaust flue gases exceeding the overheat temperature setting, the boiler operation will be stopped to prevent damage to the appliance.

1.2 CLEARANCES AROUND THE APPLIANCE

Side clearance:

The position of the appliance must provide a minimum clearance of only 5 mm as the side panels do not require removing for servicing.

However, if the option is preferred to remove the panels then a minimum clearance of 55 mm is required.

Top clearance:

The top clearance should be a minimum of 125 mm.

Bottom clearance:

A minimum bottom clearance of 80 mm is required between the appliance and any surface, though 150 mm is preferred whenever possible.

Front clearance:

A minimum of 450 mm is required in front of the appliance for access during servicing, the front clearance can be reduced when installed in a cupboard to 25 mm from the access door.

USER CONTROLS

This appliance is designed to operate with the minimum of ease for the user. All the controls are found on the control panel on the front of the boiler.

1.3 OPERATING SAFETY CHECKS TO PROTECT YOUR APPLIANCE (CHECKING THE SYSTEM PRESSURE)

Before lighting the appliance check that the Central Heating system pressure is not less than 1 bar. If it is below this it will be necessary to re-pressurise the system, between 1 and 1.5 bar to allow the boiler to operate. To view the system pressure press the INFO button once, this will display the current pressure **(if the pressure is on nil or too low, then error code 08E is displayed).**

A filling device (filling loop) will have been fitted on the system.

This is usually on the pipework near to the boiler. If you are unsure of its position, or you cannot identify it, consult the installer who fitted the boiler.

The filling loop usually consists of two taps and a separate silver coloured braided flexible pipe with connection fittings. Only when re-pressurising should the braided flexible pipe be connected between the two taps, ensure that the nuts or the pipe ends are tightened onto the taps.

Fully open one of the taps first and then while monitoring the water pressure on the digital display, carefully open the second tap. When the water pressure is to a maximum of 1.5 bar turn both taps off.

Disconnect the flexible pipe from the taps (a small amount of water may be present).

Keep the pipe in a safe place for future use.

Press the ESC button once to return to the main screen.

In the event of an error, the appliance will show a sequence code displayed on the digital display of the control panel (fig. 1). By pressing the "RESET" button it is possible to relight the boiler (see page 52 and 53 for list of error codes).

1.2 CONTROL PANEL

1 - ON/OFF.

Push button 1 to select the following functions:
 Summer, only sanitary water mode,
 Winter; sanitary and heating mode
 OFF, boiler off

2 - RESET/ESC

3/4 - HEATING

Sliding buttons.



Push to select the water value of the heating delivery and/or choose the several regulations from other functions

5/6 - SANITARIO



Push to select the value of the wished temperature of the sanitary water.

2/6 - INFO



Push the buttons 2 and 6 simultaneously for 3 seconds to visualize the operating values of the boiler.



Push the sliding buttons 3 and 4 to visualize the following data:

- 0- = Temperature of delivery (°C);
 - 1- = Temperature of Sanitary (°C);
 - 2- = Boiler's power (%);
 - 3- = Temperature of return (°C)
 - 4- = outdoor probe temperature (if present);
 - 5- = Real speed of the fan (rpm/100);
 - 6- = Frequency read by the sanitary fluxmeter (Hz);
 - 7- = Smokes temperature;
 - 8- = Sanitary water capacity (l/min)
- Push Reset to exit from INFO

1/2 - TEST/CHIMNEY SWEEPER



Push the buttons 1 and 2 simultaneously for 3 seconds.



Push the button 4 for operation at maximum power and 3 for operation at minimum power. the test function will itself automatically deactivated after 15 min if buttons 3 and 4 are not pushed.



To exit before, push button 2 ESC.

2/4 - PROGRAMMING



Push the buttons 2 and 4 simultaneously for 3 seconds.

Push the sliding buttons 3 and 4 to select the following functions:

P001: Maximum fan speed on heating mode.

P002: Maximum fan speed on sanitary mode.

P003: Sanitary pre-heating ("0" Off e "1" On).



Fig. 3

P004: high or low heating temperature Setting: "0" low (max 50°C) and "1" (max "80").

P005: External compensation regulation (default 20)

P006: Circulator anti-blockage: "0" Off and "1" On

P009: Ignition Power. It is possible adjust the percentage of the power, during the ignition, between 0 and 99%.

P0010: Boiler model

("1" ROMA 21 - "2" ROMA 25

"3" ROMA 29 - "4" ROMA 33).

P0011: Boiler type

1 = sanitary/heating combi with 2 sensors,

2 = sanitary/heating combi with 1 sensor,

3 = heating and water storage tank,

4 = heating and water storage tank, with timer

P0013: circulator type selector

1 = WILO/Shinwoo;

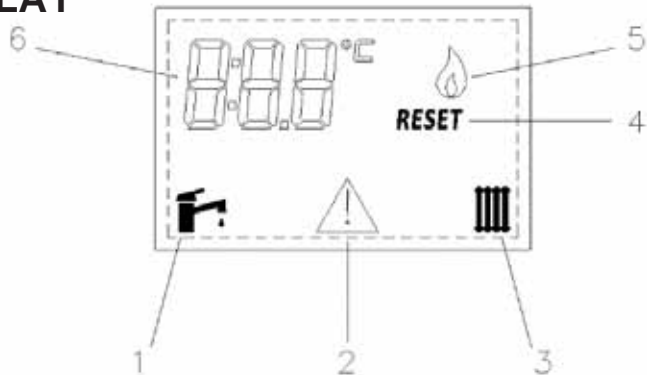
2 = GRUNDFOS;

P0014: Smokes probe

0 = Off;

1 = On;

DISPLAY



Pic. 4

- 1 - When the boiler is working on sanitary mode, the icon 1 flashes
- 2 - Boiler fault alarm, an error code will be visualized
- 3 - When the boiler is working in heating mode, icon 3 flashes..
- 4 - boiler blockage due to an anomaly: push button 2 of Reset after fixing the anomaly detected.
- 5 - When the boiler is working, icon 5 flashes.
- 6 - Boiler info visualization.

2.0 GENERAL LAYOUT (Fig. 3)

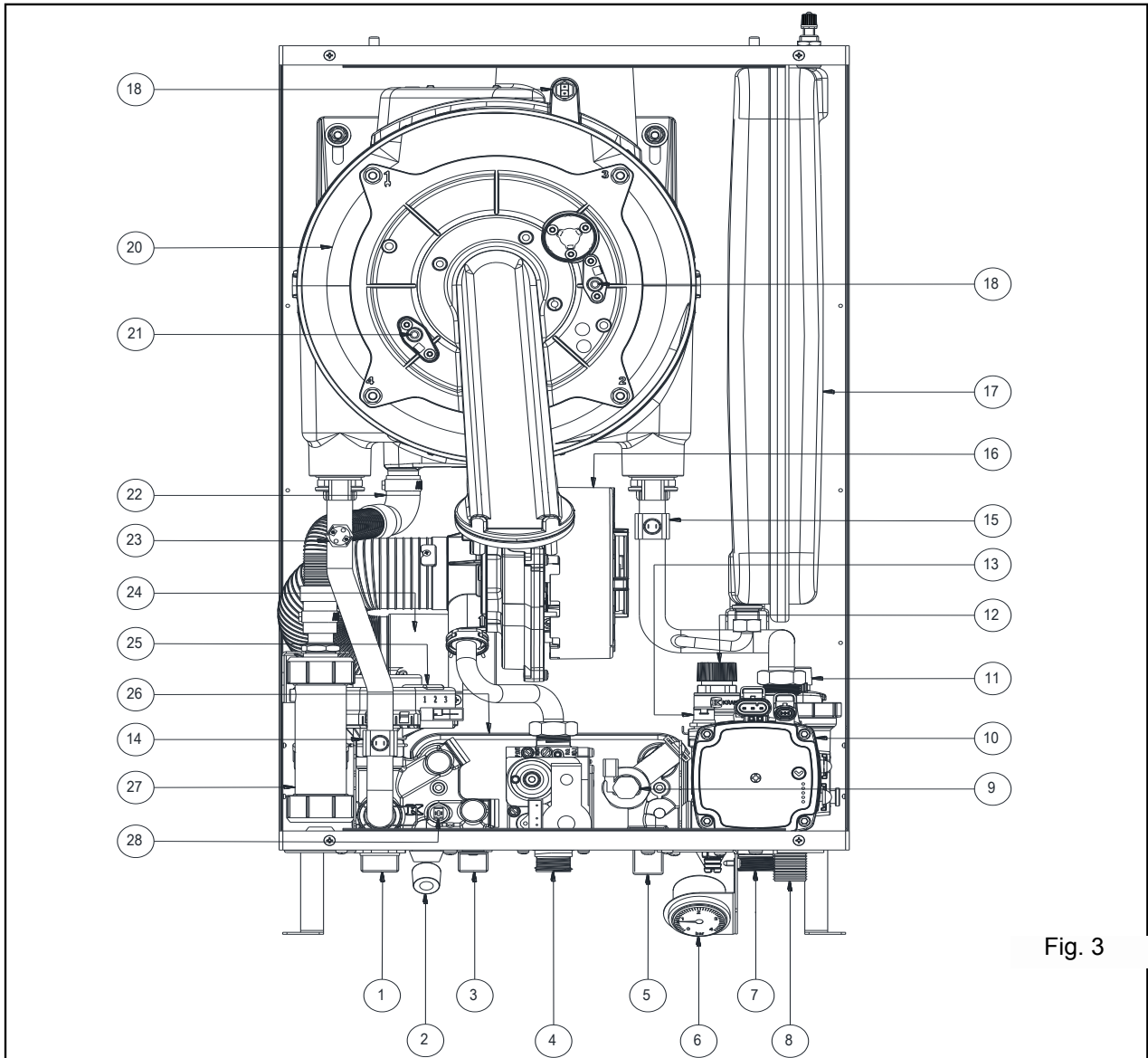


Fig. 3

- | | | |
|--------------------------|-----------------------------------|----------------------------------|
| 1 - C.H. flow | 11 - Automatic air vent | 21 - Sensing electrode |
| 2 - Water load | 12 - Safety pressure relief valve | 22 - Condensate drain |
| 3 - D.H.W. outlet | 13 - Water pressure | 23 - Overheat cut off thermostat |
| 4 - Gas inlet | 14 - C.H. flow sensor | 24 - Silencer |
| 5 - Water inlet | 15 - C.H. return sensor | 25 - Three-way valve motor |
| 6 - Pressure gauge | 16 - Fan | 26 - Plate heat exchanger |
| 7 - C.H. return | 17 - Expansion vessel | 27 - Condensate trap |
| 8 - Drain point | 18 - Spark electrode | 28 - C.H. flow sensor |
| 9 - D.H.W. flow detector | 19 - Flue temperature sensor | |
| 10 - Pump | 20 - Main heat exchanger | |

2.1 OPERATING SCHEME (Fig. 4)

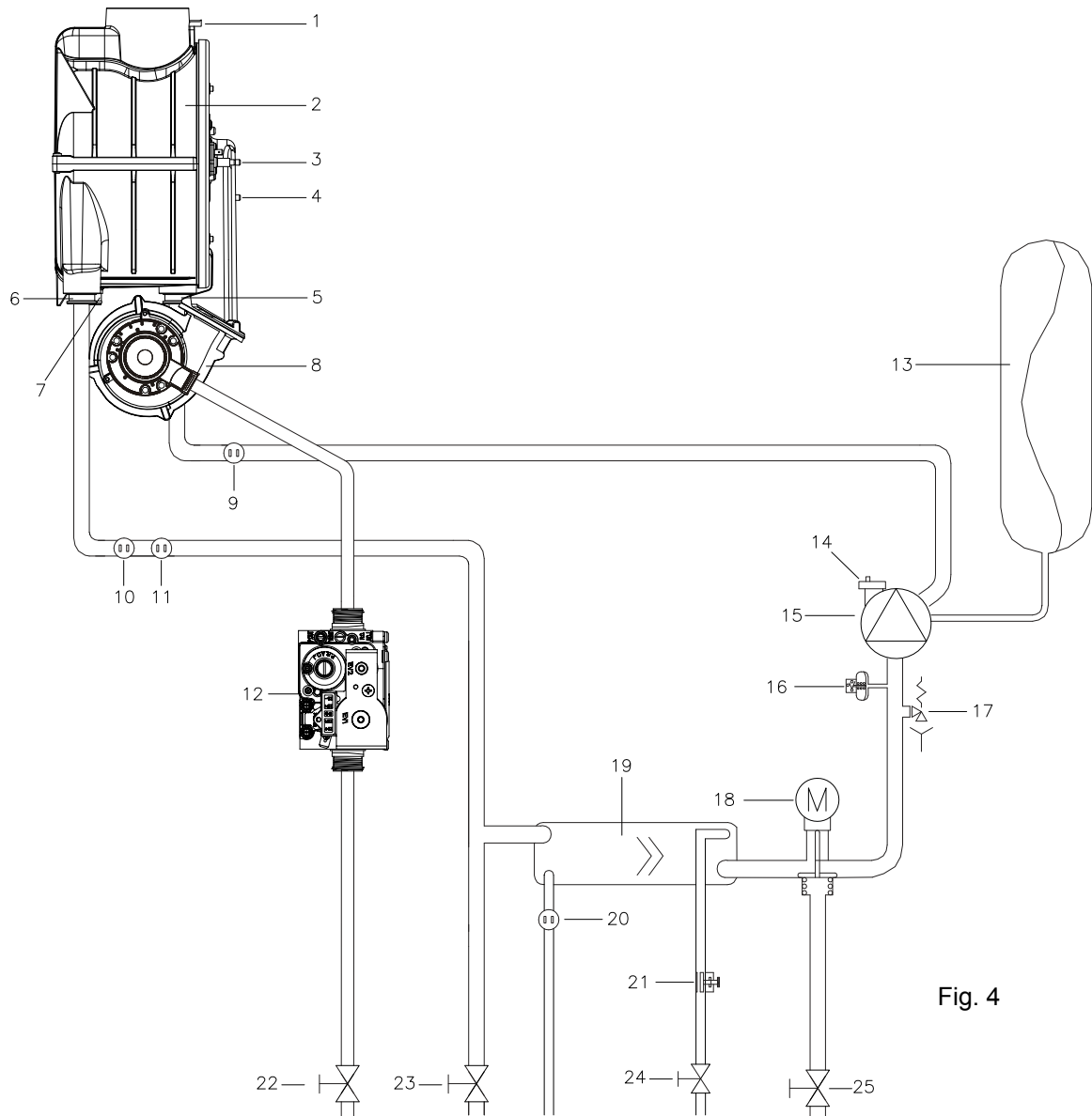


Fig. 4

KEY

- | | | |
|-----------------------------|----------------------------------|---------------------------------|
| 1 - Flue temperature sensor | 10 - Overheat cut off thermostat | 19 - Plate heat exchanger |
| 2 - Main heat exchanger | 11 - CH flow sensor | 20 - DHW sensor |
| 3 - Sensing electrode | 12 - Gas valve | 21 - DHW flow sensor |
| 4 - Spark electrode | 13 - Expansion vessel | 22 - Gas service cock |
| 5 - CH return | 14 - Automatic air vent | 23 - CH compression ball valve |
| 6 - CH flow | 15 - Pump | 24 - DHW compression ball valve |
| 7 - Condensate drain | 16 - Water pressure transducer | 25 - CH compression ball valve |
| 8 - Fan | 17 - Safety pressure system | |
| 9 - CH return sensor | 18 - Diverter valve motor | |

2.2 INTRODUCTION

This boiler is designed for the production of central heating and domestic hot water combined in one unit.

It is fitted with an automatic domestic hot water priority valve.

It is possible to select either a summer or winter function with the summer position only being for domestic hot water.

The winter position being for central heating with domestic hot water priority.

2.3 DESCRIPTION OF CONTROL SYSTEM AND SEQUENCE OF OPERATION

2.4 Domestic hot water mode

When the appliance is in rest mode, select the summer position by pressing the ON/OFF button (item 1 fig. 1) please ensure that the heating circuit is charged with water (above 1 bar).

If the domestic hot water tap is turned on, the boiler will function in the following sequence:

The pump starts. The fan starts and sends a signal back to the ignition board that the fan is running.

The spark ignition system is powered which in turn commences the spark igniter to operate and light the burner.

At this point the ignition board opens the gas valve to light the burner.

When the electrode sensor senses the signal that the burner is alight, the spark igniter stops.

The fan speed settings on the boiler increases to the maximum permissible speed over a period of 5 seconds and will remain at its maximum required power until its maximum regulated temperature is achieved and then will modulate to maintain this.

When the domestic hot water tap is closed the diverter valve goes back into rest mode, the burner is shut down along with the fan which is also switched off.

2.5 Central heating mode

If the appliance is in winter mode with a demand for heat to supply radiators, etc. , with the heating circuit fully charged above 1 bar, so as to operate the low water sensor device the boiler will start in the same way as domestic hot water mode.

As the heating sensor reaches temperature the fan speed modulates to maintain the temperature set on the display panel.

When starting, the fan will always start at the set-point speed.

The boiler is fitted with an anti-cycling device on the control board. This delays the boiler from re-firing within 10 minutes.

If the heating temperature goes 20 °C below the set point, the burner restarts immediately. The domestic hot water will always take priority and is unaffected by the anti-cycling device.

2.6 GENERAL FUNCTION

The instrument panel allows adjustment of the boiler to the heating requirements, between the maximum and minimum settings.

Air and gas are drawn by the fan for combustion. The fan also forces exhaust gas through the flue to the outside, this creates a lesser pressure in the sealed combustion chamber, thus sucking in combustion air, through the inlet duct.

The boiler water temperature is automatically controlled by a built in thermostat.

Interior space temperature is set by the room thermostat to be installed as part of the heating system. The boiler already carries connection terminals for this thermostat, as well as for an external timer if required. The burner continues to operate until it is stopped by the digital clock or one of the thermostats.

When the internal CH temperature sensor or the room thermostat intervenes the burner shuts down. The fan stops but the pump continues to operate for 3 minutes.

The boiler also incorporates an anti-block system which powers the pump every 24 hours, allowing it to operate for 2 minutes if the boiler has not been in use. This operation may in some cases be heard for a short period when the pump has been activated.

The heat exchanger in the DHW circuit is a stainless steel plate heat exchanger water to water, and domestic water is heated by converting the water in the central heating circuit. The transfer of heat is very high because the two fluids move in a counter direction.

Select the winter position by pressing the ON/OFF button (item 1 fig. 1). When a hot water tap is turned on the diverter valve motor moves to exclude the central heating circuit, the boiler automatically modulates to maintain the domestic hot water at a constant temperature. The water temperature can be regulated by the digital display.

When there is a demand for domestic hot water, the burner and pump perform as they do during central heating except that the burner is commanded by the DHW thermostat.

When DHW is no longer called for (tap is turned off), the boiler will automatically return to the central heating mode.

Select the summer position by pressing the summer/winter button. The boiler functions like an automatic gas hot water heater.

When DHW is no longer required the burner and pump and fan will immediately turn off.

This also takes place when in winter mode, if there is no demand for heat to the central heating system or until the digital clock and room thermostat (if fitted) demands the central heating circuit.

2.8 SAFETY DEVICE

In both central heating and domestic hot water mode safe operation is ensured by a control board which shuts off the main burner, if the fan stops or the flue or combustion air intake duct is obstructed.

An overheat cut off thermostat acts to turn off the burner to resettable "lockout".

A safety valve is fitted on the central heating circuit set at 3 bar.

A low water pressure switch set at 0.4 bar is fitted on heating circuit, to prevent the boiler operating below this boiler system pressure.

2.7 OVERALL DIMENSION (Fig. 5)

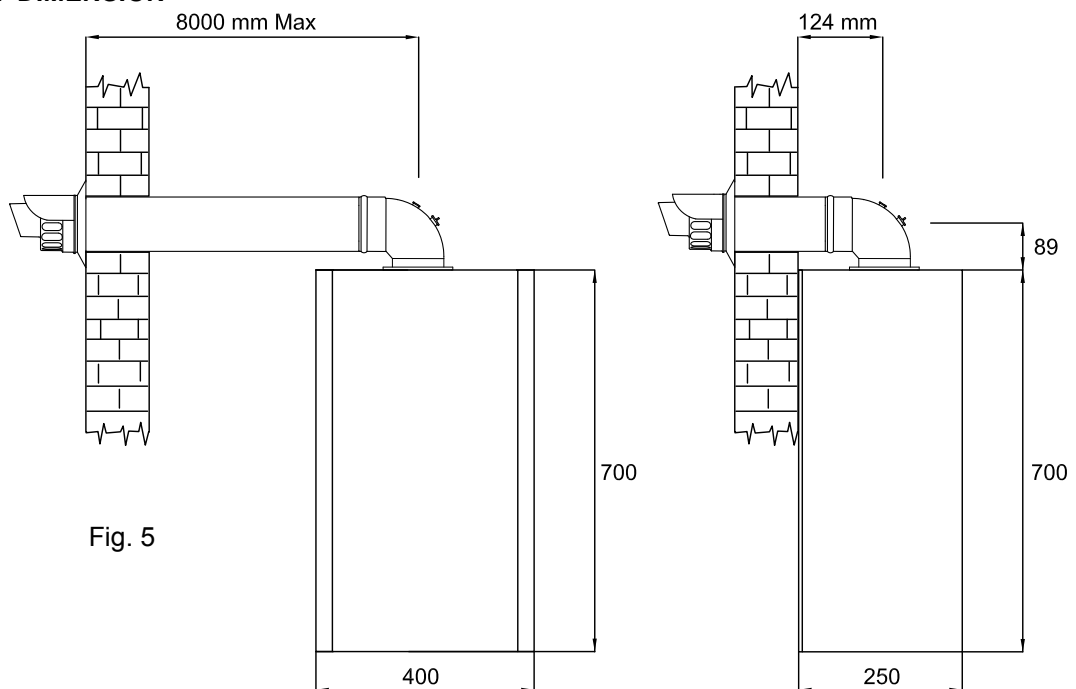
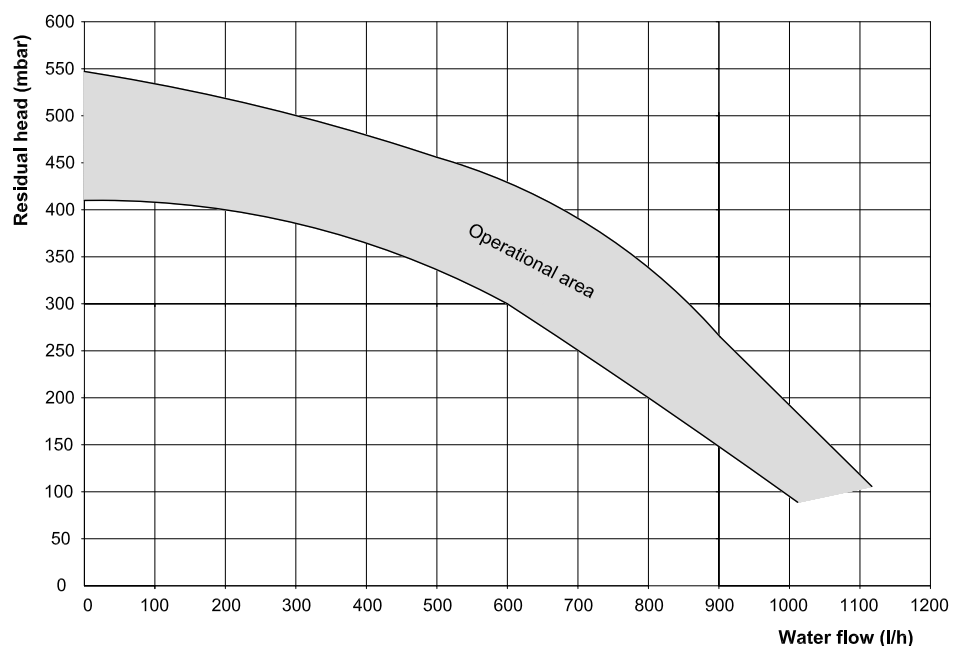


