

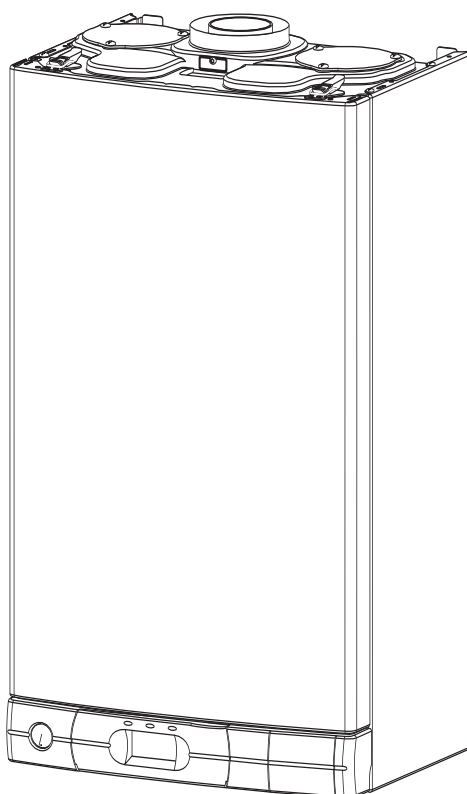
# Minima HE System

## CONDENSING WALL HUNG SYSTEM BOILER

Central Heating  
compatible with an Indirect Cylinder  
Fanned Flue System

### Installation, Servicing and Operating Instructions

These instructions must be left with the appliance



#### Manufactures N°

3650010

3650011

#### Model Type

Minima HE System 24 Nat

Minima HE System 30 Nat

#### Gas Council N°

41 - 980 - 33

41 - 980 - 34



Country of destination

GB

IE



**C&M**  
CHAFFOTEAUX & MAURY

### **These instructions are suitable for the Minima HE boilers :**

Chaffoteaux & Maury supports Benchmark, the heating industry code to ensure the correct installation, commissioning and servicing of domestic central heating systems.

#### **To The Householder**

**Make sure that your installer completes Section 24 of this manual (page 61),** this provides a record of the commissioning of your boiler.

It contains important information about your particular installation that may be required by service engineers. It will also provide contact details for the installer should you need guidance in the use of this appliance or if there are any problems.

As with your car, your boiler will work more reliably and efficiently if regularly serviced. We recommend an annual service check. The service history of the appliance must be recorded in Section 25 of this manual (page 62).

In the unlikely event of any problems with your boiler or system you should first contact your installer. If your installer cannot resolve the problem he should telephone our national service helpline.

A charge may be made if Chaffoteaux & Maury Service is called out to resolve a non-product related fault.

Your statutory rights are not affected.

#### **To The Installer**

As part of the commissioning of this appliance it is necessary to complete Section 24 of this manual (page 61) and give this manual to the Householder. Please ensure that your customer is aware of the importance of keeping this manual safe as a record of the installation (Section 24, page 61) and the appliance service history (Section 25, page 62).

Please ensure that your customer is aware of the correct operation of the system, boiler and controls.

MTS recommend the use of protective clothing, when installing and working on the appliance i.e. gloves.

### **CUSTOMER CARE**

Chaffoteaux & Maury, as a leading manufacturer of domestic and commercial water heating appliances is committed to providing high quality products and a high quality after sales service.

Advice on installation or servicing can also be obtained by contacting the Chaffoteaux Technical and Customer Service Departments on:

#### **TECHNICAL DEPARTMENT**

Tel: 0870 241 8180

Fax: 01494 459775

#### **CUSTOMER SERVICE DEPARTMENT**

Tel: 0870 600 9888

Fax: 01494 459775

### **GUARANTEE**

The manufacturer's guarantee is for 2 years from the date of purchase. The guarantee is invalidated if the appliance is not installed in accordance with the recommendations made herein or in a manner not approved by the manufacturer. To assist us in providing you with an efficient after sales service, please return the guarantee registration card enclosed with the boiler without delay.

### **CAUTION**

In the United Kingdom, installation, start-up, adjustments and maintenance, must be performed by a competent person only, in accordance with the current Gas Safety (Installation & Use) Regulations and the instructions provided.

In the Republic of Ireland, the installation and initial start up of the appliance must be carried out by a Competent Person in accordance with the current edition of I.S.813 "Domestic Gas Installations", the current Building Regulations, reference should also be made to the current ETCI rules for electrical installation.

**All CORGI registered installers carry a CORGI ID card, and have a registration number. Both should be recorded in the Benchmark Commissioning Checklist (Section 24 - page 61). You can check your installer is CORGI registered by calling CORGI direct on:- (01256) 372300.**

Improper installation may cause damage or injury to individuals, animals and personal property for which the manufacturer will not be held liable. To ensure efficient and safe operation it is recommended that the boiler is serviced annually by a competent person.

If it is known that a fault exists on the appliance, it must not be used until the fault has been corrected by a competent person.

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## INTRODUCTION

The **MINIMA HE System** is a fully automatic, wall mounted, low water content condensing system boiler. It is a room sealed, fan assisted, appliance providing central heating. It has electronic ignition and is suitable for all modern electrical control systems. The boiler has been designed for domestic use on sealed systems only. A circulating pump, expansion vessel together with a pressure gauge and safety valve are included within the boiler. The standard horizontal flue kit is suitable for lengths 300 mm minimum to 815 mm maximum (see pages 19 & 20) and includes an elbow adapter that can be rotated through 360°. The horizontal flue can extend up to 5 metres (Ø60/100) and 10 metres (Ø80/125) using 1 metre flue extension kits. 45° and 90° flue bends are also available as accessories, for more information on the fitting of the flue kits and the suitable flue runs, please refer to Section 12 Connecting the Flue (page 19).

# USER'S INSTRUCTIONS

## 1. Control Panel

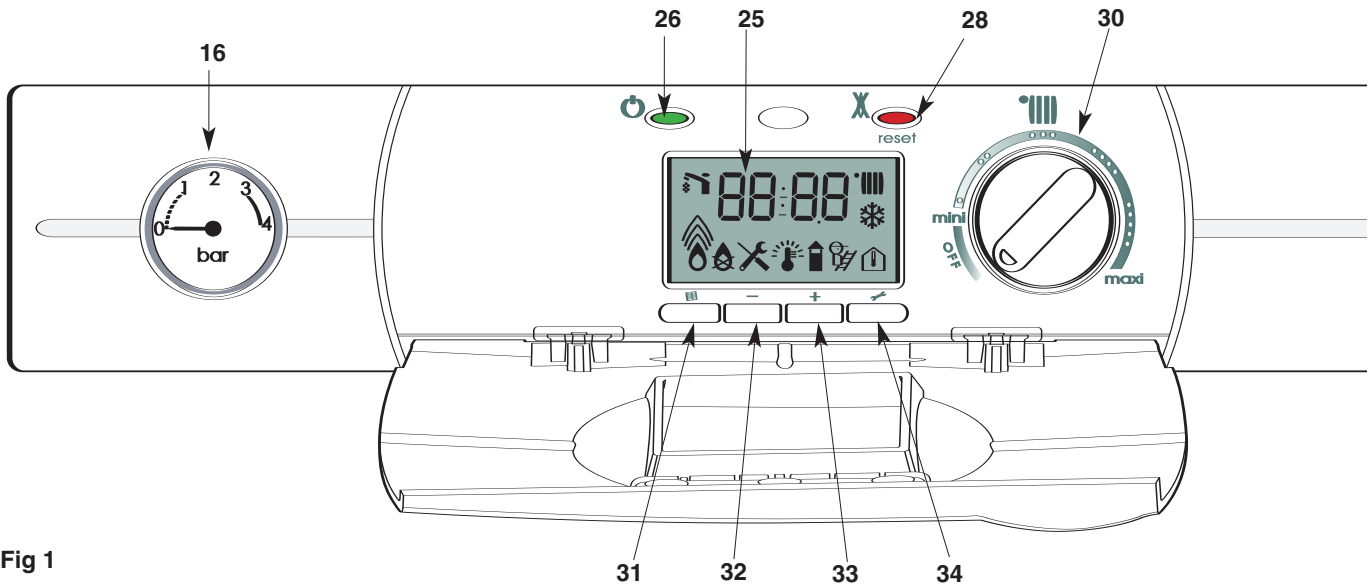


Fig 1

### Control panel (Fig.1)

- 16.- Pressure Gauge
- 25.- Display
- 26.- On/off push button and power on indicator light
- 28.- Reset push button and red indicator lockout light
- 30.- Central Heating control knob and temperature setting
- 31.- Menu key
- 32.- Reducing key
- 33.- Increasing key
- 34.- Setting key

### Connecting bracket

Taps shown in Open position (Fig. 2)

- 39 : Gas service tap
- 41 : Central heating flow isolating valve
- 42 : Central heating return isolating valve
- 43 & 44: Filling taps
- 45 : Filling loop

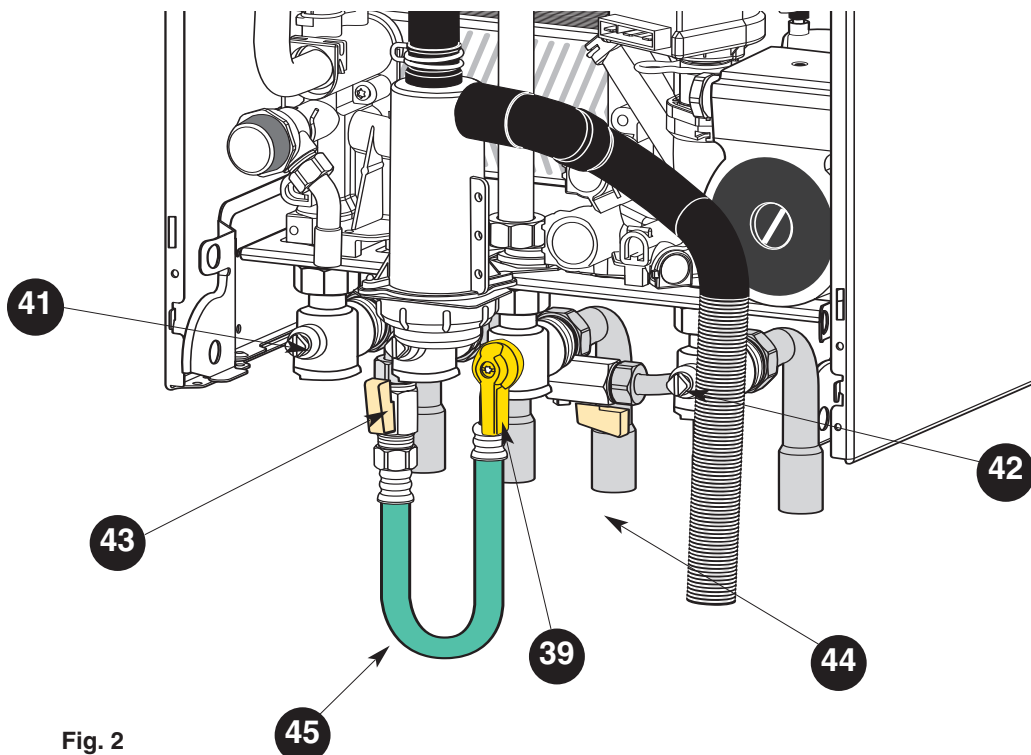



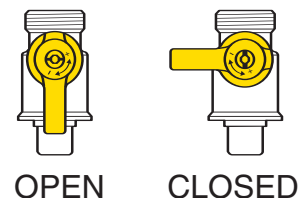
Fig. 2

## 2. How to Use

### Switching on








1. Check that the pressure in the central heating system is above 0.7 bar and below 1.5 bar on the pressure gauge **16** (Fig. 1) should it be necessary to re-pressurise the system, ensure the filling loop **45** (Fig. 2) is attached, open the filling taps **43** & **44** (Fig. 2), the pressure gauge will now start to rise, once the pressure reads 1.0 bar, close the filling taps and disconnect the filling loop, periodically check the pressure gauge for correct pressures.
2. Check that the gas service tap is opened at the gas meter and main power is on. Green indicator **26** (Fig. 1)  lit.
3. Open the gas tap **39** (Fig.2).
4. The boiler is now ready to use.

**NOTE:** If the boiler is left off for a long time, some air in the gas pipe can hinder the first lighting attempt, (please refer to Section 20 Incorrect Operation, page 56).



### Time setting


You can set the time by using the keys underneath the display.

Press the setting key  for 5 seconds. The hour digits on the display will begin to flash. Set the correct time by using the  or  keys. To alter the minutes, press the setting key  again, the minute digits will begin to flash. Set the correct time by using the  or  keys, once the correct time has been set, press the setting key  once more to accept the time.

Note: This is not a timer for Central Heating control.

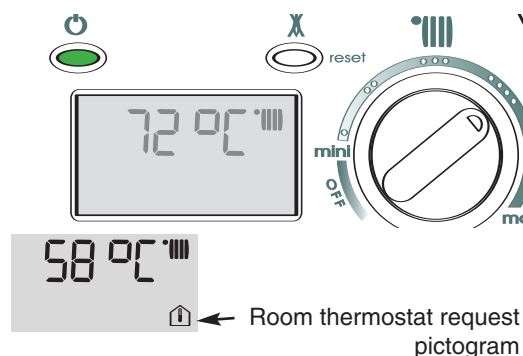
### To obtain heating

Turn the Central heating knob (**30** Fig.1) between mini and maxi.


During the setting  flashes and displays the temperature the knob has been set to.

The flashing will continue for a while after the setting and the display will then indicate one of the following :

- the heating temperature when the room thermostat is ON (Calling).
- the time when the room thermostat is OFF (Satisfied).



### BURNER ON and output level

Burner operation is indicated by the  symbol. The output of the burner is then indicated by the flame digits above the burner symbol.



### Stand by mode

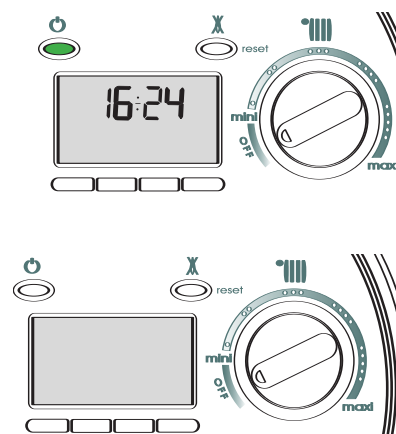
Turn the control knob **30** (Fig. 1) to the **OFF** position to deactivate the Central Heating. Leave the ON/OFF button (**26** Fig. 1) On (green light).

During the stand by mode the display indicates the time, the anti-sieze and anti-frost functions will remain active.

### Switch OFF

Press the ON/OFF button (26 Fig.1) the green light will go out.

**IMPORTANT: WHILE THE BOILER HAS BEEN SWITCHED OFF THE CENTRAL HEATING, ANTI-FROST AND ANTI-SIEZE OPERATIONS WILL BECOME INACTIVE. THE BOILER IS STILL ALSO CONNECTED TO THE MAINS ELECTRICAL AND GAS SUPPLIES.**



### Anti-freeze and anti-sieze modes

Provided the ON/OFF button is on (green light), the water pressure is adequate and the boiler has not shut down due to an error, the anti-freeze and anti-sieze operations will remain active.

When the anti-freeze comes on, one of two codes will be displayed with the snowflake pictogram ❄️.

The two possible codes are 05 (pump anti-freeze) or 06 (burner anti-freeze).

#### 05 (Pump anti-freeze):

When the boiler senses a temperature of 8°C or lower, the pump will run for 2 minutes, the boiler will then check if the flow temperature is higher than 8°C. Should the temperature still be between 3°C and 8°C the above process will be repeated a maximum of 10 times, after this the burner will light and run until a temperature of 33°C is detected (see 06 Burner anti-freeze below).

#### 06 (Burner anti-freeze):

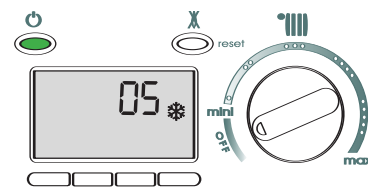
When the boiler senses a temperature of 3°C or lower, the boiler will fire at minimum power until a temperature of 33°C is achieved, the pump will run for 2 minutes after the burner is switched off.

#### Anti-sieze mode

The anti-sieze mode will activate the pump for 1 minute everytime the boiler has been inactive for 23 hours.

Note: The anti-freeze and anti-sieze modes will be automatically overridden as soon as there is a demand for heating from the room thermostat or cylinder thermostat.

The anti-freeze functions will only protect the boiler from freezing, to protect the Central Heating system it will be necessary to leave the boiler powered, the Central Heating knob turned on and the room thermostat set to its anti-frost setting (usually between 5°C and 10°C).



## 3. Maintenance

As with your car, your boiler will work more reliably and efficiently if regularly serviced. We recommend an annual service check. The service history of the appliance will be marked in the Service Interval Record (**Section 25, Page 61**).

## 4. Guarantee

The manufacturer's guarantee is for 2 years from the date of purchase. The guarantee is voidable if the appliance is not installed in accordance with the recommendations made herein or in a manner not approved by the manufacturer. To assist us in providing you with an efficient after sales service, please return the guarantee registration card enclosed with the boiler without delay.

## 5. Practical information

### Cleaning the casing and control panel

Should it be necessary to clean the casing and control panel, do so only with a damp cloth, do not use any spray polishes or cleaners.

### Precaution to avoid freezing

We recommend that you contact your installer or local service centre for further advice on the actions to be taken to avoid the system freezing (should the boiler be turned off at the mains isolator)

#### • CH system

Choose one of the following solution :

- 1) Drain the Central Heating system completely
- 2) Protect the Central Heating system with anti freeze chemical products and periodically check the concentration
- 3) Leave the Heating mode switched on and set the room thermostat to anti-freeze mode (between 5 and 10°C)
- 4) Leave your boiler in stand-by mode, the anti-freeze device will switch on the pump and the burner if necessary.

#### • DHW system

Turn off the main cold water supply and drain the cylinder.

## 6. Setting the Time Clock

### 6.1 Setting the Mechanical Clock

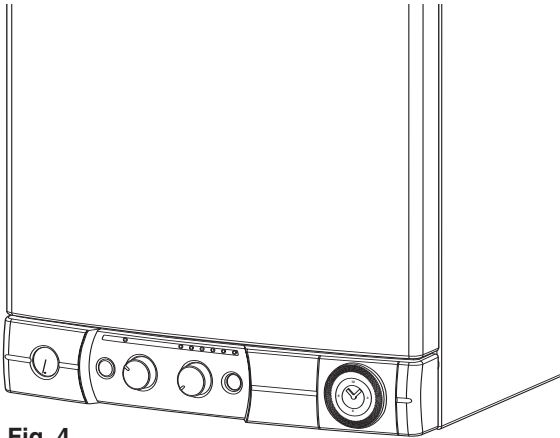


Fig. 4

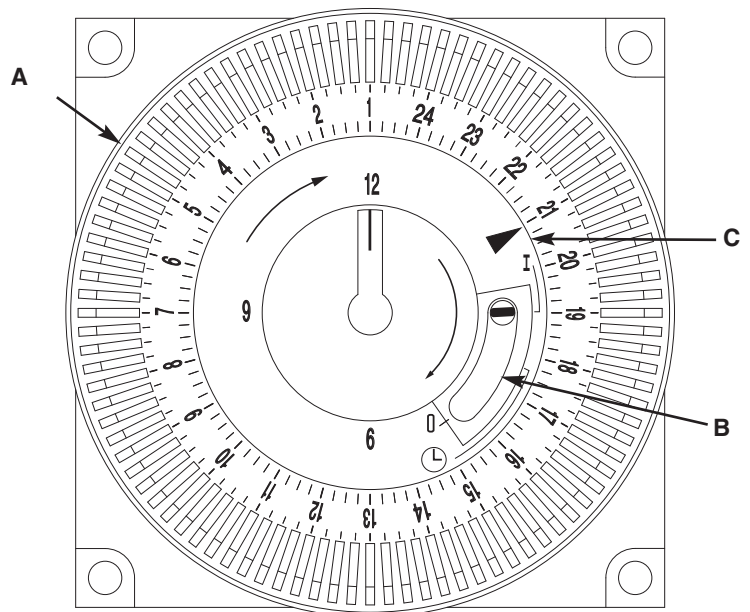


Fig. 5

#### 1. General layout

The mechanical clock covers a 24 hour period. Each tappet represents 15 minutes **A** (Fig. 5). An override switch is located on the clock **B** (Fig 5).

#### 2. To set the time

To set the time of day, grasp the outer edge of the dial and turn slowly clockwise until the correct time is lined up with the arrow **C** (Fig. 5).

#### 3. To Set the "On" and "Off" times

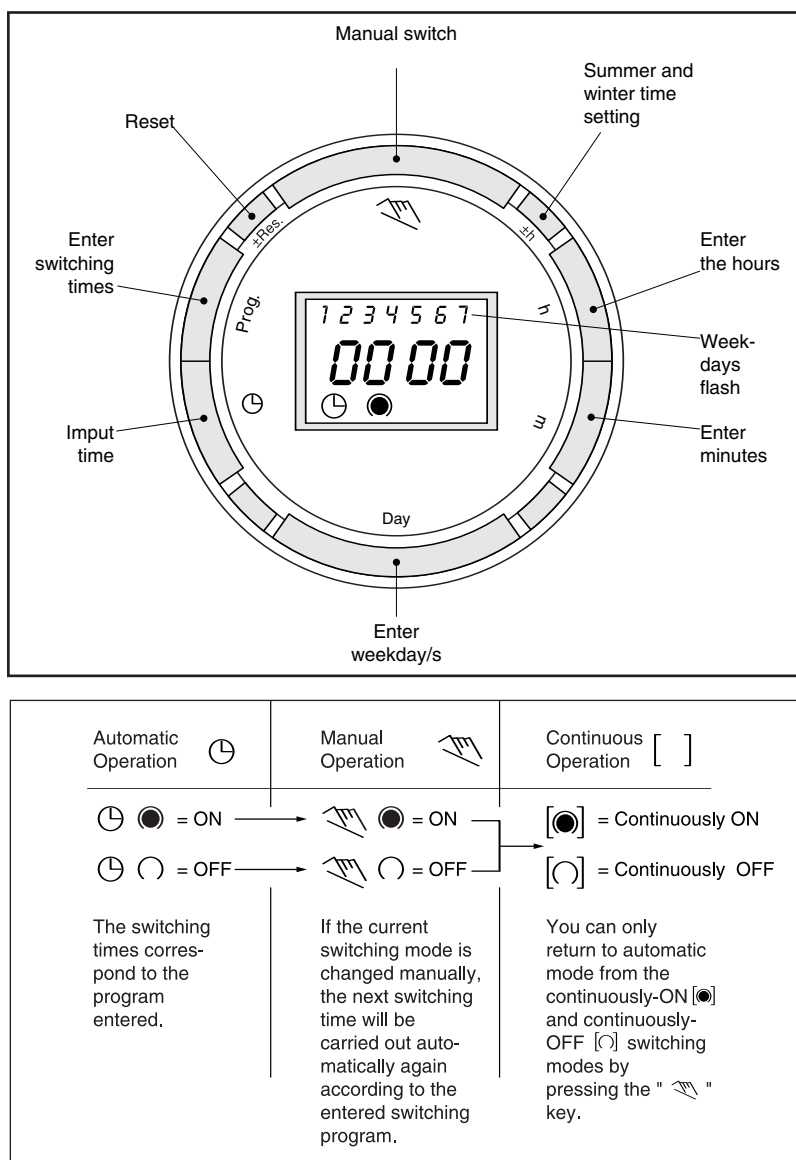
The clock uses a 24 hour system e.g. 8 = 8.00 am and 18 = 6.00 pm "ON" periods are set by sliding all tappets between the "ON" time and the "OFF" time to the outer edge of the dial. The tappets remaining at the centre of the dial are the "OFF" periods.

#### 4. For operation

Set the selector switch **B** to the ☉ symbol to control the central heating by the clock. Set the selector switch **B** to «I» to select permanent operation or to «0» to turn the central heating off permanently.

## 6. Setting the Time Clock (continued)

### 6.3 Setting the Digital Clock



#### Operating the time switch

The steps marked with the symbol "►" are necessary to carry out a switching program.

#### Preparing for Operation

- Activate the "Res" switch (=RESET) to reset the time switch to its default setting (activate using a pencil or similar pointed instrument). Do this:

- every time you wish to "reset" the time switch
- to erase all switching times and the current time of day.

After approximately two seconds the following display appears:

#### ► Enter current time and weekday

- Keep the "☀" key pressed down
- During the summer time period press the +/- 1h key once.
- Enter the hour using the "h" key
- Enter the minutes using the "m" key
- Enter the day using the "Day" key
- 1 = "Monday" ..... 7 = Sunday
- Release the "☀" key.

## 6. Setting the Time Clock (continued)

### ► Entering the switching times

You have 20 memory locations available. Each switching time takes up one memory location.


Keep pressing the “Prog” key until a free memory location is shown in the display “— :— :—”.

Programme ON or OFF with the “ ” key:

“ ”= OFF; “ ”= ON

Enter the hour using “h”

Enter the minutes using “m”

If a switching command is to be carried out every day (1 2 3 4 5 6 7) then store using the “ ” key, otherwise select the day(s) it is to be carried out by using the “Day” key.


When the day selection is left blank, the programmed switching instruction operates at the same time every day

1 2 3 4 5 6 = Monday – Saturday



1 2 3 4 5 = Monday – Friday

6 7 =Saturday – Sunday


Selection of single days: 1 = Mon. .... 2 =Tues.

Save the switching time with the “ ” key.

The time switch enters the automatic operating mode and displays the current time of day.

Begin any further entry of a switching time with the “Prog” switch. If your entry is incomplete, the segments not yet selected will blink in the display. After programming is completed, and you return the time clock to the current time display with the “ ” key, the time clock will not activate any switching instruction required for the current time. You may need to manually select the desired switching state with the “ ” key. Thereafter, as the unit encounters further switching instructions in the memory in real time, it will correctly activate all subsequent switching instructions.

### Manual Override Switch “ ”

With the “ ” you can change the current setting at any time. The switching program already entered is not altered.

### Reading the programmed switching times

Pressing the “Prog” key displays the programmed switching times until the first free memory location appears in the display “— :— :—”.

If you now press the “Prog” key once again, the number of free memory locations will be displayed, e.g. “18”. If all memory locations are occupied, the display “00” appears.

### Changing the programmed switching times


Press the “Prog” key repeatedly until the switching time you want to change is displayed. You can now enter the new data. See point “Entering the switching times”.

### Notes on storing switching times:

If you end your entry of the switching times by pressing the “Prog” key, then the switching time you have entered will be stored and the next memory location displayed.

In addition, a complete switching command is stored **automatically** after around 90 seconds provided **no other** key is pressed. The time switch then enters the automatic operating mode and displays the current time again.

### Deleting individual switching times

Press the “Prog” key repeatedly until the switching time you wish to delete is shown in the display. Then set to “— :— :—” using the “h” or “m” key and keep the “ ” key pressed down for around 3 seconds. The switching time is now erased and the current time is displayed.

### AM / PM time display

If you press the “+/- 1h” and “h” keys at the same time, the time display switches into the AM/PM mode.