Fig. 5

2.9 AVAILABLE PUMP HEAD





3 TECHNICAL DATA

ROMA 21

TABLE A

NATURAL GAS (G 20) II_{2H3P} - II_{2E3P}



Nominal heat Input net QMS	21.0 kW		
Minimum heat Input net	3.7 kW		
Nominal heat output	20.4 kW		
Nominal heat output condensing	22.1 kW		
Minimum heat output	3.5 kW		
Minimum heat output condensing	3.9 kW		
Inlet pressure	20 mbar	Gas rate after 10 minutes	Max 2.1 m ³ /h - min. 0.4 m ³ /h
Fan speed	Max 5200 rpm - 173 Hz	Combustion % CO ₂ :	9.0 (+ 0.5 / - 0.5) Case On
C.H.	min 1200 rpm - 40 Hz		9.0 (+ 0.5 / - 0.5) Case Off
Electrical supply:	230 V ~ 50 Hz		
External fuse rating:	3 A	Internal fuse F1:	3.15 A (20 mm To BS 4265)
Dry weight :	31 Kg	Water content C.H.:	0.8 Litre
		Water content D.H.W.:	0.2 Litre
Gas Supply Connection	3/4"		
Flow connection C.H.	3/4		
Return connection C.H.	3/4		
Inlet connection D.H.W.	1/2"		
Outlet connection D.H.W.	1/2"		
Safety discharge C.H.	15 mm copper pipe		
Condensation drain	21.5 mm push fit over flow		
Max cold water capacity without additional expansion vessel	110 Litre		
Sealed water system C.H.			
Max pressure PHS	2.5 bar		
Minimum working pressure	0.5 bar		
7 Litres expansion vessel pre-charge-pressure	0.5 bar		
Central Heating operating temperature	Max 80 °C	min	35 °C
Design flow rate	1066 l/h 20 °C rise		
Minimum flow rate C.H.	350 l/h		
D.H.W. flow rate 30 °C rise	11.9 l/min		
D.H.W. flow rate 35 °C rise	10.2 l/min		
D.H.W. flow rate 40 °C rise	8.9 l/min	10°C Inlet temperature	
D.H.W. temperature	Max 60 °C	min	35 °C
Fan speed D.H.W.	Max 6200 rpm - 207 Hz	min 1200 rpm - 40 Hz	
Qmw Input Net	Max 25.5 kW	min 3.7 kW	
D.H.W. Pressure Pmw	Max 6.5 bar		
D.H.W. Pressure Pmw	min 0.8 bar		
D.H.W. Minimum Flow Rate	2.1 l/min		
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU	Category: II2H3P - II2E3P		
Flue Type: C13 - C33 - C53 - C63 - C83	Electrical protection index: IP X4 D		
LWA sound power level, indoors	50.5 dB	NO _x class 6 -	24.40 mg/kWh
ErP	D.H.W.		
Seasonal space heating energy efficiency class		Water heating energy efficiency class	
η_s seasonal space heating energy efficiency	91.7 %	Load Profile	XL
P_n nominal heat input	21.0 kW	η_{wh} water heating energy efficiency	85.1 %
P₄ nominal heat output high temperature	20.4 kW	Q_{fuel} daily fuel consumption	22.774 kWh
P₁ nominal heat output (30% P _n) low temperature	6.1 kW	AFC Annual fuel consumption	17.284 GJ
		Q_{elec} daily electricity consumption	0.2046 kWh
		AEC annual electricity consumption	44.802 kWh
μ₄ efficiency at nominal heat output high temperature	87.3 %		
μ₁ efficiency at 30% nominal heat output low temperature	97.0 %		
Auxiliary electricity consumption:			
e_{lmax} at full load	0.034 kW	PSB in standby mode	0.005 kW
e_{lmin} at part load	0.016 kW	P_{stby} standby heat loss	0.028 kW

3.1 TECHNICAL DATA

ROMA 21

TABLE B



LPG (G 31) II_{2H3P} - II_{2E3P}

Nominal heat Input net QMS	21.0 kW		
Minimum heat Input net	3.7 kW		
Nominal heat output	20.4 kW		
Nominal heat output condensing	22.1 kW		
Minimum heat output	3.5 kW		
Minimum heat output condensing	3.9 kW		
Inlet pressure	37 mbar	Gas rate after 10 minutes	Max 0,8 m ³ /h - min. 0,15 m ³ /h
Fan speed	Max 5200 rpm - 167 Hz	Combustion % CO ₂ :	10.5 (+ 0.5 / - 0.5) Case On
C.H.	min 1200 rpm - 40 Hz		10.5 (+ 0.5 / - 0.5) Case Off
Electrical supply:	230 V ~ 50 Hz		
External fuse rating:	3 A	Internal fuse F1:	3.15 A (20 mm To BS 4265)
Dry weight :	31 Kg	Water content C.H.:	0.8 Litre
		Water content D.H.W.:	0.2 Litre
Gas Supply Connection	3/4"		
Flow connection C.H.	3/4		
Return connection C.H.	3/4		
Inlet connection D.H.W.	1/2"		
Outlet connection D.H.W.	1/2"		
Safety discharge C.H.	15 mm copper pipe		
Condensation drain	21.5 mm push fit over flow		
Max cold water capacity without additional expansion vessel	110 Litre		
Sealed water system C.H.			
Max pressure PHS	2.5 bar		
Minimum working pressure	0.5 bar		
7 Litres expansion vessel pre-charge-pressure	0.5 bar		
Central Heating operating temperature	Max 80 °C	min 35 °C	
Design flow rate	1066 l/h	20 °C rise	
Minimum flow rate C.H.	350 l/h		
D.H.W. flow rate 30 °C rise	11.9 l/min		
D.H.W. flow rate 35 °C rise	10.2 l/min		
D.H.W. flow rate 40 °C rise	8.9 l/min	10°C Inlet temperature	
D.H.W. temperature	Max 60 °C	min 35 °C	
Fan speed D.H.W.	Max 6000 rpm - 200 Hz	min 1200 rpm - 40 Hz	
Qmw Input Net	Max 25.5 kW	min 3.7 kW	
D.H.W. Pressure Pmw	Max 6.5 bar		
D.H.W. Pressure Pmw	min 0.8 bar		
D.H.W. Minimum Flow Rate	2.1 l/min		
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU	Category: II2H3P - II2E3P		
Flue Type: C13 - C33 - C53 - C63 - C83	Electrical protection index: IP X4 D		
LWA sound power level, indoors	50.5 dB	NO _x class 6 - 24.40 mg/kWh	
ErP		D.H.W.	
Seasonal space heating energy efficiency class		Water heating energy efficiency class	
µs seasonal space heating energy efficiency	91.7 %	Load Profile	XL
Pn nominal heat input	21.0 kW	µwh water heating energy efficiency	85.1 %
P4 nominal heat output high temperature	20.4 kW	Qfuel daily fuel consumption	22.774 kWh
P1 nominal heat output (30% Pn) low temperature	6.1 kW	AFC Annual fuel consumption	17.284 GJ
		Qelec daily electricity consumption	0.2046 kWh
		AEC annual electricity consumption	44.802 kWh
µ4 efficiency at nominal heat output high temperature	87.3 %		
µ1 efficiency at 30% nominal heat output low temperature	97.0 %		
Auxiliary electricity consumption:			
elmax at full load	0.034 kW	PSB in standby mode	0.005 kW
elmin at part load	0.016 kW	Pstby standby heat loss	0.028 kW

3.2 TECHNICAL DATA

TABLE C



ROMA 25 NATURAL GAS (G 20) II_{2H3P} - II_{2E3P}

Nominal heat Input net QMS		25.0 kW	
Minimum heat Input net		4.0 kW	
Nominal heat output		24.3 kW	
Nominal heat output condensing		26.4 kW	
Minimum heat output		3.7 kW	
Minimum heat output condensing		4.2 kW	
Inlet pressure	20 mbar	Gas rate after 10 minutes	Max 2.6 m ³ /h - min. 0.4 m ³ /h
Fan speed	Max 5400 rpm - 180 Hz	Combustion % CO ₂ : 9.0 (+ 0.5 / - 0.5) Case On	
C.H.	min 1200 rpm - 40 Hz	9.0 (+ 0.5 / - 0.5) Case Off	
Electrical supply: 230 V ~ 50 Hz			
External fuse rating: 3 A		Internal fuse F1: 3.15 A (20 mm To BS 4265)	
Dry weight : 32 Kg		Water content C.H.: 0.8 Litre	
		Water content D.H.W.: 0.2 Litre	
Gas Supply Connection		3/4"	
Flow connection C.H.		3/4	
Return connection C.H.		3/4	
Inlet connection D.H.W.		1/2"	
Outlet connection D.H.W.		1/2"	
Safety discharge C.H.		15 mm copper pipe	
Condensation drain		21.5 mm push fit over flow	
Max cold water capacity without additional expansion vessel		110 Litre	
Sealed water system C.H.			
Max pressure PHS		2.5 bar	
Minimum working pressure		0.5 bar	
8 Litres expansion vessel pre-charge-pressure		0.5 bar	
Central Heating operating temperature		Max 80 °C min 35 °C	
Design flow rate		1811 l/h 20 °C rise	
Minimum flow rate C.H.		350 l/h	
D.H.W. flow rate 30 °C rise		14.0 l/min	
D.H.W. flow rate 35 °C rise		12.0 l/min	
D.H.W. flow rate 40 °C rise		10.5 l/min 10°C Inlet temperature	
D.H.W. temperature		Max 60 °C min 35 °C	
Fan speed D.H.W.		Max 6600 rpm - 220 Hz min 1200 rpm - 40 Hz	
Qmw Input Net		Max 31.0 kW min 4.0 kW	
D.H.W. Pressure Pmw		Max 6.5 bar	
D.H.W. Pressure Pmw		min 0.8 bar	
D.H.W. Minimum Flow Rate		2.1 l/min	
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU			
		Category: II2H3P - II2E3P	
Flue Type: C13 - C33 - C53 - C63 - C83		Electrical protection index: IP X4 D	
LWA sound power level, indoors 52 dB		NO _x class 6 - 36.06 mg/kWh	
ErP			
Seasonal space heating energy efficiency class			
μs seasonal space heating energy efficiency		92.0 %	
Pn nominal heat input		25.0 kW	
P4 nominal heat output high temperature		24.3 kW	
P1 nominal heat output (30% Pn) low temperature		7.9 kW	
D.H.W.			
Water heating energy efficiency class			
Load Profile		XL	
μwh water heating energy efficiency		84.86 %	
Qfuel daily fuel consumption		22.991 kWh	
AFC Annual fuel consumption		17.415 GJ	
Qelec daily electricity consumption		0.1533 kWh	
AEC annual electricity consumption		33.564 kWh	
μ4 efficiency at nominal heat output high temperature		87.4 %	
μ1 efficiency at 30% nominal heat output low temperature		97.1 %	
Auxiliary electricity consumption:			
elmax at full load		0.034 kW	
elmin at part load		0.016 kW	
PSB in standby mode		0.005 kW	
Pstby standby heat loss		0.028 kW	

3.3 TECHNICAL DATA

TABLE D

ROMA 25 LPG (G 31) II_{2H3P} - II_{2E3P}



Nominal heat Input net QMS		25.0 kW	
Minimum heat Input net		4.0 kW	
Nominal heat output		24.3 kW	
Nominal heat output condensing		26.4 kW	
Minimum heat output		3.7 kW	
Minimum heat output condensing		4.2 kW	
Inlet pressure	37 mbar	Gas rate after 10 minutes	Max 2.6 m ³ /h - min. 0.4 m ³ /h
Fan speed	Max 5200 rpm - 173 Hz	Combustion % CO ₂	10.5 (+ 0.5 / - 0.5) Case On
C.H.	min 1200 rpm - 40 Hz		10.5 (+ 0.5 / - 0.5) Case Off
Electrical supply: 230 V ~ 50 Hz			
External fuse rating: 3 A		Internal fuse F1: 3.15 A (20 mm To BS 4265)	
Dry weight : 32 Kg		Water content C.H.: 0.8 Litre	
		Water content D.H.W.: 0.2 Litre	
Gas Supply Connection		3/4"	
Flow connection C.H.		3/4	
Return connection C.H.		3/4	
Inlet connection D.H.W.		1/2"	
Outlet connection D.H.W.		1/2"	
Safety discharge C.H.		15 mm copper pipe	
Condensation drain		21.5 mm push fit over flow	
Max cold water capacity without additional expansion vessel		110 Litre	
Sealed water system C.H.			
Max pressure PHS		2.5 bar	
Minimum working pressure		0.5 bar	
8 Litres expansion vessel pre-charge-pressure		0.5 bar	
Central Heating operating temperature		Max 80 °C min 35 °C	
Design flow rate		1811 l/h 20 °C rise	
Minimum flow rate C.H.		350 l/h	
D.H.W. flow rate 30 °C rise		14.0 l/min	
D.H.W. flow rate 35 °C rise		12.0 l/min	
D.H.W. flow rate 40 °C rise		10.5 l/min 10°C Inlet temperature	
D.H.W. temperature		Max 60 °C min 35 °C	
Fan speed D.H.W.		Max 6400 rpm - 213 Hz min 1200 rpm - 40 Hz	
Qmw Input Net		Max 31.0 kW min 4.0 kW	
D.H.W. Pressure Pmw		Max 6.5 bar	
D.H.W. Pressure Pmw		min 0.8 bar	
D.H.W. Minimum Flow Rate		2.1 l/min	
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU		Category: II2H3P - II2E3P	
Flue Type: C13 - C33 - C53 - C63 - C83		Electrical protection index: IP X4 D	
LWA sound power level, indoors 52 dB		NO _x class 6 - 36.06 mg/kWh	
ErP		D.H.W.	
Seasonal space heating energy efficiency class 		Water heating energy efficiency class 	
µs seasonal space heating energy efficiency 92.0 %		Load Profile XL	
Pn nominal heat input 25.0 kW		µwh water heating energy efficiency 84.86 %	
P4 nominal heat output high temperature 24.3 kW		Q_{fuel} daily fuel consumption 22.991 kWh	
P1 nominal heat output (30% Pn) low temperature 7.9 kW		AFC Annual fuel consumption 17.415 GJ	
		Q_{elec} daily electricity consumption 0.1533 kWh	
		AEC annual electricity consumption 33.564 kWh	
µ4 efficiency at nominal heat output high temperature 87.4 %			
µ1 efficiency at 30% nominal heat output low temperature 97.1 %			
Auxiliary electricity consumption:			
elmax at full load 0.034 kW		PSB in standby mode 0.005 kW	
elmin at part load 0.016 kW		Pstby standby heat loss 0.028 kW	

3.4 TECHNICAL DATA

ROMA 29



TABLE E

NATURAL GAS (G 20) II_{2H3P} - II_{2E3P}

Nominal heat Input net QMS	29.0 kW		
Minimum heat Input net	4.0 kW		
Nominal heat output	28.3 kW		
Nominal heat output condensing	30.5 kW		
Minimum heat output	3.7 kW		
Minimum heat output condensing	4.1 kW		
Inlet pressure 20 mbar	Gas rate after 10 minutes	Max 3.1 m ³ /h - min. 0.4 m ³ /h	
Fan speed C.H.	Max 6200 rpm - 206 Hz min 1200 rpm - 40 Hz	Combustion % CO ₂ :	9.0 (+ 0.5 / - 0.5) Case On 9.0 (+ 0.5 / - 0.5) Case Off
Electrical supply: 230 V ~ 50 Hz			
External fuse rating: 3 A		Internal fuse F1: 3.15 A (20 mm To BS 4265)	
Dry weight : 31 Kg	Water content C.H.: 0.8 Litre	Water content D.H.W.: 0.2 Litre	
Gas Supply Connection	3/4"		
Flow connection C.H.	3/4		
Return connection C.H.	3/4		
Inlet connection D.H.W.	1/2"		
Outlet connection D.H.W.	1/2"		
Safety discharge C.H.	15 mm copper pipe		
Condensation drain	21.5 mm push fit over flow		
Max cold water capacity without additional expansion vessel		110 Litre	
Sealed water system C.H.			
Max pressure PHS	2.5 bar		
Minimum working pressure	0.5 bar		
10 Litres expansion vessel pre-charge-pressure	0.5 bar		
Central Heating operating temperature	Max 80 °C	min 35 °C	
Design flow rate	1250 l/h 20 °C rise		
Minimum flow rate C.H.	350 l/h		
D.H.W. flow rate 30 °C rise	16.2 l/min		
D.H.W. flow rate 35 °C rise	13.8 l/min		
D.H.W. flow rate 40 °C rise	12.1 l/min	10°C Inlet temperature	
D.H.W. temperature	Max 60 °C	min 35 °C	
Fan speed D.H.W.	Max 7300 rpm - 243 Hz	min 1200 rpm - 40 Hz	
Qmw Input Net	Max 36.0 kW	min 4.0 kW	
D.H.W. Pressure Pmw	Max 6.5 bar		
D.H.W. Pressure Pmw	min 0.8 bar		
D.H.W. Minimum Flow Rate	2.1 l/min		
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU		Category: II2H3P - II2E3P	
Flue Type: C13 - C33 - C53 - C63 - C83		Electrical protection index: IP X4 D	
LWA sound power level, indoors	50.5 dB	NO _x class 6 - 24.72 mg/kWh	
ErP			
Seasonal space heating energy efficiency class		D.H.W.	
µs seasonal space heating energy efficiency	93.2 %	Water heating energy efficiency class	
Pn nominal heat input	29.0 kW	Load Profile	XL
P4 nominal heat output high temperature	28.3 kW	µwh water heating energy efficiency	83.6 %
P1 nominal heat output (30% Pn) low temperature	9.5 kW	Qfuel daily fuel consumption	23.364 kWh
		AFC Annual fuel consumption	17.641 GJ
		Qelec daily electricity consumption	0.1736 kWh
		AEC annual electricity consumption	38.023 kWh
µ4 efficiency at nominal heat output high temperature	87.8 %		
µ1 efficiency at 30% nominal heat output low temperature	97.0 %		
Auxiliary electricity consumption:			
elmax at full load	0.034 kW	PSB in standby mode	0.005 kW
elmin at part load	0.016 kW	Pstby standby heat loss	0.028 kW

3.5 TECHNICAL DATA
TABLE F



ROMA 29
LPG (G 31) II_{2H3P} - II_{2E3P}

Nominal heat Input net QMS	29.0 kW		
Minimum heat Input net	4.0 kW		
Nominal heat output	28.3 kW		
Nominal heat output condensing	30.5kW		
Minimum heat output	3.7 kW		
Minimum heat output condensing	4.1 kW		
Inlet pressure	37 mbar	Gas rate after 10 minutes	Max 1.1 m ³ /h - min. 0.4 m ³ /h
Fan speed	Max 6000 rpm - 200 Hz	Combustion % CO ₂ :	10.5 (+ 0.5 / - 0.5) Case On
C.H.	min 1200 rpm - 40 Hz		10.5 (+ 0.5 / - 0.5) Case Off
Electrical supply:	230 V ~ 50 Hz		
External fuse rating:	3 A	Internal fuse F1:	3.15 A (20 mm To BS 4265)
Dry weight :	31 Kg	Water content C.H.:	0.8 Litre
		Water content D.H.W.:	0.2 Litre
Gas Supply Connection	3/4"		
Flow connection C.H.	3/4		
Return connection C.H.	3/4		
Inlet connection D.H.W.	1/2"		
Outlet connection D.H.W.	1/2"		
Safety discharge C.H.	15 mm copper pipe		
Condensation drain	21.5 mm push fit over flow		
Max cold water capacity without additional expansion vessel	110 Litre		
Sealed water system C.H.			
Max pressure PHS	2.5 bar		
Minimum working pressure	0.5 bar		
10 Litres expansion vessel pre-charge-pressure	0.5 bar		
Central Heating operating temperature	Max 80 °C	min	35 °C
Design flow rate	1250 l/h 20 °C rise		
Minimum flow rate C.H.	350 l/h		
D.H.W. flow rate 30 °C rise	16.2 l/min		
D.H.W. flow rate 35 °C rise	13.8 l/min		
D.H.W. flow rate 40 °C rise	12.1 l/min 10°C Inlet temperature		
D.H.W. temperature	Max 60 °C	min	35 °C
Fan speed D.H.W.	Max 7100 rpm - 236 Hz	min 1200 rpm - 40 Hz	
Qmw Input Net	Max 36.0 kW	min 4.0 kW	
D.H.W. Pressure Pmw	Max 6.5 bar		
D.H.W. Pressure Pmw	min 0.8 bar		
D.H.W. Minimum Flow Rate	2.1 l/min		
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU	Category: II2H3P - II2E3P		
Flue Type: C13 - C33 - C53 - C63 - C83	Electrical protection index: IP X4 D		
LWA sound power level, indoors	50.5 dB	NO _x class 6 -	24.72 mg/kWh
ErP		D.H.W.	
Seasonal space heating energy efficiency class		Water heating energy efficiency class	
µs seasonal space heating energy efficiency	93.2 %	Load Profile	XL
Pn nominal heat input	29.0 kW	µwh water heating energy efficiency	83.6 %
P4 nominal heat output high temperature	28.3 kW	Qfuel daily fuel consumption	23.364 kWh
P1 nominal heat output (30% Pn) low temperature	9.5 kW	AFC Annual fuel consumption	17.641 GJ
		Qelec daily electricity consumption	0.1736 kWh
		AEC annual electricity consumption	38.023 kWh
µ4 efficiency at nominal heat output high temperature	87.8 %		
µ1 efficiency at 30% nominal heat output low temperature	97.0 %		
Auxiliary electricity consumption:			
elmax at full load	0.034 kW	PSB in standby mode	0.005 kW
elmin at part load	0.016 kW	Pstby standby heat loss	0.028 kW

3.6 TECHNICAL DATA

TABLE G



ROMA 33 NATURAL GAS (G 20) II_{2H3P} - II_{2E3P}

Nominal heat Input net QMS		33.0 kW	
Minimum heat Input net		4.0 kW	
Nominal heat output		31.5 kW	
Nominal heat output condensing		34.3 kW	
Minimum heat output		3.6 kW	
Minimum heat output condensing		4.02 kW	
Inlet pressure	20 mbar	Gas rate after 10 minutes	Max 3.4 m ³ /h - min. 0.4 m ³ /h
Fan speed	Max 6800 rpm - 180 Hz	Combustion % CO ₂	9.0 (+ 0.5 / - 0.5) Case On
C.H.	min 1200 rpm - 40 Hz		9.0 (+ 0.5 / - 0.5) Case Off
Electrical supply: 230 V ~ 50 Hz			
External fuse rating: 3 A		Internal fuse F1: 3.15 A (20 mm To BS 4265)	
Dry weight : 32 Kg		Water content C.H.: 0.8 Litre	
		Water content D.H.W.: 0.2 Litre	
Gas Supply Connection		3/4"	
Flow connection C.H.		3/4	
Return connection C.H.		3/4	
Inlet connection D.H.W.		1/2"	
Outlet connection D.H.W.		1/2"	
Safety discharge C.H.		15 mm copper pipe	
Condensation drain		21.5 mm push fit over flow	
Max cold water capacity without additional expansion vessel		110 Litre	
Sealed water system C.H.			
Max pressure PHS		2.5 bar	
Minimum working pressure		0.5 bar	
10 Litres expansion vessel pre-charge-pressure		0.5 bar	
Central Heating operating temperature		Max 80 °C min 35 °C	
Design flow rate		1811 l/h 20 °C rise	
Minimum flow rate C.H.		350 l/h	
D.H.W. flow rate 30 °C rise		16,2 l/min	
D.H.W. flow rate 35 °C rise		13.8 l/min	
D.H.W. flow rate 40 °C rise		12.1 l/min 10°C Inlet temperature	
D.H.W. temperature		Max 60 °C min 35 °C	
Fan speed D.H.W.		Max 7800 rpm - 220 Hz min 1200 rpm - 40 Hz	
Qmw Input Net		Max 34,8 kW min 4.0 kW	
D.H.W. Pressure Pmw		Max 6.5 bar	
D.H.W. Pressure Pmw		min 0.8 bar	
D.H.W. Minimum Flow Rate		2.1 l/min	
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU			
		Category: II2H3P - II2E3P	
Flue Type: C13 - C33 - C53 - C63 - C83		Electrical protection index: IP X4 D	
LWA sound power level, indoors 52 dB		NO _x class 6 - 19.42 mg/kWh	
ErP			
Seasonal space heating energy efficiency class			
µs seasonal space heating energy efficiency		92.6 %	
Pn nominal heat input		33.0 kW	
P4 nominal heat output high temperature		31.5 kW	
P1 nominal heat output (30% Pn) low temperature		10.8 kW	
D.H.W.			
Water heating energy efficiency class			
Load Profile		XL	
µwh water heating energy efficiency		83,65 %	
Qfuel daily fuel consumption		23.339 kWh	
AFC Annual fuel consumption		17.626 GJ	
Qelec daily electricity consumption		0.176 kWh	
AEC annual electricity consumption		38.552 kWh	
µ4 efficiency at nominal heat output high temperature		86.0 %	
µ1 efficiency at 30% nominal heat output low temperature		97.9 %	
Auxiliary electricity consumption:			
elmax at full load		0.034 kW	
elmin at part load		0.016 kW	
0.033 kW		PSB in standby mode 0.005 kW	
		Pstby standby heat loss 0.056 kW	

3.7 TECHNICAL DATA

TABLE H

ROMA 33 LPG (G 31) II_{2H3P} - II_{2E3P}

Nominal heat Input net QMS	33.0 kW		
Minimum heat Input net	4.0 kW		
Nominal heat output	31.5 kW		
Nominal heat output condensing	34.3 kW		
Minimum heat output	3.6 kW		
Minimum heat output condensing	4.0 kW		
Inlet pressure	37 mbar	Gas rate after 10 minutes	Max 1.4 m ³ /h - min. 0.4 m ³ /h
Fan speed	Max 6600 rpm - 173 Hz	Combustion % CO ₂ :	10.5 (+ 0.5 / - 0.5) Case On
C.H.	min 1200 rpm - 40 Hz		10.5 (+ 0.5 / - 0.5) Case Off
Electrical supply: 230 V ~ 50 Hz			
External fuse rating: 3 A		Internal fuse F1: 3.15 A (20 mm To BS 4265)	
Dry weight : 32 Kg	Water content C.H.: 0.8 Litre	Water content D.H.W.: 0.2 Litre	
Gas Supply Connection	3/4"		
Flow connection C.H.	3/4		
Return connection C.H.	3/4		
Inlet connection D.H.W.	1/2"		
Outlet connection D.H.W.	1/2"		
Safety discharge C.H.	15 mm copper pipe		
Condensation drain	21.5 mm push fit over flow		
Max cold water capacity without additional expansion vessel		110 Litre	
Sealed water system C.H.			
Max pressure PHS	2.5 bar		
Minimum working pressure	0.5 bar		
7 Litres expansion vessel pre-charge-pressure	0.5 bar		
Central Heating operating temperature		Max 80 °C	min 35 °C
Design flow rate	1811 l/h	20 °C rise	
Minimum flow rate C.H.	350 l/h		
D.H.W. flow rate 30 °C rise	16,2 l/min		
D.H.W. flow rate 35 °C rise	13.8 l/min		
D.H.W. flow rate 40 °C rise	12.1 l/min	10°C Inlet temperature	
D.H.W. temperature		Max 60 °C	min 35 °C
Fan speed D.H.W.	Max 7300 rpm - 213 Hz	min 1200 rpm - 40 Hz	
Q _{mw} Input Net	Max 34,8 kW	min 4.0 kW	
D.H.W. Pressure P _{mw}	Max 6.5 bar		
D.H.W. Pressure P _{mw}	min 0.8 bar		
D.H.W. Minimum Flow Rate	2.1 l/min		
Destination: GB, IE, ES, IT, GR, PL, CH, PT, HU		Category: II2H3P - II2E3P	
Flue Type: C13 - C33 - C53 - C63 - C83		Electrical protection index: IP X4 D	
LWA sound power level, indoors	52 dB	NO _x class 6 - 19.42 mg/kWh	
ErP		D.H.W.	
Seasonal space heating energy efficiency class		Water heating energy efficiency class	
μ_s seasonal space heating energy efficiency	92.6 %	Load Profile	XL
P_n nominal heat input	33.0 kW	μ_{wh} water heating energy efficiency	83.65 %
P₄ nominal heat output high temperature	31.5 kW	Q_{fuel} daily fuel consumption	23.339 kWh
P₁ nominal heat output (30% P _n) low temperature	10.8 kW	AFC Annual fuel consumption	17.626 GJ
		Q_{elec} daily electricity consumption	0.176 kWh
		AEC annual electricity consumption	38.552 kWh
μ₄ efficiency at nominal heat output high temperature	86.0 %		
μ₁ efficiency at 30% nominal heat output low temperature	97.9 %		
Auxiliary electricity consumption:			
el_{max} at full load	0.034 kW	PSB in standby mode	0.005 kW
el_{min} at part load	0.016 kW	P_{stby} standby heat loss	0.056 kW

4 GENERAL REQUIREMENTS

4.1 SAFETY

Gas Safety (Installation and Use). Regulations.

It is law that all gas appliances are installed and serviced by a Gas Safe registered installer in accordance with the above regulations and these installation instructions. All registered installers carry a Gas Safe I.D. card and have a registration number. Both should be recorded in your Benchmark commissioning checklist. You can check your installer on the Gas Safe register (www.gassaferegister.co.uk). Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of your safety, to ensure the law is complied with. Check the boiler and flue is the correct type for installation undertaken. The installation of the boiler MUST be in accordance with the latest IET (BS 7671) Wiring Regulations, local building regulations, bye-laws of the local water authority, the building regulations and the Building Standards (Scotland) and any relevant requirements of the local authority.

4.2 GENERAL INFORMATION

Both the user and the manufacturer rely heavily on the installer, whose job it is to install the combination boiler and connect it to a correctly designed heating system. Acquaint yourself with the relevant Standards concerning installation requirements. It is recommended that tools suitable for brass fittings are used, and have a capability to accommodate hexagon sizes up to 50 mm.

APPLICABLE CODES OF PRACTICE Ref: Documents.

Detailed recommendations are contained in the following British Standard Codes of Practice:

BS6891:2015: Low pressure installation pipes.

BS6798: Installation of gas fired hot water boilers of rated input not exceeding 70 kW.

BSEN12828: Design for water based heating systems.

BSEN12831: Heating systems in buildings, Method for calculation of the design heat load.

BSEN14336: Installation & commissioning of water based heating systems.

BS5546: Installation of gas hot water supplies domestic purposes (2nd Family Gases).

BS5440: 1 Refers to flues.

BSEN 15502-2-2:2014, BS EN 15502-1:2012+A1:2015, BS EN 15502-2-1.2012: Gas fired central heating boilers.

I.S. 813: Domestic gas Installations.

The followings standards give valuable additional information:

BS 7074: Expansion vessels and ancillary equipment for sealed water system.

BS 7593: Treatment of water in domestic hot water and central heating system.

Health & Safety Document No.635 The Electricity at Work Regulations, 1989.

IMPORTANT:

These appliances are CE certificated for safety and performance. It is therefore important that no external control devices e.g. flue dampers, economisers etc., are directly connected to this appliance unless covered by these Installation and Service Instructions or as otherwise recommended by Zantia in writing. If in doubt please enquire.

Any direct connection of a control device not approved by Zantia could invalidate the certification and the normal appliance warranty.

It could also infringe the Gas Safety regulations and the above regulations.

NOTE:

The Zantia HE 12/20/25/30/35 C combi boiler has been tested and examined by CERTIGAZ, in according to:

2006/95 EEC: the low voltage directive.

2004/108 ECC: EMC directive.

2009/142 EEC: gas directive

CE 1935/2004: materials into contact with foodstuffs

2009/125/EC: Ecodesign for energy-using appliance.

2010/30/UE: Indication by labelling of the consumption of energy by energy-related products.

811/2013: Delegated regulation.

813/2013: Delegated regulation.

Manufacturers instructions must NOT be taken in any way as overriding statutory obligations. If in doubt on any point please consult Zantia

4.3 LOCATION OF BOILER

Siting of Arca HE 12/20/25/30/35 C combi boiler must be as follows.

The position of installation should be within the building, unless otherwise protected by a suitable enclosure.

Adequate space for installation, servicing and air circulation around the boiler must be allowed for.

Arca HE 12/20/25/30/35 C combi boiler must be fitted on a flat and vertical wall capable of adequately supporting the weight of the boiler and any ancillary equipment.

The appliance may be fitted on a combustible wall. Insulation between the wall and the boiler is not necessary, unless required by the local authority.

For electrical safety reasons there must be no access available from the back of the boiler.

The boiler must not be fitted outside.

LPG versions of this appliance shall not be installed in cellars or basements.

4.4 CLEARANCES AROUND THE APPLIANCE

Side clearance:

The position of the appliance must provide minimum clearance of 5mm as the side panels do not require removing for servicing.

However, if the option is preferred to remove the panels then a minimum clearance of 55 mm is required.

Top clearance:

The top clearance should be a minimum of 125 mm.

Bottom clearance:

A bottom clearance of 80 mm is required between the appliance and any surface. Though 150 mm is preferred whenever possible.

Front clearance:

A minimum of 450 mm is required in front of the appliance for access during servicing, the front clearance can be reduced when installed in a cupboard, to 25 mm from the access door.

4.5 IMPORTANT NOTICE

For installation into timber framed buildings, please refer to the Institute of Gas Engineers Document IGE/UP/7.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current IET (BS 7671) Wiring Regulations, and in Scotland the electrical provisions of the Building

Regulations applicable in Scotland, with respect to the installation of the combination boiler in a room or internal space containing a bath or shower.

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 situated so that it cannot be touched by a person using a bath or shower.

A compartment when used to enclose the combination boiler MUST be designed and constructed specifically for this purpose. An existing cupboard, or compartment, may be used provided it is modified accordingly. Samples of the HE 12/20/25/30/35 C combi boiler have been examined by CERTIGAZ notification body, and are certified to comply with the essential requirements of the gas appliance.

Directive 90/396/EEC, the Low Voltage. Directive 72/23/EEC and shows compliance with the Electro Magnetic Compatibility. Directive 89/336/EEC and are therefore permitted to carry the CE Mark.

The appliance has been tested and approved by the WRc as meeting the requirements of G3 and L of the Building regulations and water Bylaws Scheme - Approved Products.

4.6 GAS SUPPLY

A gas meter is connected to the service pipe by the Local Gas Supplier or the Local Gas Supplier contractor. An existing meter should be checked preferably by the Gas Supplier to ensure that the meter is adequate to deal with the rate of gas supply required for all appliances it serves. Installation pipes should be fitted in accordance with BS 6891:2015. Pipework from the meter to the boiler must be of adequate size (22 mm) min to within at least one metre of the boiler, (15 mm) min. can then be used for remaining pipe work to the appliance. A smaller size than the boiler inlet gas connection should not be used. The complete installation must be tested for soundness as described in the above code.

N.B. It is the responsibility of the Gas Installer to size the gas installation pipework in accordance with BS 6891:2015. Whilst the principle of the 1:1 gas valve ensures the Arca range is able to deliver the full output at an inlet pressures as low as 14 mbar, other gas appliances in the property may not be as tolerant.

When operating pressures are found to be below the minimum meter outlet of 19 mbar these should be checked to ensure this is adequate for correct and safe operation.

Allowing for the acceptable pressure loss of 1 mbar across the installation pipework, it can be assumed that a minimum permitted operating pressure of 18 mbar (nat gas) will be delivered to the inlet of the appliance. (reference BS 6400-1 Clause 6.2 Pressure Absorption).

The external gas cock could further reduce the operating pressure when measured at its test point. The pressure drop is relative to the heat input to the boiler (kW), refer to graph below.

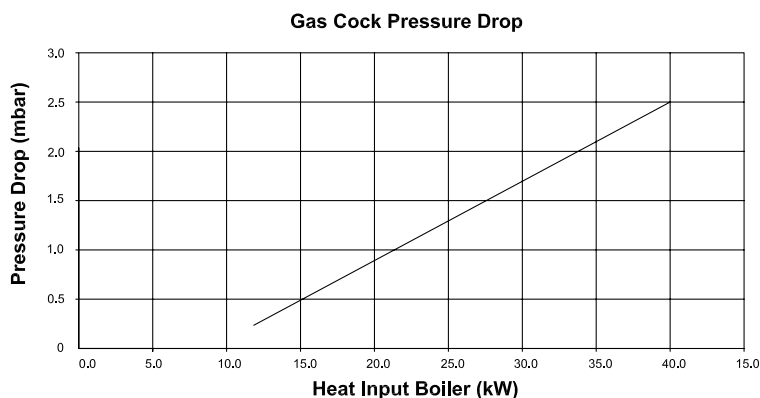


Fig.6

4.7 FLUE SYSTEM

The terminal should be located where dispersal of combustion products is not impeded and with due regard for the damage or discolouration that might occur to building products in the vicinity (section 4.10).

The terminal must not be located in a place where it is likely to cause a nuisance in cold and/or humid weather as water vapour may condense on leaving the flue terminal. The effect of such plumbing must be considered.

The terminal must not be closer than 25 mm (1 inch) to any combustible material for protection of combustibles, refer to BS 5440: Part1.

Plumbing will occur at the terminal so, where possible, terminal positions which could cause a nuisance should be avoided.

The flue must be installed in accordance with the recommendations of BS 5440: Part 1.

IMPORTANT NOTES:

For greater flue lengths see alternative flue instructions. Flue must be positioned in a place not likely to cause a nuisance from plumbing.

IMPORTANT NOTICE: If the flue terminates below a balcony, above the ground, above a flat roof to which people have access, then a suitable **terminal guard** must be fitted if less than 2 metres high.

IMPORTANT:

The following notes are intended for general guidance.

The boiler **MUST** be installed so that the terminal is exposed to external air.

It is important that the position of the terminal allows the free passage of air across it at all times.

Minimum acceptable spacing from the terminal to obstructions and ventilation openings are specified in section 4.10.

Note positions: *Due to the terminal design, installation is possible with clearances less than those specified in BS 5440, Part 1*

NOTE:

The flue must be terminated in a place not likely to cause a nuisance.

A concentric vertical flue kit is available for longer flueing applications (see table 5 page 26).

For further details see vertical flue installation instructions.

4.8 AIR SUPPLY

The following notes are intended for general guidance.

The room sealed fan flued boiler does not require a permanent air vent for combustion air supply.

Where installed in a cupboard or compartment ventilation is not required.

4.9 WATER CIRCULATION (Central heating)

Detailed recommendations are given in BS 6798: 2014 - BSEN12828 - BSEN12831 - BSEN14336 (for smallbore and microbore central heating systems). The following notes are given for general guidance.

4.10 PIPEWORK

Copper tubing to BSEN 1057:1 2006, BSEN 1172, BSEN 1652 and BSEN 1653, is recommended for water pipes. Jointing should be either 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. It should be ensured as far as possible that the appliances 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.

IMPORTANT:

A minimum length of 1 metre of copper pipe MUST be fitted to both the flow and return, as well as the cold mains inlet and the hot water outlet connections from the boiler before connecting to any plastic piping.

The water through the appliance heat exchanger circuit must exceed the min. 2.38 gals/min. (650 L/h) when the burner is firing. It is important to ensure that this rate is achieved when sections of the system are shut off either manually or by automatic controls.

If the volume of circulating water is too low, the boiler water temperature will rise too rapidly. This could cause noise in the system or even cause the safety thermostat to trip.

This appliance is designed to work on a two pipe system as shown in fig.6.

4.11 BOILER INTERLOCK CONTROL

Central heating system controls should be installed to ensure the boiler is switched off when there is no demand for heating, in compliance with Building Regulations. The boiler has its own built in bypass.

If the system has thermostatic radiator valves on all radiators, or two port valves, then a bypass circuit must be fitted with an automatic bypass valve to ensure a flow of water should all valves be in the closed position (fig. 7).

It is important that the system is flushed thoroughly before the appliance is fitted or left to operate (as recommended in BS 7593) in order to maintain an efficiently operating heating system. For replacement installations, the system MUST be flushed with the old boiler insitu, in order to prevent system debris. Once the system has been flushed, an inhibitor (suitable for stainless steel and aluminium heat exchanger) should be added (see section 4.18).

4.12 DRAINING TAP

These must be located in accessible positions to permit the draining of the whole system. The taps must be at least 15 mm nominal size and manufactured in accordance with BS 2879.

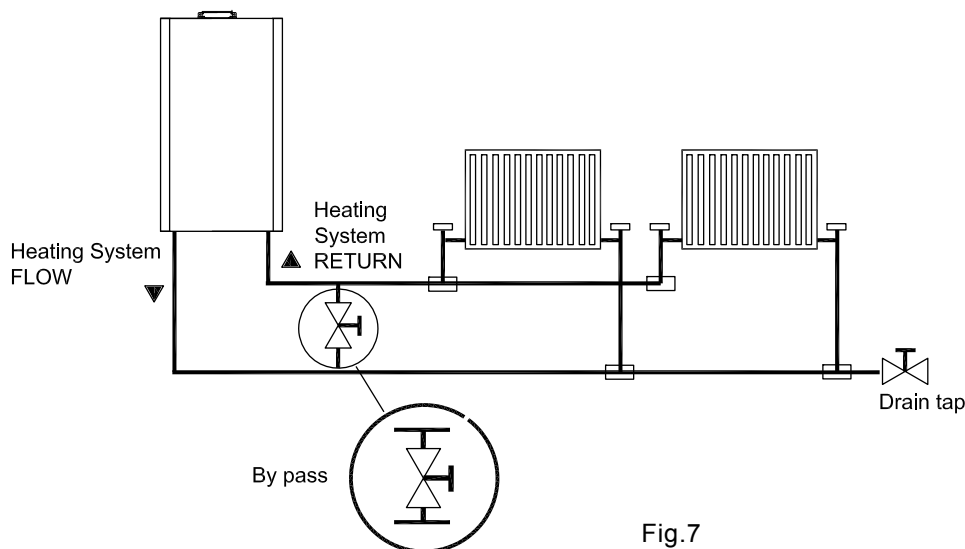


Fig.7

4.13 AIR RELEASE POINTS

These must be fitted at all high points where air will naturally collect, and must be sited to facilitate complete filling of the system.

The appliance has an integral sealed expansion vessel to accommodate the increase of water volume when the system is heated. It can accept up to 7 L of expansion water. If the appliance is connected to a system with an unusually high water content, calculate the total expansion (see table 3) and add additional sealed expansion capacity as appropriate (Fig. 8). In general, modern systems below 7 L should not present any problem.

4.14 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.

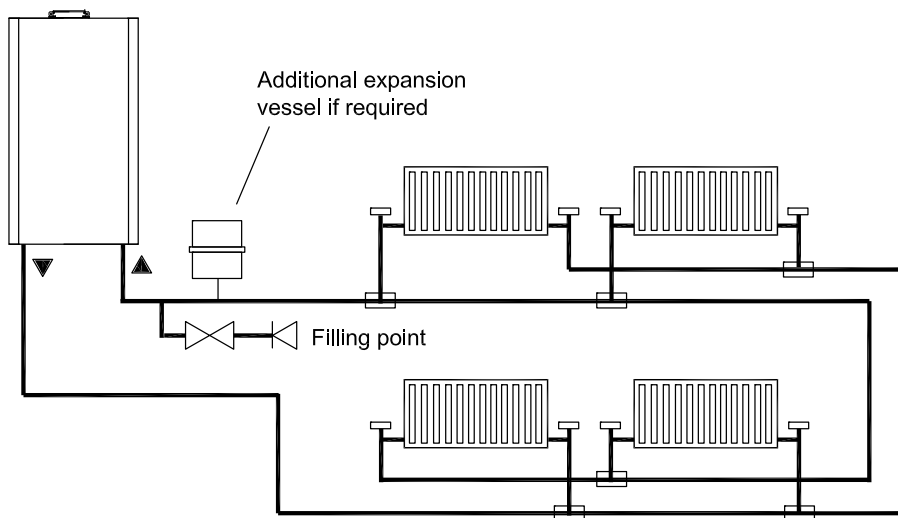


Fig.8

4.15 SIZING OF ADDITIONAL EXPANSION VESSEL

Deduct from the value given in the table the 7 litre vessel supplied.

Safety valve setting (bar)	3.0									
Vessel charge pressure (bar)	0.5				1.0			1.5		
Initial system pressure (bar)	0.5	1.0	1.5	2.0	1.0	1.5	2.0	1.5	2.0	
Total water content of system	EXPANSION VESSEL VOLUME (LITRES)									
Litres										
25	2.1	3.5	6.5	13.7	2.7	4.7	10.3	3.9	8.3	
50	4.2	7.0	12.9	27.5	5.4	9.5	20.6	7.8	16.5	
75	6.3	10.5	19.4	41.3	8.2	14.2	30.9	11.7	24.8	
100	8.3	14.0	25.9	55.1	10.9	19.0	41.2	15.6	33.1	
125	10.4	17.5	32.4	68.9	13.6	23.7	51.5	19.5	41.3	
150	12.5	21.0	38.8	82.6	16.3	28.5	61.8	23.4	49.6	
175	14.6	24.5	45.3	96.4	19.1	33.2	72.1	27.3	57.9	
200	16.7	28.0	51.8	110.2	21.8	38.0	82.4	31.2	66.2	
225	18.7	31.5	58.3	124.0	24.5	42.7	92.7	35.1	74.5	
250	20.8	35.0	64.7	137.7	27.2	47.5	103.0	39.0	82.7	
275	22.9	38.5	71.2	151.5	30.0	52.2	113.3	42.9	91.0	
300	25.0	42.0	77.7	165.3	32.7	57.0	123.6	46.8	99.3	
325	27.0	45.5	84.1	179.1	35.7	61.7	133.9	50.7	107.6	
350	29.1	49.0	90.6	192.8	38.1	66.5	144.2	54.6	115.8	
375	31.2	52.5	97.1	206.6	40.9	71.2	154.5	58.5	124.1	
400	33.3	56.0	103.6	220.4	43.6	76.0	164.8	62.4	132.4	
425	35.4	59.5	110.1	239.2	46.3	80.7	175.1	66.3	140.7	
450	37.5	63.0	116.5	247.9	49.0	85.5	185.4	70.2	148.9	
475	39.6	66.5	123.0	261.7	51.8	90.2	195.7	74.1	157.2	
500	41.6	70.0	125.9	275.5	54.5	95.0	206.0	78.0	165.5	
For system volumes other than those given above, multiply the system volume by the factor across	0.0833	0.140	0.259	0.551	0.109	0.190	0.412	0.156	0.331	

Note: This pressure can be increased up to 1.5 bar to suit high static head situations.

If the capacity of the central heating system should exceed 110 L, an additional vessel should be installed on the return to the combination boiler from the heating system (fig. 7). Guidance on vessel sizing is given (see table "Sizing of additional expansion vessel").

Reference should be made to British Gas Publications. Draining taps should be at least 1/2" in BSP nominal size and be in accordance with BS 2879.

4.16 INSTALLATION TO AN EXISTING CENTRAL HEATING SYSTEM

The combination boiler is designed to operate on a sealed system only. Therefore if the existing system is of the open water type it will have to be modified to comply with BS 6798. Before installing a new combination boiler to an existing system, flush out the old system with a recommended descaling agent.

If the boiler is installed in an existing system any unsuitable additives *MUST* be removed by thorough cleaning, and flushing out the old system with recommended descaling agent.

BS 7593:2006 details the steps necessary

to clean domestic central heating system. Also check pipework and renew any corroded pipework or fittings. Valve glands must be repacked or replaced wherever necessary and any defective controls exchanged.

Debris from the system can damage the boiler and reduce the efficiency. Failure to comply with the guidelines for the use of water treatment with the appliance will invalidate the appliance guarantee and contravene the Building Regulations.

It is recommended that you fit a primary water cleanser to the system. We recommend fitting a filter that will help remove both magnetite and non-magnetic debris.

4.17 WATER TREATMENT

This boiler has a stainless steel heat exchanger, Arca recommend the use of FERNOX or SENTINEL, or other treatment products recognised by Arca which must be used in accordance with the manufacturer's instructions.

4.18 HARD WATER AREAS

If the area of installation is recognised as a hard water area, it is recommended that a suitable water treatment device is installed on the mains supply. The water hardness can be determined by using the standard test paper or by referring to local water authority.

4.19 DOMESTIC WATER

The domestic hot water 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 used for pipework carrying potable water.

Important:

It is important that at installation allowance must be made for the expansion of DHW within the appliance. If the DHW inlet has a back flow prevention device fitted for example a non-return valve or water meter. Then additional measure should be taken in the form of a mini expansion vessel. Fitted in the cold inlet pipe between the back flow prevention device and the boiler.

4.20 ELECTRICAL SUPPLY

Warning: this appliance must be earthed

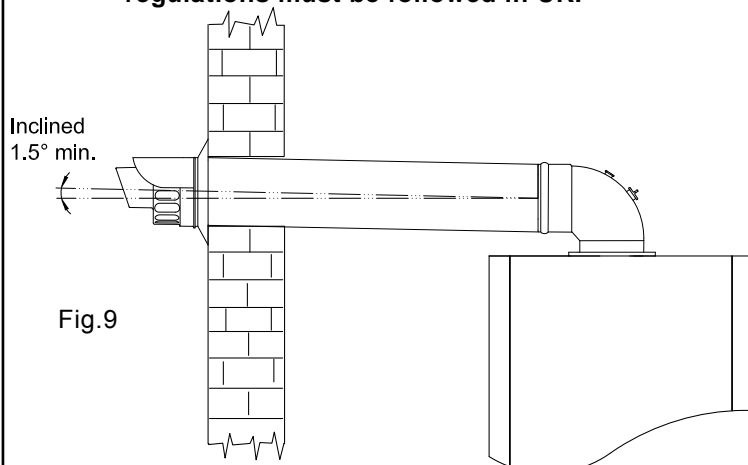
External wiring to the appliance must be carried out by a competent person and be in accordance with the current I.E.E. Regulations and local regulations which apply.

Zantia boiler is supplied with a connection to a 230 V ~ 50 Hz single phase supply.

The supply must be fused at 3 A.

NOTE: The method of connection to the electricity supply MUST facilitate complete electrical isolation of the appliance, by the use of a fused, double pole isolator, having a contact separation of at least 3 mm in all poles. 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.

The current electrical IEE Wiring regulations must be followed in UK.



5 INSTALLATION

5.1 WARNING

It is MOST IMPORTANT that this appliance is installed in a HORIZONTAL POSITION, with the flue air duct passing through the wall. **Make sure the flue is at a 1.5° incline, rising from the boiler with 50 mm. Flue terminal diagram states 1.5° - 25 mm, fall back on flue (fig. 9).**

5.2 DELIVERY

The appliance carton contains:

- Installation instructions, user instructions and Benchmark log book
- Guarantee card.

IMPORTANT NOTES:

This appliance will produce a plume of condensation in cool weather. This is due to the High Efficiency and hence low flue gas temperature of the boiler. A plume management kit is available. (see section 5.7)

5.3 UNPACKING OF BOILER

IMPORTANT:

With regard to the Manual Handling Operations, 1992 Regulations, the following lift operation exceeds the recommended weight for a one man lift.

- Stand the boiler carton upright.
- Open the top of the carton.
- Rest the carton on the floor (keeping the flaps open).
- Turn the carton over with the boiler inside and then pull the carton up away from the boiler.
- Rest the boiler on its back on the floor to prepare it for installation.