# INSTALLER'S INSTRUCTIONS

## 7. Description

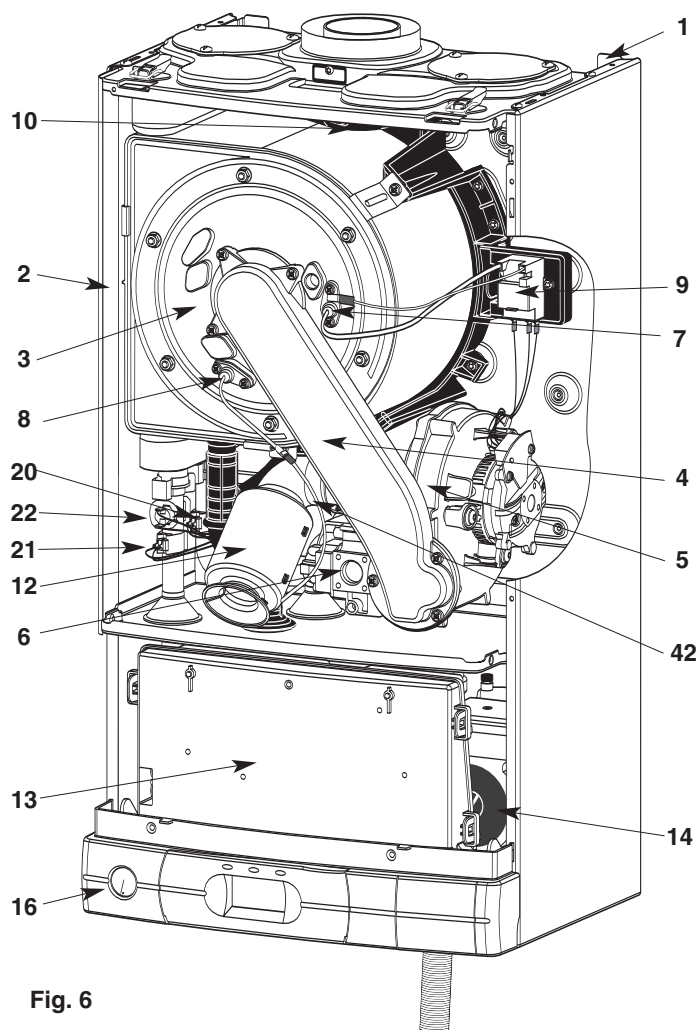


Fig. 6

- 1.- Steel chassis complete with expansion vessel
- 2.- Sealed chamber
- 3.- Burner and heat exchanger assembly
- 4.- Air / gas connection
- 5.- 24 V modulating fan
- 6.- Gas valve
- 7.- Ignition electrode
- 8.- Ionisation probe
- 9.- Ignitor
- 10.- Combustion products manifold
- 11.- Condense trap
- 12.- Silencer
- 13.- Electrical box
- 14.- Pump
- 16.- Pressure gauge
- 17.- Three way valve
- 18.- Automatic air separator and automatic vent
- 20.- Main exchanger return thermistor
- 21.- Main exchanger flow thermistor
- 22.- Overheat sensor
- 23.- Central heating pressure relief valve
- 24.- Condensate pipe

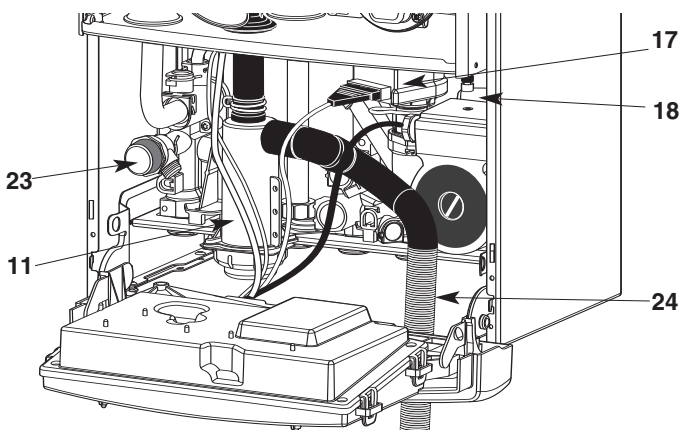


Fig. 7

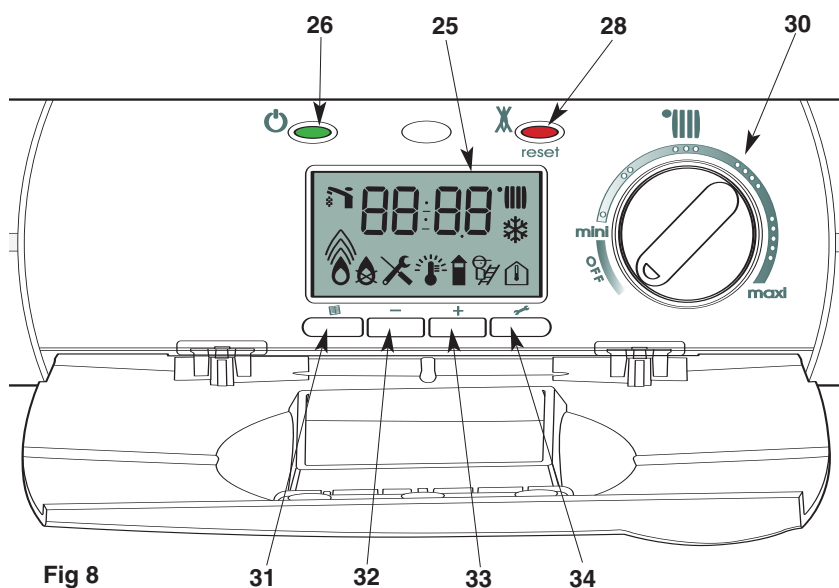


Fig 8

- 25.- Display
- 26.- On/off push button and power on indicator light
- 28.- Reset push button and red indicator locking light
- 30.- Central Heating start button and temperature setting
- 31.- Menu key
- 32.- Reducing key
- 33.- Increasing key
- 34.- Setting key

## 8. Dimensions

All dimensions in mm

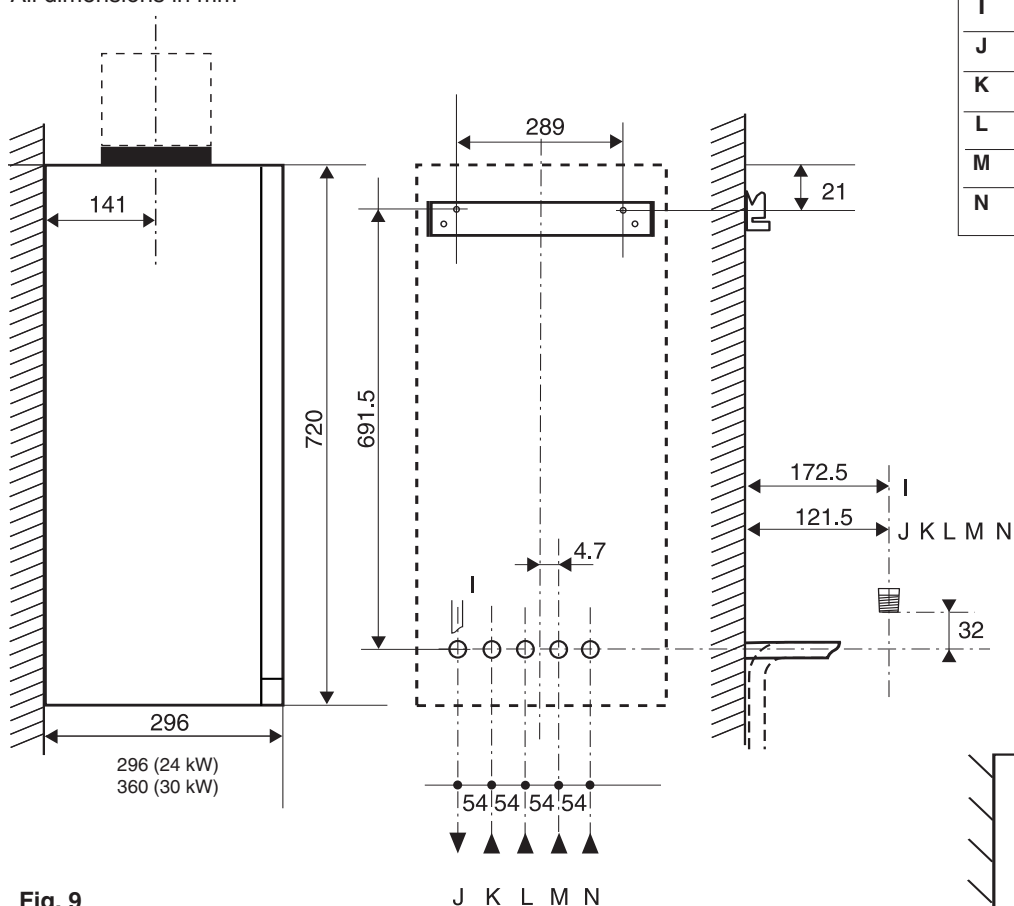
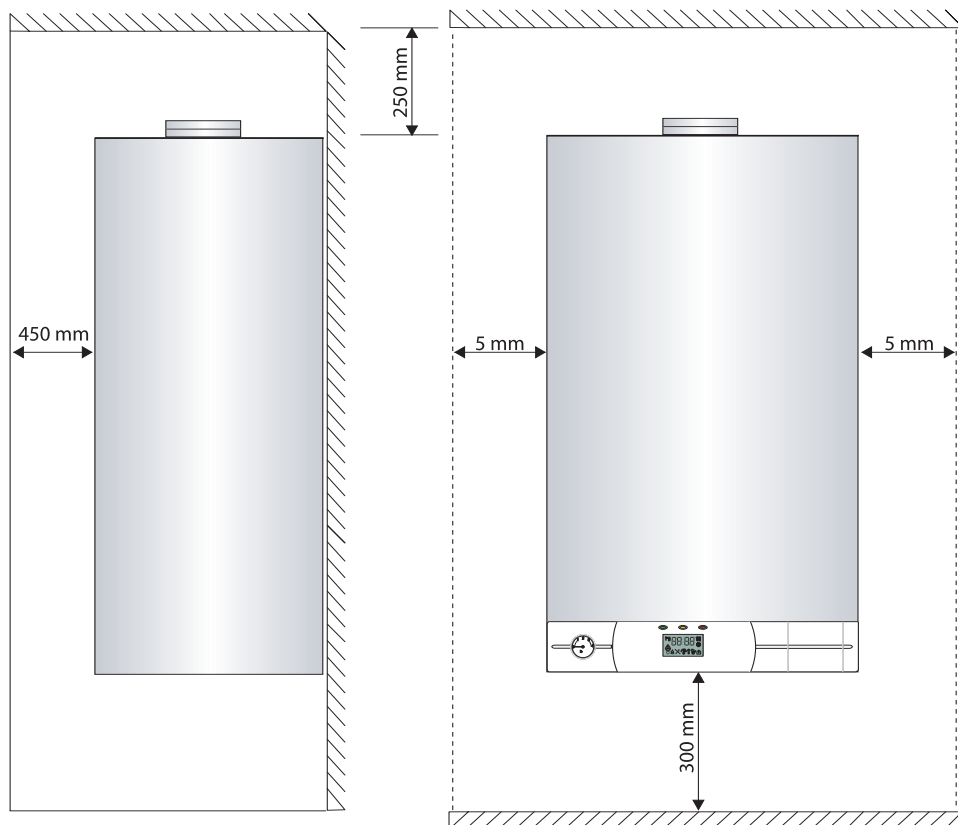
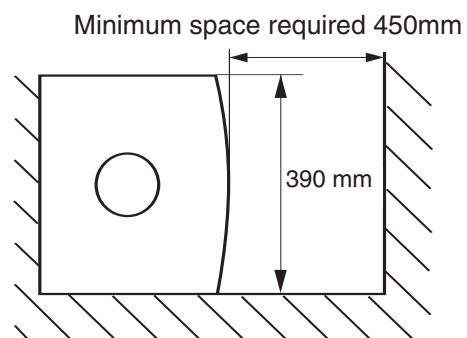


Fig. 9



NOTE: THE CLEARANCES STATED ABOVE ARE REQUIRED FOR SERVICING PURPOSES

## 9. Hydraulic data

The boiler is fitted with an automatic by-pass as standard.

The graphs (Fig. 10) show the development of the pressure available in relation to flow (on exit from the boiler).

To ensure correct operation, the minimum flow of the appliance must be 300 l/h. (Thermostatic taps closed).

### Capacity of the installation.

The water heater is fitted with a pressurised expansion vessel.

Maximum volume of expansion vessel: 6 litres.(24 kW)

7 litres.(30 kW)

Pressure: 1 bar.

The volume of the expansion vessel in a pressurised appliance varies according to:

- the average operating temperature in °C
- the static height, which is the difference in metres between the highest point of the appliance and the expansion vessel axis.

The minimum cold filling pressure of the appliance is 0.8 bar (recommended pressure between 1.0 and 1.5 bar).

The pressure of the expansion vessel should always be greater than the static height (in metres) divided by 10.

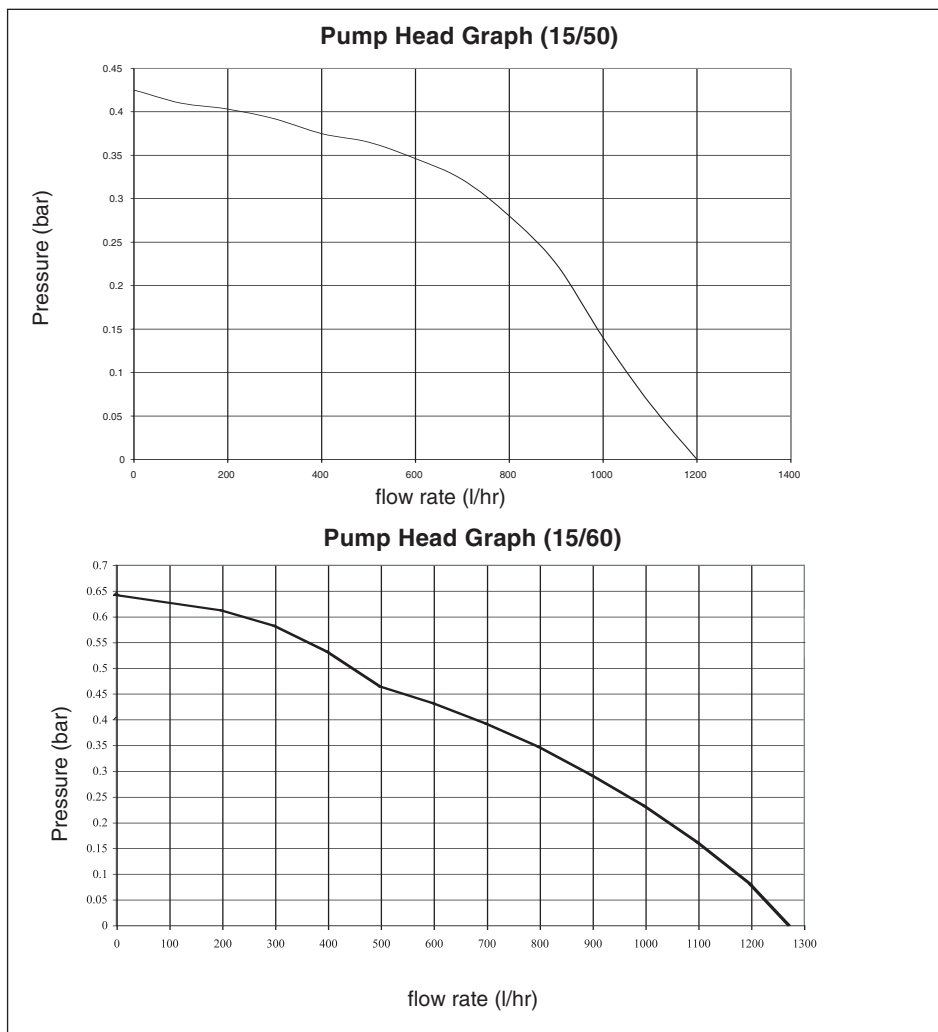


Fig. 10

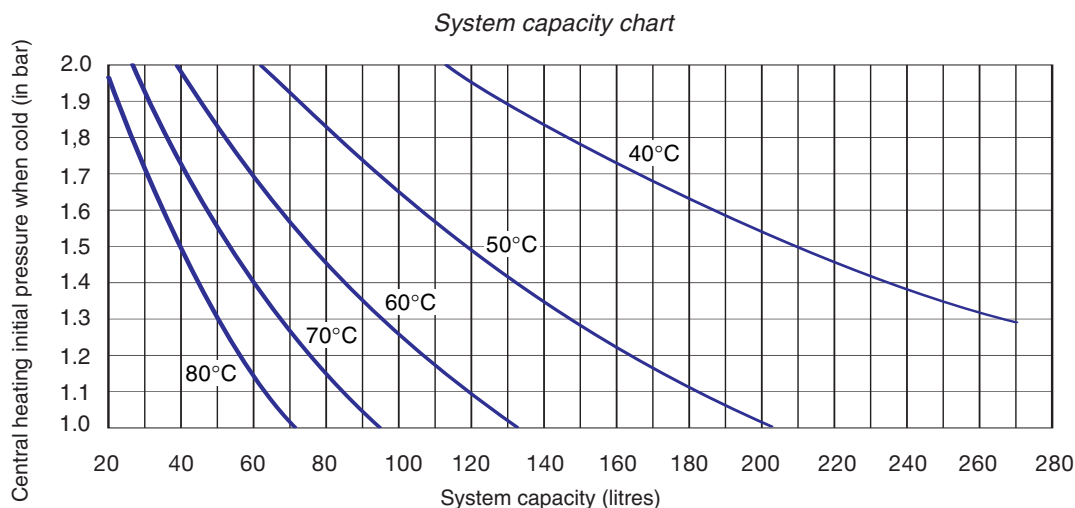


Fig. 11

# 10. Installation Requirements

## Reference Standards

In the United Kingdom, the installation and initial start up of the boiler must be by a CORGI Registered installer in accordance with the installation standards currently in effect, as well as with any and all local health and safety standards i.e. CORGI.

In the Republic of Ireland the installation and initial start up of the appliance must be carried out by a Competent Person in accordance with the current edition of I.S.813 "Domestic Gas Installations" and the current Building Regulations, reference should also be made to the current ETCl rules for electrical installation.

The installation of this appliance must be in accordance with the relevant requirements of the Local Building Regulations, the current I.E.E. Wiring Regulations, the by-laws of the local water authority, in Scotland, in accordance with the Building Standards (Scotland) Regulation and Health and Safety document No. 635, "Electricity at Work Regulations 1989" and in the Republic of Ireland with the current edition of I.S. 813 and the Local Building Regulations (IE).

For detailed information on the installation of Condensing boilers, reference should be made to the **ODPM Guide to the Condensing Boiler Assessment Procedure for Dwellings**.

## C.O.S.H.H.

Materials used in the manufacture of this appliance are non-hazardous and no special precautions are required when servicing.

## Codes of Practice

Installation should also comply with the following British Standards Codes of Practice:

<b>BS 7593:1992</b>	<b>Treatment of water in domestic hot water central heating systems</b>
<b>BS 5440-1:2000</b>	<b>Flues</b>
<b>BS 5440-2:2000</b>	<b>Air Supply</b>
<b>BS 5449:1990</b>	<b>Forced circulation hot water systems</b>
<b>BS 6798:2000</b>	<b>Installation of gas fired hot water boilers of rated input not exceeding 70kW</b>
<b>BS 6891:1998</b>	<b>Installation of low pressure gas pipe up to 28mm</b>
<b>BS 7671:2001</b>	<b>IEE Wiring Regulations</b>
<b>BS 4814:1990</b>	<b>Specification for expansion vessels</b>
<b>BS 5482:1994</b>	<b>Installation of L.P.G.</b>

and in the Republic of Ireland in accordance with the following codes of practice

## I.S. 813 Domestic Gas Installations

Avoid installing the boiler where the air inlet can be polluted by chemical products such as chlorine (swimming pool area), or ammonia (hair-dresser), or alkaline products (launderette)

## Flue

Detailed information on flue assembly can be found in **Section 12 "Connecting the flue"**.

The boiler must be installed so that the flue terminal is exposed to the free passage of external air at all times and must not be installed in a place likely to cause nuisance. It

must not be allowed to discharge into another room or space such as an outhouse or closed lean-to.

Condensing boilers have a tendency to form a plume of water vapour from the flue terminal due to the low temperature of the flue gasses. The terminal should therefore be located with due regard for the damage or discolouration that might occur to buildings in the vicinity and consideration must also be given to adjacent boundaries, openable windows should also be taken into consideration when siting the flue.

The minimum acceptable clearances are shown below:

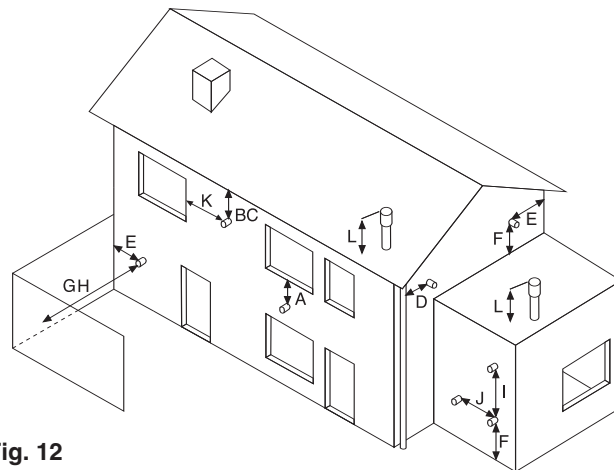


Fig. 12

A - Directly below an open window or other opening	300
B - Below gutters, solid pipes or drain pipes	75
C - Below eaves	200
D - From vertical drain pipes and soil pipes	75
E - From internal or external corners	300
F - Above ground on a public walkway or patio	2100
G - From a surface facing a terminal	2500
H - From a terminal facing a terminal	2500
I - Vertically from a terminal in the same wall	1500
J - Horizontally from a terminal in the same wall	300
K - Horizontally from an opening window	300
L - Fixed by vertical flue terminal	

**NOTE: THE FLUE MUST NOT BE INSTALLED IN A PLACE LIKELY TO CAUSE A NUISANCE.**

It may be necessary to protect the terminal with a guard, if this is the case it will be necessary to purchase a stainless steel terminal guard. Reference should be made to the Building Regulations for guidance.

## Ventilation

The room in which the boiler is installed does not require specific ventilation. **If it is installed in a cupboard or compartment permanent ventilation is not required for cooling purposes.**

## Gas Supply

The gas installation and soundness testing must be in accordance with the requirements of BS 6891. Ensure that the pipe size is adequate for demand including other gas appliances on the same supply.

## Electrical Supply

The appliance requires an earthed 230V - 50 Hz supply and must be in accordance with current I.E.E. regulations.

## 10. Installation Requirements (continued)

It must also be possible to be able to completely isolate the appliance electrically. Connection should be via a 3 amp fused double-pole isolating switch with a contact separation of at least 3 mm on both poles. Alternatively, a fused 3 Amp. 3 pin plug and unswitched socket may be used, provided it is not used in a room containing a bath or shower. It should only supply the appliance.

The boiler is suitable for sealed systems only. The maximum working pressure for the appliance is 6 bar. All fittings and pipework connected to the appliance should be of the same standard. If there is a possibility of the incoming mains pressure exceeding 6 bar, particularly at night, then a suitable pressure limiting valve must be fitted.

The boiler is designed to provide Central Heating on demand to a Central Heating system and to heat an Indirect Hot Water Storage Cylinder.

### Flushing and Water Treatment

The boiler is equipped with a stainless steel heat exchanger.

The detailed recommendations for water treatment are given in BS 7593:1992 (Treatment of water in domestic hot water central heating systems); the following notes are given for general guidance;

If the boiler is installed on an existing system, any unsuitable additives must be removed.

Under no circumstances should the boiler be fired before the system has been thoroughly flushed; the flushing procedure must be in line with BS7593:1992.

We highly recommend the use of a flushing detergent appropriate for the metals used in the circuit. These include cleansers produced by Fernox and BetzDearborn, whose function is to dissolve any foreign matter that may be in the system;

In hard water areas or where large quantities of water are in the system the treatment of the water to prevent premature scaling of the main heat exchanger is necessary.

The formation of scale strongly compromises the efficiency of the thermic exchange because small areas of scale cause a high increase of the temperature of the metallic walls and therefore add to the thermal stress of the heat exchanger.

Demineralised water is more aggressive so in this situation it is necessary to treat the water with an appropriate corrosion inhibitor.

Any treatment of water by additives in the system for frost protection or for corrosion inhibition has to be absolutely suitable for all the metals used in the circuit.

The use of a corrosion inhibitor in the system such as Fernox MB-1, BetzDeaborn Sentinel X100 or Fernox System Inhibitor is recommended to prevent corrosion (sludge) damaging the boiler and system;

If anti-freeze substances are to be used in the system, check carefully that they are compatible with the metals used in the circuit.

MTS suggests the use of suitable anti-freeze products such as Fernox ALPHI 11, which will prevent rust and incrustation taking place.

Periodically check the pH of the water/anti-freeze mixture of the boiler circuit and replace it when the amount measured is out of the range stipulated by the manufacturer ( $7 < \text{pH} < 8$ ). **DO NOT MIX DIFFERENT TYPES OF ANTI-FREEZE**

In under-floor systems, the use of plastic pipes without protection against penetration of oxygen through the walls can cause corrosion of the systems metal parts (metal piping, boiler, etc), through the formation of oxides and bacterial agents.

To prevent this problem, it is necessary to use pipes with an "oxygen-proof barrier", in accordance with standards DIN 4726/4729. **If pipes of this kind are not used, keep the system separate by installing heat exchangers of those with a specific system water treatment.**

### IMPORTANT

***Failure to carry out the water treatment procedure will invalidate the appliance warranty.***

### Location

The boiler can be installed on any suitable internal wall. Provision must be made to allow the correct routing of the flue and siting of the terminal to allow the safe and efficient removal of the flue products. A compartment or cupboard may be used provided that it has been purpose-built or modified for the purpose. It is not necessary to provide permanent ventilation for cooling purposes. Detailed recommendations are given in BS 5440 pt 2. If it is proposed that it is installed in a timber framed building then reference should be made to British Gas Document DM2, or advice sought from CORGI.

**Where a room sealed appliance is installed in a room containing a bath or shower, the appliance and any electrical switch or appliance control, utilising mains electricity should be situated specifically in accordance with current IEE Wiring Regulations.**

For unusual locations, special procedures may be necessary. **BS 6798:2000** gives detailed guidance on this aspect.

### Condensate Discharge

The condensate discharge hose from the boiler must have a continuous fall of 2.5° and must be inserted by at least 50mm into a suitable acid resistant pipe - e.g. plastic waste or overflow pipe. The condensate discharge pipe must have a minimum diameter of 22mm, must have a continuous fall and preferably be installed and terminated to prevent freezing.

The discharge pipe must be terminated in a suitable position:

- i) Connecting into an internal soil stack (at least 450mm above the invert of the stack). A trap giving a water seal of at least 75mm must be incorporated into the pipe run, there also must be an air break upstream of the trap.
- ii) Connecting into the waste system of the building such as a washing machine or sink trap. The connection must be upstream of the washing machine/sink. If the connection is down stream of the waste trap then an additional trap giving a minimum water seal of 75mm and an air break must be incorporated in the pipe run, as above.

## 10. Installation Requirements (continued)

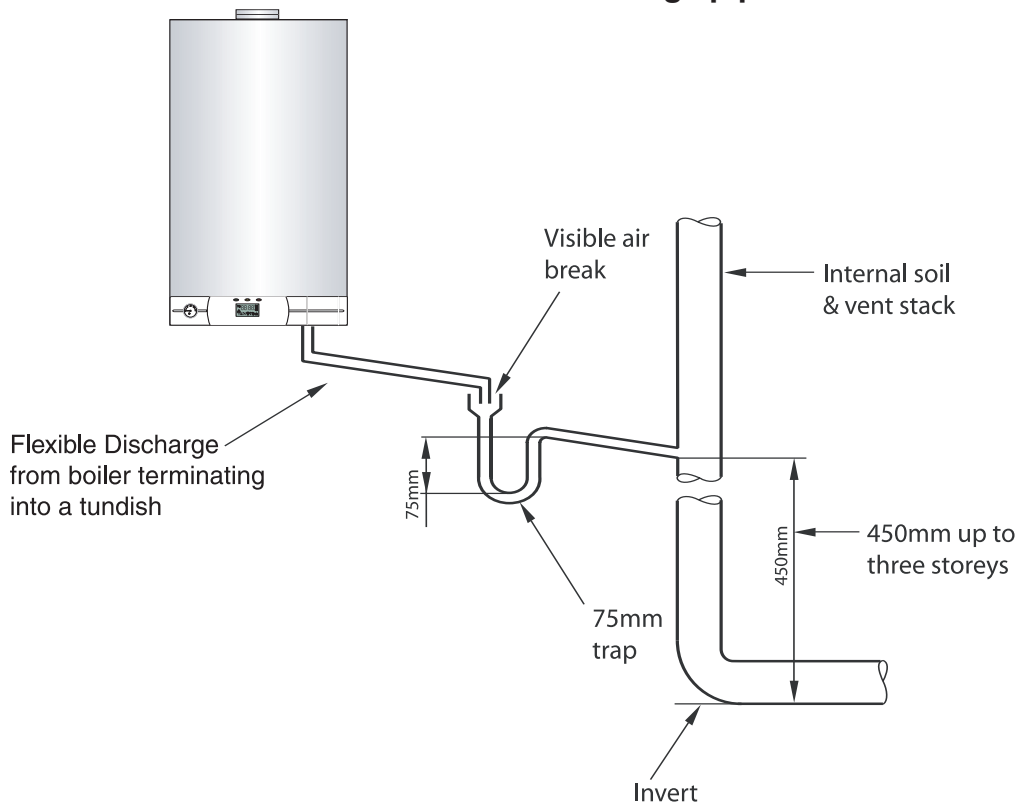
- iii) Terminating into a gully, below the grid level but above the water level.
- iv) Into a soakaway.

NOTE: If any condensate pipework is to be installed externally then it should be kept to a minimum and be insulated with a waterproof insulation and have a continuous

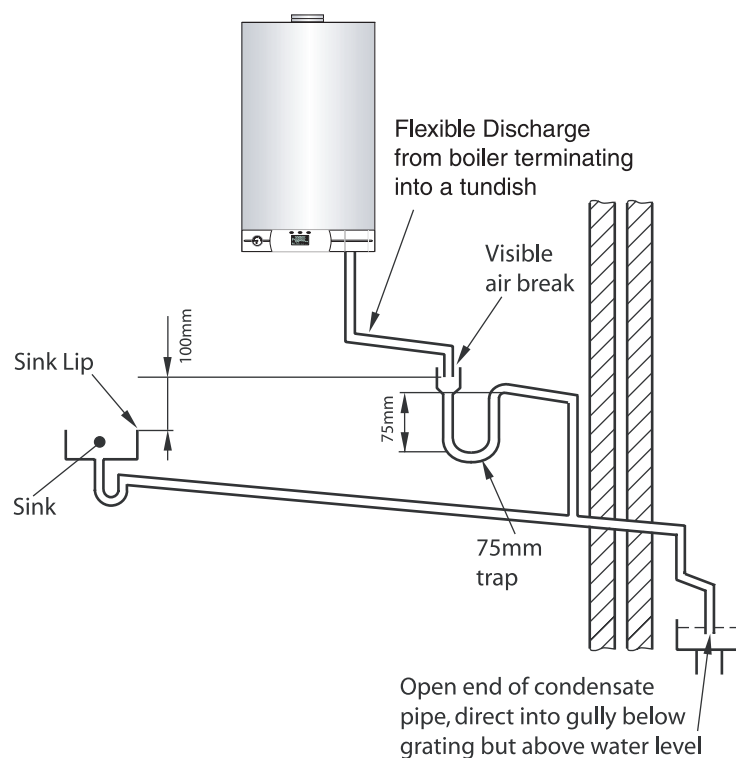
fall. The total length of external pipe used should not exceed 3 metres.

Some examples of the type of condensate terminations can be found below.

### 1. Internal termination of condensate drainage pipe to internal stack

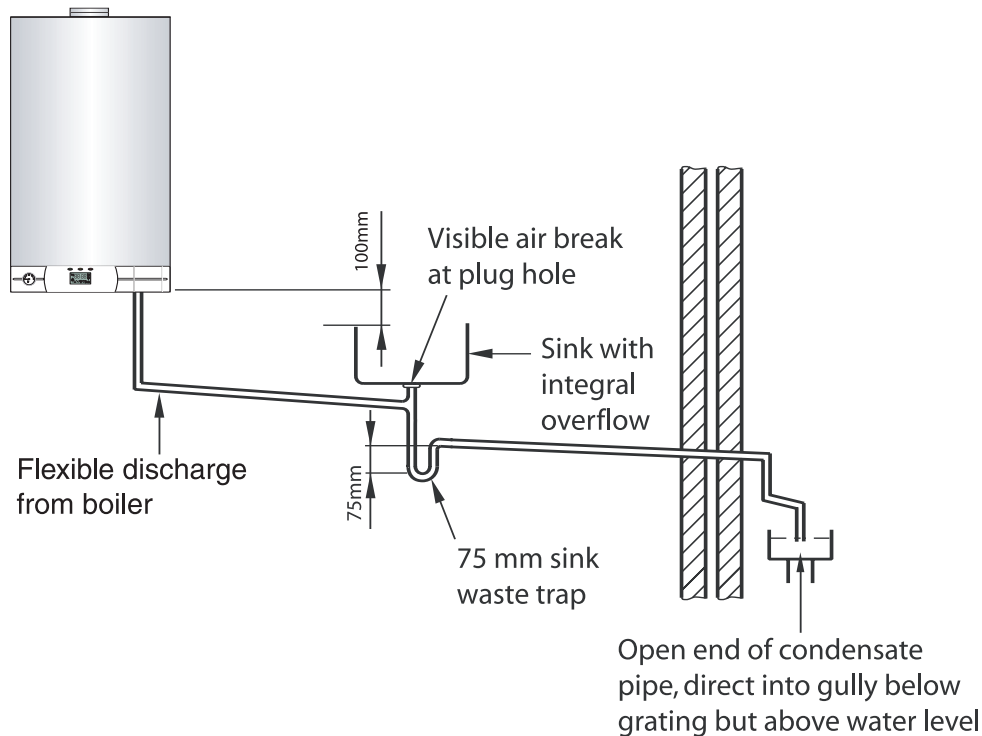


### 2. External termination of condensate drainage pipe via internal discharge branch (e.g. sink waste) and condensate siphon

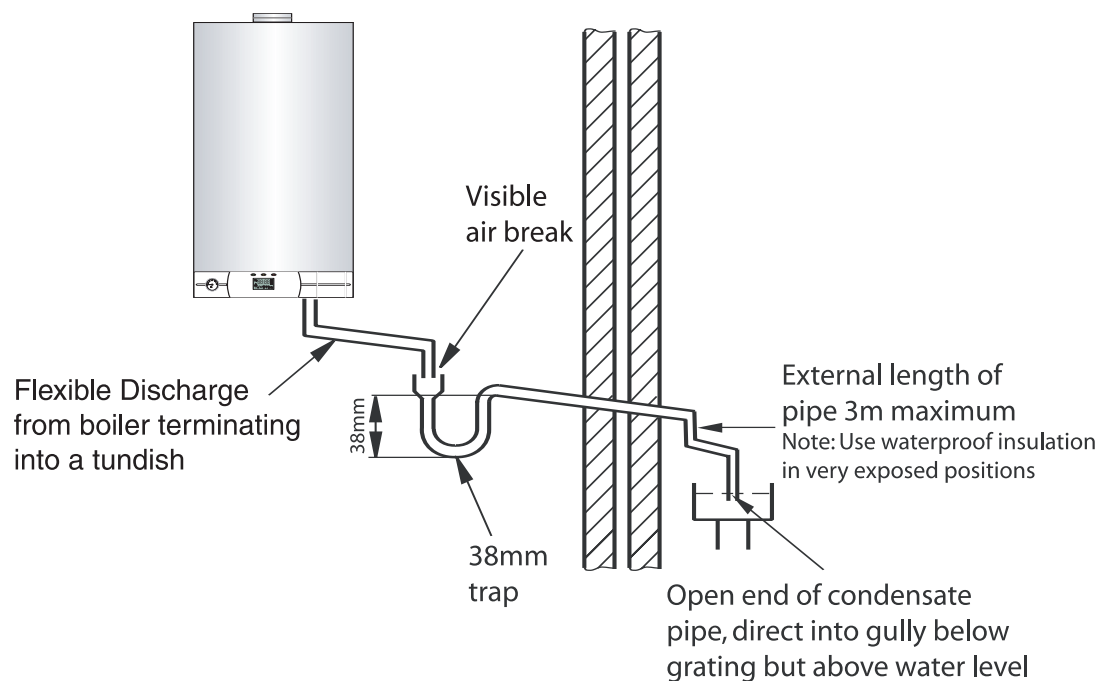


## 10. Installation Requirements (continued)

### 3. External termination of condensate drainage pipe via internal discharge branch (e.g. sink waste - proprietary fitting)



### 4. External termination of condensate drainage pipe via condensate siphon



# 11. Installing the Boiler

Please check that you are familiar with the installation requirements before commencing work (Section 10).

The installation accessories described in the following list are included in the boiler packaging:

- Hanging bracket
- A paper template (showing the dimensions of the boiler with 5 mm side clearances)
- Connection tails and valves
- Screws and washers
- Connection washers
- Installation, Servicing and Operating Instructions
- Air Inlet Header (for use with twin flue pipe)
- Guarantee Card

## Method of positioning the boiler on the wall.

The paper template can be used to ensure the correct positioning of kitchen cabinets etc. It also details the commissioning instructions.

The paper template has to be fixed to the wall and used to locate the position of the hanging bracket and the centre for the flue hole.

Drill and plug the wall and secure the hanging bracket using the screws provided. Remove the boiler from its packaging as shown in Fig. 13, unscrew the clamp locking bolt **A** and remove the casing (Fig. 14).

Place the boiler on the wall on the hanging bracket (Fig. 15).

**NOTE: THE APPLIANCE MUST NOT BE FITTED ON A COMBUSTIBLE WALL SURFACE.**

## Connecting the boiler to the system

- Remove the boiler casing as described in Section 18 (page 45).
- Push in the tabs "**P**" (Fig. 15) on either side of the boiler and pivot the electrical box forward to gain access to the valve connections
- Remove the caps and connect the valves to the boiler using the washers provided in the plastic bag.
  - 2 x fibre washers for the C/H flow and return.
  - 1 x rubber washer for gas connection

## Safety valve discharge

The pressure relief valve tube is made of copper. It should terminate below the boiler safely outside the premises. Care should be taken that it does not terminate over an entrance or window or where a discharge of heated water could endanger occupants or passers by.

Fill the Central Heating and DHW system and bleed air from the system as described in Section 14 (page 32).

The system should be carefully checked for leaks, as frequent refilling could cause premature system corrosion or unnecessary scaling of the heat exchanger. The condensate pipe from the siphon (24 Fig. 7, page 11) should be connected to a drain as described in the relevant British regulations.

Pay special attention to not bend the plastic condensate drain pipe in such a way as to cause the flow to be interrupted. Please use exclusively drain pipe material compatible with condensate products. (refer to **BS 6798 : 2000**)

The condensate flow can reach 2 litres / hour; because of the acidity of the condensate products (Ph close to 2), take care before operation.

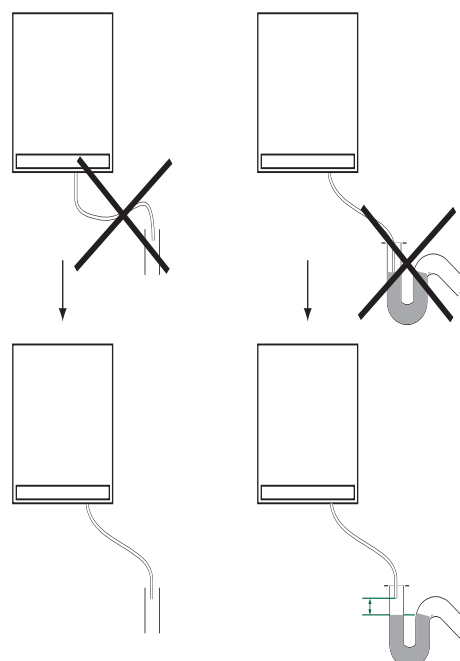
## Fitting the Horizontal Flue

**Attention ! Before starting the boiler, the trap (11 Fig. 7, page 11) must be filled with water. Before fitting the flue onto the boiler, pour 1/4 litre of water into the exhaust pipe as shown in Fig. 17 (page 19).**

Instructions on fitting the flue can be found in Section 12.

### IMPORTANT!!

**Use only the specific condensation flue kit supplied by MTS (GB) Limited.**



## 11. Installing the Boiler (continued)

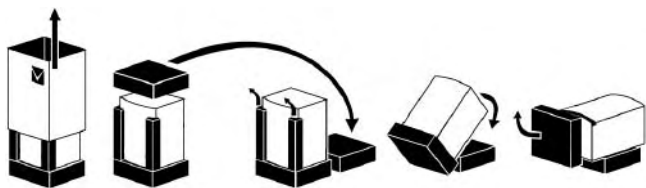


Fig. 13

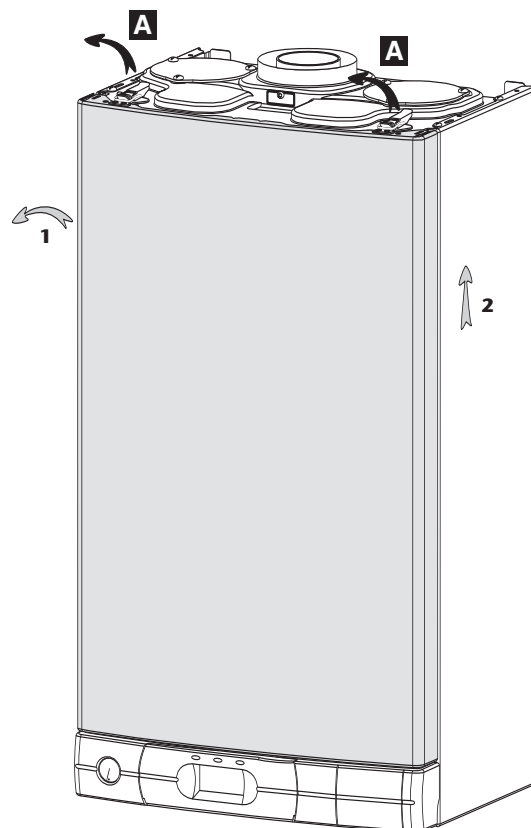


Fig. 14

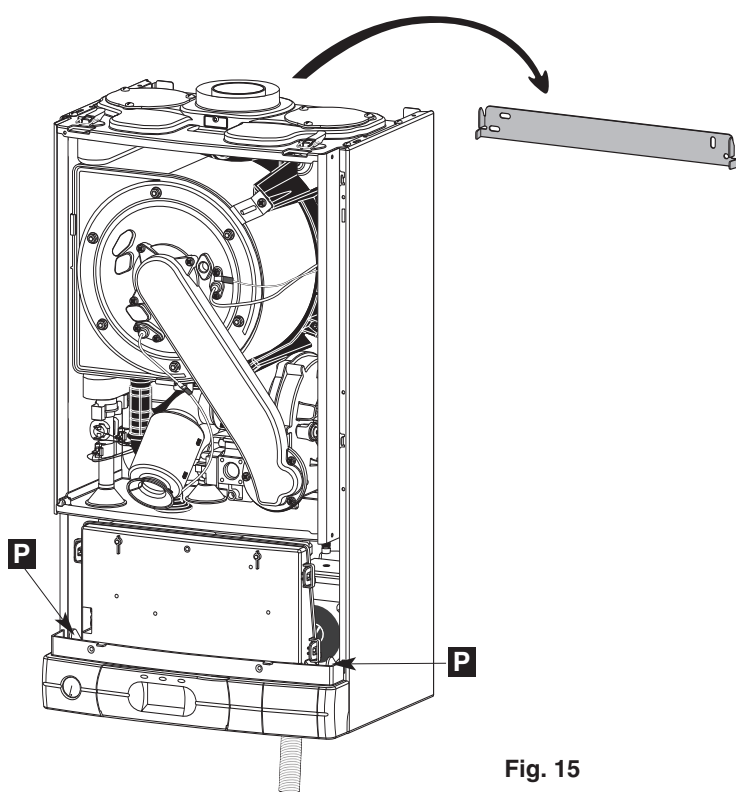


Fig. 15

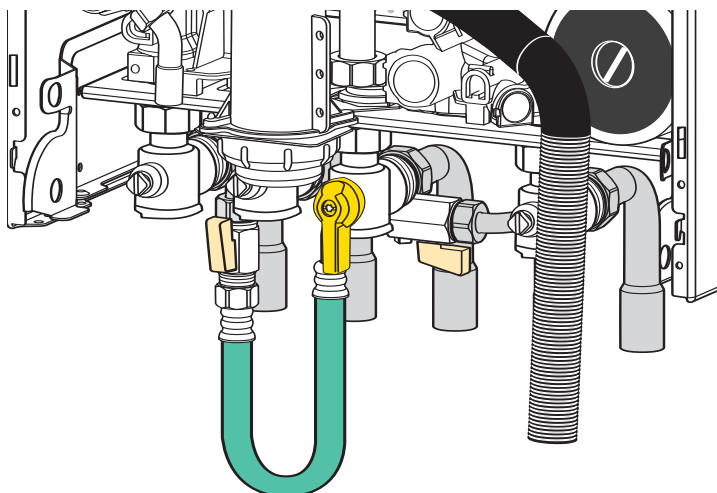


Fig. 16

## 12. Connecting the Flue

The boiler should only be installed with a flue system supplied by MTS (GB) Limited.

These kits are supplied separately to the appliance in order to respond to different installation solutions. For more information with regard to the inlet/outlet accessories consult the accessory catalogue. The boiler is supplied ready for connection to a concentric flue system.

NOTE: SEE PAGE 24 FOR MAXIMUM AND MINIMUM FLUE RUNS (TABLES A, B AND C)

### IMPORTANT!!

BEFORE CONNECTING THE FLUE, ENSURE THAT 1/4 LITRE OF WATER HAS BEEN POURED INTO THE EXHAUST CONNECTION TO FILL THE CONDENSATE TRAP (FIG. 17). SHOULD THE TRAP BE EMPTY THERE IS A TEMPORARY RISK OF FLUE GASSES ESCAPING INTO THE ROOM.

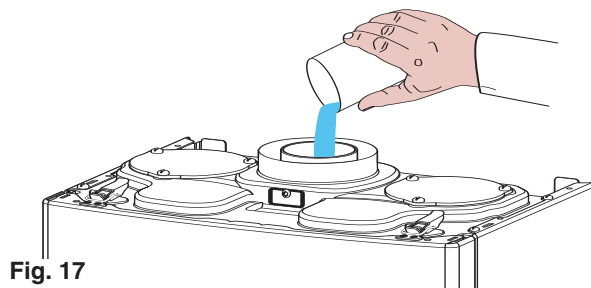


Fig. 17

### Warning

The exhaust gas ducts must not be in contact with or close to inflammable material and must not pass through building structures or walls made of inflammable material.

When replacing an old appliance, the flue system must be changed.

### Important

Ensure that the flue is not blocked. Ensure that the flue is supported and assembled in accordance with these instructions.

Ø 60/100 mm

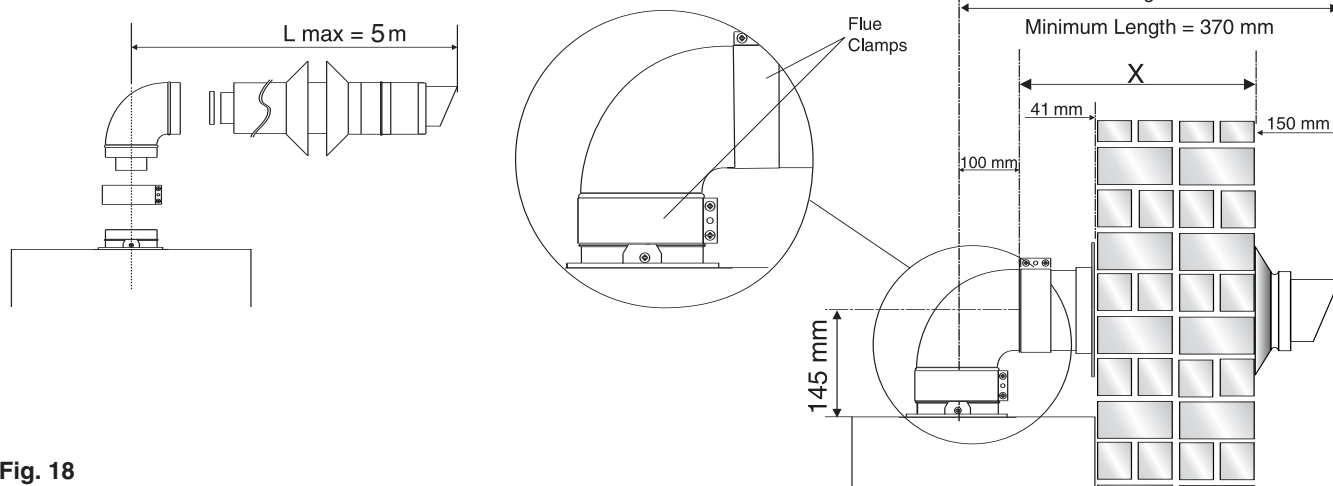
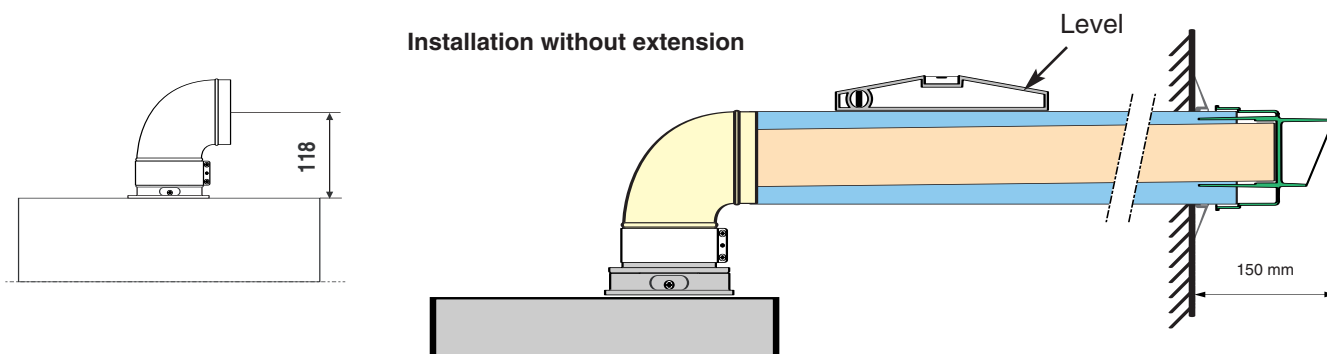


Fig. 18

### Installation without extension



### Installation with extension

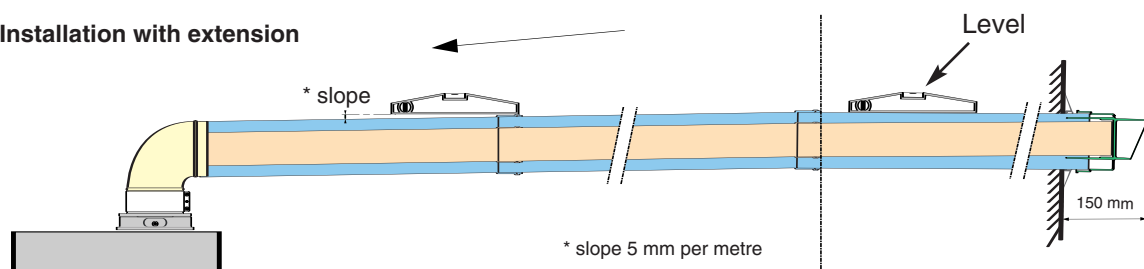


Fig. 19

## 12.1 Fitting the coaxial flue (Ø 60/100 Horizontal)

### CONTENTS:

1x SILICONE O-RING (60mm)

1x ELBOW (90°)

2x WALL SEALS (INTERNAL & EXTERNAL)

1x FLUE PIPE INCLUDING TERMINAL (1 METRE - 60/100)

1x FLUE CLAMP

1x SCREWS

1x Seal

Once the boiler has been positioned on the wall, insert the elbow into the socket and rotate to the required position. NOTE: It is possible to rotate the elbow 360° on its vertical axis.

Using the flue clamp, seals and screws supplied (**Fig 20**) secure the elbow to the boiler.

The 1 metre horizontal flue kit (3318073) supplied is suitable for an exact **X dimension** of 815mm.

Measure the distance from the face of the external wall to the face of the flue elbow (**X - Fig 18**), this figure must now be subtracted from 815mm, you now have the total amount to be cut from the plain end of the flue.

Draw a circle around the outer flue and cut the flue to the required length taking care not to cut the inner flue, next cut the inner flue ensuring that the length between the inner and outer flue is maintained. (**Fig 20**).

e.g.

$$X = 555\text{mm}$$

$$815 - 555 = 260\text{mm (Length to be cut from the plain end of the flue)}.$$

Once cut to the required length, ensure that the flue is free from burrs and reassemble the flue. If fitting the flue from inside of the building attach the grey outer wall seal to the flue terminal and push the flue through the hole, once the wall seal has passed through the hole, pull the flue back until the seal is flush with the wall. Alternatively, the flue can be installed from outside of the building, the grey outer seal being fitted last.

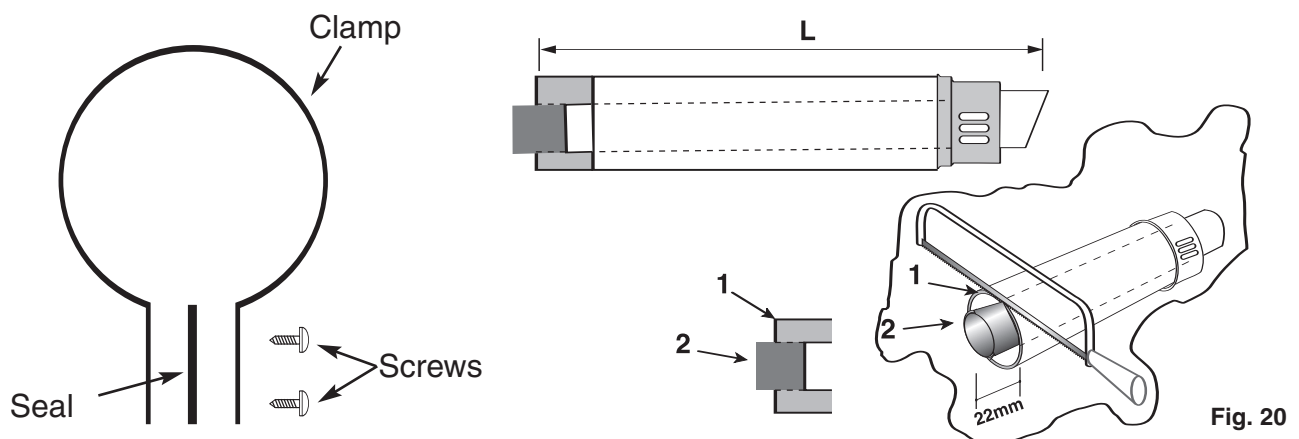


Fig. 20

## 12.2 Fitting the 5" Flue (Ø 80 / 125 Horizontal/vertical)

Should the flue require extending, the flue connections are push fit, however, one flue bracket should be used to secure each metre of flue.

NOTE: SEE PAGE 24 FOR MAXIMUM AND MINIMUM FLUE RUNS.

Once the boiler has been positioned on the wall, it is necessary to insert the Ø80/125 adaptor (**Fig. 21**) for both horizontal and vertical flue runs into the boiler flue socket (not supplied with flue kit - **Part No 3318095**).

Push the adaptor onto the boilers flue connection, grease the seals then add extensions or elbows as required, secure the adaptor, using the clamp and screws provided.

To fit extensions or elbows it is first necessary to ensure that the lip seal is fitted correctly into the inner flue, once verified, it is simply necessary to push them together, no clamps are necessary to secure the flue components.

Before proceeding to fit the flue, ensure that the maximum flue length has not been exceeded (See the tables on Page 23) and that all elbows and bends have been taken into consideration, the maximum flue length is 10 metres, for each additional 90° elbow 1 metre must be subtracted from the total flue length, and for each 45° 0.5 metres must be subtracted from the total flue length (**the height of the vertical adaptor and a 45° bend can be seen in Fig. 22 and a 90° bend in Fig. 24**).

NOTE: **DO NOT** CUT THE VERTICAL FLUE KIT.