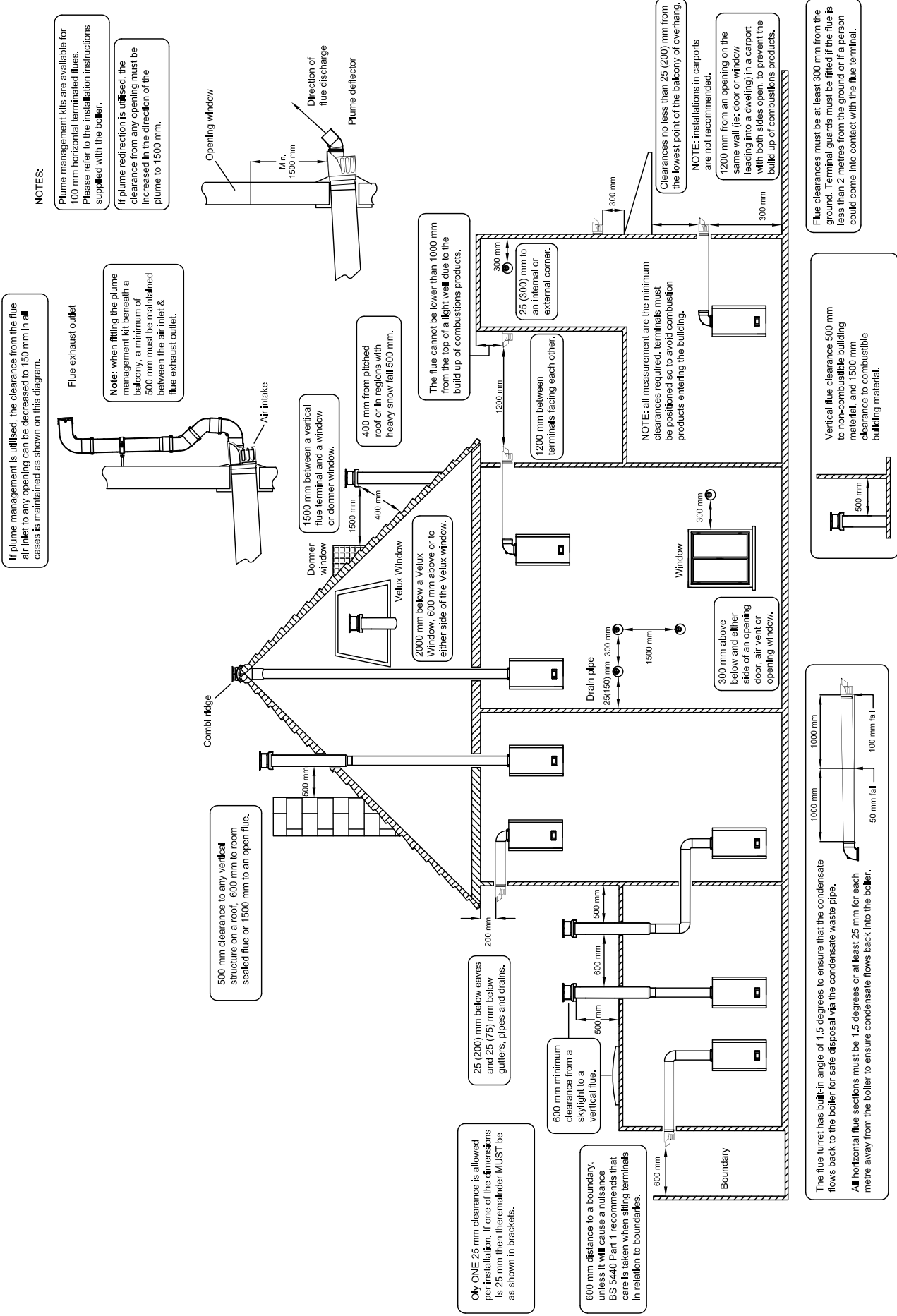
5.4 POSITIONING OF THE BOILER

Unscrew the two lower screws that secure the front panel and pull forward and lift up (fig. 39).

Unscrew the 4 screws that fasten the lower grating on the casing and remove it from the bottom of the casing.

Make sure the casing and screws are put to one side in a safe place.

5.5 FLUE TERMINAL POSITION



5.6 OPTIONAL EXTRAS

HORIZONTAL FLUE KIT BOX CONTAINING (Fig 10):

- 52 - Self-cutting joint securing screw
- 57 - Elbow header
- 59 - Rubber seal Ø 60
- 56 - Rubber seal Ø 100
- 60 - Fumes sample point
- 61 - Flue exhaust duct
- 62 - Air intake duct
- 69 - Air sample point
- 127 - Terminal Rubber wall seal

IMPORTANT: Please lubricate the internal part of the seals before fitting.

Generally speaking, oils and greases are not suitable for the “peroxide -EPDM”, therefore we suggest a correct lubrication using silicon-substances, for instance “Silikon Spray“ (Arexons).

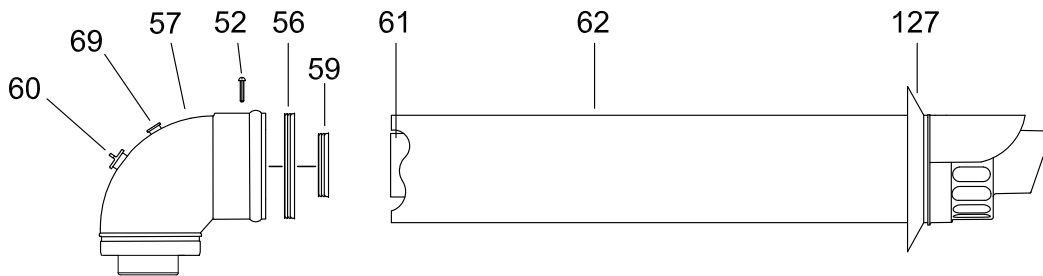


Fig 10

FLUE EXTENSION BOX CONTAINING (Fig. 11):

1000 mm flue extension duct as an extra cost only when requested for side and vertical flue applications.

WARNING: With horizontal concentric flue, the maximum flue length is 8 metres, duct extension can be used with the standard flue (see table “Type flue system”).

- 59 - Rubber seal Ø 60
- 63 - Air intake duct extension
- 64 - Flue exhaust duct extension

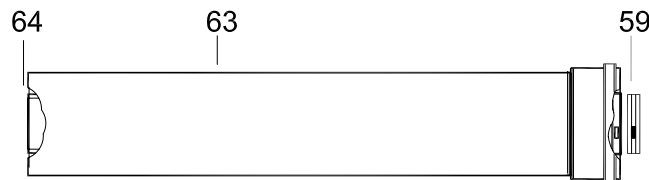


Fig 11

TYPE OF FLUE SYSTEM (All types) - minimum and maximum distance					TABLE
Flue type	C ₁₃		C ₃₃		C ₅₃ ¹
	60/100 (concentric)	80/125 (concentric)	60/100 (concentric)	80/125 (concentric)	80 mm single pipe
Minimum length (m)	0.3 (horizontal length)	0.3 (horizontal length)	1.0 (vertical length)	1.0 (vertical length)	0.5
Maximum length (m)	11.0	30.0	13.0	26.0	60.0
Equivalent length of 45° bend (m)	0.5	1.25	0.5	1.25	1.25
Equivalent length of 90° bend (m)	1.0	2.5	1.0	2.5	2.5

5.7 PLUME MANAGEMENT KIT (Fig 12)

Max 6000 mm flue extension duct as an extra cost only when requested to reduce plumbing nuisance of condensation from 60/100 horizontal concentric flue.

Plume Management Kit	
Maximum Length (mm)	6000
minimum length (mm)	500
Equivalent length of 45° bend (mm)	500
Equivalent length of 90° bend (mm)	1000
The Maximum permitted flue length is measured from the centre line of the flue terminal to the top of the outlet terminal	
IMPORTANT : Max flue length must not exceed 6 m with a horizontal concentric 60/100 flue of 3 m (L)	
Plume Management Kit Part No.	
Part. No.	Description
TER110101 (Fig. 12)	1 metre high plume kit containing: n. 1 terminal bend n. 1 90° elbow bend n. 2 45° bend n. 1 metre 60 M-F flue length n. 1 flue length bracket
CUR110050 (Fig. 12a)	45° flue exhaust deflection bend
CUR110100 (Fig. 12a)	90° flue exhaust deflection bend

IMPORTANT: Please lubricate the internal part of the seals before fitting.

FLUE EXHAUST DEFLECTION BEND (Fig 12a)

Flue exhaust deflection bend are also available. These come in both 45° and 90° degree versions. These bends fit directly onto the flue exhaust terminal to deflect the flue gas plume in an upward or sideways direction. Although they are not substitute for a plume kit, they can be considered useful where condensate plumbing is causing a nuisance or can be used to eliminate condensate collecting on the end of the horizontal flue terminal.

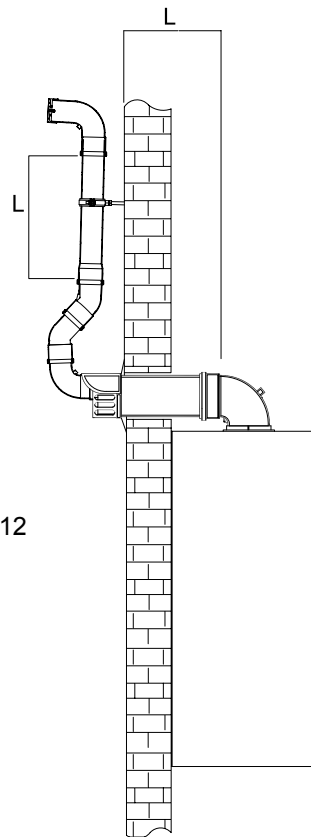


Fig. 12

L+L max 6000 mm
minimum plume kit length 500 mm

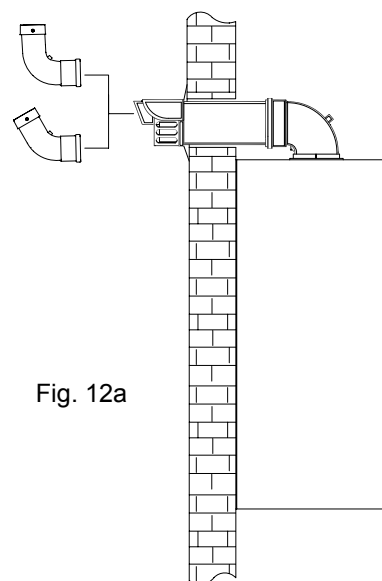


Fig. 12a

5.8 INSTALLING THE APPLIANCE FOR REAR FLUE OUTLET (Fig. 13, 16, 17, 18). FOR APPLIANCE CLEARANCES SEE SECT. 4.4 AND SECT. 4.10

Use adhesive tape to attach the template to the wall, making sure that the centre line is vertical and that the clearance distance is no less than that shown in fig. 13.

- Mark the two holes for the top fixing bolts to fix the boiler on the wall as well as the centre of the flue duct.
- Detach the template from the wall.
- Use a 10 mm dia drill to make the 2 holes. Insert the plastic expansion plugs.
- Cut or core drill a 105 mm dia hole for inserting the flue duct.

Fit the elbow header into the flue flange on the top of the boiler, positioning it towards the required direction (fig 13).

Important: Make sure that the inner 60 mm diameter of the elbow header is inserted fully into the heat exchanger, and the rubber seal is correctly fitted. (Fig 17 item 65)

If using the horizontal flue duct and it is too long it can be shortened. Should it be necessary to cut the flue always cut on right angles and ensure the cut is de-burred.

Note: Add 30 mm to allow for terminal rubber wall seal (fig.10 item 127).

Insert the flue assembly locating it onto the wall.

Lift the boiler on the wall, locating onto the top two fixing bolts. Tighten the two bolts using a spanner to secure to the wall.

Working above the boiler pull the flue exhaust duct towards the boiler in order to engage tube (fig. 18 item 61) into its header.

Position flue into elbow header and push so as to locate inner and outer flue correctly ensuring a good seal is made with O-rings. Tighten the two screws on the flue flange to secure the elbow header in place

Fit the terminal rubber wall seal and if necessary terminal guard.

Extension kits are available to order for flue extension of up to a total overall length of 8 metres (fig.18).

Each extension length extends the pipe by approximately 1000 mm long up to a maximum of seven extensions.

Extensions must be installed with the widened end of the pipe and the tapered end of the flue pipe aimed towards the exhaust terminal.

IMPORTANT:

Inline flue bend - 1000 mm must be deducted from overall length for each 90° bend. Obtuse flue bend - 500 mm must be deducted from overall length for each 135° bend (see table 4).

5.9 INSTALLING THE APPLIANCE FOR SIDE FLUE OUTLET (Fig. 14, 15, 16, 17, 18)

- Attach the template to the wall with adhesive tape, making sure that the centre line is vertical and that the distance from the centre line to the nearest side wall is not less than measurement in fig.14.

- Mark the two fixing bolt securing holes on the wall and extend the axis of the flue duct hole to the side wall ensuring it is horizontal.

- **Make sure flue slopes 1.5° down towards the boiler and that there is a 25 mm fall per metre of the flue length.**

- Trace the centre of the flue duct hole and measure distance from the corner of the wall (fig.14), measure the distance 124 mm between the centre of flue duct hole to the corner.

Detach the template from the wall.

- Use a 10 mm. dia drill to make the 2 holes for the fixing bolts. Insert the plastic expansion plugs. Core drill a 105 mm dia. hole in the side wall for inserting the flue duct.

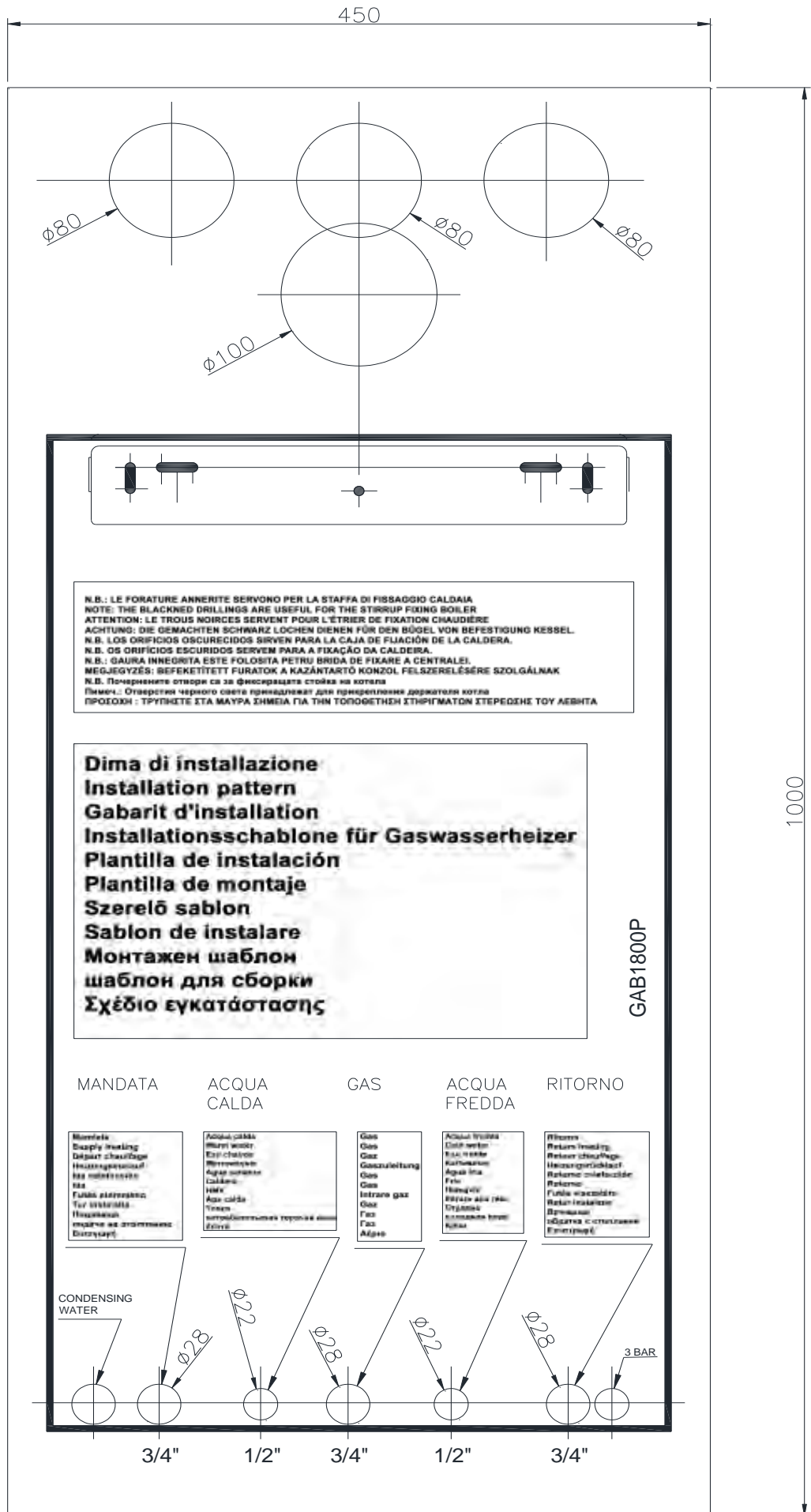
Fit the elbow header into the flue flange on the top of the boiler, positioning it towards the required direction.

Important: Make sure that the inner 60mm diameter of the elbow header is inserted fully into the heat exchanger, and the rubber seal is correctly fitted. (Fig 17 item 65)

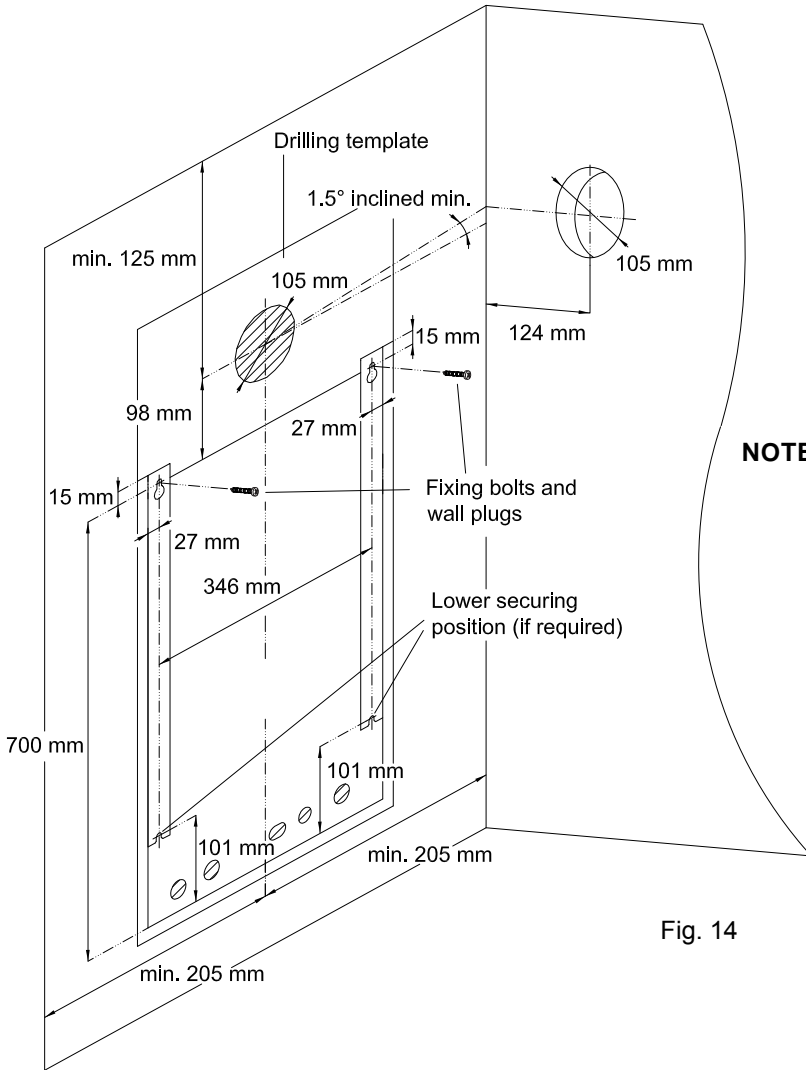
If using the horizontal flue duct and it is too long it can be shortened.

Should it be necessary to cut the flue always cut on right angles and ensure the cut is de-burred.

Note: Add 30 mm to allow for terminal rubber wall seal (fig.10 item 127).



SIDE FLUE OUTLET



NOTE: The position of the appliance must provide minimum side clearances of 5mm as the side panels do not require removing for servicing. However, if the option is preferred to remove the panels then a minimum clearance of 55mm is required.

Fig. 14

All joints must be sealed with the rubber seals supplied.

It is important to put the centering spacer, supplied with the unit, inside between the two pipes, from the side opposite the extension's straight end.

NOTE: A suitable support bracket (flue bracket) is available from Arca and should be used to support the flue length at least every one metre preferably at each joint this bracket should be secured to wall and flue duct.

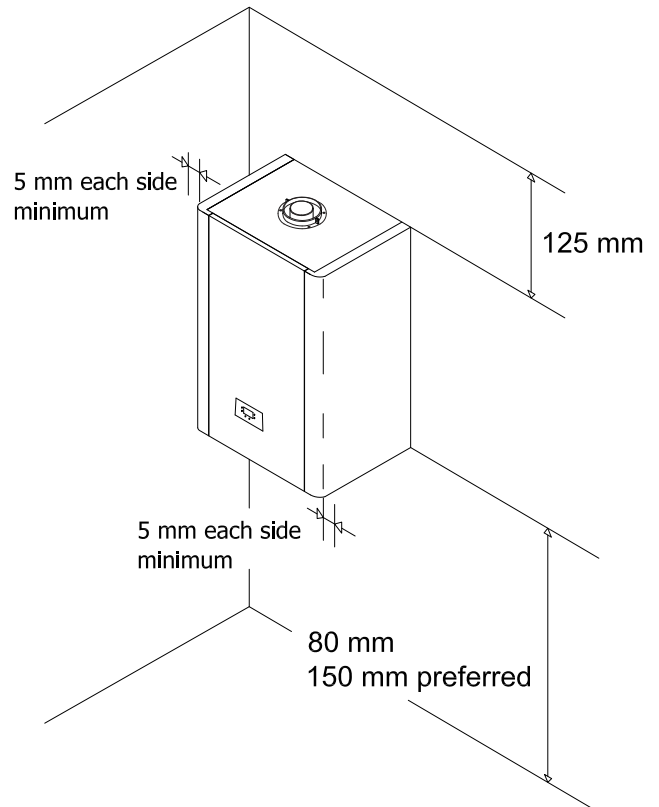


Fig. 15

5.10 COMPLETING HORIZONTAL FLUE INSTALLATION.

Ensure the flue system has been checked for soundness, is stable and secure. Where the horizontal flue terminal passes through the external wall, **it is essential that the flue must be sealed on both in exterior and interior part of the wall, and securing screws fitted.** The terminal rubber must also be fitted (fig. 16-17 item 127).

Must be sealed

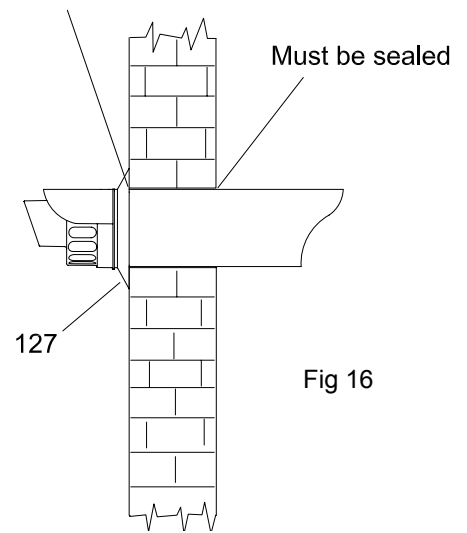


Fig 16

5.11 INTAKE AND EXHAUST TERMINAL COMPONENTS

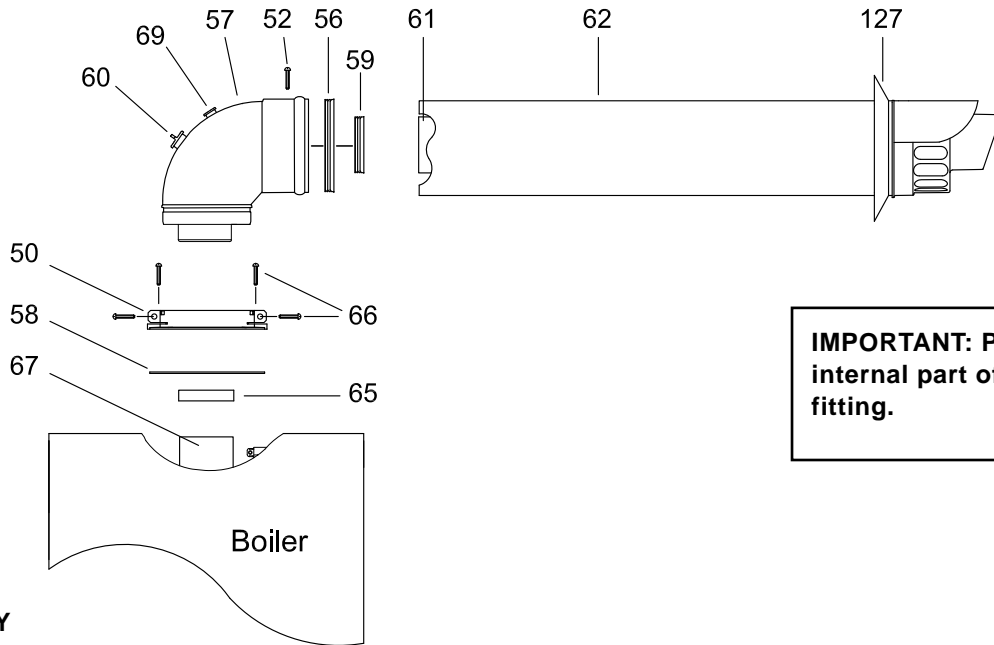


Fig.17

IMPORTANT: Please lubricate the internal part of the seals before fitting.

KEY

- | | | |
|--|--------------------------------|---------------------------------|
| 50 - Flue adapter | 59 - Rubber seal Ø 60 | 66 - Securing screw |
| 52 - Self-cutting joint securing screw | 60 - Fumes sample point | 67 - Flue temperature sensor |
| 56 - Rubber seal Ø 100 | 61 - STD flue exhaust duct | 69 - Air sample point |
| 57 - Elbow header | 62 - Terminal | 127 - Terminal Rubber wall seal |
| 58 - Header gasket | 65 - Flue manifold rubber seal | |

5.12 IN-LINE FLUE BEND AND FLUE EXTENSION

IN-LINE FLUE BEND

Measure the distance between the flue bends or the flue/terminal assembly. The measurements should be taken from the outer edge of the flue and bend (fig. 18).