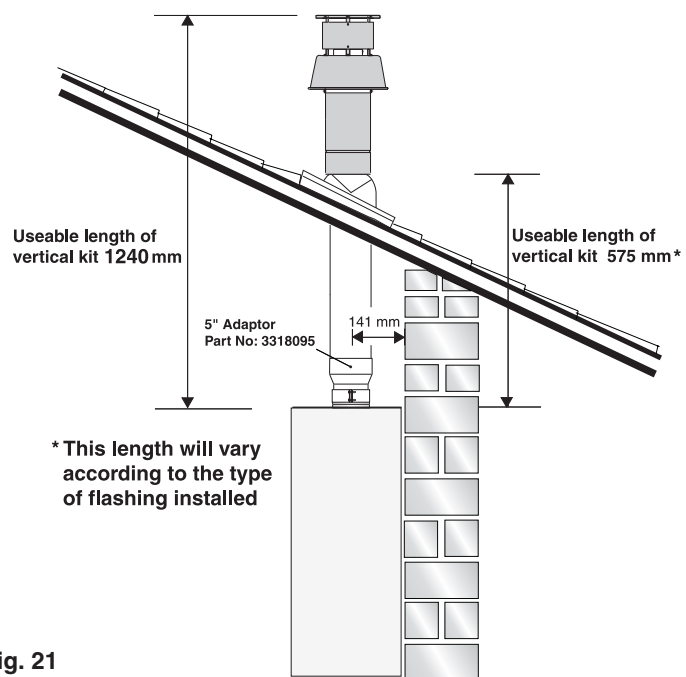


Fig. 21

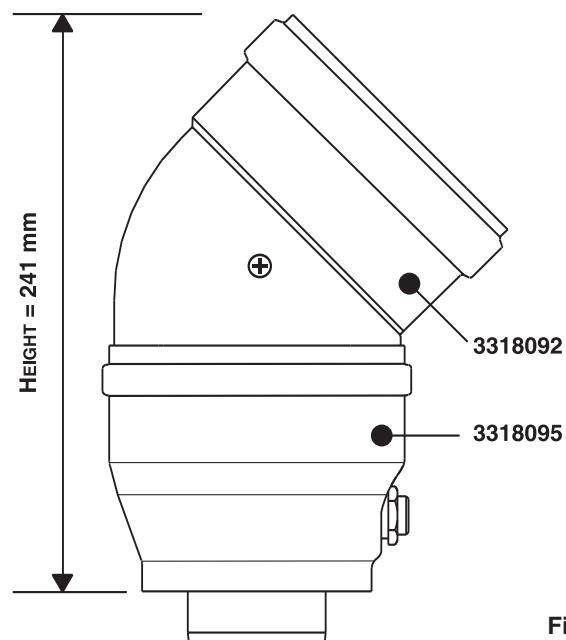


Fig. 22

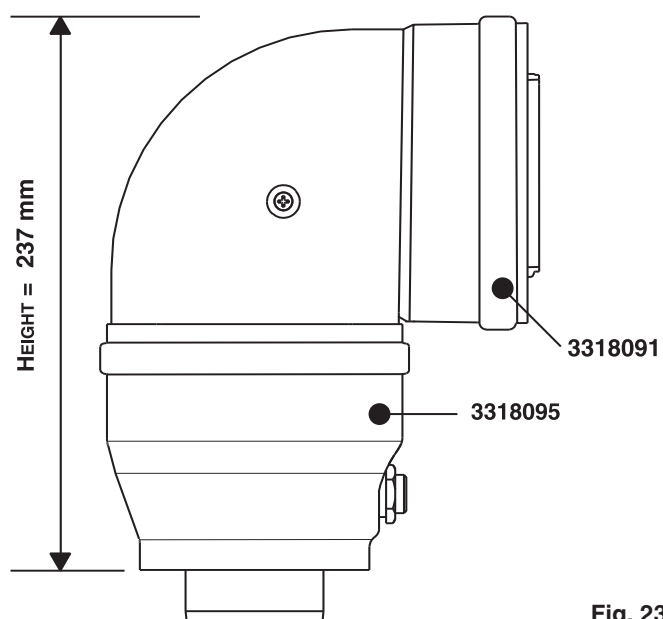


Fig. 23

## 12.3 Fitting the Coaxial Flue (Ø 60 / 100 Vertical)

NOTE: SEE PAGE 24 FOR MAXIMUM AND MINIMUM FLUE RUNS.

### CONTENTS:

1x SILICONE O-RING (60mm)

1x CONICAL ADAPTOR (60/100mm)

1x VERTICAL FLUE KIT (80/125mm)

3x SCREWS

The vertical flue kit is supplied with a specially designed weather proof terminal fitted, it can be used either with a flat roof or a pitched roof.

The Vertical flue kits useable lengths with the pitched roof flashings are indicated in **Fig. 24**.

Before proceeding to fit the flue, ensure that the maximum flue length has not been exceeded (See the tables on Page 24) and that all elbows and bends have been taken into consideration, the maximum flue length is 4 metres, for each additional 90° elbow 1 metre must be subtracted from the total flue length, and for each 45° 0.5 metres must be subtracted from the total flue length (**the height of the vertical adaptor and a 45° bend can be seen in Fig. 25**).

Mark the position of the flue hole in the ceiling and/or roof (see **Fig. 24** for the distance from the wall to the centre of the flue).

Cut a 120mm diameter hole through the ceiling and/or roof and fit the flashing plate to the roof.

**DO NOT** cut the vertical flue kit.

To connect the vertical flue kit directly to the boiler, place the vertical starter kit (**Part No. 3318079**) (see **Figs. 24 and 25**) onto the exhaust manifold and secure with the clamp, fit the vertical adaptor onto the vertical starter kit (note: there is no need to use a clamp to secure this as it is a push fit connection), the vertical flue kit must then be inserted through the roof flashing, this will ensure that the correct clearance above the roof is provided as the terminal is a fixed height.

Should extensions be required, they are available in 1 metre (**Part No. 3318077**), 500mm (**Part No. 3318078**) and 160mm lengths, they must be connected directly to the vertical starter kit before connecting the adaptor to allow the vertical flue kit to be fitted. In the event that extension pieces need to be shortened, they must only be cut at the male end and it must be ensured that the inner and outer flue remain flush.

When utilising the vertical flue system, action must be taken to ensure that the flue is supported adequately to prevent the weight being transferred to the appliance flue connection by using 1 flue bracket per extension.

When the flue passes through a ceiling or wooden floor, there must be an air gap of 25mm between any part of the flue system and any combustible material. The use of a ceiling plate will facilitate this. Also when the flue passes from one room to another a fire stop must be fitted to prevent the passage of smoke or fire, irrespective of the structural material through which the flue passes.

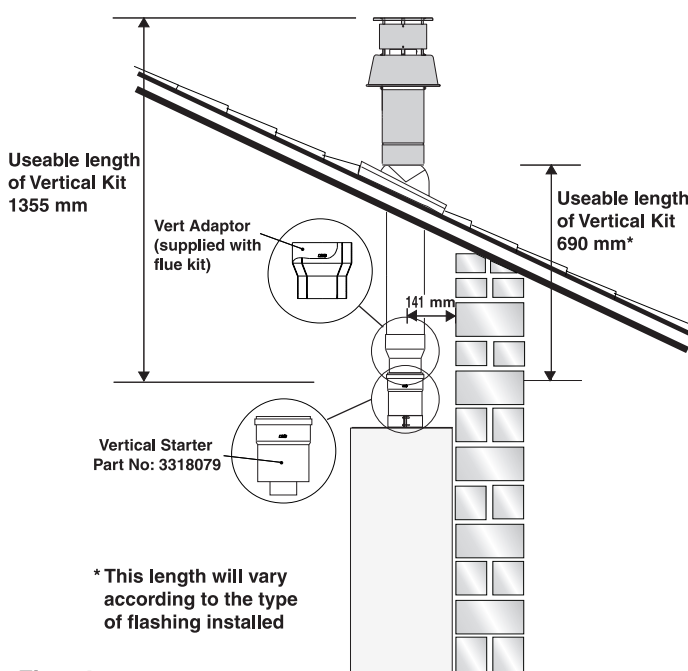


Fig. 24

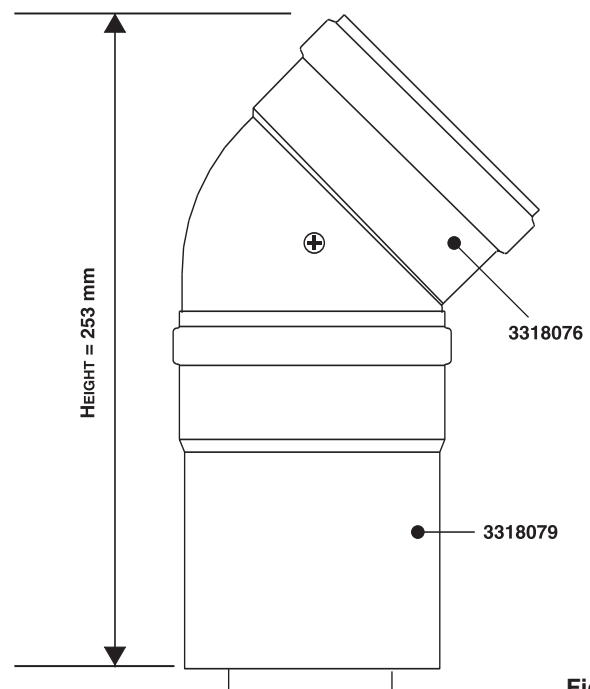


Fig. 25

## 12.4 Fitting the twin pipe flue (Ø80/80)

NOTE: SEE PAGE 24 FOR MAXIMUM AND MINIMUM FLUE RUNS (TABLE C)

Where it is not possible to terminate the flue within the distance permitted for coaxial flues, the twin flue pipe can be used by fitting a special adaptor to the flue connector and using the aperture for the air intake located on top of the combustion chamber.

Always ensure that the flue is adequately supported, avoiding low points. (MTS supply suitable clamps as Part No. 705778). To utilise the air intake it is necessary to:

- 1) Take the air intake cover off
- 2) Assemble the flange on the header supplied with the boiler
- 3) Insert the restrictor if necessary, on the tube or the elbow
- 4) Insert the header on the tube or the elbow up until the lower stop (you do not have to use the washer).
- 5) Insert the elbow/header in the boiler air intake hole and fasten it with screws

The twin flue pipes can be fitted with or without additional elbows and need no clamps, simply ensure that the red o-ring is inserted in the female end of the flue pipe and push the extension piece fully into the previous section of flue pipe or elbow, check that the o-ring is not dislodged when assembling the flue.

Twin pipe can also be converted back to Coaxial flue to enable vertical termination with a coaxial kit by using the pipe bridge (Twin - Coaxial Adaptor - Part No. 705767). When running the twin flue pipe vertically.

It is not recommended that the pipe bridge be used for horizontal termination, however in the unlikely event that this proves to be a necessity it is extremely important that the entire flue has a fall of 5mm in every metre back to the boiler, and where the 60mm inner flue of the concentric terminal connects to the pipe bridge, this point must be adequately sealed with silicone sealant to avoid condense leakage at this point.

When siting the twin flue pipe, the air intake and exhaust terminals must terminate on the same wall, the centres of the terminals **must** be a minimum of 280 mm apart and the air intake **must** not be sited above the exhaust terminal (refer to Fig. 30). The air intake pipe can be run horizontally, however, the terminal and the final 1 metre of flue must be installed with a fall away from the boiler to avoid rain ingress.

It is also strongly recommended that the air intake pipe run be constructed of insulated pipe to prevent condense forming on the outside of the tube.

The maximum permissible flue length for twin flue is dependent on the type of run used.

For flue runs with the intake and exhaust pipes under the same atmospheric conditions (TYPE 4) the maximum length is 60 metres (24kW and 30kW), for runs with the terminals under different atmospheric conditions (TYPE 5) the exhaust terminal **must** extend 0.5 metres above the ridge of the roof (this is not obligatory if the exhaust and air intake pipes are located on the same side of the building). For TYPE 5 also, the maximum permissible combined length is 60 metres (24kW and 30kW).

The maximum length is reached by combining the total lengths of both the air intake and exhaust pipes. Therefore a maximum length of 60 metres for example, will allow a flue run of 30 metres for the air intake and 30 metres for the exhaust pipes, also for each 90° elbow 2.2 metres must be subtracted from the total length and for each 45° elbow 1.4 metres must be subtracted from the total flue length.

Some of the acceptable flue configurations are detailed on page 25.

For further information relating to flue runs not illustrated, please contact the Technical Department on 0870 241 8180.

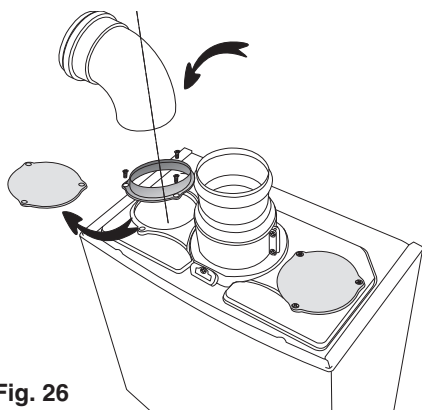


Fig. 26

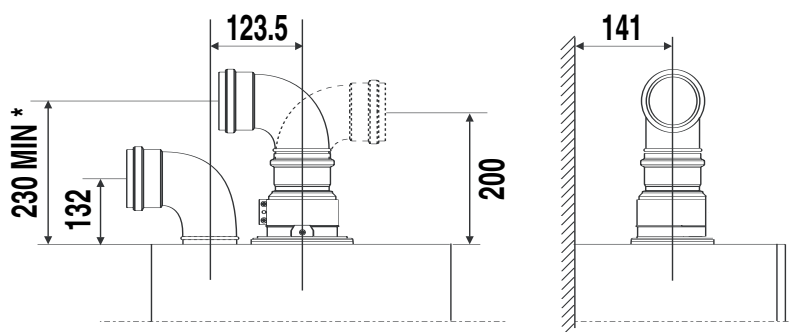


Fig. 27

## 12.4 Fitting the twin pipe flue (Ø80/80) (continued)

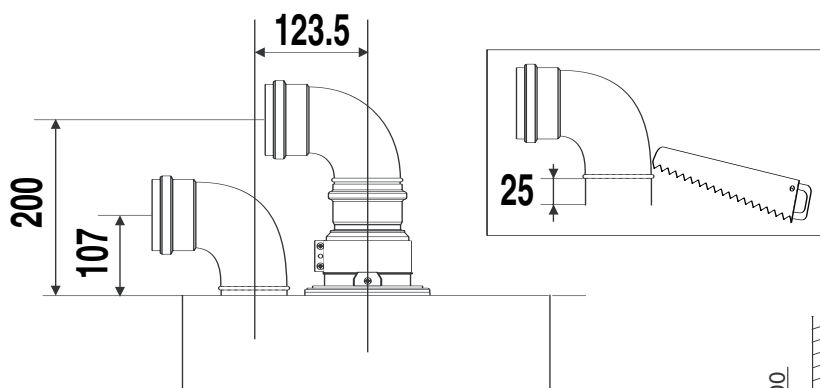


Fig. 28

In the event that twin flue pipes are used, and the boiler has a side clearance of less than 60mm from the wall, it is necessary to cut a larger diameter hole for the flue pipe, this should be  $\varnothing 100$  mm, this will then allow for easier assembly of the air intake elbow and the tube outside the wall (see Fig. 29).

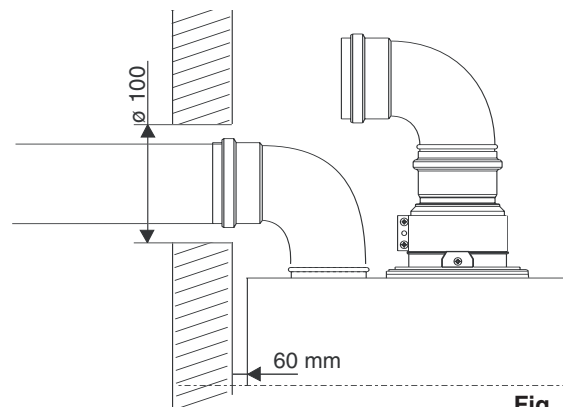


Fig. 29

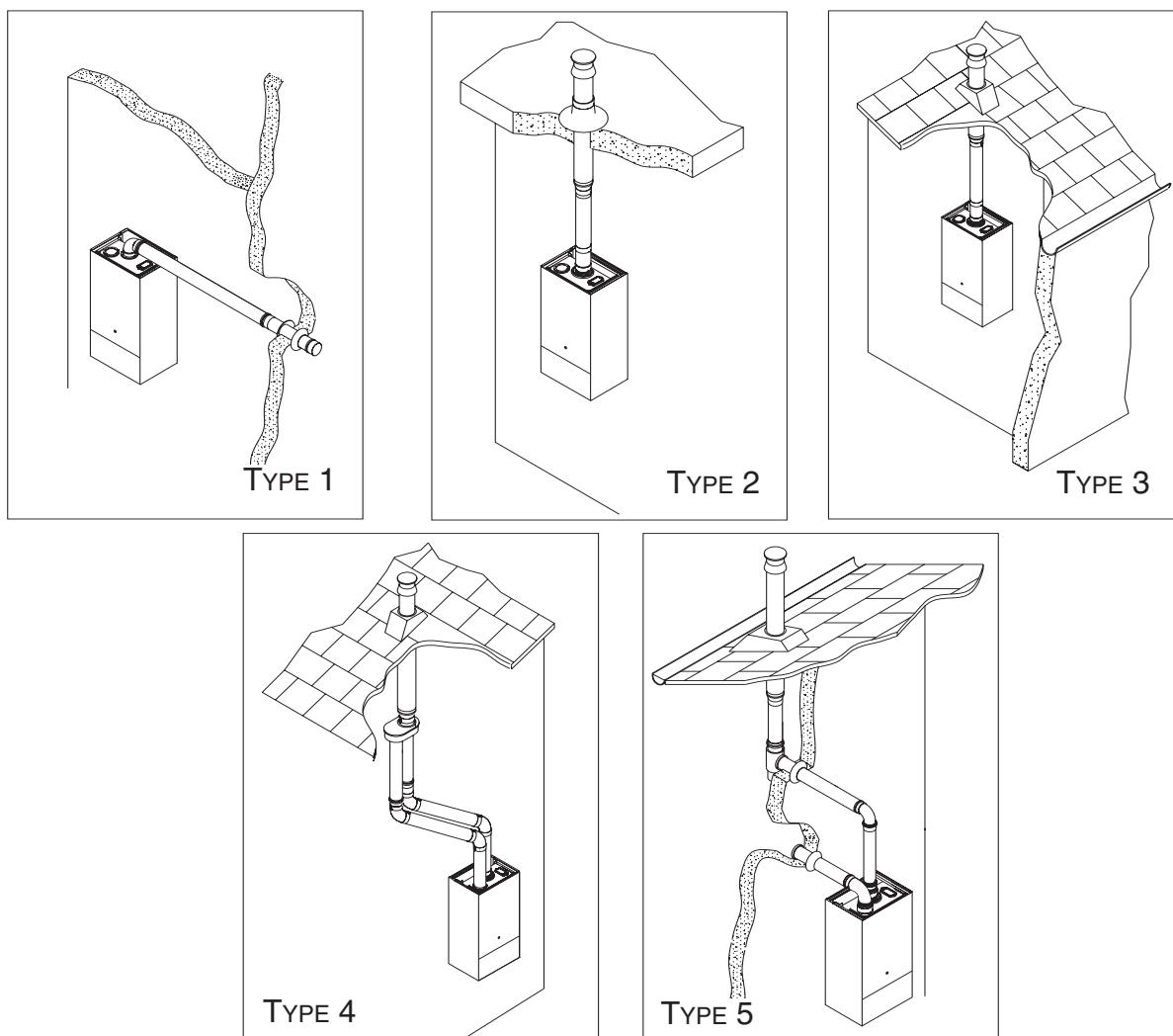
TABLE A	Concentric outlet 60/100	Min length	Max. length	Length equivalency for	
	24 , 30 and 35 kW (Type 1, Type 2, Type 3)	0.3 m	5m	45° elbow	0.5 m
				90° elbow	1 m
TABLE B	Concentric outlet 80/125	Min length	Max. length		
	24 , 30 and 35 kW (Type 1)	0.3 m	10 m	45° elbow	0.5 m
	24 , 30 and 35 kW (Type 2, Type 3)	0.3 m	10 m	90° elbow	1 m
TABLE C	Twin flue outlet 24 , 30 and 35 kW	Min length	Max. length		
	Type 4 80/80	10 m	60 m (30m air / 30m exhaust)	45° elbow	1.4 m
	Type 5 80/80	10 m	60 m (30m air / 30m exhaust)	90° elbow	2.2 m

For coaxial systems, the maximum development value, mentioned in the table above also takes into account an elbow.  
For twin flue systems the maximum development value, mentioned in the table includes the exhaust gas/air intake terminal.

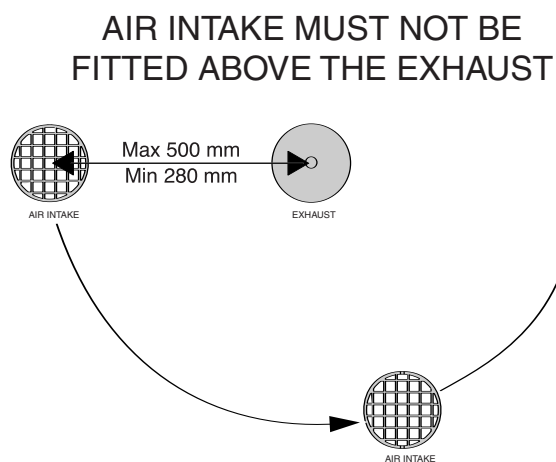
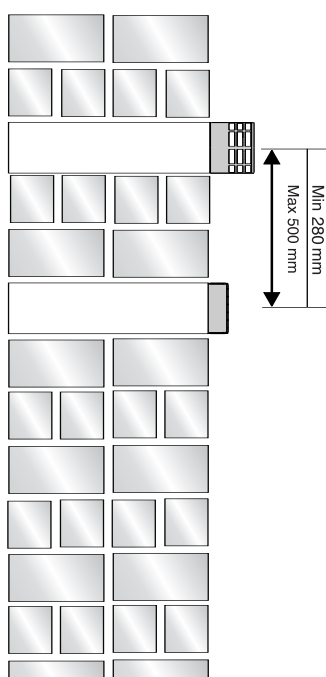
Type 5 outlets should respect the following instructions:

- 1- Use the same  $\varnothing 80$  mm flue pipes for the air intake and exhaust ducts.
- 2- If you need to insert elbows in the air intake and exhaust ducts, you should consider for each one the equivalent length to be included in the calculation of developed length.
- 3- The exhaust duct should extend above the roof by at least 0.5 m.
- 4- The intake and exhaust ducts in Type 5 must be installed on the same wall, or where the exhaust is vertical and the air intake horizontal, the terminals must be on the same side of the building.

## 12.4 Fitting the twin pipe flue (Ø80/80) (continued)



**NOTE: DRAWINGS ARE INDICATIVE OF FLUEING OPTIONS ONLY.**



**Fig. 30**

## 13. Electrical Connections

### Making the Electrical Connections

Lower the electrical box to gain access to the electrical connections. Push in the tabs **P** (Fig. 31) on either side of the boiler and pivot the box forward.

If using a room thermostat or other external control, they can be connected in place of the link on the terminal block (Diagram A- Fig. 33).

**Note:** Use only controls designed for voltage free switching or 24V supply. Do not connect to a 230V supply, and do not run 230v cables alongside the low voltage cables.

All necessary settings for room thermostat operations are described in Section 17 ADJUSTMENTS AND SETTINGS.

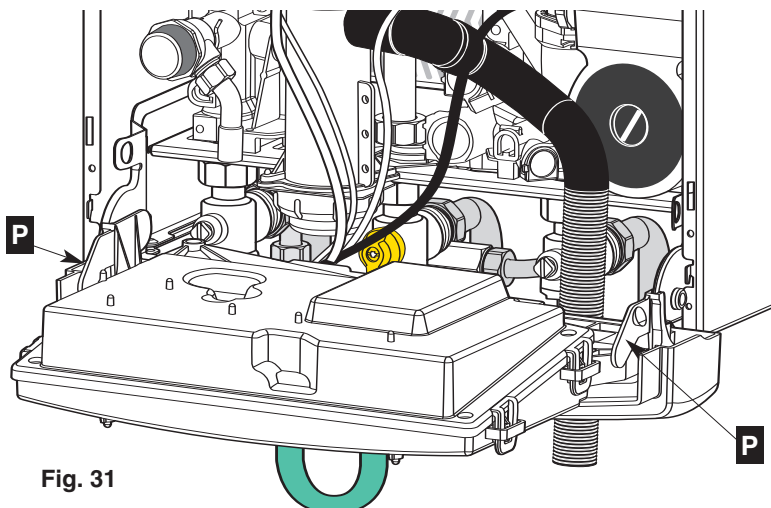


Fig. 31

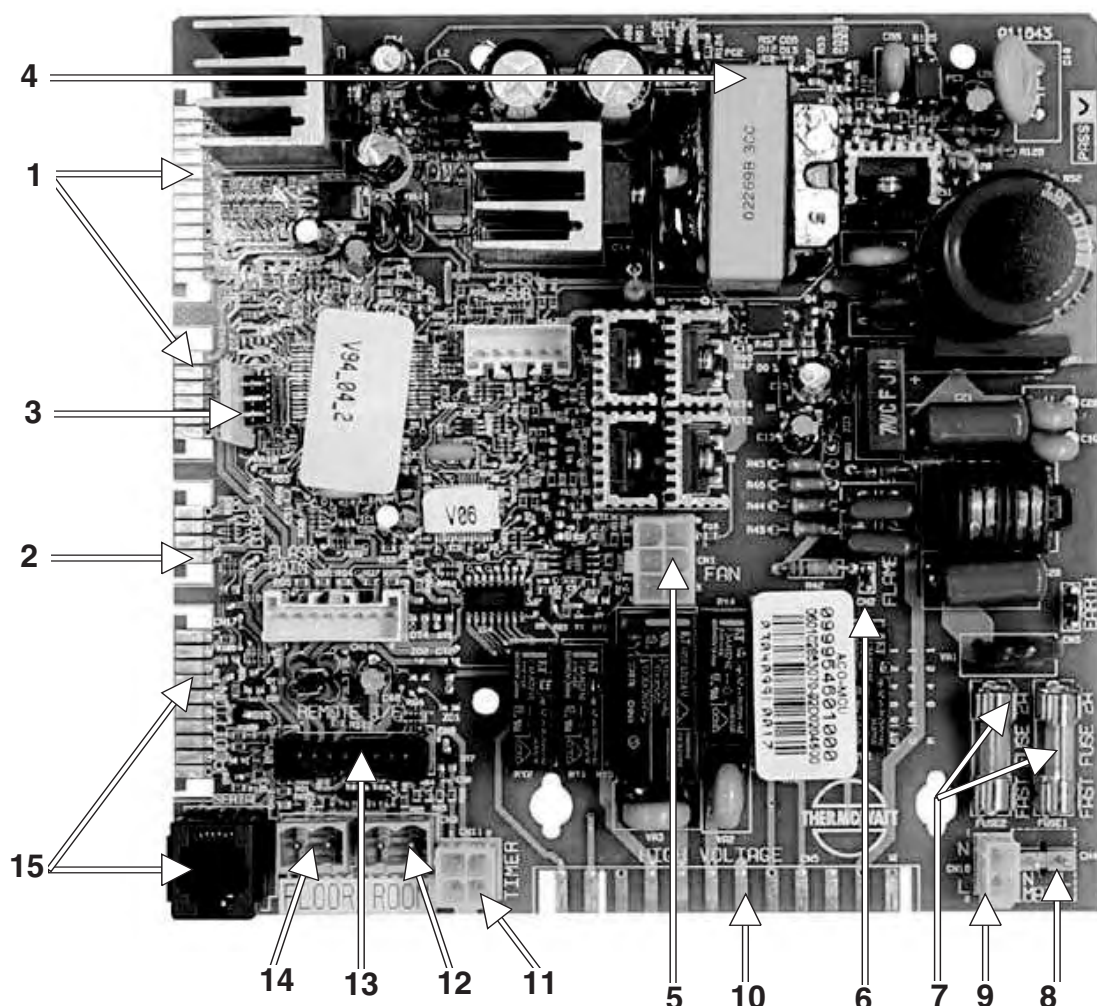


Fig. 32

#### LEGEND

- |                             |                                     |
|-----------------------------|-------------------------------------|
| 1 NTC Connectors            | 8 230V Connector                    |
| 2 Display Connectors        | 9 Auxillary 230V Connector          |
| 3 EEPROM Key                | 10 Not Used                         |
| 4 24V DC Supply             | 11 Time Clock Connector (Internal)  |
| 5 Fan Connector             | 12 Room Thermostat Connector (ROOM) |
| 6 Flame Detection Connector | 13 Remote Control Connector         |
| 7 Fuses 2A 230V (X2)        | 14 Under Floor Heating Connector    |
|                             | 15 Not Used                         |

## 13. Electrical Connections (continued)

- If a remote time clock is to be fitted, using a volt-free switching time clock, remove the link wire and connect the switching wires from the time clock following the points opposite above (see also **Diagram B Fig. 33**).
- If using an external time clock and room thermostat, remove the link wire and connect in series as above (see also **Diagram C Fig. 33**).