- 49 - In-line Flue Bend
- 52 - Self-cutting joint securing screw
- 56 - Rubber seal Ø 100
- 59 - Rubber seal Ø 60
- 63 - Air intake duct extension
- 64 - Flue exhaust duct extension

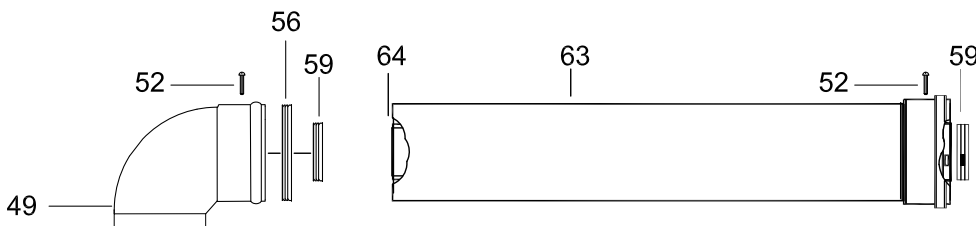


Fig.18

**5.13 VERTICAL FLUE INSTRUCTION ONLY (Fig. 19-20-21)
SEE SECT. 4.10 FOR PERMISSIBLE FLUE POSITION**

IN-LINE FLUE BEND - 1000 mm MUST BE DEDUCTED FROM OVERALL LENGTH FOR EACH 90° BEND
OBTUSE FLUE BEND - 500 mm MUST BE DEDUCTED FROM OVERALL LENGTH FOR EACH 135° BEND.

The vertical flue kit is intended for use where a horizontal flue outlet is not possible or desired. The vertical flue can be used either with a flat roof or a pitched roof (maximum pitch 60°). Where a straight vertical flue is not possible or desired, an offset vertical flue can be used in conjunction with a side horizontal flue extension piece and in-line 135°/90° flue bend (fig. 19).

IMPORTANT NOTES : For greater flue length see twin flue or concentric 80/125 flue instructions

Proceed with installation as detailed in section 5 ignoring all references to horizontal flue installations. Use adhesive tape to attach the template to the wall, making sure that the centre line is vertical and that the flue centre line is virtually below the point at which the flue will exit the roof.

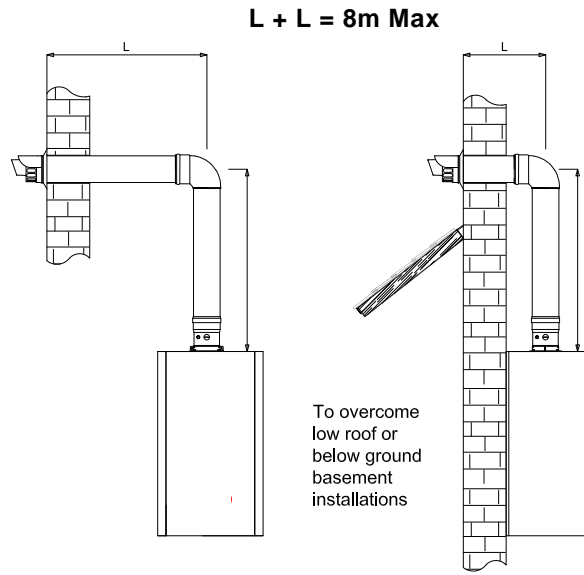


Fig. 19

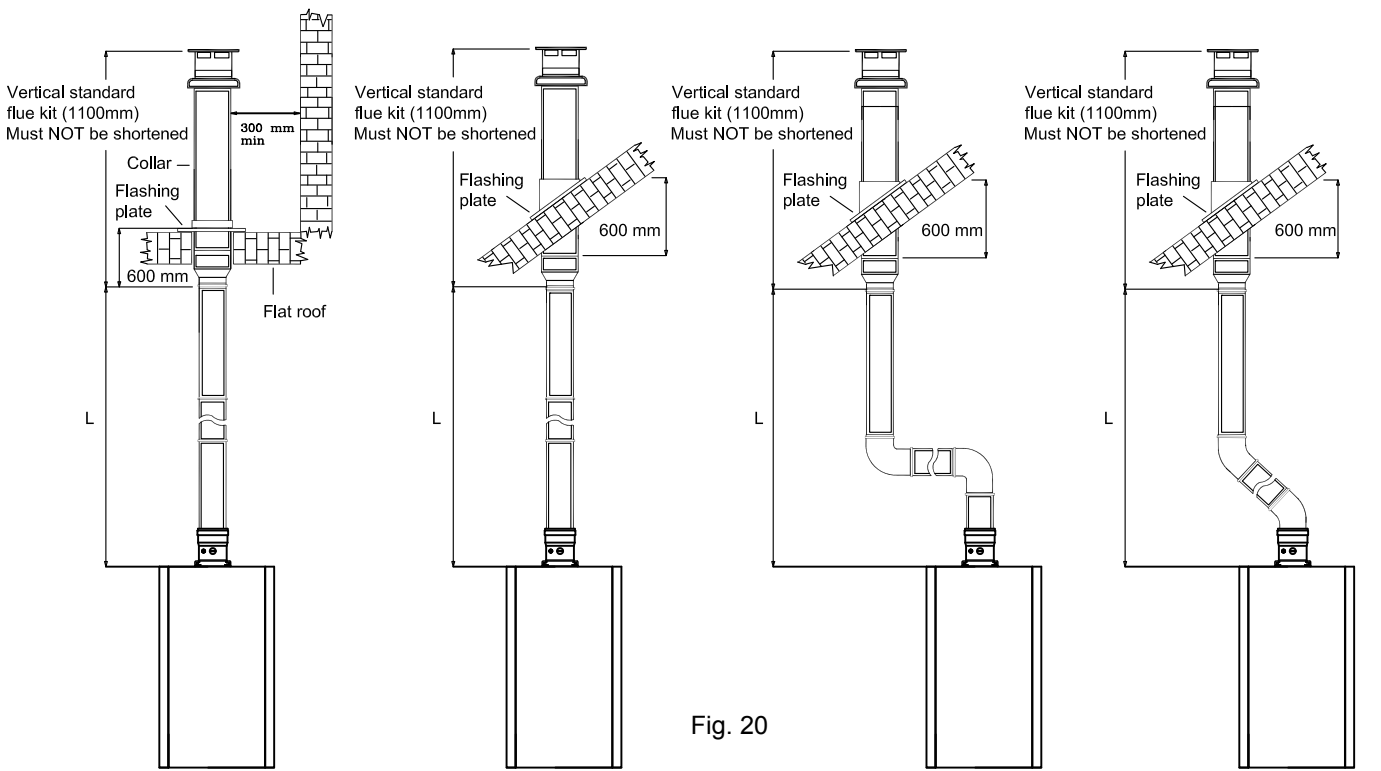


Fig. 20

Straight Flue
L = 12 m Max
plus Terminal

Straight Flue
L = 12.0 m Max
plus Terminal

Offset Flue
L = 10 m Max
plus 2 bend 90°
and Terminal

Offset Flue
L = 11 m Max
plus 2 bend 45°
and Terminal

- Ensure that the maximum permissible flue length is not exceeded (fig. 20 and see table 5).
- Mark the two wall fixing bolt holes
- Detach the template from the wall.
- Use a 10 mm dia. drill to make the 2 holes.
- Insert plastic expansion plug.
- Screw in the two coach bolts.
- Position the flue sample point starter (straight flue header which must be fitted) and tighten the two screws on the flue flange (fig. 22 item 66),

and ensure that the gasket is correctly fitted.

Important: Make sure that the inner 60 mm diameter of the straight flue header is inserted fully into the heat exchanger, and the rubber seal is correctly fitted. (Fig 22 item 65)

Cut a 105 mm diameter hole through the ceiling and/or roof, at the point previously marked.

Fit a roof flashing slate to the roof, available from Arca. Insert the Vertical Flue terminal assembly through the flashing slate from the outside.

Lift the boiler on the wall, locating onto the top two fixing bolts. Tighten the two bolts using a spanner to secure to the wall.

Measure the vertical distance between the top of the flue and the bottom of the flue terminal assembly (fig. 21). The measurements should be taken from the outer diameter of the flue.

NOTE: Where this length does not match any standard combination of the extensions, only the extension can be cut to the required length (fig. 23).

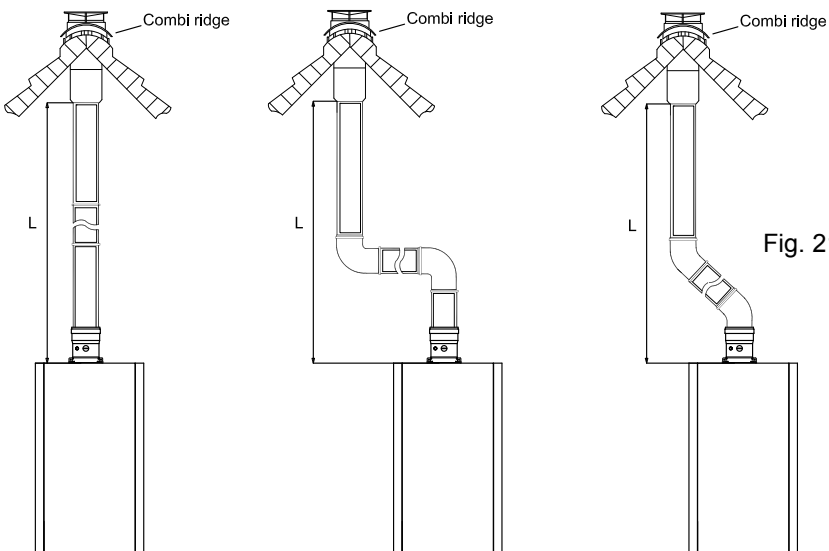
When cutting both inner and outer ducts of the extension, always cut on spigot side, and they must be de-burred.

Starting at the appliance end, assemble the extension duct sections, making each inner and outer (flue) joint by inserting the spigot end into the socket end of the next tube, making sure the seal rings are correctly located (fig. 22). Make sure that the entire flue is adequately supported. Use at least one bracket for each extension used.

Ensure that all inner flue connections have a good fit/seal, and that the space clips in each extension are correctly positioned.

ACCESSORIES CONCENTRIC FLUE 60/100 EXTRAS:

Part. No.	Description
COL0160050	Straight flue header / sample point 60/100
PRFE	Flue Extension 60/100 L1000
PR45FBI	45° bend 60/100
PR90FBI	90° Elbow bend 60/100
PR5023016	Horizontal terminal 60/100
TER110200	Vertical flue Terminal
TEG060050	Flashing Sleeve/Slate



Straight Flue
L = 12 m Max
plus Combi ridge

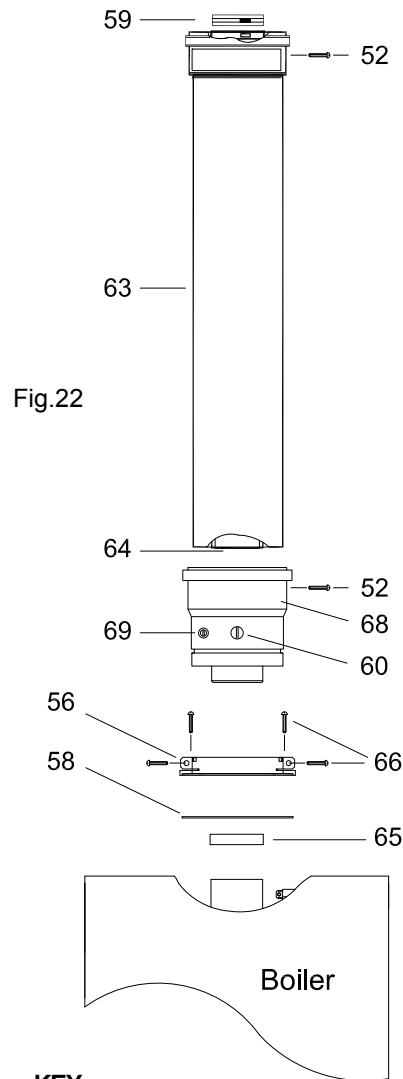
Offset Flue
L = 12 m Max
plus 2 bend 90°
and Combi ridge

Offset Flue
L = 11 m Max
plus 2 bend 45°
and Combi ridge

Fig.23



Cut Flue extension



KEY

- 52 - Self-cutting joint securing screw
- 56 - Flue adapter
- 58 - Header gasket
- 59 - Rubber seal Ø 60
- 60 - Fumes sample point
- 63 - Flue extension
- 64 - Flue exhaust duct extension
- 65 - Flue manifold rubber seal
- 66 - Securing screw
- 68 - Flue starter
- 69 - Air sample point

IMPORTANT: Please lubricate the internal part of the seals before fitting.

5.14 INSTALLATION INSTRUCTIONS FOR TWIN FLUE PIPE (ECCENTRIC FLUE DUCT SYSTEM)

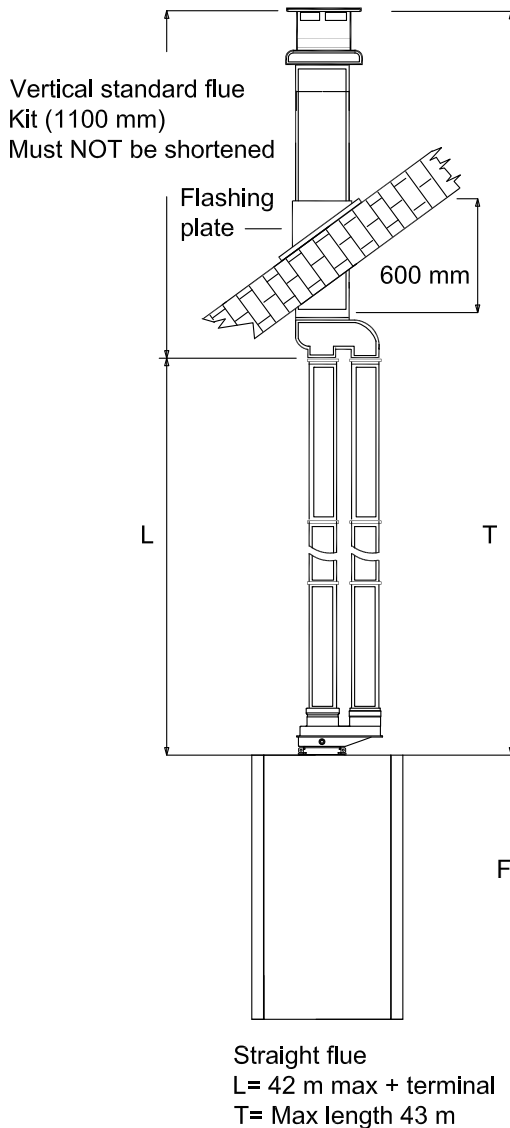


Fig. 24

IMPORTANT: Please, lubricate the internal part of the seals before fitting.

IMPORTANT:

These instructions must be read in conjunction with the main installation and servicing instructions.

As with all flues the kits must be installed taking due account of the current issue of BS 5440 parts 1 & 2 and timber frame housing DM2 is referenced to the Institute of Gas Engineers Document IGE/UP/7.

Also note that the requirements will vary depending upon the kit being installed. Guidance is provided but unless otherwise stated, always comply with the recommendations of the relevant codes of practice.

Part. No	Description
SDO160050	Twin flue header F80/F80
PRO110200	Straight pipe L.1000 80
CUR110150	90° elbow bend 80
CUR110200	45° bend 80
GRI110050	Air inlet terminal 80
GRI110100	Exhaust terminal 80
TER060110	Vertical eccentric flue Terminal

5.15 TWIN FLUE INSTRUCTIONS

This part of the installation manual covers the installation and fixing instructions of the twin flue eccentric flue duct systems only.

When ordering twin flue it must be stated for HE 12/20/25/30/35 C range.

Typical installation procedures are illustrated by the drawing (fig.24).

Remove the front panel of the case (sect.8.1). Unscrew the screws on the flue adaptor.

Make sure that the heat exchanger rubber seal is located, and lubricate the internal part of the seal before assembly.

Locate the header gasket on the twin flue header and push into the flue adaptor making sure that the inner plastic exhaust locates firmly in the outlet spigot of the heat exchanger, and screw the securing screws that secure the twin flue header on to the boiler.

Locate the 2 x 80 mm O-rings in the twin flue header and lubricate the internal part of the seal before assembly to ensure an easy snug fit.

Measurements and bends must be calculated correctly to ensure the maximum flue length is not exceeded.

All located O-rings must be lubricated with a silicone grease to ensure a snug fit.

NOTE: Exhaust flue must slope 1.5° down towards the boiler 25 mm/m fall per metre of flue length.

Spacing Clips

Spacing Clips are available on request should they be required.

NOTE: for eccentric vertical flue a 125 mm (5 in) diameter flashing plate will be required.

IMPORTANT:
 - See fig. 6 for terminal clearances.

IMPORTANT NOTICE:
 - Inlet and exhaust terminals must never be installed on opposite walls of the building (PrEN 483).
 - If the flue terminates less than 2 m above a balcony, above the ground, or above a flat roof to which people have access, then a suitable terminal guard must be fitted.
 - Fit only recommended flue terminal guard by securing concentrically around terminal with screws.

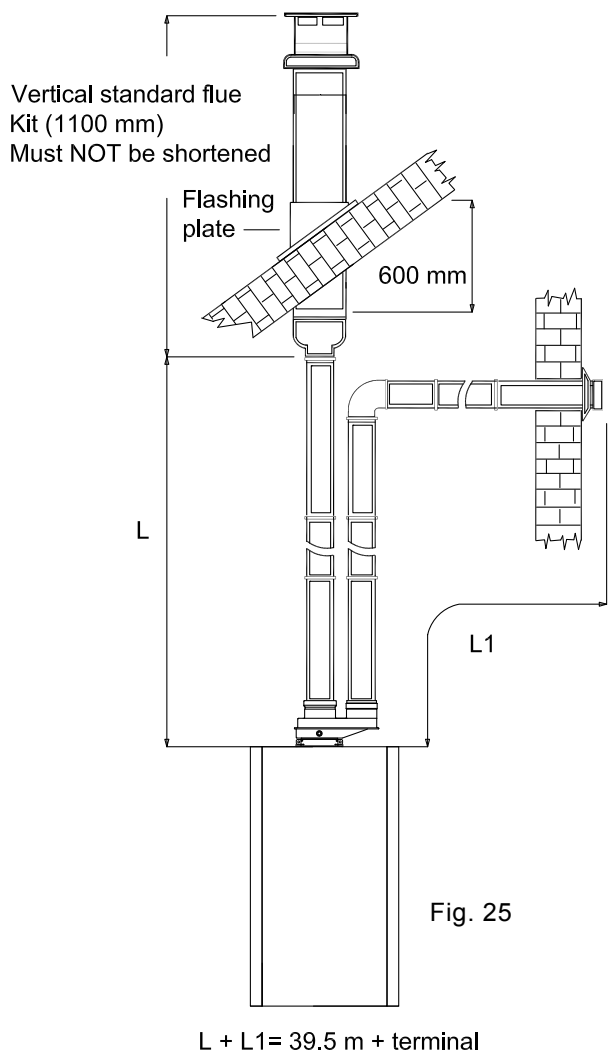


Fig. 25

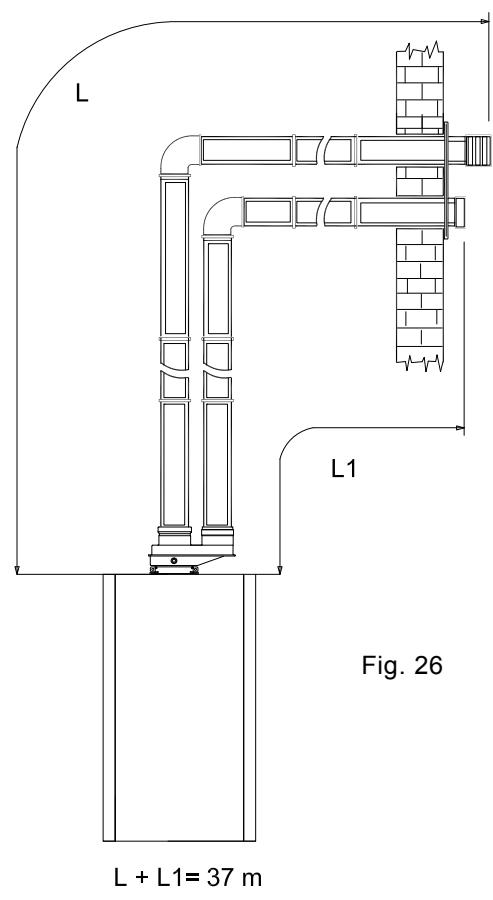


Fig. 26

5.16 Exhaust/suction system with concentric pipes for flat or sloping roofs. Extensions with two separate pipes (fig. 24).

Maximum distance: $T = L = 21 + 21 = 42$ metres + Terminal
 Minimum distance: $L = 0.5 + 0.5 = 1$ metres + Terminal

Exhaust terminal must not be cut.

NOTE:

- If bends are used in the exhaust flue then horizontal sections must be avoided and there must be a 1.5° slope
- Towards the boiler 25 mm fall per metre.

5.17 Exhaust/suction system with with two separate rated 80 dia. pipes exhaust on flat or sloping roof, suction from vertical wall (fig. 25).

Maximum distance $D = L + L1 = 39.5$ metres + Terminal
 Minimum total length = 2 metres

NOTE: Exhaust flue must slope 1.5° down towards the boiler 25 mm fall per metre.

5.18 Exhaust/suction system with two separate pipes through a single vertical wall (fig. 26).

Maximum distance: $D = L + L1 = 37$ metres
 Minimum distance: $D = L + L1 = 1$ metres
 Min distance between pipe 50 mm.

IMPORTANT: Please lubricate the internal part of the seals before fitting.

5.19 INSTALLATION INSTRUCTIONS FOR CONCENTRIC 80/125 FLUE SYSTEM

The vertical 80/125 flue kit is intended for use where a horizontal 60/100 flue outlet is not possible or desired. The vertical flue can be installed on either a flat roof or a pitched roof (maximum pitch 60°). Where a straight vertical flue is not possible or desired, an offset vertical flue can be used in conjunction with a side horizontal flue extension piece and an inline 135°/90° flue bend (fig. 27).

IMPORTANT:

- See fig. 6 for terminal clearances.

IMPORTANT NOTICE:

When using our vertical flue kit the 125 mm x 100 reducer is supplied complete with the vertical terminal simply remove this and fix it into the straight flue header (which must be fitted) on the top of the boiler.

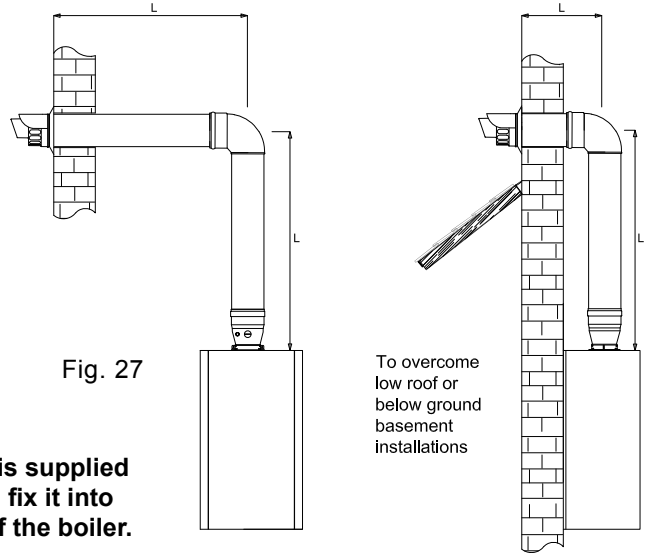
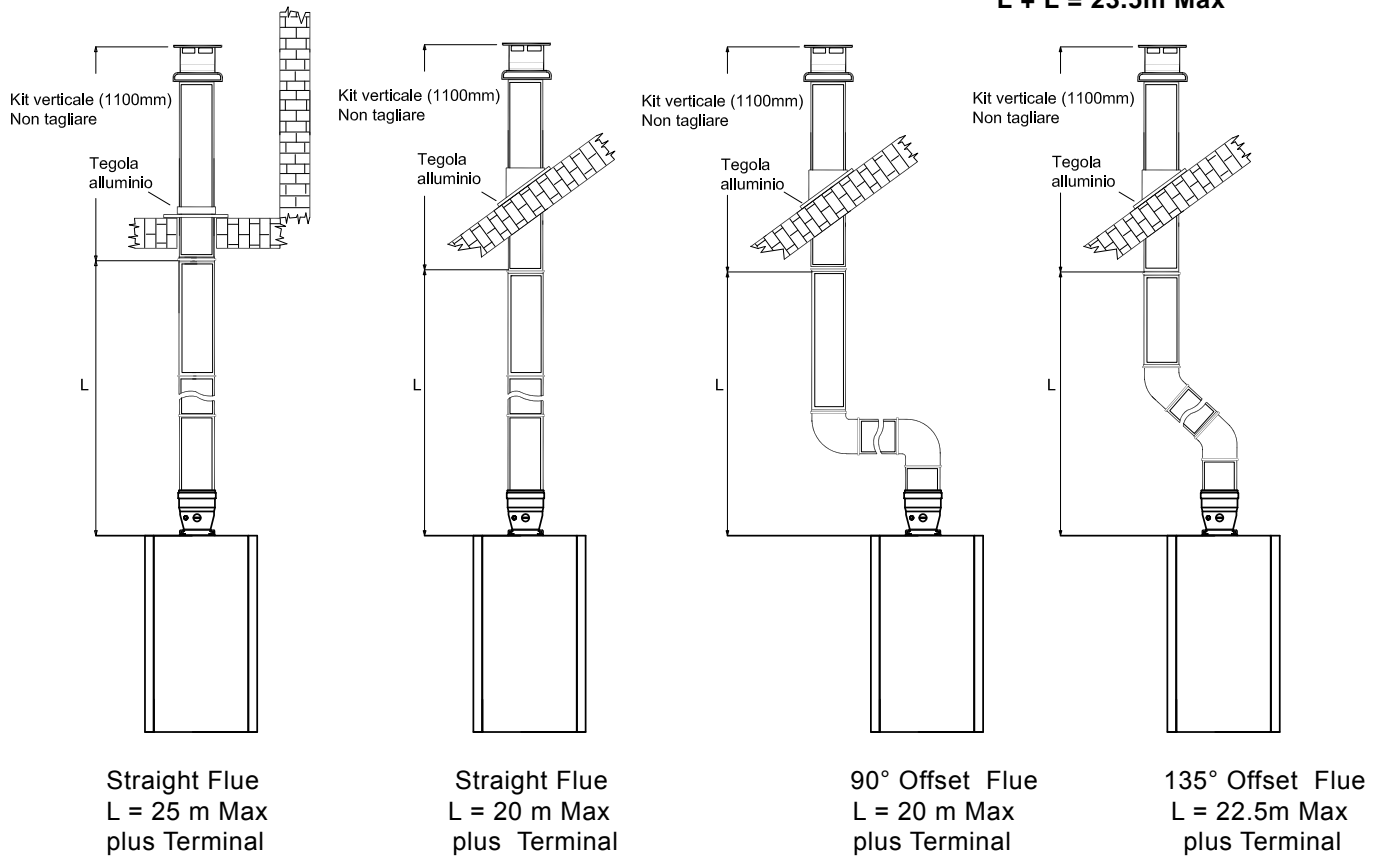


Fig. 27

$L + L = 23.5m \text{ Max}$



Straight Flue
L = 25 m Max
plus Terminal

Straight Flue
L = 20 m Max
plus Terminal

90° Offset Flue
L = 20 m Max
plus Terminal

135° Offset Flue
L = 22.5m Max
plus Terminal

NOTE : If using Flue arrangement in fig. 27 then the 125x100 Flue reducer must be purchased separately.