Live and Neutral connections to operate the clock motor must be taken from a suitable source.

Connector 11 (**Fig. 32**), is provided for connecting an optional integral time clock or programmer, for fitting instructions, please refer to those provided with the clock or page 28 of this manual.

Diagram A  
Room Thermostat

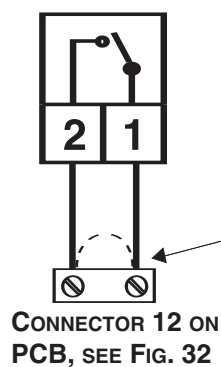


Diagram B  
External Timeclock /  
Programmer

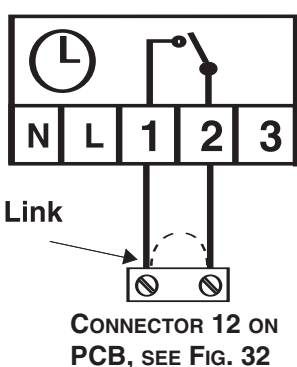
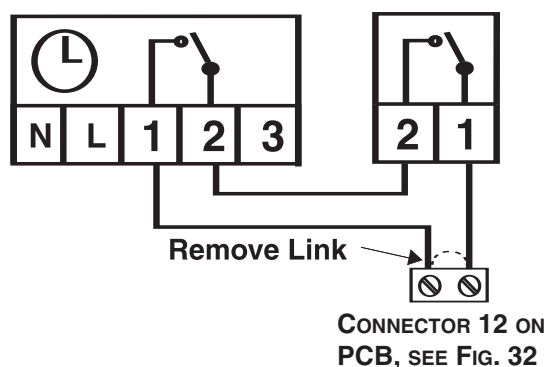


Diagram C  
External Room Thermostat and Volt  
Free Timeclock / Programmer Wired  
in Series



Ensure low voltage and high voltage circuits are cabled separately to avoid induced voltages in the low voltage circuits

Timeclock and Room Thermostat low voltage compatible

Fig. 33

## 13. Electrical Connections (continued)

### 13.1 Fitting the Mechanical and Digital Time Clocks

To fit the integral time clock it is necessary to proceed as follows;  
(this should only be carried out by a competent engineer)

- Isolate the electrical supply to the appliance;
- Remove the front panel as described in Section 18.1.1;
- Remove the plastic cover on the right hand side (Fig. 34) and pull out the 4 wires (Fig. 35);
- NOTE: THE WIRES MAY BE TUCKED BEHIND THE ELECTRICAL COVER.**
- Connect the time clock wires as follows;

#### MECHANICAL MODEL (Fig. 36)

Red Wire	-	Contact 1
Black Wire	-	Contact 2
Black Wire	-	Contact 3
Grey Wire	-	Contact 5

**NOTE: THE TWO BLACK WIRES ON CONTACTS 2 & 3 CAN BE REVERSED**

#### DIGITAL MODEL (Fig. 37)

Red Wire	-	Contact 1
Black Wire	-	Contact 2
Grey Wire	-	Contact 3

**NOTE: SECOND BLACK WIRE IS NOT CONNECTED.**

- Push the clock back into the panel and refit the casing panel (Fig. 38).



Fig. 34



Fig. 35

Fig. 36

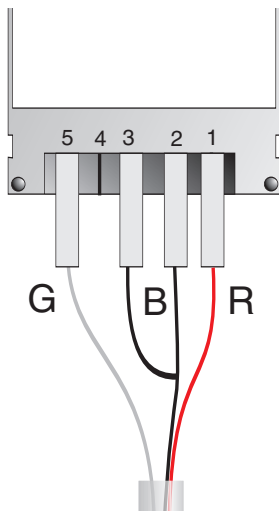


Fig. 38

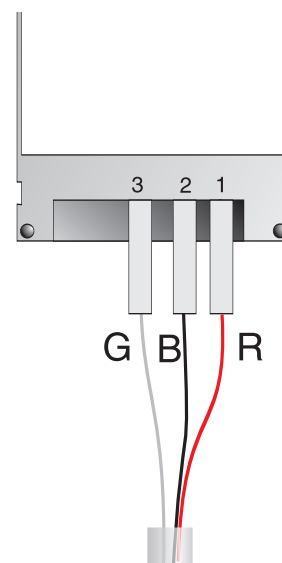


Fig. 37

## 13. Electrical Connections (continued)

### 13.2 Connecting Zone Valves (MINIMA HE System only)

The boiler can be connected to a central heating system that uses two zone valves to allow connection to an indirect storage cylinder.

There are two wiring diagrams shown, one for the connection to an Unvented Cylinder (Diagram A, page 30) and one for connection to an open vented cylinder (Diagram B, page 31).

In both cases the boiler connection is shown as **ROOM**, which relates to the terminal on the PCB for external controls (see **12 Fig. 32, page 26**).

When connecting the boiler to an external cylinder do not run 240V cables and the cables for the **ROOM** terminal (**12 Fig. 32, page 26**) together, use separate cables to prevent induced voltage on the low voltage switching circuit.

**NOTE: THE USE OF A 'Y' PLAN SYSTEM IS NOT POSSIBLE WITH THE MINIMA HE SYSTEM BOILER DUE TO THE LOW VOLTAGE SWITCHING OF THE APPLIANCE.**

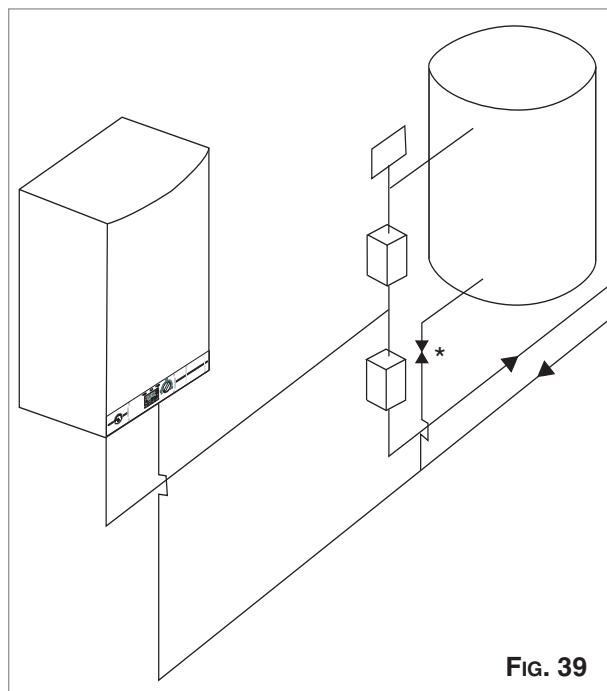


FIG. 39

**\* IMPORTANT!!**

**ENSURE THAT A BALANCING VALVE IS FITTED ON THE CYLINDER RETURN AND BALANCED CORRECTLY AT COMMISSIONING STAGE.**

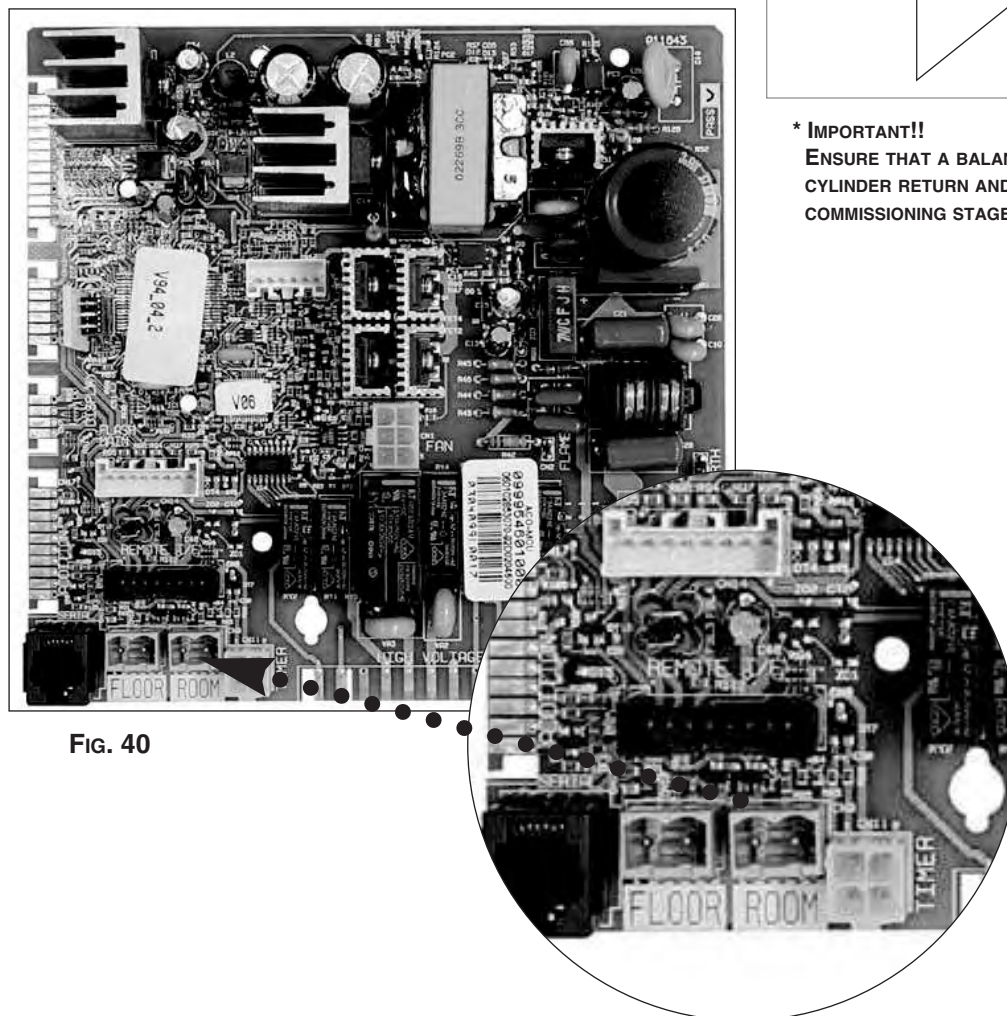
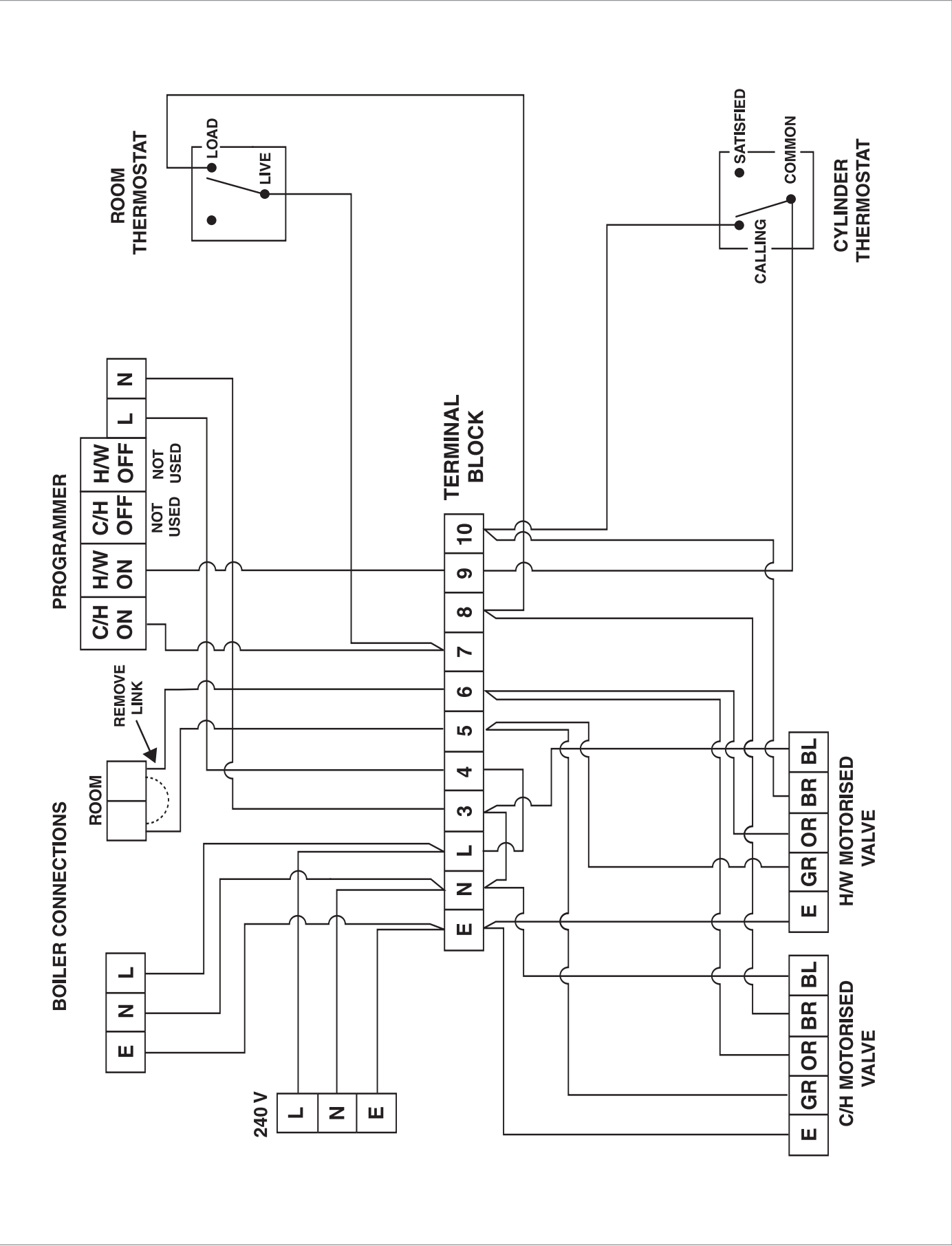


FIG. 40

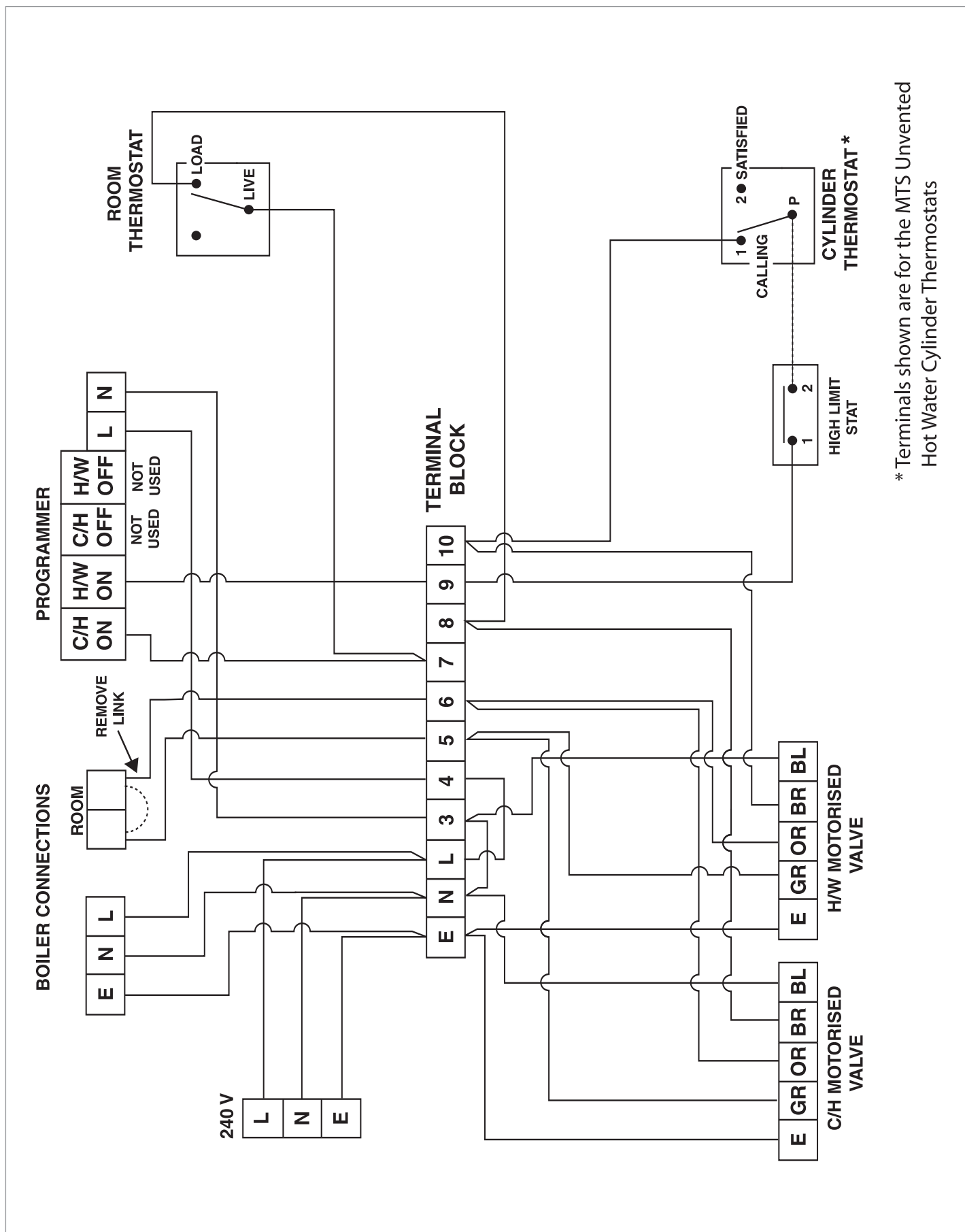
WIRING DIAGRAM FOR CONNECTION TO AN  
OPEN VENTED CYLINDER

DIAGRAM B



# WIRING DIAGRAM FOR CONNECTION TO AN MTS UNVENTED CYLINDER

DIAGRAM A



# 14. Commissioning and Testing

## 14.1 Initial preparation

MTS (GB) Limited support the *benchmark* initiative. In Sections 24 and 25 (pages 60 and 61) of this manual the *benchmark* Commissioning Checklist and Service Interval Record can be found. It is important that this is completed in the presence of your customer, they are shown how to use it, and it is signed by them. Please instruct your customer that they must have this manual with them whenever they contact a service engineer or us.

Preliminary electrical system checks to ensure electrical safety must be carried out by a competent person i.e. polarity, earth continuity, resistance to earth and short circuit.

### FILLING THE HEATING SYSTEM

Remove the front casing panel and lower the control panel as described in Section 18.1 (page 45).

Open the central heating flow and return cocks supplied with the connection kit;

Unscrew the cap on the automatic air release valve one full turn and leave open permanently;

Close all air release valves on the central heating system;

Gradually open the valves at the filling point (filling loop) until water is heard to flow, do not open fully;

Open each air release tap starting with the lowest point and close them only when clear water free of air is visible;

**Purge the air from the pump by unscrewing the pump plug anti-clockwise, also manually rotate the pump shaft in the direction indicated by the pump label to ensure the pump is free;**

Refit the pump plug;

Continue filling the system until at least 1.5 bar registers on the pressure gauge;

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

### FLUSHING AND WATER TREATMENT

The boiler is equipped with a stainless steel main heat exchanger.

The detailed recommendations for water treatment are given in BS 7593:1992 (Treatment of water in domestic hot water central heating systems); the following notes are given for general guidance:

- If the boiler is installed in an existing system, any unsuitable additives must be removed;
- Under no circumstances should the boiler be fired before the system has been thoroughly flushed; the flushing procedure must be in line with BS7593:1992. Firstly fill the central heating system and boiler with the power off and flush through cold, fill the central heating system again, add a flushing detergent, whose function is to dissolve any foreign matter that may be in the system, and run the boiler on central heating until it reaches its operating temperature, flush the system as instructed by the manufacturer of the flushing detergent and refill the system with a suitable corrosion inhibitor.

**NOTE: FAILURE TO CARRY OUT THE FLUSHING PROCEDURE WILL RESULT IN THE WARRANTY BECOMING VOID.**

In hard water areas or where large quantities of water are in the system the treatment of the water to prevent premature scaling of the main heat exchanger is necessary.

The formation of scale strongly compromises the

efficiency of the thermic exchange because small areas of scale cause a high increase of the temperature of the metallic walls and therefore add to the thermal stress of the heat exchanger.

Demineralised water is more aggressive so in this situation it is necessary to treat the water with an appropriate corrosion inhibitor.

- Any treatment of water by additives in the system for frost protection or for corrosion inhibition has to be absolutely suitable for all the metals used in the circuit including the aluminium alloys.

- If anti-freeze substances are to be used in the system, check carefully that they are compatible with the aluminium.

In particular, **DO NOT USE** ordinary ETHYLENE GLYCOL, since it is corrosive in relation to aluminium and its alloy, as well as being toxic.

MTS suggests the use of suitable anti-freeze products such as Fernox ALPHI 11, which will prevent rust and incrustation taking place.

Periodically check the pH of the water/anti-freeze mixture of the boiler circuit and replace it when the amount measured is out of the range stipulated by the manufacturer (  $7 < \text{pH} < 8$  ).

**DO NOT MIX DIFFERENT TYPES OF ANTI-FREEZE**

- In under-floor systems, the use of plastic pipes without protection against penetration of oxygen through the walls can cause corrosion of the system's metal parts (metal piping, boiler, etc), through the formation of oxides and bacterial agents.

To prevent this problem, it is necessary to use pipes with an "oxygen-proof barrier", in accordance with standards DIN 4726/4729. **If pipes of this kind are not used, keep the system separate by installing heat exchangers of those with a specific system water treatment.**

### IMPORTANT

**Failure to carry out the water treatment procedure will invalidate the appliance warranty**

## 14.2 Initial start-up

**The checks to be run before initial start-up are as follows:**

1. Make sure that:
  - The screw on the automatic air valve has been loosened when the system is full;
  - If the water pressure in the system is below 1.5 bar, bring it up to the appropriate level;
  - Ensure that the gas cock is closed;
  - Make sure that the electrical connection has been made properly and that the earth wire is connected to an efficient earthing system;
  - Supply power to the boiler by pushing the on/off button **26 (Fig. 1)** the green led indicator light will illuminate;
  - Turn the central heating control knob **30 (Fig. 1)** to maximum and switch the time clock (if fitted) to constant and turn up the room thermostat (where fitted);
  - After 7 seconds, the boiler will signal a shutdown due to ignition failure. Leave the boiler as it is until all the air

## 14. Commissioning and Testing (continued)

- has been bled from the system;
  - Loosen the cap on the head of the pump to eliminate any air pockets;
  - Repeat the procedure for bleeding the radiators of air;
  - Check the system pressure and, if it has dropped, open the filling loop again to bring the pressure back up to 1.5 bar;
2. Make sure that all radiator valves are open;
  3. Turn on the gas cock and check the seals on the connections with any approved soap solution and eliminate any leaks;
  4. Press the reset button **28** (Fig. 1) the boiler will re-attempt ignition. If the burner does not light the first time, wait 1 minute and repeat the procedure;
  5. Once the boiler has ignited check the minimum and maximum CO<sub>2</sub> values and gas rates;
  - Adjust if necessary as indicated in Section 14.3.

### 14.3 Adjusting the CO<sub>2</sub>

1. Remove the casing panel as described in Section 18.1 (page 45);
2. Connect a manometer to the inlet test nipple (Fig. 41) on the gas valve, turn on the Central Heating and ensure the inlet working pressure is 20mbar. If correct proceed as follows;
3. Turn on the combustion analyser, remove the combustion test point plug **Q** (Fig. 42) and insert the analyser probe into the test point;
4. Turn on the Central Heating and ensure that the boiler is firing.
5. Access the setting menu by pressing the  $\oplus$  and  $\ominus$  buttons for 5 seconds the  $\frac{8}{8}$  icon will be shown in the display;
6. Press the menu button  $\text{⏏}$  four times to access Menu 5 and press the setting button  $\text{⚙}$  once to switch the output of the boiler to maximum (two digits will be flashing indicating the temperature of the boiler). There will be a cursor at the top of the display indicating the boiler is at maximum output. If the cursor is at the bottom of the display (indicating minimum output) press the  $\ominus$  button the change to maximum output;
7. If necessary adjust the screw on the gas valve (Fig. 41) to set the CO<sub>2</sub> to 8.9%  $\pm$  0.2% (NG) or 8.9%  $\pm$  0.2% (LPG) with the front case removed;
8. Press the setting button  $\ominus$  once to set the combustion control rate mode to minimum, and, if necessary, adjust the screw on the gas valve to set the CO<sub>2</sub> to 9.2%  $\pm$  0.2% (NG) or 9.7%  $\pm$  0.2% (LPG) with the front case removed;
9. Press the setting button  $\oplus$  again to set the combustion rate control mode to maximum and if necessary adjust the screw on the gas valve to set the CO<sub>2</sub> to 8.9%  $\pm$  0.2% (NG) or 9.7%  $\pm$  0.2% (LPG) with the front case removed;
10. Reassemble in reverse order.

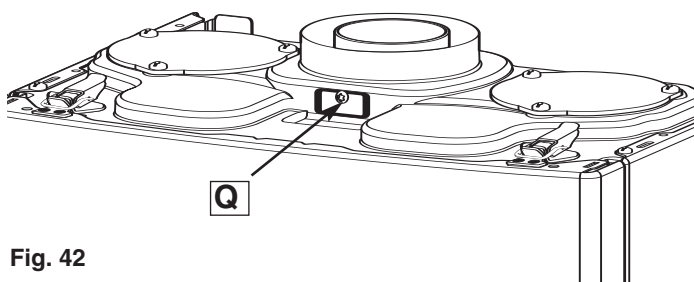


Fig. 42

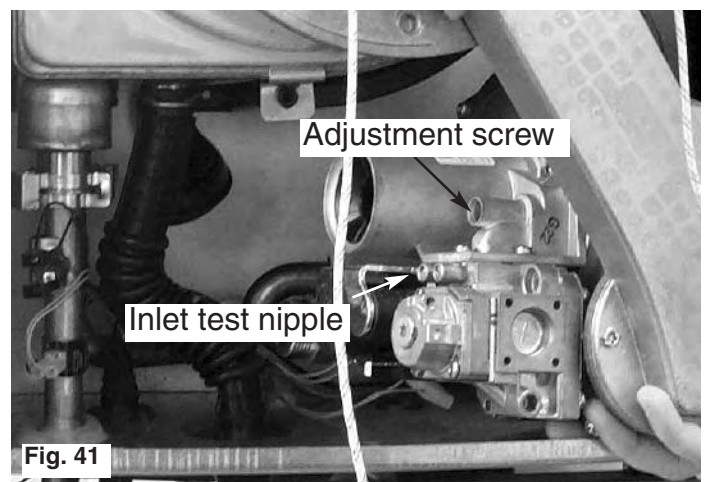
### 14.4 Gas Conversion

To convert from Natural Gas (G20) to LPG (G31), it is necessary to insert a diaphragm between the gas valve and air/gas arm.

Once the conversion has been made, the CO<sub>2</sub> setting will need to be checked as described in Section 14.3, for LPG the CO<sub>2</sub> reading should be 10%  $\pm$  0.2% with the front case fitted or 9.7%  $\pm$  0.2% with the front case removed.

To convert from LPG (G31) to Natural Gas (G20), it is necessary to remove the diaphragm and restrictor from between the gas valve and air/gas arm.

Once the conversion has been made, the CO<sub>2</sub> setting will need to be checked as described in Section 14.3, for NG the CO<sub>2</sub> reading should be 9.2%  $\pm$  0.2% with the front case fitted or 8.9%  $\pm$  0.2% with the front case removed.



### 14.5 Range rating the maximum heating power

To adjust the maximum heating power it is necessary to access the settings menu by pressing  $\oplus$  the  $\ominus$  and buttons together for five seconds, and proceed as follows;

1. Press the menu button  $\text{⏏}$  3 times to access Menu 4;
2. Press the  $\oplus$  button to access Menu 4.9;
3. The value is adjustable between 0 and 10, 0 being the minimum output and 10 being the maximum, please refer to the chart on page 36 (Fig. 44) for the required setting;
4. The maximum central heating output can now be adjusted by pressing the setting button  $\text{⚙}$  ;
5. To exit the setting mode, do not press any buttons for 1 minute, the boiler will automatically exit the Setting Menu.

### 14.6 Fitting the external sensor

The external sensor should be fitted 1.5 meters above the floor on a North to North West facing wall out of direct sunlight.

To connect the external sensor, it is first necessary to remove the casing panel as described in Section 18 (page 45);






Remove the PCB cover as described in Section 18.4 and connect the external sensor as described in Section 18.5 (page 54).

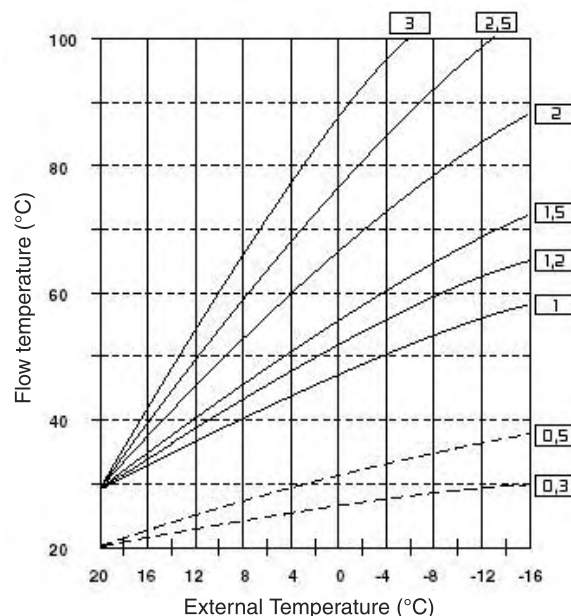
## 14.7 External sensor set-up (where fitted)

When using an outdoor sensor, the microprocessor-controlled PCB will select the most suitable flow temperature, taking into account the external temperature and the type of system. The microprocessor is capable of doing this because it is possible to establish a link between the external temperature and the flow temperature of the Central Heating system water. This link translates into a "thermal curve".

The type of curve should be chosen in correspondence with the planned temperature of the system and the nature of the heat loss present in the building.

To set up the external sensor, proceed as follows;

1. Access the settings menu by pressing the  $\oplus$  and  $\ominus$  buttons together for five seconds;
2. Press the  button 5 times to access Menu 6;
3. Press the  button, the 3rd and 4th digits will flash;
4. Press the  $\oplus$  or  $\ominus$  buttons to change from 1 (sensor not fitted) to 0 (sensor fitted) and press the  button again to select the change;
5. Select the thermal curve required from **Table D**;
6. Press the  $\oplus$  or  $\ominus$  buttons to change to Menu 6.2;
7. To adjust the thermal curve, press the  button, the 3rd and 4th digits will begin to flash;
8. Press the  $\oplus$  or  $\ominus$  buttons to select the parameter that best meets your temperature requirement shown in **Table D** (opposite);
9. Once the correct parameter has been set, press the  button again to confirm the selection.



**TABLE D**



CONVECTOR RADIATOR	-	CURVES 2.5	TO	3
STEEL RADIATOR	-	CURVES 1.5	TO	2
OVERSIZED STEEL RADIATOR	-	CURVES 1	TO	1.2
UNDERFLOOR HEATING	-	CURVES 0.3	TO	0.5*

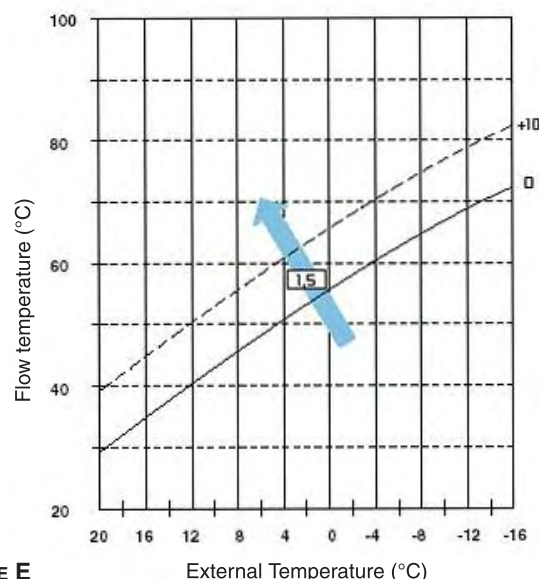
\* WHERE CURVE 0.3 OR 0.5 (UNDERFLOOR HEATING) ARE SELECTED, A SUITABLE SYSTEM SAFETY THERMOSTAT MUST BE CONNECTED TO THE MAIN PCB TERMINAL 14 (SEE Fig. 32, page 26) IN ORDER TO PROTECT THE UNDERFLOOR HEATING SYSTEM.

## 14.8 Adjusting the parallel shift

In the event that the thermal curve set is giving too high or too low a temperature, there are two options, you can either alter the thermal curve as described in Section 14.7 or adjust the parallel shift of the curve.

To adjust the parallel shift, proceed as follows:

1. Access the settings menu by pressing the  $\oplus$  and  $\ominus$  buttons together for five seconds;
2. Press the  button 5 times to access Menu 6;
3. Press the  $\oplus$  or  $\ominus$  buttons to access Menu 6.3;
4. Press the  button, the 3rd and 4th digits will flash;
5. Press the  $\oplus$  or  $\ominus$  buttons to adjust the parallel shift up and down in steps of 1 between 0 and 20 (see **Table E**).



**TABLE E**

External Temperature (°C)

## 14.9 Completion

For the Republic of Ireland it is necessary to complete a "Declaration of Conformity" to indicate compliance to I.S.813. An example of this is given in the current edition of I.S.813. In addition it is necessary to complete the *benchmark* Commissioning Checklist in Section 24 of this manual (Page 60).

## 14. Commissioning and testing (continued)

### 14.10 Operational checks

1. The system must be visually checked for soundness;
2. **Fill the condensate trap with water, by pouring ½ litre of water into the exhaust flue connector (see Fig. 43). N.B. In the event of a prolonged period of system shutdown, the condensate trap should be filled before any renewed use. A shortage of water in the trap could possibly lead to a temporary leakage of fumes into the air, until it refills itself;**
3. Ensure that the flue is fitted correctly;
4. Allow the central heating system to warm up and adjust the central heating temperature control knob **30** (Fig.1), check the burner modulates between the high and low settings;
5. Range rate the thermal power for central heating as detailed in Section 14.5. To adjust the maximum heating power it is necessary to follow the steps in Section 14.5 Menu 4 (page 41). and adjust in relation to the chart on Page 36 (Fig. 44);
6. Check the gas rate;
7. Record the finding in the Benchmark Commissioning Checklist (Page 60);
8. Balance the central heating system until all return temperatures are correct and equal;
9. Turn the boiler off by pressing the On/Off button **26** (Fig.1) to OFF, disconnect the gas pressure gauge, retighten the screw and relight the boiler;
10. Re-examine the central heating system and gas supply for soundness;
11. If external controls have been disconnected, reconnect and test;
12. Refit the boiler casing.

### 14.11 Instructing the end user

1. Hand over these instructions and explain how to use the time clock and room thermostat (if fitted) and explain how to register the guarantee;
2. Show the end user how to switch the appliance off quickly, and indicate the position of the electric supply isolator;
3. Inform the end user of the location of all drains, isolating valves and air vents;
4. Explain how to turn the appliance off for both short and long periods and advise on the precautions necessary to prevent damage in the event that the appliance is inoperative when freezing conditions occur;
5. Instruct the end user on the correct procedure for checking and refilling the boiler;
6. Finally advise the end user that, for continued safe and efficient operation, the appliance must be serviced by a competent person at least once a year and the service logged in the Service Interval Record (Page 61).

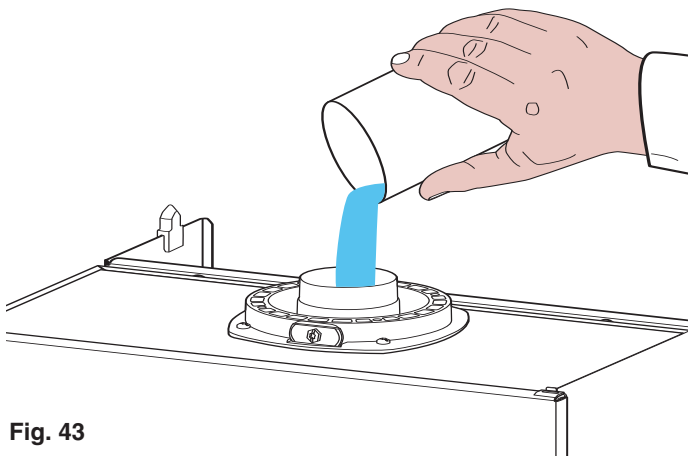


Fig. 43

## 14. Commissioning and testing (continued)

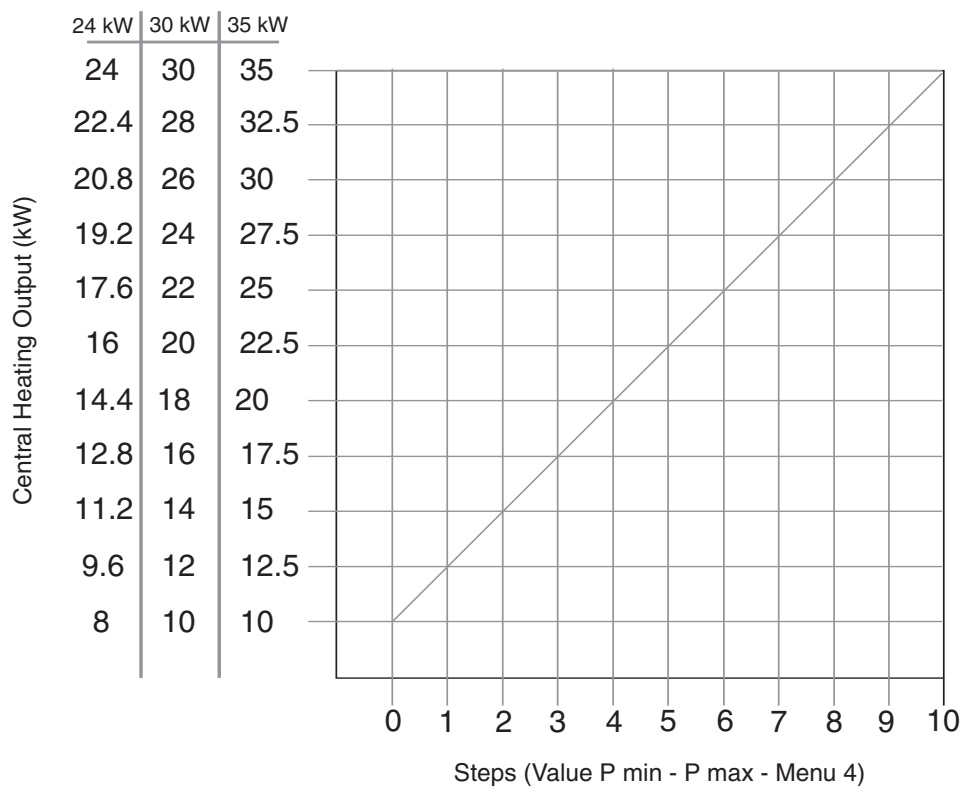


Fig. 44

## 15. Fitting the casing

### Fitting the casing

Remove the protective film on the casing;

- Locate the lower clips into the slots in the chassis;
- Engage hooks **N** on the casing in notches **R** on the side panels **M** (Fig. 45);
- Close the panel mounting clamps (Fig. 45);
- Screw in the clamp locking bolt **A**;

**Note: it is essential to refit the locking bolt A**

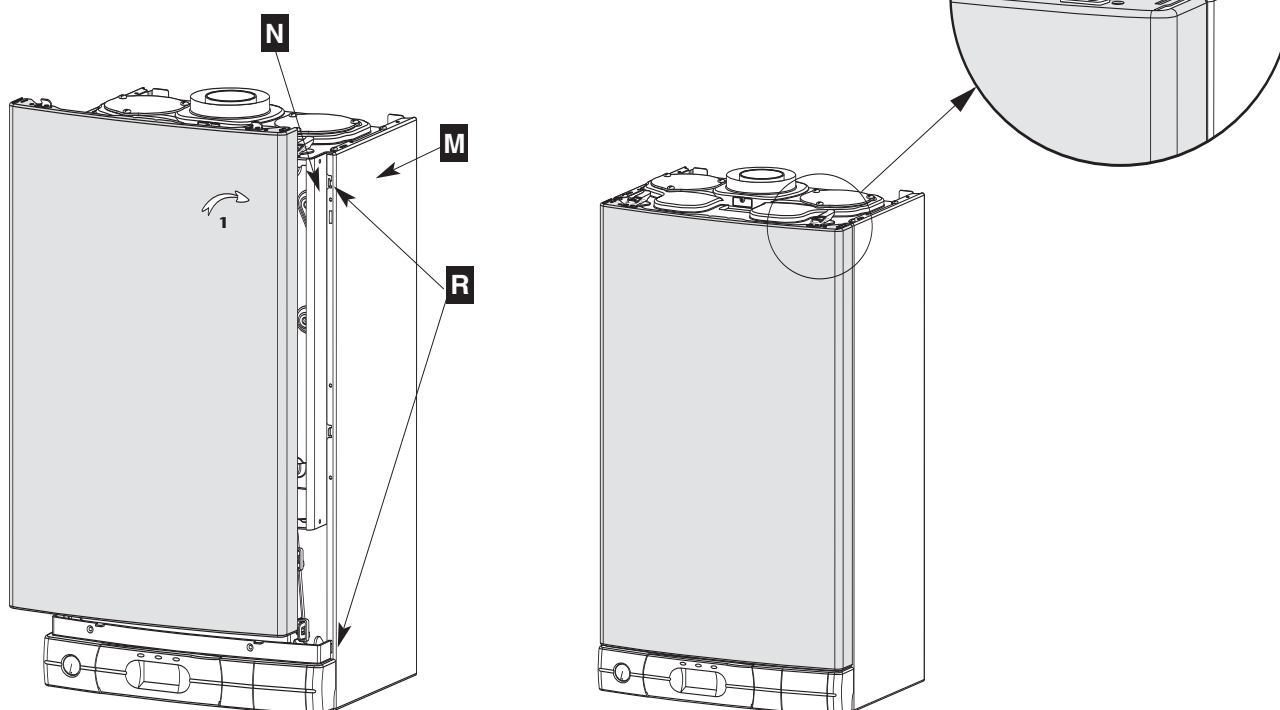
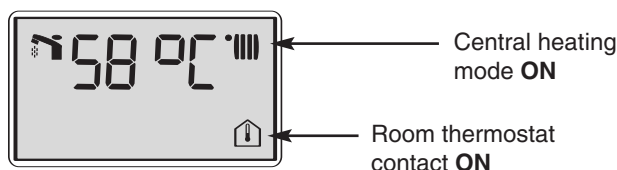


Fig. 45

## 16. Sequence of operation

### Central Heating Mode

Activation of the time clock and/or room thermostat starts the boiler. The display panel indicates the flow temperature in the Central Heating system as illustrated below:



The PCB checks the pressure of the primary circuit, if the pressure measured is 0.8 bar or lower, the boiler will lockout after 40 seconds. The error code **E02** will appear on the LCD and the pump will stop.

If the pressure measured is above 0.8 bar, the boiler ignition sequence will begin.

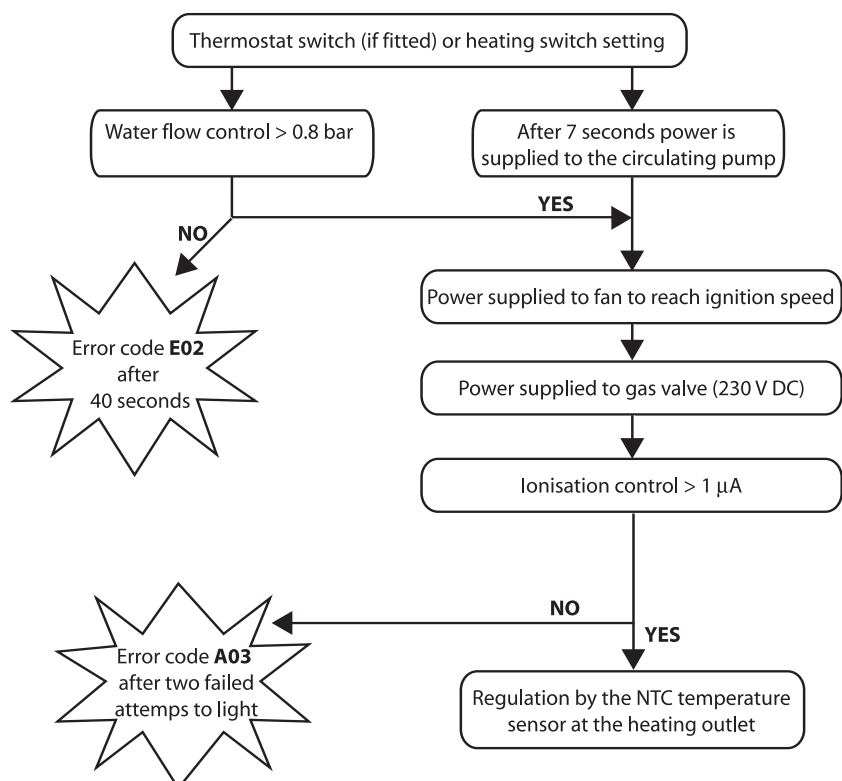
At first, the fan starts and the speed increases to the required ignition speed (3460 rpm), once this speed has been achieved, the safety coil of the gas valve is supplied with 230V DC, after 8 seconds the boiler checks that the burner has lit, if the boiler does not sense that the burner has lit, the error code **E04** will appear on the display, should this error occur, the boiler will attempt to relight two more times (20 seconds between each attempt). After this, should the boiler still not sense a flame, error code **A03** will appear on the LCD. Should the boiler detect that the burner has lit, the boiler continues to regulate as follows.

The NTC fitted on the outlet of the primary circuit exchanger is the only NTC to adjust the heat output of the boiler according to the adjustable setting point. This point is adjustable from 25°C to 85°C by the user. This NTC relays information to the PCB, which in turn modulates the burner by adjusting the speed of the fan.

When the NTC senses that the set temperature has been achieved (+ 4°C to the temperature set by the user), the burner will go out. To avoid excessive burner lighting, an anti-cycle timer can be set between 0 to 7 minutes in menu **4** line **48** (see Section 17 Adjustments and Settings).

The speed of the pump can be set at two levels. The PCB controls the speed of the circulation pump depending on the speed set in menu **4** line **41**. Setting **410** will cause the pump to operate continually at high speed, and setting **411** will cause the pump to modulate between high and low speed depending on the  $\Delta T$  between the inlet and the outlet. If the  $\Delta T$  is greater than 20°C the pump will run on high speed and if the  $\Delta T$  is less than 20°C the pump will run on low speed.

NOTE: THE DEFAULT SETTING FOR THE PUMP IS HIGH SPEED.



## 17. Adjustments and Setting

The boiler is delivered with preset values described in Menus 3 and 4.

All settings can be changed by the installer or a qualified person. To gain access to the setting keys please, open the front cover **P** (Fig. 46).

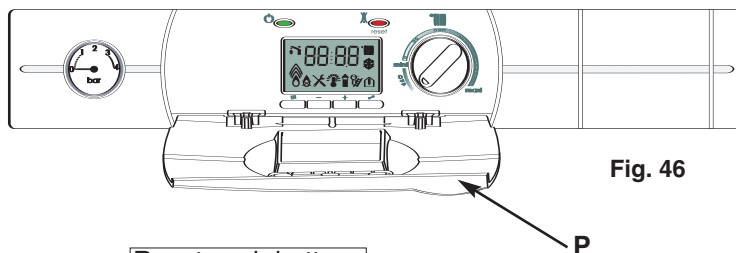


Fig. 46

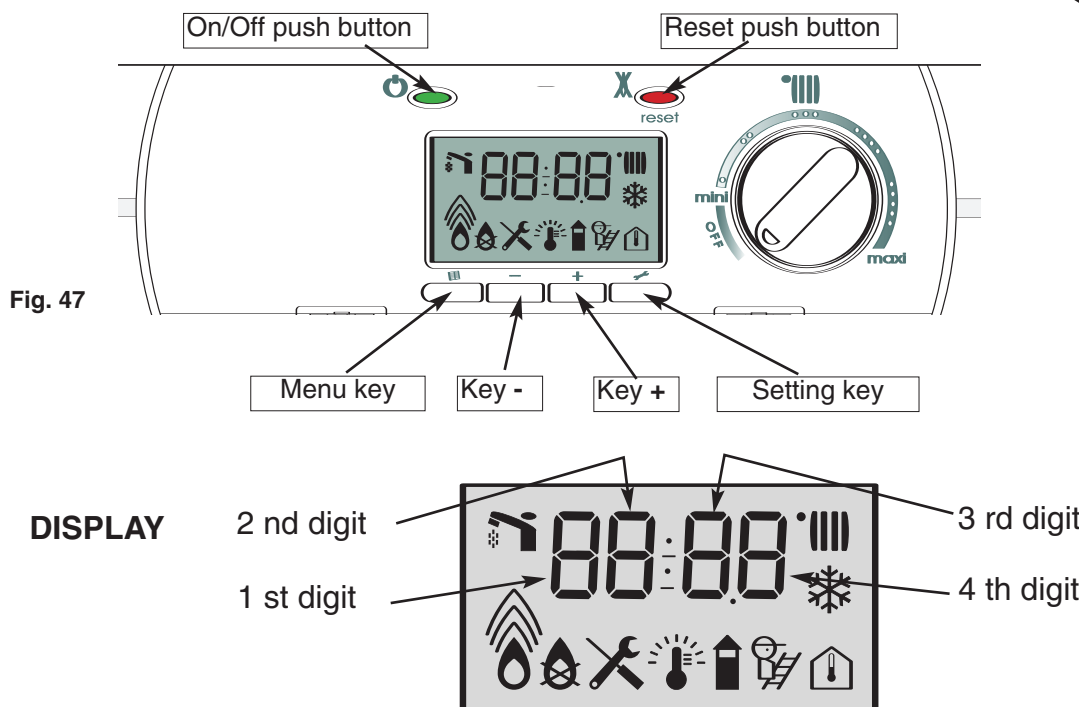




Fig. 47

Pressing the reset, menu ,  $\ominus$ ,  $\oplus$ , or the setting  keys will make the display light. The light will go out 30 seconds after the last key has been pressed.

To gain access to setting menus press the  $\ominus$  and  $\oplus$  keys together for 5 seconds. (Fig. 41). Menu 1 will be displayed on the 1st digit of the display.

### **Changing the menu :**



Press the Menu key  (Fig. 47). The menu number is displayed for 3 seconds. Press the Menu key to change between menus

### **Setting a parameter in a section :**


Press either the  $\oplus$  key or the  $\ominus$  key to change between sections.

**Note:** When you arrive at the last section of a menu, pressing the  $\oplus$  key will move to the 1st section. When you are at the first section, pressing the  $\ominus$  key will move to the last section of the menu.


### **Changing section in a menu (available only for menu 3 and 4) :**

Press the setting key  to enter the modification mode, The 3rd and 4th digits will begin flashing, press the  $\oplus$  or  $\ominus$  keys to select the correct value then press the setting key  to confirm this modification and to exit the setting mode. The 3rd and 4th digits will stop flashing.

### **Recalling the basic configuration :**

Select Menu 3 or 4 then press the  $\oplus$  +  keys together for more than 5 seconds. The digits will flash **CM** for a while to indicate that the operation is completed.

### **Erasing the default register :**

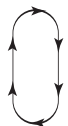
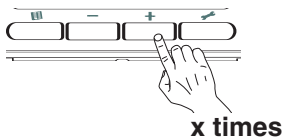
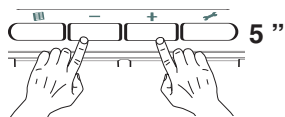
Select menu 1 then press the  $\oplus$  +  keys together for more than 5 seconds. The digits will flash **CM** for a while to indicate that the operation is completed.

**Note :** To exit the setting mode, leave the boiler for approx. 1 minute the boiler will automatically switch back to user mode.