TABLE 8

Part No	Description
COL160050	Straight flue header / sample point 60/100
PRO110300	Flue Extension 80/125 L1000
RID110050	125/80 to 100/60 Flue reducer
CUR110250	45° flue bend 80/125
CUR110300	90° elbow flue bend 80/125
TER010050	Horizontal Flue Terminal 80/125
TER110200	Vertical Flue Terminal 80/125
TEG060051	Flashing sleeve/slate

IMPORTANT: Please lubricate the internal part of the seals before fitting.

5.20 ASSEMBLE BOILER

5.21 Fitting valve pack

Remove plastic caps from boiler connection and fit valves as per fig. 29 using the washers provided.

It is recommended fitting the valve pack before installing the boiler on the wall.

5.22 GAS CONNECTION (Fig. 29)

A minimum working gas pressure of 20 mbar (8 in w.g.) must be available at the boiler inlet at full flow rate (37 mbar for propane).

(Also see section 4.6)

Fit the gas service cock to the boiler via the union nut and connect gas pipe. Do not over tighten and use another spanner as a counter force to avoid straining internal connections. Important consult (sect 4.6).

5.23 CENTRAL HEATING CONNECTION (Fig. 29)

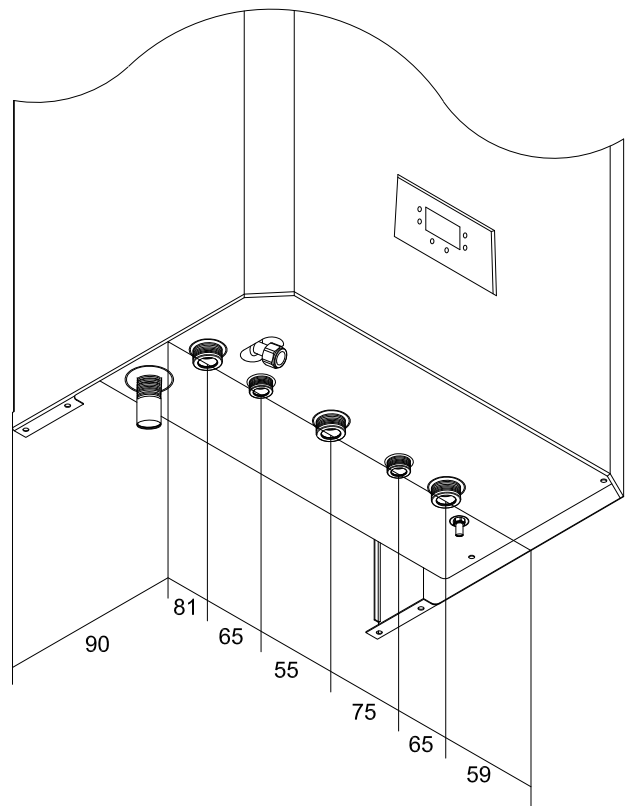
Before any central heating connections are made to the boiler all system valves should be opened and the system thoroughly flushed out with cold water.

- Connect the central heating return pipe to the isolating cock.
- Connect the central heating flow pipe to the isolating cock marked CHF.
- Pipe dimensions and positions are marked on template supplied (fig. 30).

5.24 DOMESTIC HOT WATER CONNECTION (Fig. 29)

The domestic hot water circuit does not need a safety valve but it is essential to ensure that the pressure of the cold water supply does not exceed 10 bar. If in doubt it is advisable to install a pressure reducing valve. The minimum pressure needed to operate the domestic hot water system is 0.5 bar with a flow of approx 3 L per min. Flush out all foreign matter from the supply pipe before and after connecting to the appliance.

- Connect the 15 mm. cold water pipe to the appliance inlet.
- Connect the 15 mm. hot water pipe to the appliance outlet.



5.25 POSITION OF WATER/GAS CONNECTIONS

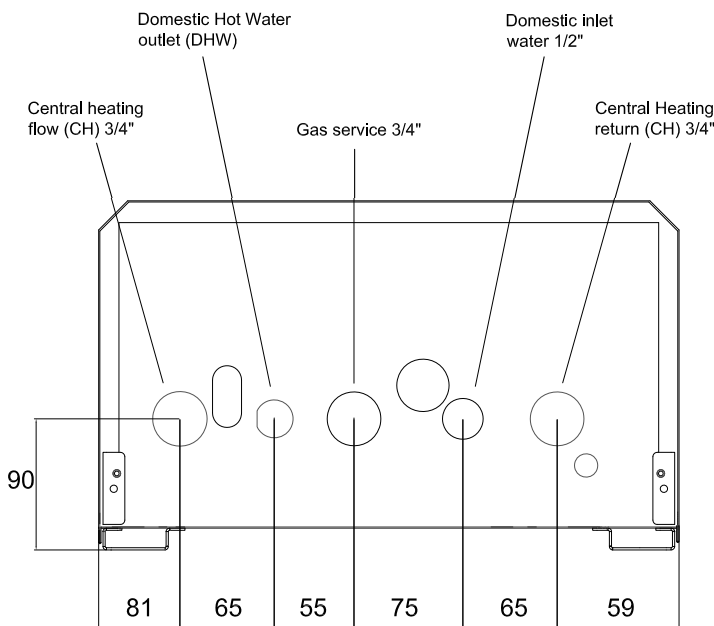


Fig. 30

5.26 SAFETY VALVE DISCHARGE

The safety valve is located to the rear (15 mm copper) to permit a discharge pipe to be connected. When connecting ensure the discharge pipe does not restrict access. The discharge should terminate facing downward exterior to the building in a position where discharging (possibly boiling water & steam) will not create danger or nuisance, and not to cause damage to electrical components or wiring. The discharge must not be over an entrance or a window or any other type of access.

5.27 CONDENSATE DRAIN CONNECTION

The condensate drain connection is a flexible 3/4" pipe and is therefore adjustable Fig. 29.

The drain pipe should have a fall of at least 2.5° away from the boiler. Condensate should, if possible be discharged into the household internal drainage system.

If this is not practicable, discharge can be allowed into the external household drains or a purpose designed soak away.

It is recommended that any external condensate drain pipe is insulated and also must be of 40 mm (1 1/2") diameter, through the outside wall to prevent freezing in adverse weather conditions. It is not necessary to provide air breaks or extra traps in discharge pipe as there is already a 125 mm high trap inside the boiler.

Fitting an extra trap may cause the boiler siphon to work incorrectly.

Refer to BS5546 or BS6798 for advice on disposal of boiler condensate.

Notes: ALL EXTERNAL PIPE RUNS MUST BE IN ACCORDANCE WITH BS 6798

1 - INTERNAL TO SINK WASTE UPSTREAM OF SINK WASTE TRAP

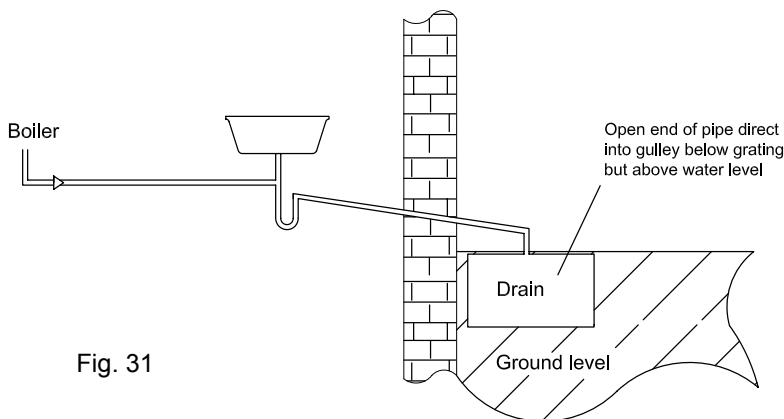


Fig. 31

2 - INTERNAL CONNECTION TO SOIL VENT STACK

Make connection to SVP using a solvent welded saddle.

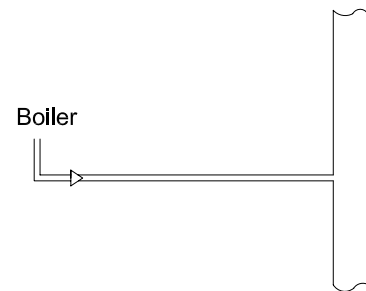


Fig. 32

3 - TERMINATION TO SOAK AWAY

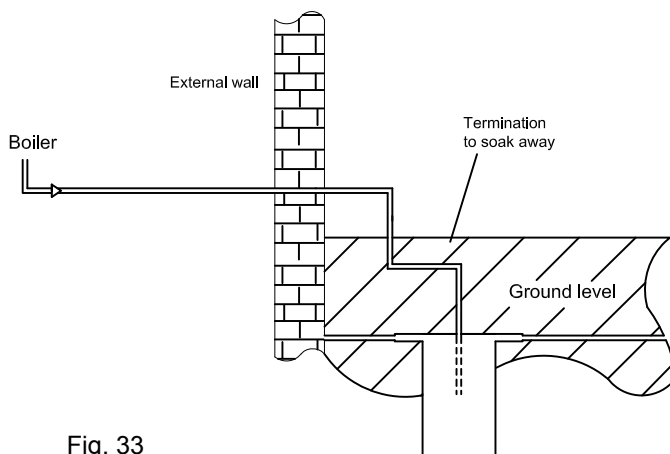


Fig. 33

4 - TERMINATION TO DRAIN / GULLY

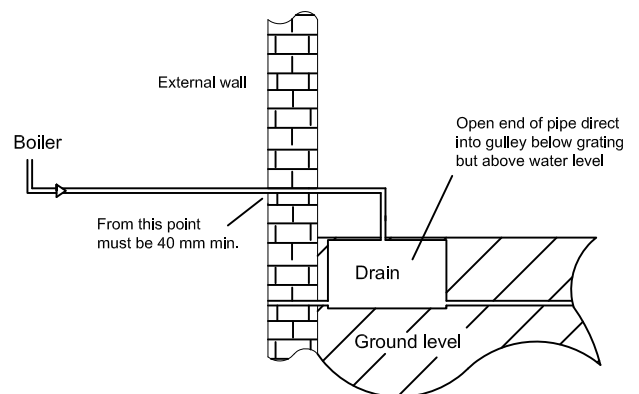


Fig. 34

5.28 EXTERNAL CONTROLS

IMPORTANT:

Electricity supply must be as specified in clause (sect. 4.22).

- When controls external to the appliance are required, design of the external electrical circuits should be undertaken by a competent person. In accordance with the IEE wiring regulations.

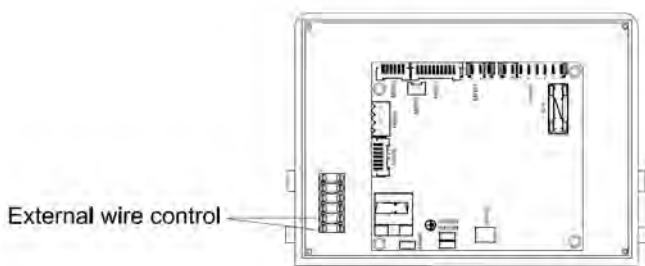
It is essential that all external controls are VOLT FREE.

Factory fitted internal wiring must not be disturbed when wiring external controls.

- To gain access to the electrical box remove the front panel of the case as described in clauses sect. 8.2.

You can slide towards the top the instrument panel box and push the retaining latches and remove the instrument panel (sect. 8.24).

- Heat resistant flexible cable is fitted between the isolator and the terminal block which is a 3 core cable of 0.75 mm² (24x0,2 mm) to BS 6500.



Make sure all wires to the appliance are routed away from sharp edges and hot surfaces.

The cable must be fastened with its cord anchorage and connected so that it should make the cable slip from the anchorage until the current carrying conductors

become taut before the earthing conductor. Securely tighten all terminal screws and arrange the cable with slack between the cord anchorage and the terminal block.

WARNING:

If the supply cord is damaged, it must be replaced by a service engineer (supply cord available from Arca).

5.29 OUTDOOR SENSOR

For use, consult Outdoor Sensor instructions.

6 COMMISSIONING

Each boiler has been through a rigorous operational testing procedure at our factory and should not require any further adjustment, if you are not the installer but just commissioning this boiler check that the boiler has been installed in accordance with these instructions, and the integrity of the flue system and the flue seals, as described in the flue installation section.

IMPORTANT:

Also refer to the commissioning check list attached to the front of the boiler.

6.1 GAS SUPPLY INSTALLATION

Inspect the entire installation including the gas meter, test for soundness and purge, all as described in BS 6891.

In Ireland refer to IS 813:2002.

6.2 ELECTRICAL INSTALLATION

Preliminary electrical systems checks to ensure electrical safety shall be carried out by a competent person.

ALWAYS carry out the preliminary electrical system checks:

i.e. earth continuity, polarity, resistance to earth and short circuit, using a suitable test meter.

6.3 INITIAL FILLING OF THE SYSTEM

Open central heating flow and return valves Unscrew the cap on automatic air release valve positioned on the top of the pump housing one full turn (leave open permanently).

- Close all air release taps on the central heating system. Press the info button to display the current pressure (code E08 will display if the pressure is nil/too low).
- Gradually open stopcock at the filling point connection to the central heating system until water is heard to flow.

- Starting with the lowest radiator open each air release tap in turn. Close when the water is clear, free of bubbles and flows out. In the same way release air from any high points in the pipework.
- Continue filling the system until 1.5 bar register on digital display. Press the ESC button once again to return to the main screen.

Then turn off the filling points stopcock.

- Inspect the system for water soundness and remedy any leaks discovered.

6.4 SETTING THE HEATING SYSTEM DESIGN PRESSURE

The design pressure must be a min. 1bar and max. 1.5 bar. These figures are read on the digital display by pressing the INFO button.

The actual reading should ideally be 1 bar + the height in metres to the highest point of the system above the base of the appliance (up to max of 1.5 bar).

N.B.: The safety valve is set to lift at 3 bar (30 m/42.5 psi).

To lower the system pressure to the required value unscrew the drain point (fig. 36) or drain on the heating circuit.

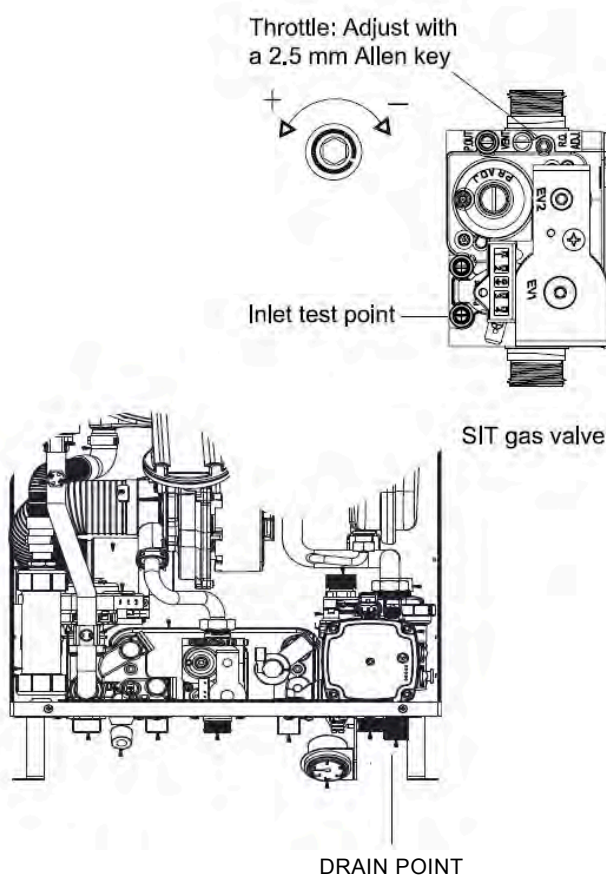


Fig. 36

6.5 FILLING THE HOT WATER SYSTEM

Close all hot water draw-off taps. Open the cold water inlet cock. Slowly open each draw-off tap until clear water is discharged.

6.6 LIGHTING THE BOILER

Before lighting the boiler make sure that the heating circuit flow and return valves are open and also that the cold water input cock is open.

- If external controls are installed (E.g. time clock and thermostat) make sure that they are calling for heat.
- Select winter function, the winter icon in digital display will be flashing (item 3 fig. 2).
- To select the minimum heating temperature press the radiator button.

IMPORTANT:

Before lighting the boiler select the minimum central heating temperature. This must be left at minimum for approx 5 mins to purge air safely from the boiler.

Fig. 35

- To select the minimum heating temperature press the radiator button.
- Press arrow up and arrow down buttons to adjust.
- The digital display shows the current set temperature in central heating.
- After a few seconds the digital display shows the central heating temperature in demand (CH icon flashing, item 3 fig. 2).
- The fan starts and after a few seconds or so the digital led display will show that the ignition has commenced.

- The ignition control will automatically make three attempts to start, if it doesn't start this may be due to air in the gas supply line. If the burner fails to light, the digital led display and fan will stop, and the display will show the lockout code (E01 depicts flame failure).
- If necessary push the boiler Reset button (item 2 fig.1) and the boiler will restart automatically.
- After the boiler has lit, allow to warm at minimum temperature setting to purge any air from the system.
- Once the system has been purged of air, set the heating temperature to the desired setting.

Anti-clockwise to increase CO₂.
 Clockwise to decrease CO₂.
 After any new regulation wait to stabilise for about one minute.
 Replace the front cover.

TYPE OF GAS	CO ₂ %
NAT GAS	9.0 (+0.5 / -0.5)
LPG	10.5 (+0.5 / -0.5)

6.8 CHECK THE GAS PRESSURE

Check the gas mains pressure at the gas valve inlet pressure test point (fig.35) with the boiler operating at full rate.

Check with the Local Gas supplier if the pressure differs significantly from 20 mbar G20 (natural gas), 37 mbar G31 (propane). With leak detection fluid test for gas tightness of all gas components and joints.

IMPORTANT:
The Gas Valve Throttle adjuster is required to be sealed with tamper proof paint after adjustment (fig. 35).

6.9 COMBUSTION CHECK

Check all gas carrying components along with, the combustion of the appliance which should be checked as follows.

Remove the front panel of the appliance.

Ensure the boiler and external controls are calling for heat. Turn on the electrical supply. open the hot water tap at maximum flow rate. Wait at least five minutes or until the unit has reached its operating temperature.

Unscrew the test sample screw on the boiler elbow bend (item 60 fig. 10). Measure the level of CO₂. Check the reading against the corresponding value in table 9.

It is essential that this test is repeated with the casing on as this will check the integrity of the flue.

If adjustment proves necessary then proceed as follows.

IMPORTANT: Any adjustment to the gas valve should only be carried out by a qualified person.

Referring to the table 9, adjust the maximum level of CO₂ with the Throttle using a 2.5 mm hex on the gas valve (fig.35).

IMPORTANT: Do not insert the analyser probe into the sample point immediately or leave in long periods. This will prevent saturation of the analyser.

During the calibration function the combustion ratio may increase for a short time while the boiler performance is optimised.

The person carrying out a combustion measurement should have been assessed as competent in the use of a flue gas analyser.

The flue gas analyser used should be one meeting the requirements of BS7927 or BS-EN50379-3 and be calibrated in accordance with the analyser manufacturer's requirements.

ELECTRODES POSITION

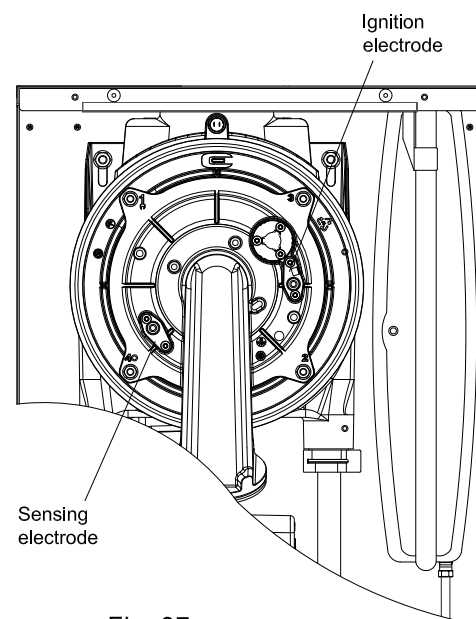


Fig. 37

6.10 CHECKING THE FLUE SYSTEM

The flue system should be visually checked for soundness. Check all connections and fixings are secure and tight.

6.11 CHECKING THE HEATING THERMOSTAT

Allow the system to warm up and then select the C.H thermostat to ensure the main burner modulates from "high" to "low" and "low" to "off" and vice versa (scale range covers approx. 35 °C - 80 °C, sec 1.5 key 5 to set heating temperatures).

6.12 TESTING AND REGULATING THE DOMESTIC HOT WATER SYSTEM FLOW AND CHECK THE OPERATIONAL (WORKING) INLET PRESSURE

Set up the boiler to operate at maximum rate by opening the hot tap to maximum flow. With the boiler operating at the maximum rate check the operational dynamic (working) gas pressure test complies with the requirements.

Ensure that this inlet pressure can be obtained with all other gas appliances in the property working.

Put the appliance in summer position (item 1 fig. 1).

- Open a domestic hot water tap (preferably the bath tap). Ensure the cold water inlet stopcock is open and the DHW is set at maximum, press the arrow up (item 3 fig. 1) the digital display shows the set temperature, if necessary adjust with arrow up and arrow down buttons.
- After a few seconds the digital display shows water temperature in demand (D.H.W. icon flashing, item 10 fig. 2).
- If the boiler does not light check that the water flow rate is above the min. required to operate the differential pressure 2.8 L/min. (0.61 gals/min).
- The temperature of the water will depend on the rate at which it flows. If, due to high water pressure, the flow rate is too high (and the temperature too low for practical use) the flow rate may be adjusted. It is better to set for the lowest acceptable temperature preferably at the bath tap since the user can gain higher temperatures at other restricted flow taps.
- If the cold supply is subject to large fluctuations or is above the permitted max. water pressure, a suitable pressure/flow regulator should be fitted on the cold water supply to the appliance.
- Slowly close the draw off tap to reduce the flow rate to the min (approx. 2.8 L/min).

- Select a different temperature for DHW. to ensure it operates at its various setting.
- Close the draw-off tap still further. The burner should stop when the rate falls below about 2.8 L/min (0.61 gals/min).

6.13 KEEP HOT

The boiler comes with an optional keep hot facility.

This can be switched on by a competent person.

This will result in the boiler, at any time, periodically firing to keep the water within the boiler up to temperature to reduce the time delay of hot water delivered to any hot draw off point.

- Press ESC and arrow up buttons together (item 2 and 4 fig. 3) for 5 seconds to enter in USER PARAMETERS mode.
- Use arrow up and arrow down buttons (item 3 and 4 fig. 3), to select P003, and press ENTER (item 1 fig. 3).
- Use arrow up and arrow down buttons (item 3 and 4 fig. 3) to select the followings option: "0" disabled, "1" enable, adjust if necessary and press ENTER (item 1 fig. 3) to confirm.

6.14 C.H. HIGH/LOW TEMPERATURE

The boiler comes set, in Central heating, at the 80°C flow temperature.

It is possible to adjust the max set-point to max 50°.

- Press ESC and arrow up buttons together (item 2 and 4 fig. 3) for 5 seconds to enter in USER PARAMETERS mode.
- Use arrow up and arrow down buttons (item 3 and 4 fig. 3), to select P004.
- Use arrow up and arrow down buttons (item 3 and 4 fig. 3) to select the followings option: "0" low temperature, "1" high temperature.