## ACTION

## CONFIGURATION

## DISPLAY

**Menu - 1 - Default register**

Record the last 10 defaults

Section	Digit 1	Digit 2	Digits 3 and 4
Last default occurred	1	0	code from 01 to 99
Last but one default occurred	1	1	code from 01 to 99
...	1	...	code from 01 to 99
Last default occurred before the previous one	1	9	code from 01 to 99

Note -- is displayed if no default is recorded

10--

11--

19--

**Menu - 2 - Boiler conditions**

Indicates the conditions or the configurations of the boiler

Section	Digit 1	Digit 2	Digits 3 and 4
Software version of display PCB	2	0	code from 01 to 99
Software version of main PCB	2	1	code from 01 to 99
Flue type	2	2	4 : Condensation
Room thermostat is calling for heat	2	3	0 : No 1 : Yes

20--

21--

22 4

23 0

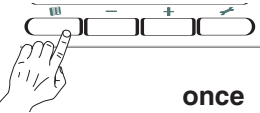
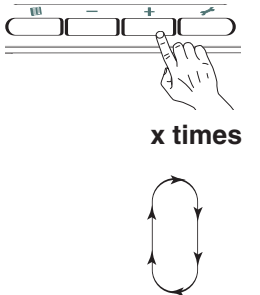



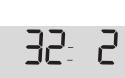
23 1

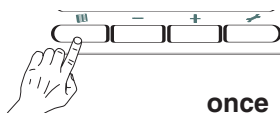
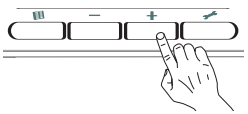
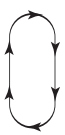
CH flow temperature in °C	2	7	from 01 to 99
CH return temperature in °C	2	8	from 01 to 99
Outside temperature Flashing when below 0 °C.	2	9	from 01 to 99

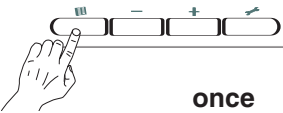

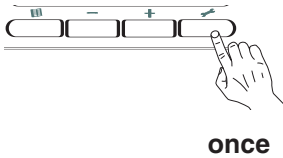

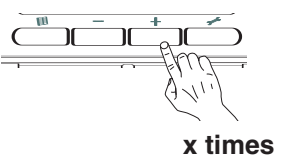

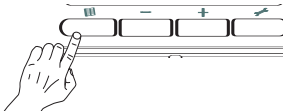

27--

28--

29--

ACTION	CONFIGURATION				DISPLAY	Factory setting
 once	Menu - 3 - Boiler options					
 x times						
	Section	Digit 1	Digit 2	Digits 3 and 4		
	Thermostatic device	3	1	0 : No 1 : Yes	 	✓
	Integral time clock	3	2	1 : Fitted 2 : Not Fitted	 	✓


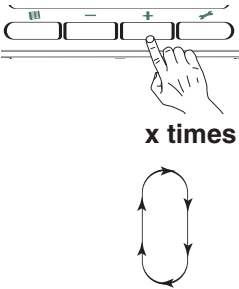
ACTION	CONFIGURATION	DISPLAY																													
 <p>once</p>	<h2 style="text-align: center;">Menu - 4 - Boiler settings</h2>																														
 <p>x times</p> 																															
	<table border="1"> <thead> <tr> <th>Section</th><th>Digit 1</th><th>Digit 2</th><th>Digits 3 and 4</th></tr> </thead> <tbody> <tr> <td>Continuous pump run</td><td>4</td><td>0</td><td>           0 : Yes            1 : No         </td></tr> <tr> <td>Pump overrun duration</td><td>4</td><td>2</td><td>0 to 5 min by step 0.5 min</td></tr> <tr> <td>Maximum Central Heating flow temperature</td><td>4</td><td>4</td><td>50°C to 80°C by steps of 1°C</td></tr> <tr> <td>Minimum Central Heating flow temperature</td><td>4</td><td>5</td><td>25°C to 50°C by steps of 1°C</td></tr> <tr> <td>CH anti-cycling delay</td><td>4</td><td>8</td><td>0 to 7 min by step 0.5 min</td></tr> <tr> <td>CH maximum output limitation</td><td>4</td><td>9</td><td>Value from 0 to 10 Pmin &amp; Pmax general</td></tr> </tbody> </table>	Section	Digit 1	Digit 2	Digits 3 and 4	Continuous pump run	4	0	0 : Yes 1 : No	Pump overrun duration	4	2	0 to 5 min by step 0.5 min	Maximum Central Heating flow temperature	4	4	50°C to 80°C by steps of 1°C	Minimum Central Heating flow temperature	4	5	25°C to 50°C by steps of 1°C	CH anti-cycling delay	4	8	0 to 7 min by step 0.5 min	CH maximum output limitation	4	9	Value from 0 to 10 Pmin & Pmax general	<div> <div>40: 0</div> <div>✕</div> </div> <div> <div>40: 1</div> <div>✕</div> </div> <div> <div>42: 10</div> <div>✕</div> </div> <div> <div>44: 80</div> <div>✕</div> </div> <div> <div>45: 25</div> <div>✕</div> </div>	<div>Factory setting</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div>
Section	Digit 1	Digit 2	Digits 3 and 4																												
Continuous pump run	4	0	0 : Yes 1 : No																												
Pump overrun duration	4	2	0 to 5 min by step 0.5 min																												
Maximum Central Heating flow temperature	4	4	50°C to 80°C by steps of 1°C																												
Minimum Central Heating flow temperature	4	5	25°C to 50°C by steps of 1°C																												
CH anti-cycling delay	4	8	0 to 7 min by step 0.5 min																												
CH maximum output limitation	4	9	Value from 0 to 10 Pmin & Pmax general																												

ACTION	CONFIGURATION	DISPLAY				
Menu - 5 - Combustion rate control mode						
 once	<table><tr><th>Effect</th><th>Display</th></tr><tr><td colspan="2">Combustion rate control mode OFF</td></tr></table>	Effect	Display	Combustion rate control mode OFF		
Effect	Display					
Combustion rate control mode OFF						
 once	<table><tr><td>Combustion rate control mode ON</td><td>The main exchanger temperature appears on the display. The digit - on the display shows the gas output level. (Top = maxi, bottom = mini).</td></tr></table>	Combustion rate control mode ON	The main exchanger temperature appears on the display. The digit - on the display shows the gas output level. (Top = maxi, bottom = mini).			
Combustion rate control mode ON	The main exchanger temperature appears on the display. The digit - on the display shows the gas output level. (Top = maxi, bottom = mini).					
 x times	<table><tr><td>Gas output setting</td><td>To modify the gas output use the ⊕ and ⊖ keys.</td></tr></table>	Gas output setting	To modify the gas output use the ⊕ and ⊖ keys.			
Gas output setting	To modify the gas output use the ⊕ and ⊖ keys.					
	To cancel the combustion rate control mode press the  key.					

**The combustion rate control mode will not operate if:**

- the boiler is in stand-by mode
- the room thermostat is not calling for heat
- the boiler has locked out
- after a reset or if the main supply fails
- end of the mode if the operator leaves Menu 5
- after 15 minutes if no keys are pressed

**Note :** As soon as the combustion rate control mode is on the Central Heating temperature control knob will become inactive.

ACTION	CONFIGURATION			DISPLAY	
 <p>once</p>  <p>x times</p>	<b>Menu - 6 - External Sensor Settings</b>				Factory setting
Section	Digit 1	Digit 2	Digit 3 and 4		
External Sensor Fitted	6	0	0 : External sensor fitted	60: 0	✓
			1 : No external sensor (factory setting)	60: 1	
Automatic heating adjustment active	6	1	0 : Inactive - External Sensor not fitted (factory setting)	61: 0	✓
			1 : Active - External Sensor fitted	61: 1	
Thermal Curve (see table D)	6	2	0.3	62: 10	✓
			0.5		
			1		
			1.2		
			1.5		
			2		
			2.5		
Parallel Shift (see table E)	6	3	3	63: 10	✓
			from 0 to 20 (in steps of 1)		

In the event of connection of the external sensor, you must:

1. Activate the external sensor (menu 6.0)
2. Activate the automatic heating adjustment (menu 6.1)
3. Select the correct thermal curve (menu 6.2)
4. Adjust the parallel shift (menu 6.3)

**NOTE:** SEE SECTIONS 14.6, 14.7 AND 14.8 (PAGES 33 & 34) FOR INSTRUCTIONS ON SETTING THE ABOVE.

## 17. Adjustments and Setting (continued)

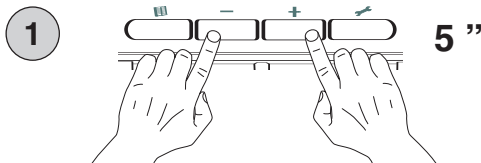
### CH anti cycling delay setting :

If you would like to change the setting of CH anti cycling delay to 3 mins, please proceed as follows:

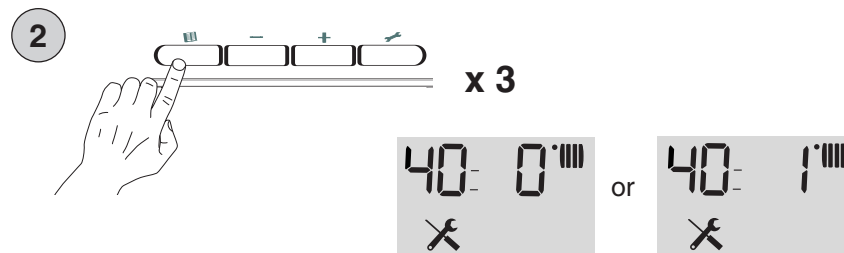
(NOTE : the factory setting is 2 min 30 seconds and the following explanation refers to Menu 4 Section 8)

Display

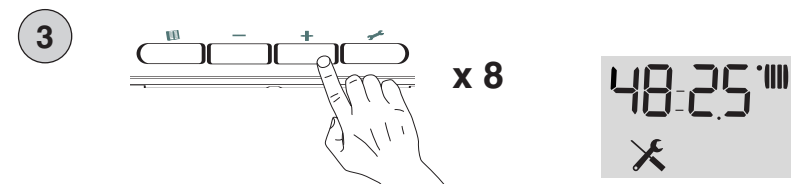
- 1 Switch to installer mode, press the **+** and **-** keys for 5 seconds, the display shows :**10=0** if there is no default in the default register.



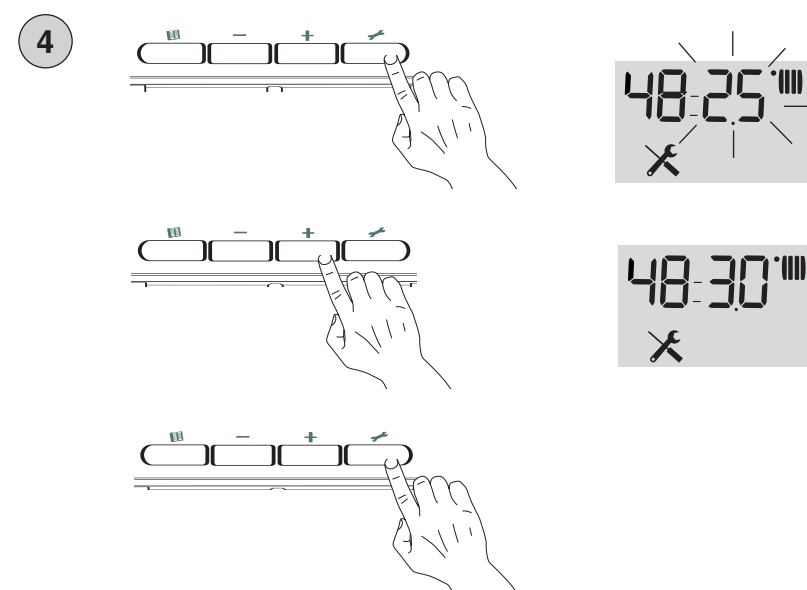
- 2 Press the menu key three times to gain access to menu 4, the display shows : **40=0** or **40=1**



- 3 Change to section 8 (CH anti-cycling delay), press the **+** key eight times, the display shows :**48=2.5** (factory setting 2 min 30 secs)  
**4** = menu 4  
**8** = section 8  
**2.5** = 2.5 min (2 min 30 seconds)



- 4 Press the setting key once, the 3rd and 4th digits flash together. Then press the **+** key to change the CH anti-cycling delay, the display shows:  
**48=3.0** press the setting key to confirm the value. The display stops flashing.



To exit from setting mode, leave the boiler for approx. 1 minute the boiler will automatically switch back to the user mode.

After programming please close the door **P** (Fig. 46)

# SERVICING INSTRUCTIONS

To ensure efficient safe operation, it is recommended that the boiler is serviced annually by a competent person.

**Before starting any servicing work, ensure both the gas and electrical supplies to the boiler are isolated and the boiler is cool.**

Before and after servicing, a combustion analysis should be made via the flue sampling point (see Section 14.3, steps 1-6).

After servicing, preliminary electrical system checks must be carried out to ensure electrical safety (i.e. polarity, earth continuity, resistance to earth and short circuit).

## 18. Replacement of parts

The life of individual components vary and they will need servicing or replacing as and when faults develop, instructions for removal, inspection and replacement of the individual parts are given in the following pages.

### 18.1 To Gain General Access

All testing and maintenance operations on the boiler require the control panel to be lowered. This will also require the removal of the casing.

#### 18.1.1 Removing the front panel :

1. Unlock the two clamps **A** (see Fig. 48);
2. Remove the front panel from the rest of the casing (see Fig. 49).



Fig. 48

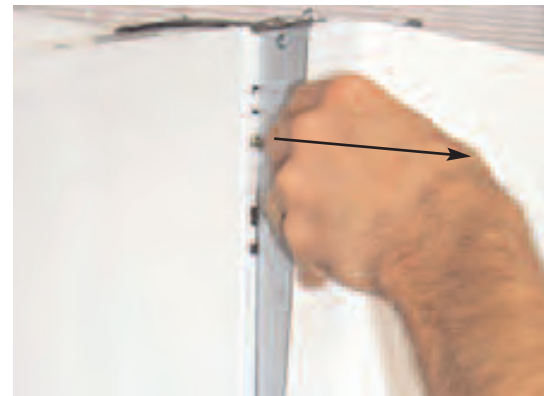


Fig. 49

#### 18.1.2 Lowering the control panel :

1. Remove the front panel;
2. Push in the tabs on either side of the electrical box (see Fig. 50) and pivot the electrical box forward.



Fig. 50

## 18.2 Access to the Combustion Chamber

### 18.2.1 Removing the air gas assembly

1. Carry out step 18.1.1;
2. Remove the silencer (Fig. 51);
3. Disconnect the detection electrode cable (Fig. 52);

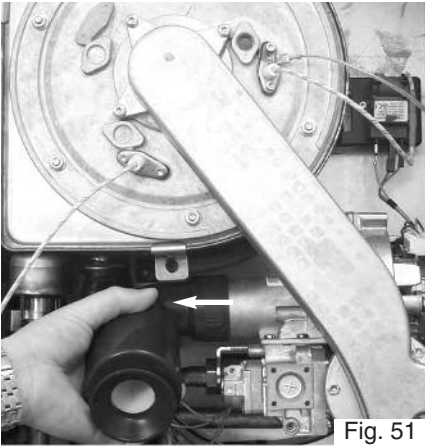


Fig. 51

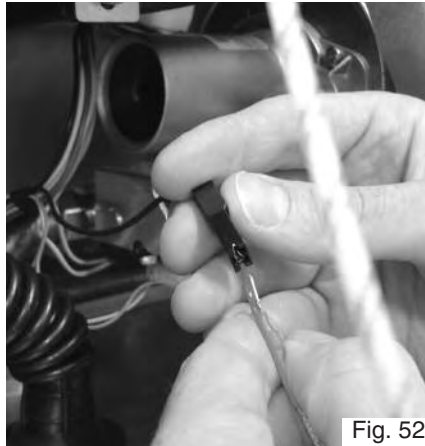


Fig. 52

4. Remove the earth cable from the ignition electrode (Fig. 53), and remove the ignition electrode cable from the ignitor (Fig. 54);

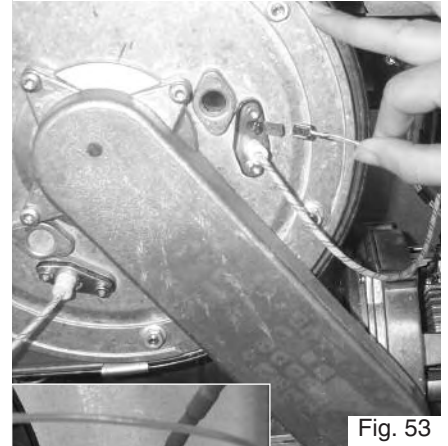


Fig. 53



Fig. 54

5. Unplug the gas valve and fan connectors (Figs. 55 and 56);



Fig. 55



Fig. 56

6. Unscrew the 6 nuts **D** on the combustion chamber (Fig. 57);

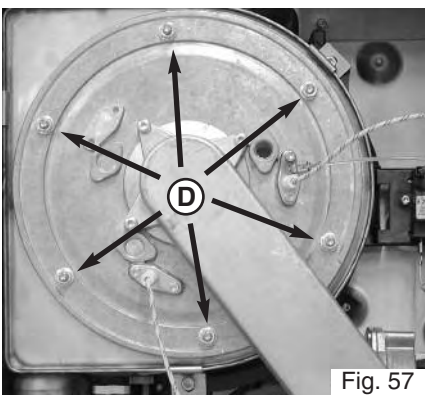


Fig. 57

7. Unscrew the gas valve nut **E** (Fig. 58);

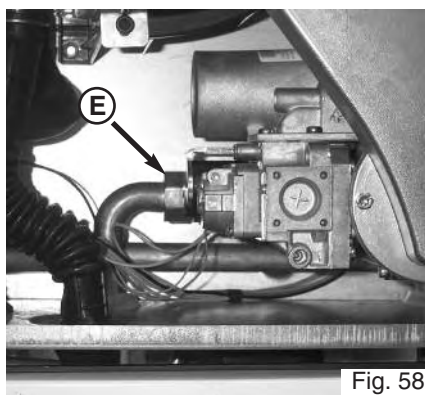


Fig. 58

7. Remove the air gas assembly and combustion chamber front (Fig. 59);
8. Reassemble in reverse order.

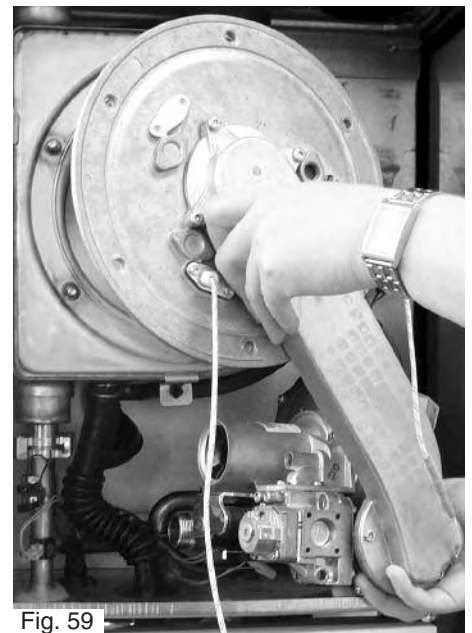


Fig. 59

### 18.2.2 Removing the burner

1. Carry out step 18.1.1 and 18.2.1;
2. Remove the 3 screws **F** from the air/gas manifold (Fig. 60);
3. Slide the burner out from the front, taking care not to damage the insulation (Fig. 61);

4. Reassemble in reverse order, check all seals are undamaged and the burner is positioned correctly (Fig. 62).

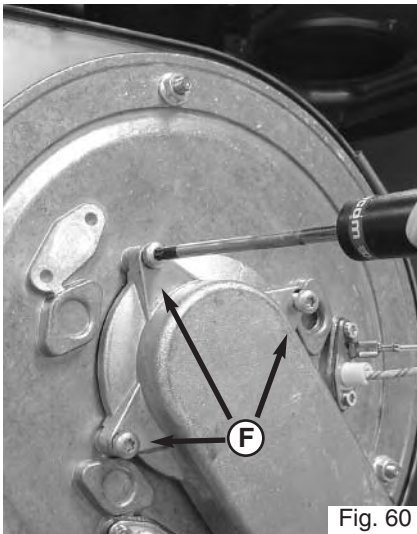


Fig. 60



Fig. 61



Fig. 62

### 18.2.3 Removing the detection electrode

1. Carry out step 18.1.1;
2. Remove the 2 screws **G** from the electrode manifold (Fig. 63);
3. Pull the electrode from the combustion chamber (Fig. 64);

4. Disconnect the detection electrode cable (Fig. 65).
5. Reassemble in reverse order.

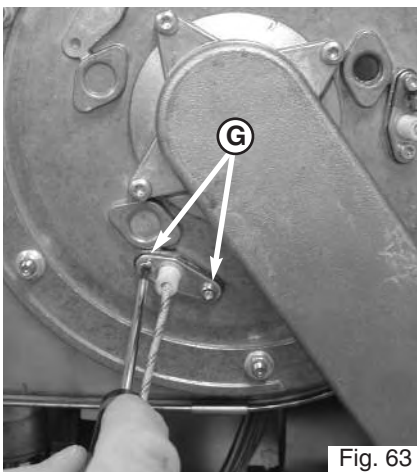


Fig. 63



Fig. 64



Fig. 65

### 18.2.4 Removing the ignition electrode

1. Carry out step 18.1.1;
2. Remove the earth cable from the electrode (Fig. 66);
3. Remove the electrode cable **H** from the ignitor (Fig. 67);

4. Unscrew the 2 screws **I** on the electrode (Fig. 68);

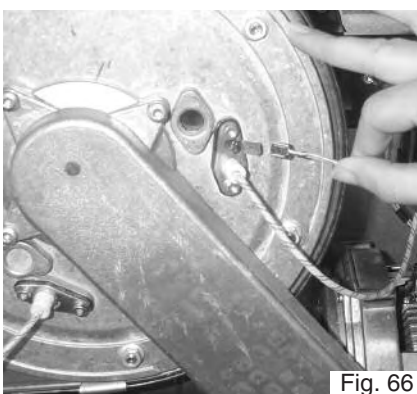


Fig. 66

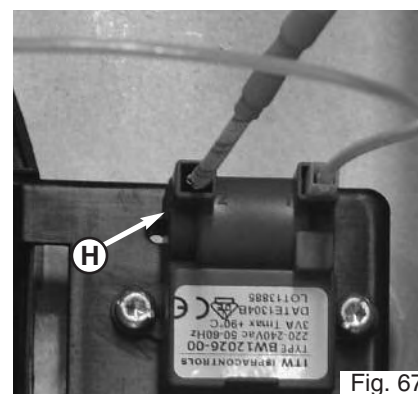


Fig. 67

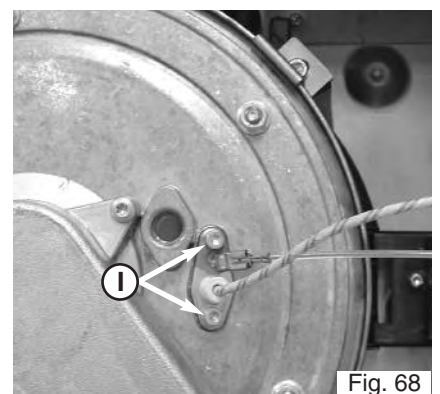


Fig. 68

### 18.2.5 Removing the fan

1. Carry out step 18.1.1;
2. Remove the air gas manifold as in 18.2.1 (Fig. 69);



Fig. 69

3. Unscrew the two screws on the venturi J and remove with the gas valve (Fig. 70);

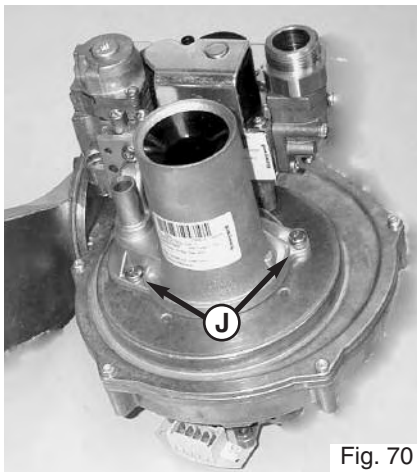


Fig. 70

4. Unscrew the three screws K on the air/gas pipe and remove (Fig. 71);
5. Reassemble in reverse order.

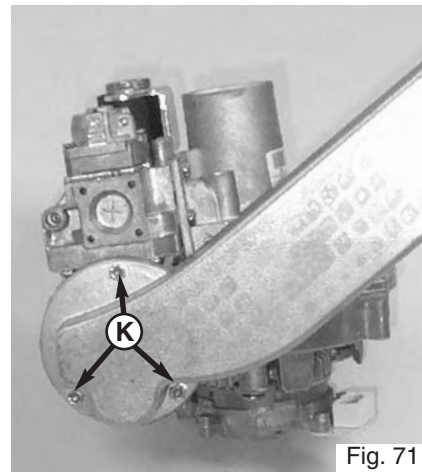


Fig. 71

### 18.2.6 Removing the gas valve

1. Carry out step 18.1.1;
2. Remove the air gas manifold as in 18.2.1 (Fig. 72);



Fig. 72

3. Unscrew the three screws K on the air/gas pipe and remove (Fig. 73);

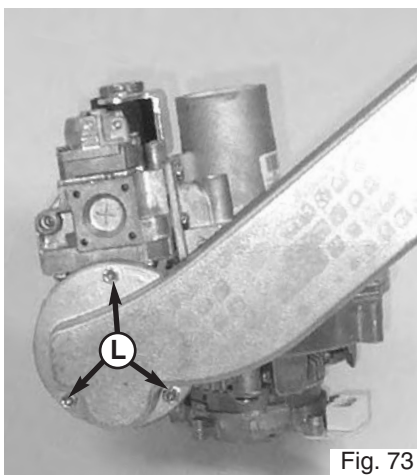


Fig. 73

4. Unscrew the three screws L holding the gas valve on the venturi (Fig. 74);



Fig. 74

5. Remove the gas valve from the venturi. (Fig. 75);
6. Reassemble in reverse order;
7. The CO<sub>2</sub> settings will need to be checked and if necessary adjusted (see Section 14.3 page 30);
8. Test for tightness on reassembly

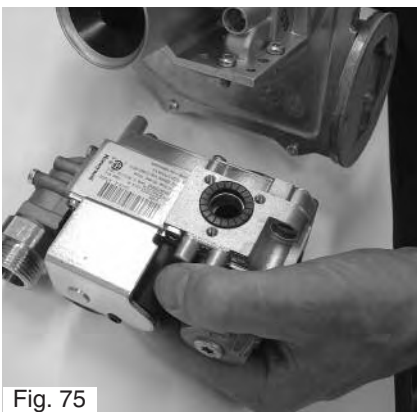


Fig. 75

### 18.2.7 Removing the heat exchanger

1. Drain down the boiler;
2. Carry out step 18.1.1;
3. Remove the air gas manifold as in 18.2.1 (Fig. 76);

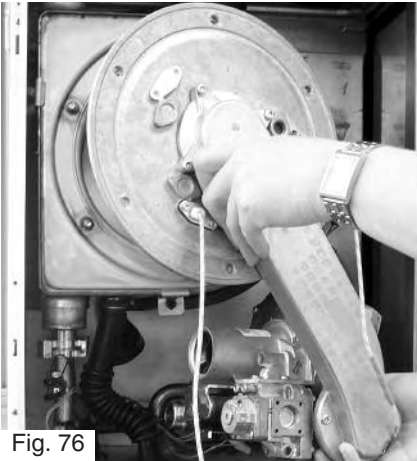


Fig. 76

4. Unscrew the three bolts **M** from the main heat exchanger (Fig. 77);

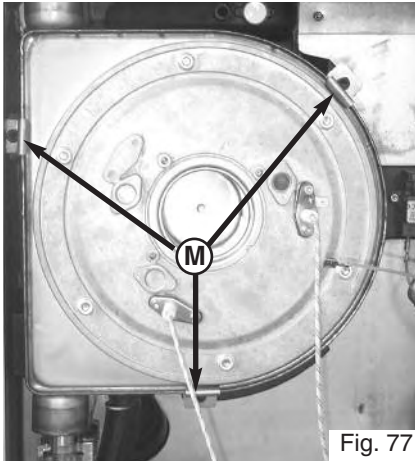


Fig. 77

5. Remove the flow and return pipes and the condense drain pipe from the heat exchanger. (Fig. 78)



Fig. 78

6. Remove the heat exchanger from the boiler by sliding it forwards. (Fig. 79);
7. Reassemble in reverse order.



Fig. 79

### 18.2.8 Removing the spark generator

1. Carry out step 18.1.1;
2. Disconnect the earth cable from the ignition electrode. (Fig. 80);

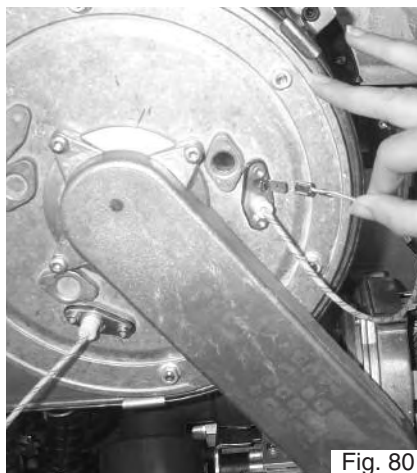


Fig. 80

3. Disconnect the ignition electrode, live, neutral and earth cables from the ignitor. (Fig. 81);

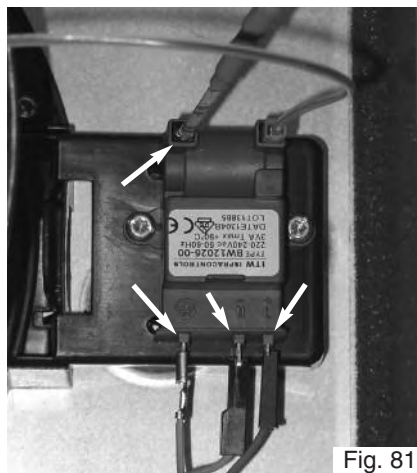


Fig. 81

4. Remove the two screws **N** from the ignitor and remove (Fig. 82);
5. Reassemble in reverse order.



Fig. 82

## 18.3 Access to the Water Circuit

**Important!** Before any component is removed, the boiler must be drained of all water.

### 18.3.1 Drain down

Close the flow and return isolating valves and open the pressure relief valve.