6.15 RANGE RATING CENTRAL HEATING OR/AND DOMESTIC HOT WATER

The boiler comes set, in Central heating, at the MID RANGE of its output.

TABLE 10/A

Range rating regulation of Central Heating				
C.H. regulations	Heat input (kW) - Fan speed (rpm)			
	HE 25 C	HE 30 C	HE 35 C	HE 40 C
Maximum setting	21 - 5200 (nat gas) - 5000 (lpg)	25 - 5400 (nat gas) - 5200 (lpg)	29 - 6200 (nat gas) - 6000 (lpg)	33 - 6800 (nat gas) - 6600 (lpg)
Minimum setting	3,7 - 1200	4,0 - 1200	4,0 - 1200	4,0 - 1200

TABLE 10/B

Range rating regulation of Domestic water				
D.H.W. regulations	Heat input (kW) - Fan speed (rpm)			
	HE 25 C	HE 30 C	HE 35 C	HE 40 C
Maximum setting	25,5 - 6200 (nat gas) - 6000 (lpg)	31 - 6600 (nat gas) - 6400 (lpg)	36 - 7300 (nat gas) - 7000 (lpg)	41 - 8300 (nat gas) - 8100 (lpg)
Minimum setting	3,7 - 1200	4,0 - 1200	4,0 - 1200	4,0 - 1200

The boiler has already been adjusted by the manufacturer during production. If the adjustments need to be made again, observe the following procedures.

The adjustment to fan speed must be strictly in the sequence indicated, by qualified personnel only.

To check max fan speed, see tables 10/A and 10/B.

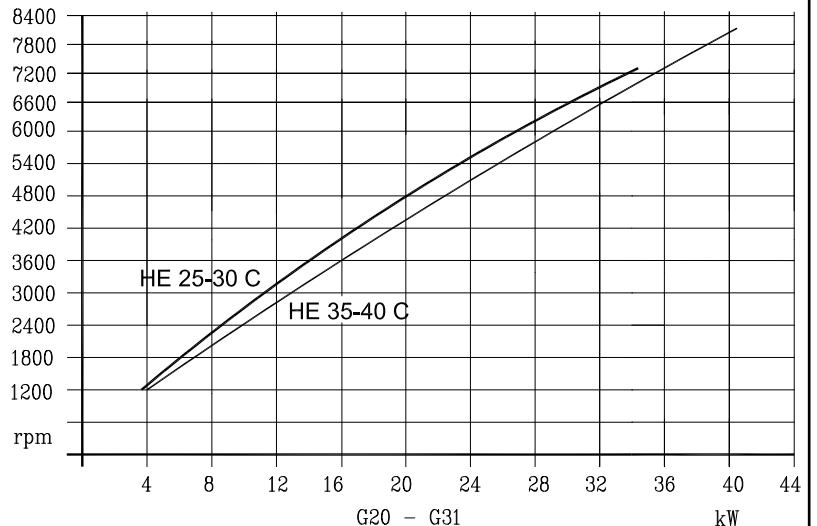
Press INFO and arrow down buttons together (item 6 and 4 fig. 1) for 5 seconds to enter in USER PARAMETERS mode.

- Use arrow up and arrow down buttons (item 3 and 4 fig. 1) to select the followings options:

- P001 CH max fan speed.
- P002 DHW max fan speed.
- Press enter (item 1 fig. 1) to select CH or DHW fan speed. Adjust if necessary.

RATIO BETWEEN FAN SPEED AND HEAT INPUT

Fig. 38



6.16 TEST MODE

It is possible to activate the test mode by USER PARAMETERS (see section 1.4) or directly by pressing the INFO and the RESET buttons together (item 6 and 2 fig. 1) for 5 seconds.

Press the arrow up and the arrow down buttons to set the maximum or minimum fan speed.

The function is enabled for maximum 15 minutes.

Press RESET to esc test mode.

6.17 INSTRUCTING THE USER

After completion of the installation and commissioning of the system, the installer should hand over to the householder by taking the following actions:

- To the Householder explain his/her responsibilities under The Gas Safety (Installation and Use) Regulations 1998.
- Explain and demonstrate the lighting and shutting down procedures.
- Show the user the location of the filling valve and how to top-up the system pressure correctly.

Explain the operation of the boiler including the use and adjustment of ALL system controls which should be fully explained to the householder.

This will ensure the optimum fuel economy for the household requirements of both heating and hot water consumption. Advise the User of the precautions necessary to prevent damage to the system, and to the building, in the event of the system remaining inoperative during frost conditions.

- Explain the function and the use of the boiler, the summer/winter button, the ON/OFF switch and the reset of the digital display.
- Explain and demonstrate the function of the temperature controls, radiator valves etc. for the economic use of the system.
- If an external time clock is fitted, then draw attention to ensure the boiler timer is left in the manual position.
- Stress the importance of regular servicing by a qualified Heating Engineer and that a comprehensive service should be carried out AT LEAST ONCE A YEAR.
- Fill in the Benchmark log book and leave completed with the customer.
- Explain to the user how to isolate the appliance from the gas, water and electricity supplies and the locations of all drain points.

7 SERVICING INSTRUCTIONS

During routine servicing, and after any maintenance or change of part of the combustion circuit, the following must be checked:

- The integrity of the flue system and the flue seals.
- The integrity of the boiler combustion circuit and the relevant seals.
- The operational dynamic (working) gas inlet pressure at maximum rate.
- The gas rate.
- The combustion performance (Refer to page 65).
- Check all joints and connections in the appliance and remake any that show signs of leakage.

NOTE:

Service consumables are not covered by the warranty.

To view warranty exclusions please visit

COMPETENCE TO CARRY OUT THE CHECK OF COMBUSTION PERFORMANCE.

Please note: BS6798:2009 Specification for installation and maintenance of gas-fired boilers of rated input not exceeding 70 kW net advises that:

- The person carrying out a combustion measurement should have been assessed as competent in the use of a flue gas analyser and the interpretation of the results.
- The flue gas analyser used should be one meeting the requirements of BS7927 or BS-EN 50379-3 and be calibrated in accordance with the analyser manufacturers requirements.
- Competence can be demonstrated by satisfactory completion of the CPA1 ACS assessment which covers the use of electronic portable combustion gas analysers in accordance with BS 7967, Parts 1 to 4.

7.1 BOILER FROST PROTECTION

The appliance has a built in frost protection device that protects the boiler from freezing. With the gas and electric supplies ON and irrespective of any room thermostat setting, the frost protection device will operate the pump when the temperature falls below 10 °C and will operate the burner when the temperature falls below 5°C.

The burner will switch off when the temperature reaches 27 °C. When the frost protection device operates "AF" is displayed on the digital display.

IMPORTANT NOTE:

The system should be protected by incorporating a system frost thermostat.

To ensure continued efficient operation of the appliance it is necessary to carry out servicing and cleaning at regular intervals. The frequency of servicing and cleaning will depend upon the particular installation conditions and usage but in general, once a year is advisable.

WARNING:

Before the start of any servicing or replacement of components always isolate the electricity supply to the appliance and always turn off the appliance gas supply at the gas service cock.

The data badge is positioned low on the inside left panel.

- The following notes apply to the appliance and its controls but it should be remembered that attention must also be paid to the heating and hot water circuits with special attention to radiator valves, thermostats, clocks, leaking hot water taps etc.
- Where it is necessary to replace a gasket that relies on adhesive for securing - this adhesive will be supplied with the gasket as a spare item.
- In all cases prior to servicing, remove the front panel of the case. Operate the appliance by turning the hot water services on to a high water flow. Measurement of the products of combustion can be achieved by connection of a probe to the combustion analyser test point.

- IMPORTANT NOTE:

After completing any servicing or replacement of gas carrying components it is essential that a test for gas soundness is always carried out along with functional checks in operation.

7.2 TO INSPECT AND CLEAN THE APPLIANCE

Before carrying out the cleaning operation, cover the electrical control panel with a piece of waterproof material to protect it from debris. Inspect the heat exchanger for any blockage. Deposits of any material should be brushed away using a soft brush.

NOTE: Do not use brushes with metallic bristles.

Examine internal pipe-work connections and automatic air vent for any water leaks and rectify if necessary.

Examine and remove loose debris from the combustion chamber using a soft brush and vacuum cleaner.

Carefully flush, by spraying water at any remaining debris through the condensate trap.

(Ensure the water is kept away from electrical components).

It is important to verify that the drip-plate with drain trap contains water (this check is particularly important if the boiler has not used for extended periods of time). If necessary, the drip plate can be filled using the trap provided (Fig. 49).

Examine the spark and sensing electrodes for any mechanical damage. Clean away any debris and check the spark and sensing gap.

Examine flue duct and flue manifold and ensure that there is no obstruction. Examine the gasket at the entry into the flue manifold.

It is essential that a good seal is made at the outlet to the flue manifold, renew this gasket if there is any sign of damage or deterioration.

8 REPLACEMENT OF PARTS

8.1 GENERAL

Replacement of parts must be carried out by a competent person.

Before replacing any parts the boiler should be isolated from the mains electric supply and the gas should be turned off at the service cock on the boiler.

After replacing any parts always test for gas soundness and if necessary carry out functional test of the controls.

For replacement of parts, the front, and bottom panels of the boiler will need to be removed (it is not necessary to remove the side panels as all parts are accessible from the front or beneath the boiler).

8.2 TO REMOVE THE BOILER PANELS

To remove the front panel unscrew the two lower screws that secure the front panel to the boiler and lift off.

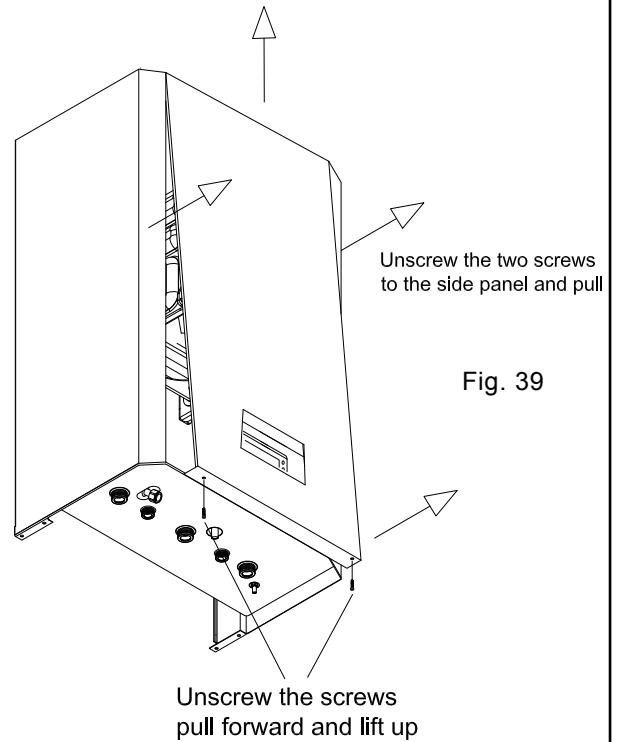


Fig. 39

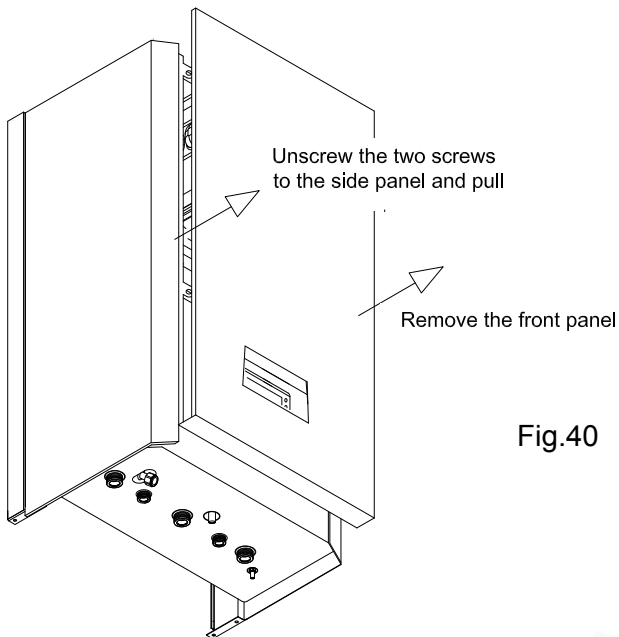


Fig.40

8.3 TO REMOVE LEFT AND RIGHT PANELS (Fig. 40)

Remove the front panel (fig. 39).
Unscrew the four screws to the bottom panel.
Unscrew the two screws to the side panel and pull.

8.4 TO REMOVE/REPLACE FAN (Fig. 41)

Remove the front panel (fig. 39).
Unscrew the gas pipe nut and remove the retaining clip. Detach the connectors from the fan.
Unscrew the four screws that fix the fan and remove only in front screws.
Pull forward the fan.
Replace in reverse order (always fitting a new gasket).

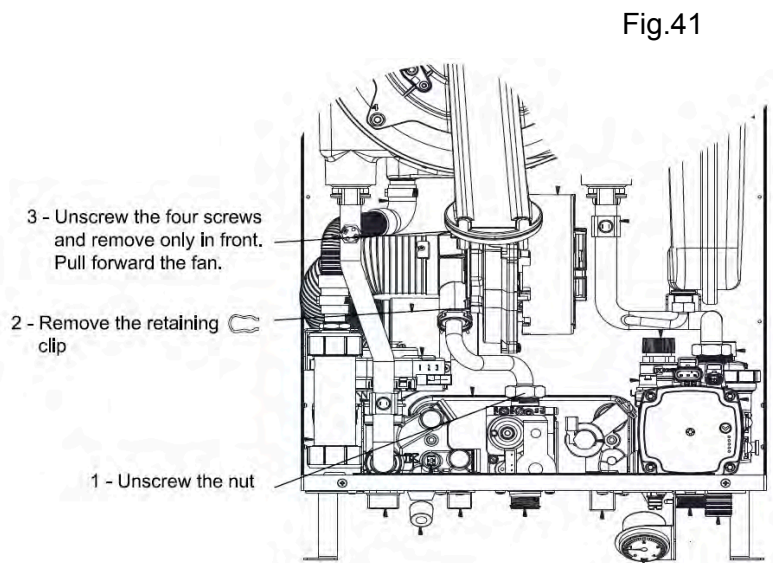


Fig.41

8.5 TO REMOVE/ REPLACE THE ELECTRODES (Fig.37)

Remove the front panel (fig. 39).
 Remove the ignition and/or sensing lead plug.
 Unscrew the securing screws with a TORX T15 screwdriver and put them into a suitable container so that they don't get lost.
 Withdraw the Spark electrode and/or Sensing electrode carefully from the burner cover being careful not to damage the seal.
 Replace with a new electrode in reverse order. Ensure the gap is correct and there is a good seal when replaced (always fitting a new gasket).

8.6 TO REMOVE/REPLACE THE BURNER (FIG.42)

Remove the front panel (fig. 39).
 Unscrew the gas pipe nut and remove the retaining clip. Detach the connectors from the fan.
 Unscrew the four screws that fits the burner door to the heat exchanger and remove it.
 Remove the electrodes (sect. 8.5), and remove the insulation pad, is helpful to use a screwdriver to move the fastening clips.
 To remove the burner, unscrew the screws with a TORX T15 screwdriver.
 Replace in reverse order.

3 - Unscrew the four screws and remove the burner door

4 - Remove the electrodes, unscrew the screws with TORX T15 screwdriver and, remove the insulation pad. Is helpful to use a screwdriver to move the fastening clips.

5 - Unscrew the screws to remove the burner, use a TORX T15 screwdriver

2 - Remove the retaining clip

1 - Unscrew the nut

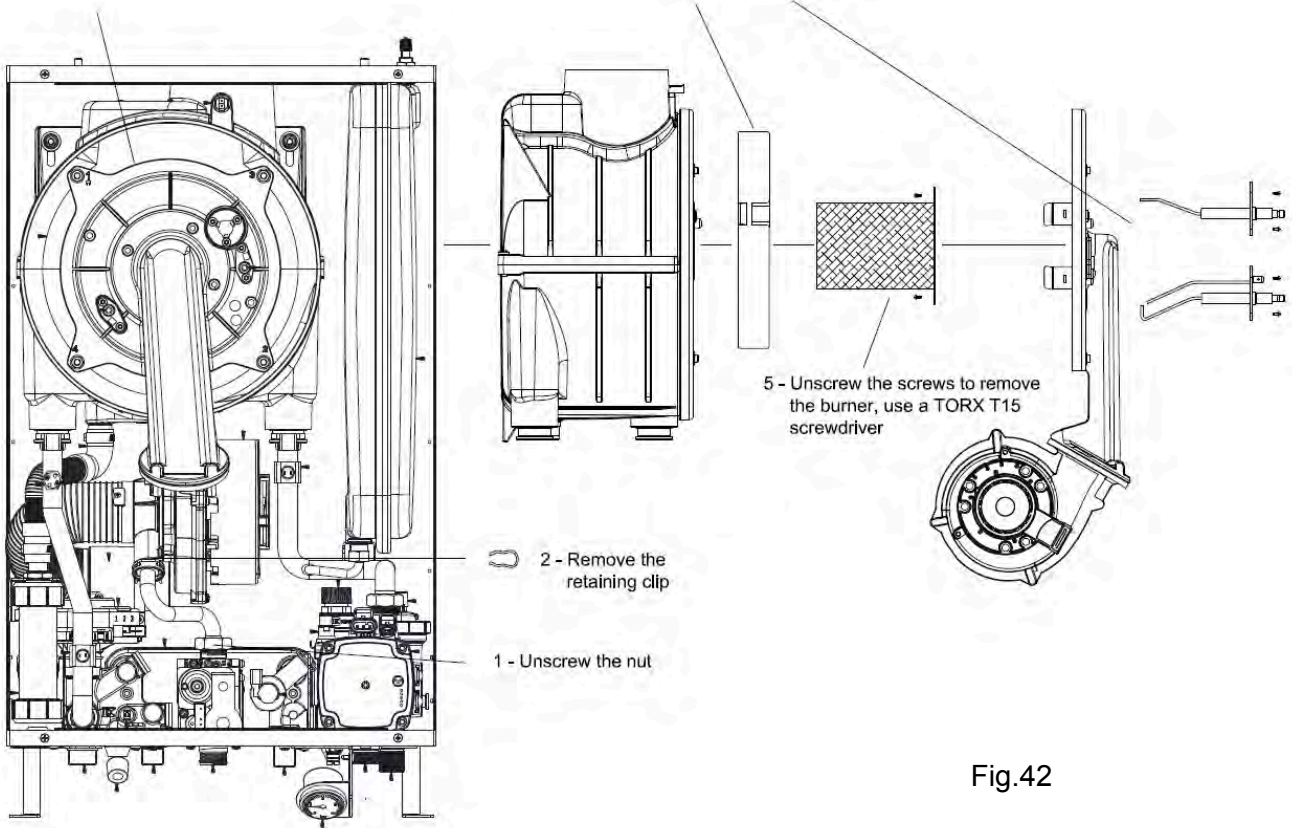


Fig.42

8.7 TO REMOVE/REPLACE THE MAIN HEAT EXCHANGER

Remove the front and bottom panels (fig. 39-40).
 Drain the boiler CH circuit and drain the DHW circuit. Follow the instructions to remove the burner (sect. 8.6). Pull down to remove the condense pipe on the bottom of the heat exchanger. Disconnect the flow and return pipes at the heat exchanger.
 Loosen the four heat exchanger securing screws and clamps then carefully ease the heat exchanger out.

CAUTION : There will be water in the heat exchanger.

Replace in reverse order, always use new O-ring seals.

8.8 TO REMOVE/REPLACE EXPANSION VESSEL (Fig.43)

Remove the front and bottom panels (fig. 39-40).
Close the on/off valves for the heating circuit and drain the water at the drain point (fig.36). Unscrew the fixing bracket and the nut connecting the expansion vessel. Lift up the vessel and remove.
Replace in reverse order. Use a new gasket, taking care to ensure they are replaced correctly.

8.9 TO REMOVE/REPLACE GAS VALVE (Fig. 44)

Remove the front and bottom panels (fig. 39-40).
Unscrew the nut at the top and the four screws on the bottom of the gas valve.
Replace in reverse order.

IMPORTANT:
when the gas valve is re-fitted, **check combustion CO₂ and adjust if necessary (see section 6.9).**

8.10 TO REMOVE/REPLACE PLATE HEAT EXCHANGER (Fig. 44)

Remove the front and bottom panels (fig. 39-40).
Remove the panel control box (sect. 8.22).
Close off the on/off valves for CH circuit and DHW circuit and drain the boiler and drain hot water from the lowest hot water tap.
Unscrew the two allen screws that connect the DHW heat exchanger and pull it out from the boiler (fig. 46).
If necessary the pipes from the flow manifold may have to be removed for easier access. Lift up the plate heat exchanger.
Replace in reverse order.
NOTE: Always use new O-rings.

8.11 TO REMOVE/REPLACE THE WATER PRESSURE TRANSDUCER (Fig. 45)

Remove the front and bottom panels (fig. 39-40).
Close the on/off valves for the heating circuit and drain the water at drain point (fig.36).
Detach the wire connector, remove the securing clip.
Replace in reverse order.

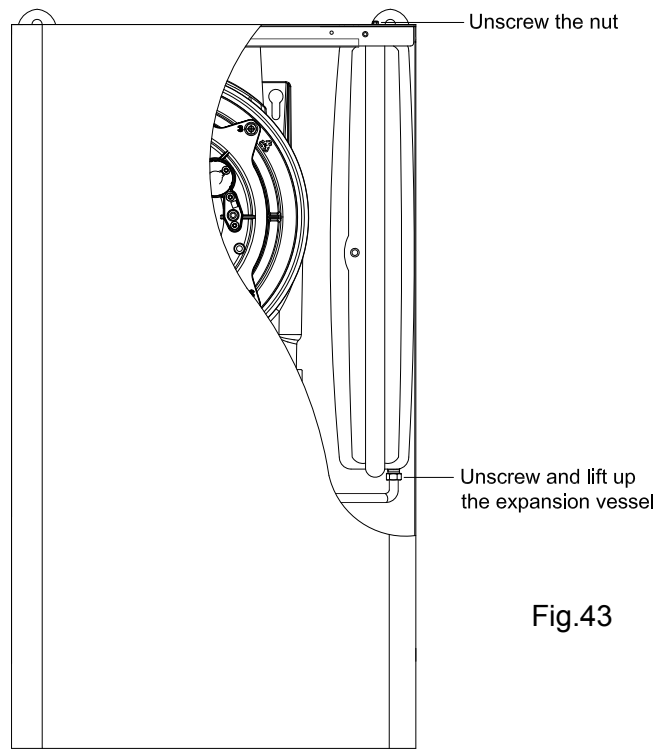


Fig.43

Fig.44

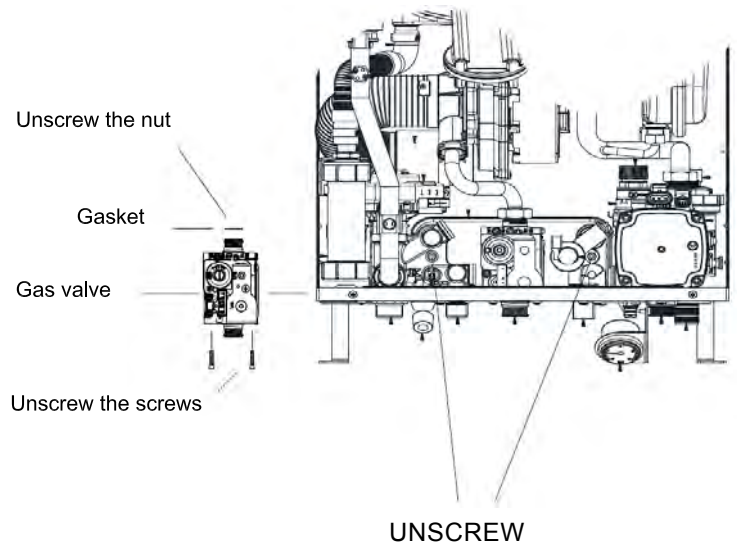


Fig.45

8.12 TO REMOVE/REPLACE DIVERTER VALVE MOTOR (Fig. 46)

Remove the front and bottom panels (fig. 39-40).
Detach the electrical plug and remove the retaining clip. Replace in reverse order.

8.13 TO REMOVE/REPLACE C.H. DIVERTER VALVE (Fig. 46)

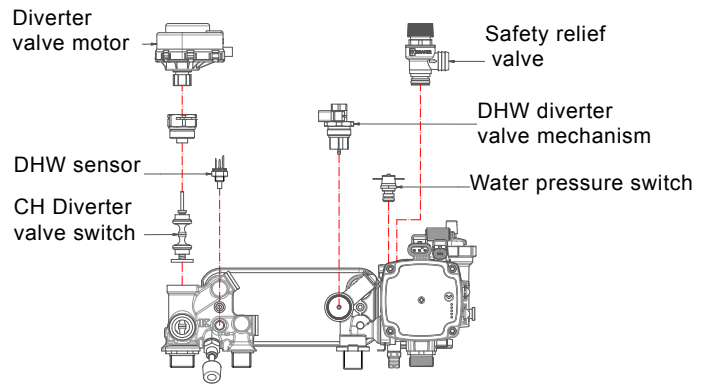
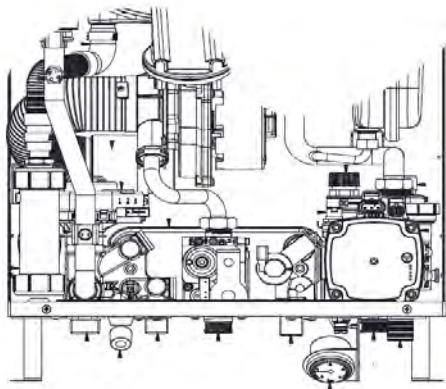
Remove the front and bottom panels (fig. 39-40).
Remove the panel control box (sect. 8.222). Close the on/off valves for the heating circuit and drain the water at drain point (fig.46).
Remove diverter valve motor switch, to allow access and unscrew the C.H.diverter valve (fig.47).
Replace in reverse order.
NOTE: Always use new O-ring.

8.14 TO REMOVE/REPLACE D.H.W. DIVERTER VALVE MECHANISM (Fig. 46)

Remove the front and bottom panels (fig. 39-40).
Remove the panel control box (sect. 8.22).
Close the on/off valves for the heating circuit and drain the water at drain point (fig.36).

Remove flow detector and unscrew DHW diverter valve.
Replace in reverse order.
NOTE: Always use new O-ring.

Fig.46



8.15 TO REMOVE/REPLACE PUMP (Fig.47)

Remove the front and bottom panels (fig. 39-40).
Close the on/off valves for the heating circuit and drain the water at drain point (fig.36).
Detach the supply wire connector from the pump.
Unscrew the nut that fastens the pump to the CH pipe and remove the pump and remove the securing clip at the pump manifold.
Replace in reverse order.
NOTE: Always use new O-ring.

Remove the clip and pull the automatic air vent from the pump.
Replace in reverse order.
NOTE: Always use new O-ring.

8.16 TO REMOVE/REPLACE AUTOMATIC AIR VENT (Fig. 47)

Remove the front and bottom panels (fig. 39-40).
Remove the panel control box (sect. 8.22).
Close the on/off valves for C.H. circuit and drain the water from at drain point Fig.36.

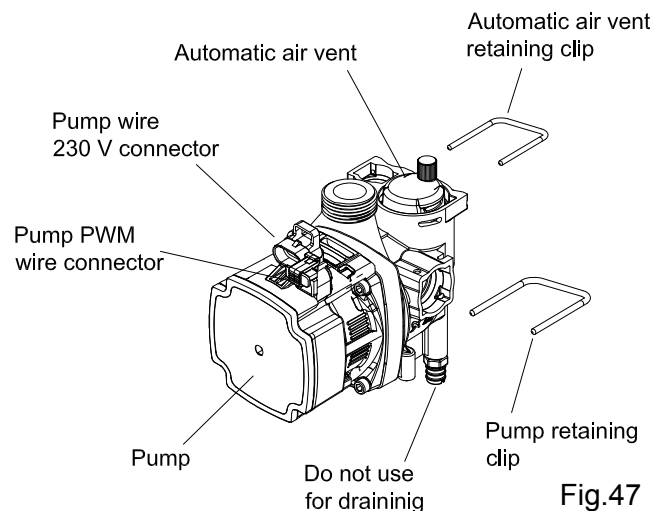


Fig.47

8.17 TO REMOVE/REPLACE SAFETY RELIEF VALVE (Fig. 46)

Remove the front and bottom panels (fig. 39-40).
 Close the on/off valves for C.H. circuit and drain the water from at drain point fig.36.
 Unscrew the safety relief valve screw and pull up.
 Replace in reverse order and using a new gasket.

8.18 TO REMOVE/REPLACE D.H.W. SENSOR (Fig. 46)

Remove the front and bottom panels (fig. 39-40).
 Close the on/off valve for the DHW circuit and drain the hot water from the lowest hot water tap.
 Detach the wire connector and unscrew the sensor.
 Replace in reverse order.

8.19 TO REMOVE/REPLACE C.H. FLOW AND RETURN SENSORS (Fig. 48)

Remove the front panel (fig. 39).
 Detach the wire connector and remove the retaining clip sensor from the pipe.
 NOTE: When reconnecting ensure the correct wires go to the relevant sensor (the polarity on each one is unimportant).

8.20 TO REMOVE/REPLACE FLUE SENSOR (Fig. 3 item 23)

Remove the front panel (fig. 39).
 Detach the wire connector and rotate the sensor.
 Replace in reverse order.

Overheat thermostat
 C.H. flow sensor clip
 C.H. return sensor

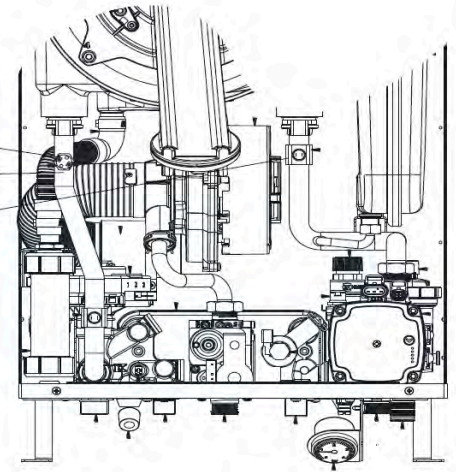


Fig.48

8.21 TO CLEAN AND REMOVE/REPLACE CONDENSING TRAP (Fig. 49)

Remove the front panel (fig. 39), bottom and left side panels (fig. 40).
 Remove the securing clip and pull out the plastic pipe that connects the condensing trap at the heat exchanger.
 Unscrew the nut that fastens the condensing trap to the depression chamber and remove it.
 If the side panel can not be removed then remove the gas valve (see sec 8.9) and continue with the above instructions.
 Replace in reverse order.

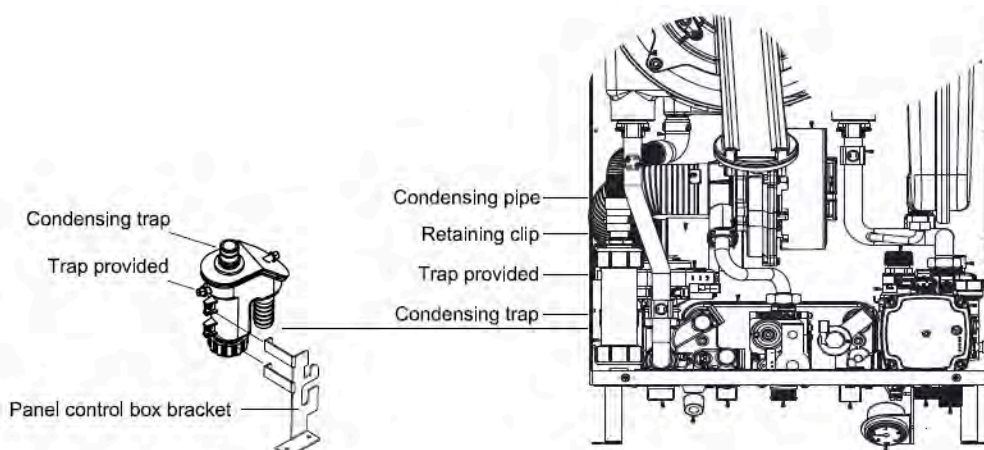
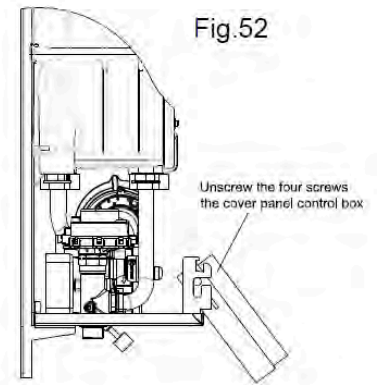
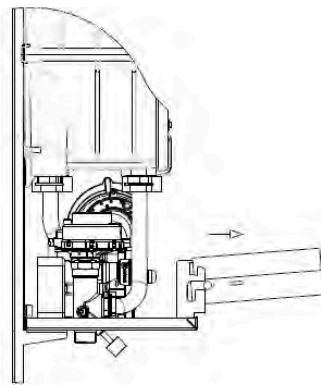
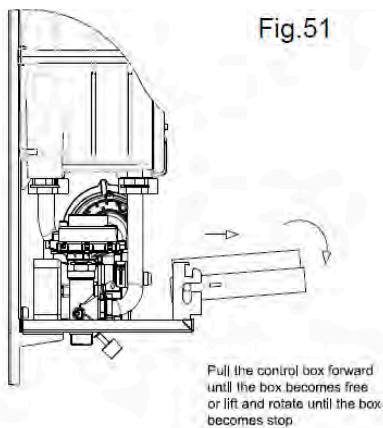
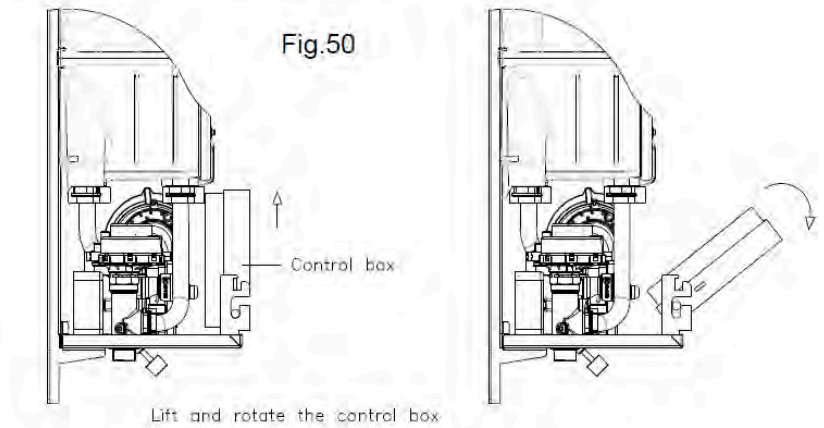


Fig.49

8.22 TO REMOVE PANEL CONTROL BOX (Fig. 50,51).

Remove the front panel (fig. 39).
 Pull the control panel box until it is slightly out of the boiler.
 As doing so move the box forward until the control box becomes free.
 This will allow free access to lower part of the boiler.



8.23 TO REMOVE/REPLACE CONTROL BOARD (Fig.52).

Remove the front panel (fig. 39).
 Remove the the panel control box (sect. 8.22).
 Detach all connectors from control board, unscrew the four screws and lift up.

Replace in reverse order.

8.24 TO REMOVE/REPLACE DIGITAL DISPLAY BOARD.

Remove the front panel (fig. 39).
 Remove the panel control box (sect. 8.22), and let it fix at the depression chamber like in fig. 52.
 Unscrews the four screws that fix the cover panel control box and lift up.
 Detach all connectors from control board, unscrew the four screws and lift up.
 This will allow free access to digital display. Detach the connector and unscrew the four screws and lift up.

Replace in reverse order.

8.25 EXTERNAL CONTROL CONNECTION (Fig. 53)

Remove the front panel (fig. 39).
 Remove the external wire link on the panel control box.
 Replace with external wire controls. **(These must be volt free).**

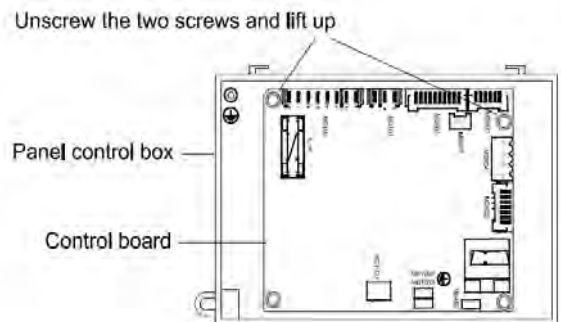
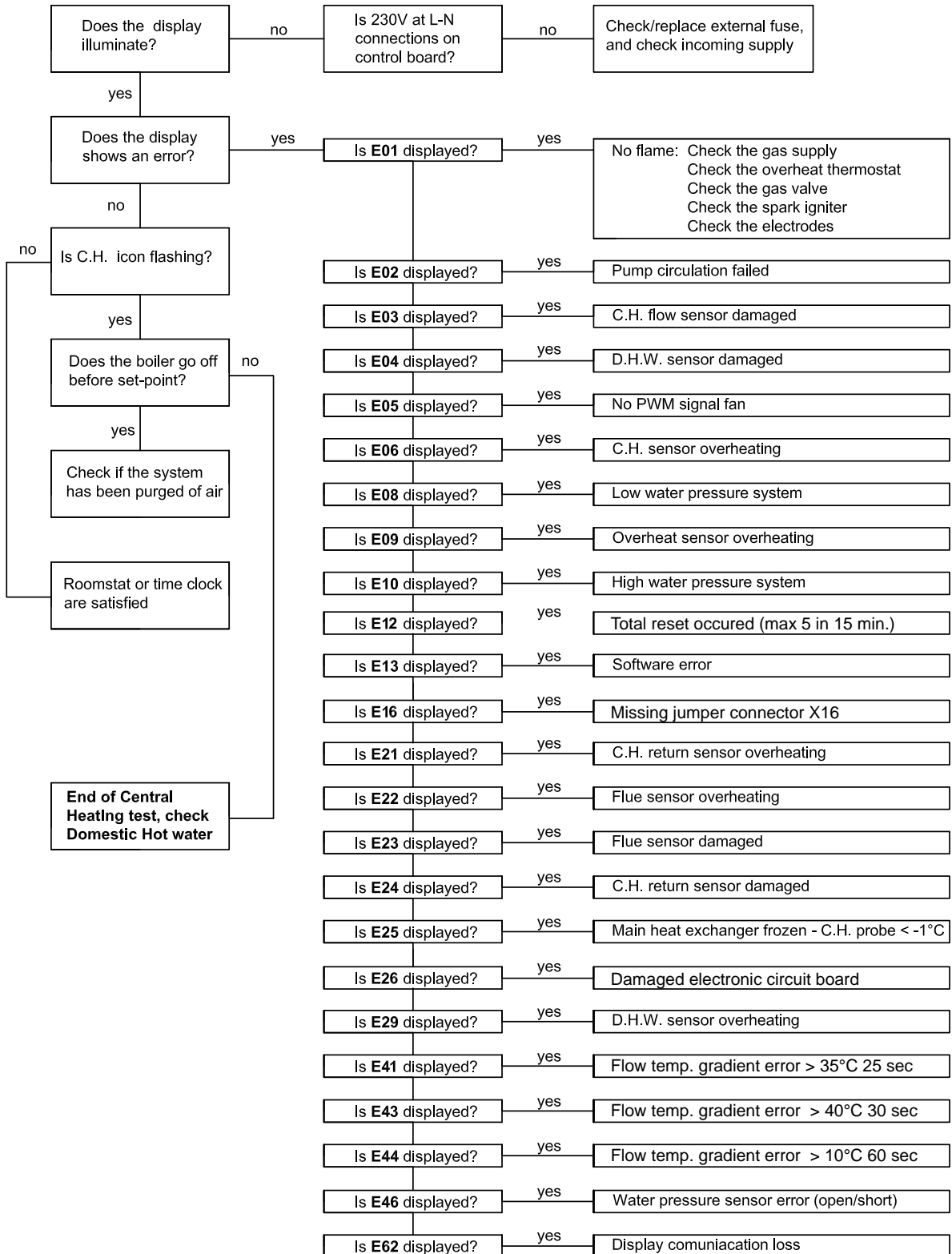


Fig.53

9 FAULT FINDING CENTRAL HEATING

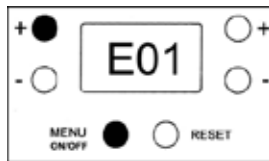
Before trying to operate the boiler make sure that: all gas supply cocks are open and the gas supply has been purged of air. The heating system pressure is at least 1 bar min to 1.5 bar max, select winter position on the digital display and set the central heating temperature to maximum. (sect. 1.5).

Ensure external controls are calling for heat (room thermostat/ digital clock) and check the following appliance operations:

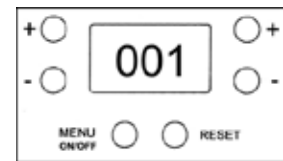


9.1 LOG OH THE ERRORS

It is possible see the last errors that are recorded by the boiler, pushing the keys 1 and 5 for 5 seconds.



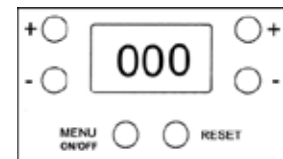
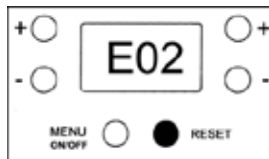
(ex. Gas lock)



Push the buttons + and – of sanitary (5 and 6) to see all the errors sequence.



Push the key RESET (2) for 5 seconds to cancel the errors.



Push keys 5 and 6 simultaneously to exit from the errors log function.

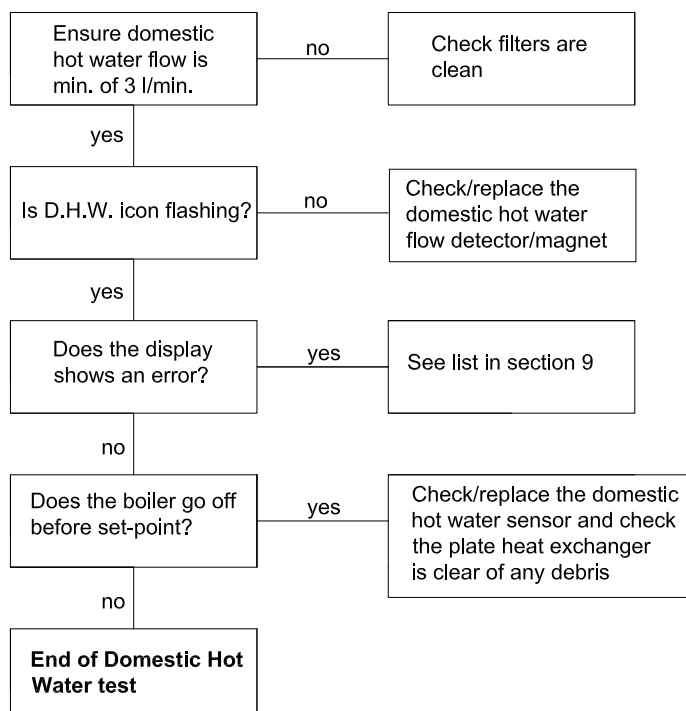


In any case the exit from the errors log takes place after 30 seconds if no other keys are pushed.

9.2 FAULT FINDING DOMESTIC HOT WATER

Before continuing see section 9, and after selecting the summer position on the digital display and setting the domestic hot water temperature to maximum (sect.1.5).

Open the domestic hot tap and check the following appliance operations:



10 ELECTRICAL SYSTEM DIAGRAM

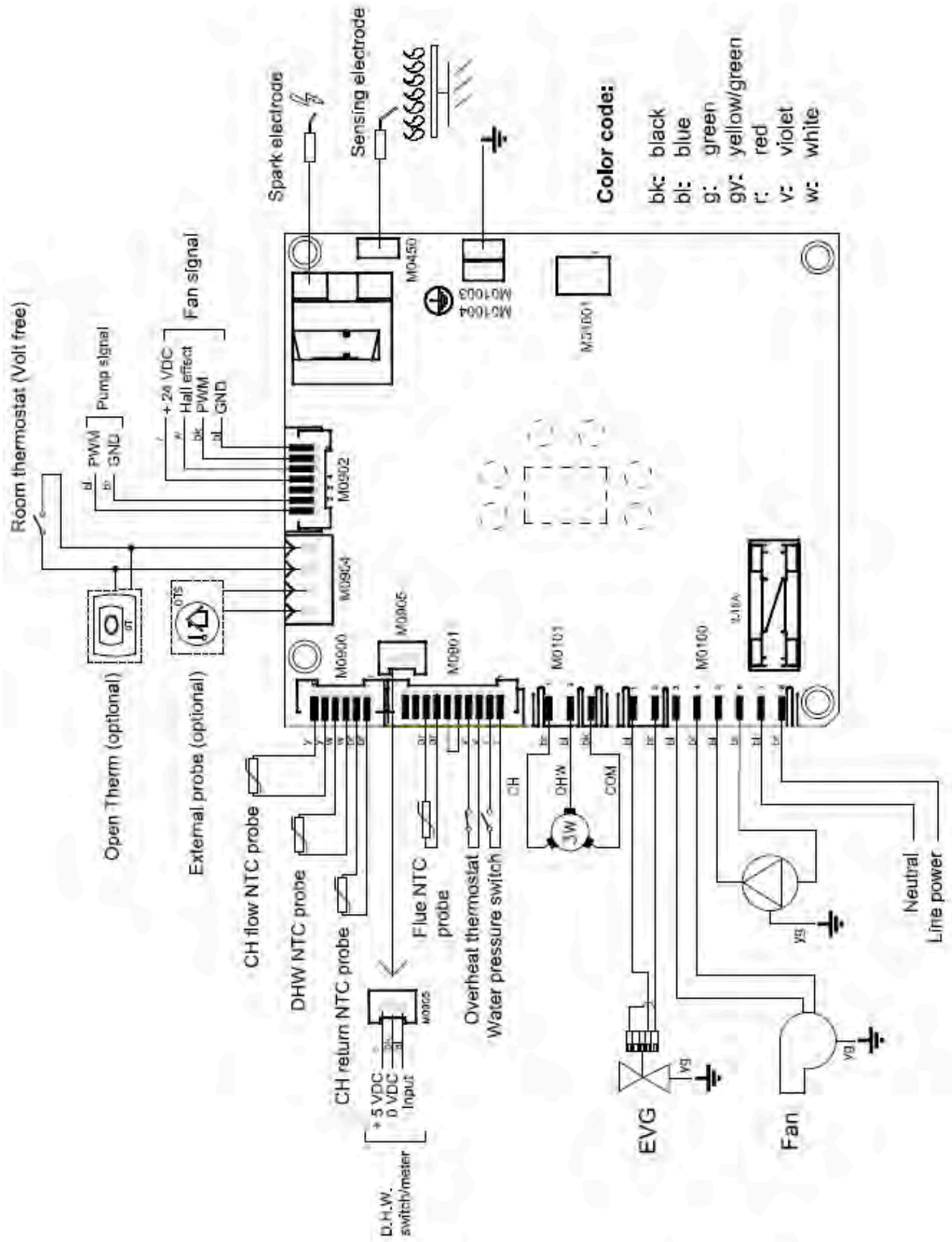


Fig. 55

10 List of parameters

- adjustable by the INSTALLER (Pushing keys 2 e 4)

Parameters	Range	Description	Value	Default
P01	16 ÷ P20	Max fan speed in HEATING	Visualized in RPM/100	61
P02	16 ÷ P22	Max fan speed in SANITARY	Visualized in RPM/100	72
P03	0 ÷ 1	Pre-Heating	0 = Off 1 = On	0
P04	0 ÷ 1	Type of system (high or low temperature)	1 = High temperature 0 = Low temperature	1 (Normal Range)
P05	0 ÷ 30	External probe compensation KD		20
P06	0 ÷ 1	Circulator anti-lock (for 10 sec/day)	0 = Off 1 = On	1
P07	0 ÷ 0	Not used	0	0
P08	0 ÷ 0	Not used	0	0
P09	30 ÷ 80	Low Ignition (soft start power level)	% of the power	30
P10	0 ÷ 3	Boiler power (in combination with P34)	0= 20/25 KW 1= 25/30 KW 2= 30/35 KW 3= 35/35 KW	0= 20/25 KW
P11	1 ÷ 5	Type of boiler	1 = instantaneous with 2 temperature sensors. 2 = instantaneous with 1 temp sensor 3 = Heating only 4 = Heating + sanitary tank 5 = Heating + sanitary tank + tank clock	1= combi fast Double probe
P12	0 ÷ 0	Not used	--	--
P13	0 ÷ 1	Type of circulator	0 = WILO Yonos PARA 1 = GRUNDFOS UPM/UPM2 / Shinoho Type GPA15-5	1 = GRUNDFOS UPM/UPM2
P14	0 ÷ 1	Flue gas thermostat enabled	0= off 1= on	1= enabled
P15	0 ÷ 0	Not used	0	0

- adjustable by the TECHNICIAN (Pushing keys 2 e 4)

P16	0 ÷ 250	Post circulation pump time in heating	seconds	180 sec
P17	0 ÷ 90	Post ventilation (time)	seconds	60 sec
P18	0 ÷ 255	Anti-frequent ignition in heating	minutes	3
P19	10 ÷ 40	Min fan speed in heating	Visualized in RPM/100	12
P20	16 ÷ 150	Max fan speed in heating	Visualized in RPM/100	61
P21	10 ÷ 40	Min fan speed in sanitary	Visualized in RPM/100	12
P22	16 ÷ 150	Max fan speed in sanitary	Visualized in RPM/100	72
P23	0 ÷ 40	Sanitary Flow switch /Flowmeter	0=flow switch 10-40=flow switch with minimum limit of frequency (Hertz)	17=flow meter Hertz
P24	0 ÷ 1	Quick overheating error	0 = off 1 = on	0
P25	0 ÷ 99	Ramp time in heating	minutes	3
P26	0 ÷ 0	Not used	0	0
P27	0 ÷ 1	Sanitary primary heating check	0 = Primary time dependent on set point 1= fixed 80°C	0 (set point related)
P28	40 ÷ 255	Post ventilation (turns/min)	visualized in RPM/100	30
P29	0 ÷ 240	Sanitary Post circulation time	seconds	30 sec
P30	0 ÷ 30	Controllo modulazione sul Delta T mandata - ritorno	0= modulation Off / 1 - 30 °C	25 °C
P31	10 ÷ 240	Time break of circulator check	seconds	30 sec
P32	50 ÷ 70	Min circulator modulation	% Of the max fan speed	50%
P33	70 ÷ 100	Max circulator modulation	% of the max circulator speed	100%
P34	0 ÷ 1	Type of fan	0 = FIME VPX0098233 1 = FIME PX090	0 = FIME VPX0098233



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