### 18.3.2 Removing the Central Heating return body

1. Carry out step 1.2.1 and 1.2.3;
2. Remove the clip "Q1" from the by-pass tube (Fig. 84);
3. Remove the clips "Q2" and "Q3" from the heating return and the pump (Fig. 85 & 86);
4. Remove the two screws "P1" (Fig. 84);
5. Remove the Central Heating return body by pulling it toward you (Fig. 87);
6. Reassemble in reverse order;

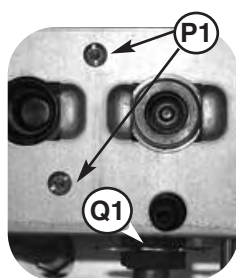


Fig. 84



Fig. 87

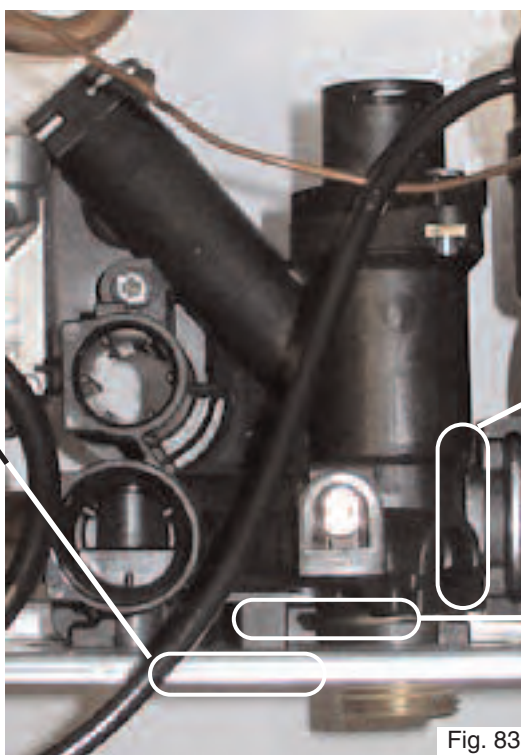


Fig. 83



Fig. 85

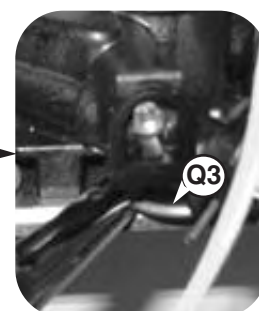


Fig. 86

### 18.3.3 Removing the pump

1. Carry out step **18.1.1**;
2. Lower the electrical box cover as in step **18.1.2**;
3. Remove the PCB cover;
4. Remove the pump plug from the control board and earth plug from the earth socket (see Fig. 88);



Fig. 88

6. Unscrew the pump nut (see Fig. 89);

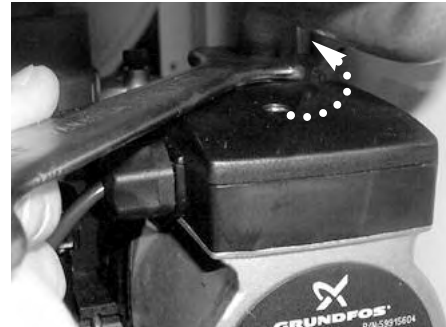


Fig. 89

5. Remove the clip **S2** on the pump volute (see Fig. 90);



Fig. 90

7. Pull the pump toward you and remove the clip **S3** securing the pressure gauge (see Fig. 91);
8. Reassemble in reverse order.



Fig. 91

### 18.3.4 Removing the pressure relief valve

1. Carry out step **18.1.1** and **18.3.1**;
2. Remove the clip securing the valve (see Fig. 92) and pull it toward you;
3. Reassemble in reverse order; take care to ensure the valve is in the correct position;



Fig. 92

### 18.3.5 Removing the expansion vessel

1. Carry out step 18.3.1;
2. Isolate the gas supply and disconnect all pipe connections;
3. Remove the boiler from the wall
4. Remove the two screws **T** (see Fig. 93);

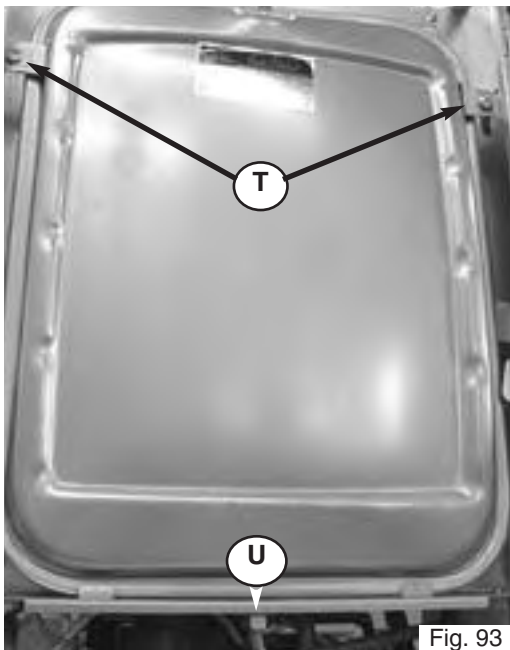


Fig. 93

5. Unscrew the nut **U** (see Fig. 94);
6. Pull the expansion vessel toward you to remove it;
7. Reassemble in reverse order, testing all pipe connections for soundness.



Fig. 94

### 18.3.6 Removing the overheat thermostat

1. Remove the casing as in step 18.1.1;
2. Pull off the thermostat connections and remove the thermostat from the pipe by releasing its securing clip (see Fig. 95).

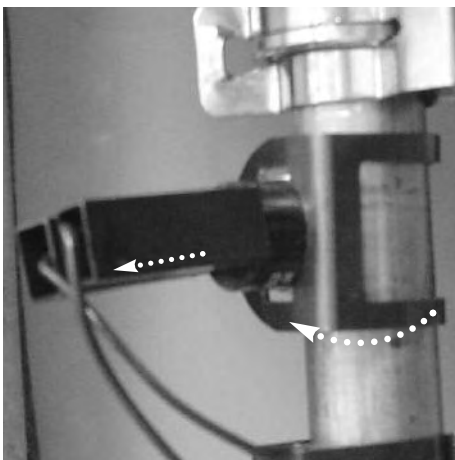


Fig. 95

### 18.3.7 Removing the temperature sensors (N.T.C's)

1. Remove the casing as in step 18.1.1;
2. Pull off the NTC connections and remove the NTC from the pipe by releasing its securing clip (see Fig. 96).



Fig. 96

### 18.3.8 Removing the pressure gauge

1. Carry out steps **18.3.1** and **18.3.3**;
2. Remove the pressure gauge by releasing the two clips **V** and pulling the pressure gauge out. (see Fig. 97)

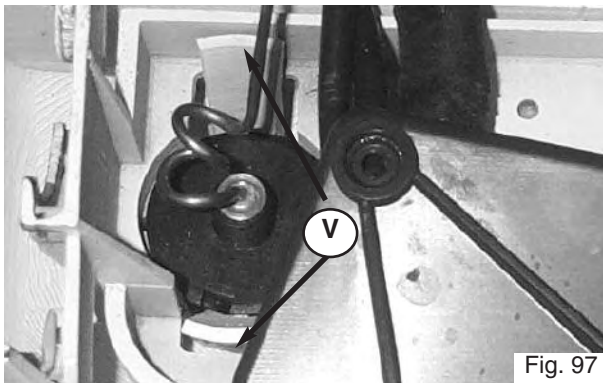


Fig. 97

### 18.3.9 Removing the water pressure switch

1. Carry out steps **18.1.1** and **18.3.1**;
2. Pull off the connections and remove the pressure switch by releasing its securing clip (see Fig. 98).

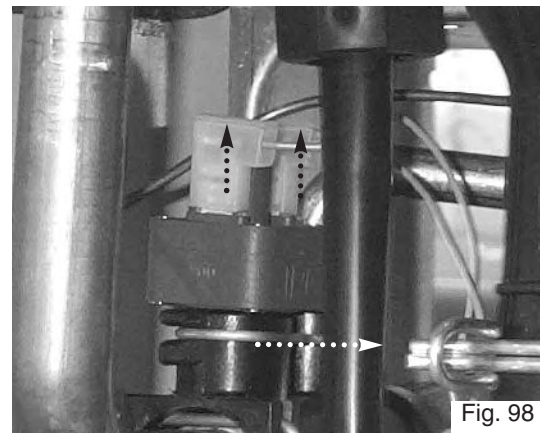


Fig. 98

## 18.4 Access to the Control System

### 18.4.1 Removing the P.C.B.s

1. Carry out steps **18.1.1** and **18.1.2**;
2. Remove the screw **W1** from the electrical box (see Fig. 99);



Fig. 99

3. Release the three clips **W2** and remove the electrical box cover (see Fig. 100);



Fig. 100

4. Remove the two screws **W3** from the front control panel and lower the front control panel (see Fig. 101);



Fig. 101

5. Remove all electrical connections from the display PCB (see Fig. 102);



Fig. 102

6. To remove the display PCB, remove the two screw **W4** and lift the PCB out (see Fig. 103);
7. Reassemble in reverse order;

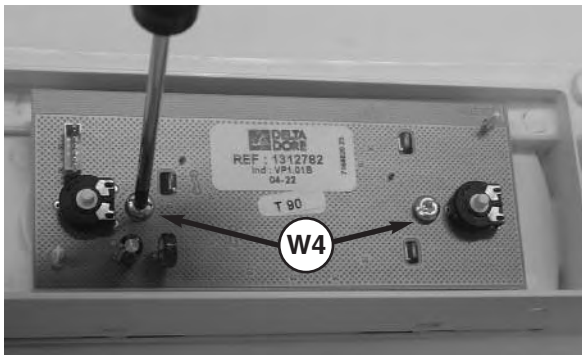


Fig. 103

8. To remove the main PCB disconnect all electrical connections and remove the two screws **W5** (see Fig. 104);  
Fit the correct EEPROM key when replacing the old PCB.
9. Reassemble in reverse order.

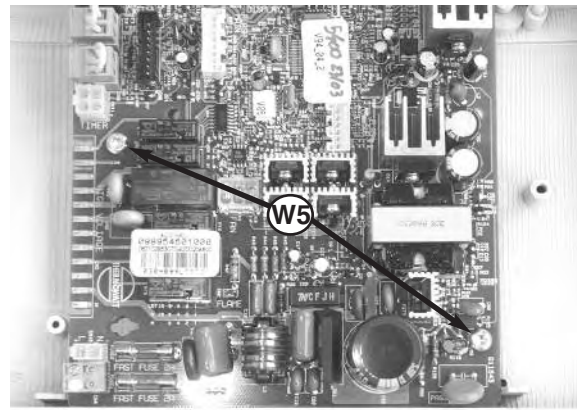


Fig. 104

#### 18.4.2 Removing the fuses

1. Carry out step **18.4.1**;
2. Remove the fuses "**X**" (see Fig. 105)
3. Reassemble in reverse order.

NOTE: FUSE RATING = 2 AMP FAST FUSE

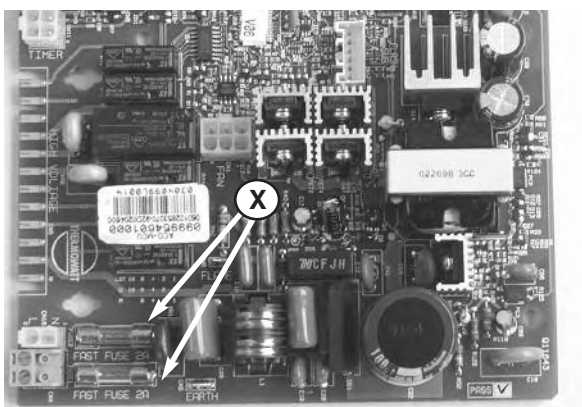


Fig. 105

#### 18.5 Connecting the external sensor

1. Access the main PCB as in step **18.4.1**;
2. Install the interface PCB supplied in the external sensor kit on the main PCB (see Fig. 106)
3. Connect the wires between the external sensor and the interface (see Fig. 106).

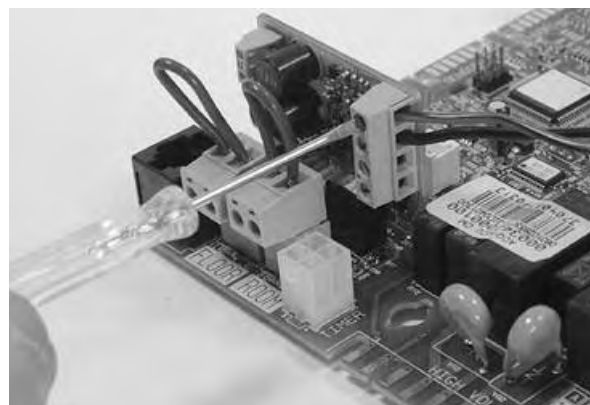


Fig. 106

## 19. Error Codes

In case of an error, or when the boiler has to display a message, the display flashes 2 digits. Please refer to the table below to diagnose the default.

For default 01 and 03, **A** appears on the display, the boiler is locked and the red button lights (28). To reset the boiler press key **28**.

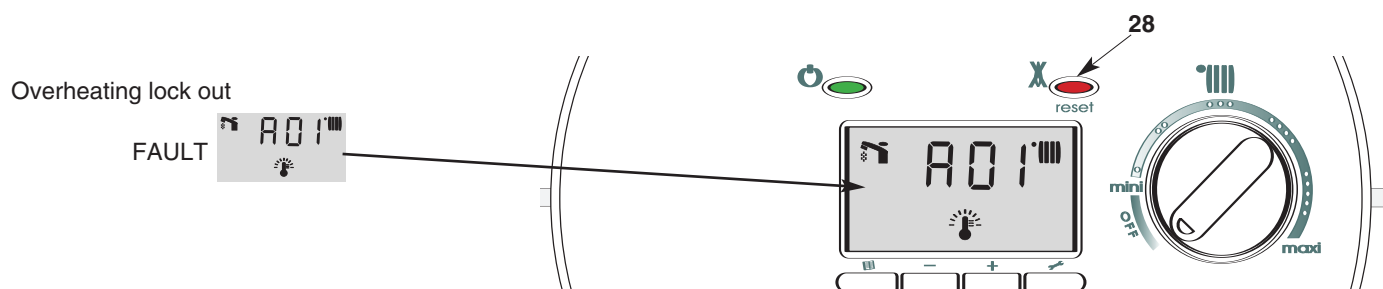


Fig. 107

Code	Fault description
A 01	Overheat lockout
A 03	No flame detected within allowed time
A 36	Flue pipe too high temperature
A 37	CPU fault
A 39	PCB fault 1
A 40	PCB fault 2
A 41	Fan error
E 02	No Circulation (check pump and water pressure)
E 04	No flame detection
E 05	Anti-freeze system, pump only
E 06	Anti-freeze system, pump and burner
E 07	No water circulation in primary circuit
E 08	No water in the primary circuit
E 11	Flow sensor open circuit
E 12	Flow sensor short circuit
E 13	Return sensor open circuit
E 14	Return sensor short circuit
E 15	Outdoor sensor open circuit (where fitted)
E 16	Outdoor sensor short circuit (where fitted)
E 18	Flame lift
E 20	Flame detected with gas valve off
E 22	Faulty air pressure switch
E 23	Low fan speed
E 25	Tank sensor open circuit
E 26	Tank sensor short circuit
E 27	Tank fault warning
E 29	Room sensor open circuit
E 30	Room sensor short circuit
E 33	Under floor heating thermostat open circuit
E 34	Flue pipe sensor open circuit
E 35	Flue pipe sensor short circuit
E 36	Flue pipe too high temperature
E 37	Communication problem with the main PCB
E 38	Reset pressed 5 times within 15 minutes

## 20. Incorrect Operaton

Fault	Cause	Solution
The boiler doesn't start	No gas, no water or no electricity	Check gas, water and electrical supplies and fuses.
	Air in the gas pipe	Follow the procedure in Section 14.2 (page 32)
	Room thermostat switched off	Turn up the room thermostat
Red indicator alight		Wait for a few minutes Press the reset button <b>28</b> (Fig. 107, page 55) the red led will go out and the boiler will attempt to re-light. If the red indicator lights too frequently, please call your local service centre.
Noises in CH system	Air present in the CH system or insufficient pressure	Purge the system of air and increase the system pressure (Section 2 page 6)
Radiators rise in temperature During summer season	2 Port Valve for Central Heating stuck open or demand for Central Heating from Time Clock and Room Thermostat	Check the Central Heating 2 port valve, time clock and room thermostat.

**If these solutions do not cure the fault, call a qualified professional**

## 21. Maintenance Instructions

### 21.1 General remarks

It is recommended that the following inspections be carried out on the boiler at least once a year;

1. Check the seals in the water group, and if necessary, replace the gasket and restore the seal to perfect working order;
2. Check the seals in the gas group, and if necessary replace the gaskets and restore the seal to perfect working order;
3. Visually check the overall condition of the boiler;
4. Visually check the combustion, and if necessary, disassemble and clean the burner;
5. Following inspection 3, disassemble and clean the combustion chamber as necessary;
6. Following inspection 4, disassemble and clean the injector, if necessary;
7. Clean the primary heat exchanger. (see Section 21.2);
8. Check and adjust the CO<sub>2</sub> emissions as necessary (see Section 14.3);
9. Check the correct operation of the heating safety devices:
  - Overheat thermostat
10. Check the correct operation of the low water pressure switch;
11. Check the correct operation of the gas group safety devices:
  - absence of gas or flame safety device (ionisation);
12. Check that the electrical connections are correct (as described in Section 13, page 26);
13. Check the efficiency of the production of domestic hot water (test the flow rate and temperature rise);
14. Carry out a general inspection of the boiler;
15. Check the flue and termination point;
16. Remove any oxide from the detection electrode by using an emery cloth.

### 21.2 Cleaning the primary exchanger

#### Cleaning the exhaust side

Remove the air gas assembly (Section 18.2.1). Check that the exhaust passages are free, if there are deposits present, clean the exchanger with compressed air or wash with water or a vinegar based detergent.

#### Cleaning the water side

Use detergents that dissolve CaCO<sub>3</sub>. Leave to act for a short time and then rinse.

Make sure that the detergent does not remain inside the exchanger.

Remove the condensate trap and clean it. Fill it with water and reassemble.

### 21.3 Operational test

After servicing the boiler, fill the heating circuit to a pressure of approximately 1.5 bar and release the air from the system.

- Place the boiler in operation;
- If necessary, release the air again from the heating system;
- Check the settings, seals and the correct functioning of the system for expelling the products of combustion and drawing combustion air;
- Check the settings and correct operation of all the control, regulation and monitoring components;
- Check that the burner ignites properly and carry out a visual check of the burner flame;
- Check that the 3 bar safety valve is operating correctly;
- Check the operation of the time control and room thermostat (if fitted);
- Complete the Service Interval Record (Section 25, page 36)

NOTE: THESE CHECKS ARE NOT EXHAUSTIVE

# 21. Maintenance Instructions

## 21.1 General remarks

It is recommended that the following inspections be carried out on the boiler at least once a year;

1. Check the seals in the water group, and if necessary, replace the gasket and restore the seal to perfect working order;
2. Check the seals in the gas group, and if necessary replace the gaskets and restore the seal to perfect working order;
3. Visually check the overall condition of the boiler;
4. Visually check the combustion, and if necessary, disassemble and clean the burner;
5. Following inspection 3, disassemble and clean the combustion chamber as necessary;
6. Following inspection 4, disassemble and clean the injector, if necessary;
7. Clean the primary heat exchanger. (see Section 21.2);
8. Check and adjust the CO<sub>2</sub> emissions as necessary (see Section 14.3);
9. Check the correct operation of the heating safety devices:
  - Overheat thermostat
10. Check the correct operation of the low water pressure switch;
11. Check the correct operation of the gas group safety devices:
  - absence of gas or flame safety device (ionisation);
12. Check that the electrical connections are correct (as described in Section 13, page 26);
13. Check the efficiency of the production of domestic hot water (test the flow rate and temperature rise);
14. Carry out a general inspection of the boiler;
15. Check the flue and termination point;
16. Remove any oxide from the detection electrode by using an emery cloth.

## 21.2 Cleaning the primary exchanger

### Cleaning the exhaust side

Remove the air gas assembly (Section 18.2.1). Check that the exhaust passages are free, if there are deposits present, clean the exchanger with compressed air or wash with water or a vinegar based detergent.

### Cleaning the water side

Use detergents that dissolve CaCO<sub>3</sub>. Leave to act for a short time and then rinse.

Make sure that the detergent does not remain inside the exchanger.

Remove the condensate trap and clean it. Fill it with water and reassemble.

## 21.3 Operational test

After servicing the boiler, fill the heating circuit to a pressure of approximately 1.5 bar and release the air from the system.

- Place the boiler in operation;
- If necessary, release the air again from the heating system;
- Check the settings, seals and the correct functioning of the system for expelling the products of combustion and drawing combustion air;
- Check the settings and correct operation of all the control, regulation and monitoring components;
- Check that the burner ignites properly and carry out a visual check of the burner flame;
- Check that the 3 bar safety valve is operating correctly;
- Check the operation of the time control and room thermostat (if fitted);
- Complete the Service Interval Record (Section 25, page 36)

NOTE: THESE CHECKS ARE NOT EXHAUSTIVE

PRESSURE SENSOR CODE		CITY CODE						
700	ELECTRICAL BOX							
705	PRESSURE GAUGE	61313561		•	•	•		
707	PRINTED CIRCUIT BOARD	65102353		•	•	•		
	PRINTED CIRCUIT BOARD ADJUST.	61312782		•	•	•		
	PRINTED CIRCUIT BOARD CONNECT.	61314958		•	•	•		
709	IGNITER	61002105-20		•	•	•		

## 23. Technical data

Model				Minima HE System 24		Minima HE System 30	
CE certificate				1312-BP-4083		1312-BP-4084	
Performance category				****		****	
NoX class				5		5	
Category				II2H3P		II2H3P	
Heating output		80°C/60°C	kW	7 to 24		9 to 29	
Heating output		50°C/30°C	kW	7 to 26		9 to 32	
Variable heating power		PN max	kW	24		29	
Nominal gas flow rate (15°C-1013 mbar)				min	max	min	max
Central Heating (gas flow rate)		Qn	kW	7	24	9	29
G20 (NG H - Lacq)	34.02 MJ/m³ under 20 mbar	Vr	m³/h	0.79	2.65	0.99	3.17
G31 (propane)	46.4 MJ/kg under 37 mbar	Vr	kg/h	0.58	1.94	0.73	2.33
Membrane Diameter (mm)/marking							
G20		mm		without		without	
G31 propane		mm		4.4		4.8	
Adjustable heating outlet temperature			°C	25 to 85		25 to 85	
Central heating minimum flow rate			l/h	300		300	
Central heating circuit maximum pressure		Pw max	bar	3		3	
Central heating expansion vessel capacity			L	6		8	
Expansion vessel inflation pressure			bar	0.7		0.7	
Electric voltage				230 volt, single phase-50 Hz		230 volt, single phase-50 Hz	
Electrical input power			W	150		150	
Electrical protection				IP 44		IP 44	
Maximum flow rate for combustion products				10.9		13.5	
Fume temperature (60-80)			°C	79		74	
Fume temperature (30-50)			°C	60		59	
CO² G20			%	9.5		9.2	
CO² G31			%	10		10	
Flue duct type				C13 / C33 / C43 / C53			
Maximum flue length (Horizontal and Vertical - Ø60/100)			m	5			
Maximum flue length (Horizontal and Vertical - Ø80/125)			m	10			
SEDBUK			Band (%)	A (90.1)		A (90.3)	
Dimensions		HxWxD	mm	720 x 390 x 396		720 x 390 x 360	
Weight			kg	31.4		34	

## 24. Benchmark Commissioning Checklist



BENCHMARK No. | | | | |

### GAS BOILER COMMISSIONING CHECKLIST

BOILER SERIAL No. \_\_\_\_\_ NOTIFICATION No. \_\_\_\_\_

**CONTROLS** To comply with the Building Regulations, each section must have a tick in one or other of the boxes

TIME & TEMPERATURE CONTROL TO HEATING	ROOM T/STAT & PROGRAMMER/TIMER <input type="checkbox"/>	PROGRAMMABLE ROOMSTAT <input type="checkbox"/>
TIME & TEMPERATURE CONTROL TO HOT WATER	CYLINDER T/STAT & PROGRAMMER/TIMER <input type="checkbox"/>	COMBI BOILER <input type="checkbox"/>
HEATING ZONE VALVES	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>
HOT WATER ZONE VALVES	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>
THERMOSTATIC RADIATOR VALVES	FITTED <input type="checkbox"/>	
AUTOMATIC BYPASS TO SYSTEM	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>

#### FOR ALL BOILERS CONFIRM THE FOLLOWING

THE SYSTEM HAS BEEN FLUSHED IN ACCORDANCE WITH THE BOILER MANUFACTURER'S INSTRUCTIONS? ☐

THE SYSTEM CLEANER USED \_\_\_\_\_

THE INHIBITOR USED \_\_\_\_\_

#### FOR THE CENTRAL HEATING MODE, MEASURE & RECORD

GAS RATE \_\_\_\_\_ m<sup>3</sup>/hr \_\_\_\_\_ ft<sup>3</sup>/hr

BURNER OPERATING PRESSURE (IF APPLICABLE) ☐ N/A \_\_\_\_\_ mbar

CENTRAL HEATING FLOW TEMPERATURE \_\_\_\_\_ °C

CENTRAL HEATING RETURN TEMPERATURE \_\_\_\_\_ °C

#### FOR COMBINATION BOILERS ONLY

HAS A WATER SCALE REDUCER BEEN FITTED? YES ☐ NO ☐

WHAT TYPE OF SCALE REDUCER HAS BEEN FITTED? \_\_\_\_\_

#### FOR THE DOMESTIC HOT WATER MODE, MEASURE & RECORD

GAS RATE \_\_\_\_\_ m<sup>3</sup>/hr \_\_\_\_\_ ft<sup>3</sup>/hr

MAXIMUM BURNER OPERATING PRESSURE (IF APPLICABLE) ☐ N/A \_\_\_\_\_ mbar

COLD WATER INLET TEMPERATURE \_\_\_\_\_ °C

HOT WATER OUTLET TEMPERATURE \_\_\_\_\_ °C

WATER FLOW RATE \_\_\_\_\_ lts/min

#### FOR CONDENSING BOILERS ONLY CONFIRM THE FOLLOWING

THE CONDENSATE DRAIN HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS? YES ☐

#### FOR ALL INSTALLATIONS CONFIRM THE FOLLOWING

THE HEATING AND HOT WATER SYSTEM COMPLIES WITH CURRENT BUILDING REGULATIONS ☐

THE APPLIANCE AND ASSOCIATED EQUIPMENT HAS BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS ☐

IF REQUIRED BY THE MANUFACTURER, HAVE YOU RECORDED A CO/CO<sub>2</sub> RATIO READING? N/A ☐ YES ☐ CO/CO<sub>2</sub> RATIO \_\_\_\_\_

THE OPERATION OF THE APPLIANCE AND SYSTEM CONTROLS HAVE BEEN DEMONSTRATED TO THE CUSTOMER ☐

THE MANUFACTURER'S LITERATURE HAS BEEN LEFT WITH THE CUSTOMER ☐

**COMMISSIONING ENG'S NAME** PRINT \_\_\_\_\_ CORGI ID No. \_\_\_\_\_

SIGN \_\_\_\_\_ DATE \_\_\_\_\_

## 25. Service Interval Record

### SERVICE INTERVAL RECORD

It is recommended that your heating system is serviced regularly  
and that you complete the appropriate Service Interval Record Below.

**Service Provider.** Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the boiler manufacturer's instructions. Always use the manufacturer's specified spare part when replacing all controls

#### **SERVICE 1** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 2** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 3** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 4** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 5** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 6** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 7** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 8** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 9** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

#### **SERVICE 10** DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE



# TERMS AND CONDITIONS OF GUARANTEE

Please read these terms and conditions which are in addition to any terms and conditions detailed in this book or any registration card supplied with your appliance.

## A charge will be made to the owner of the appliance if:

- The reason for any service visit is as a direct result of a failure to install the appliance in accordance with the manufacturer's instructions.
- Your installer does not complete the necessary commissioning process and procedure as detailed in the Installation and Operating Instructions.
- Your appliance is not serviced on or before the 12 month anniversary of installation - this only applies to appliances with a 2 and 5 year guarantee.
- Our service engineer calls as requested and the failure is a non-manufacturing defect.

Failure to pay an invoice for any such occurrence **will** be assumed by MTS that you accept that your appliance has not been installed correctly and understand that any manufacturer's guarantee has been withdrawn.

On the 12 month anniversary of the appliance installation, you must have it serviced to continue any guarantee offered into the following year. Failure to do so **will** invalidate your guarantee and should an MTS engineer be required to attend and no proof of service documentation is made available, then MTS **will** charge.

As part of the commissioning process, it is a legal requirement to register all boiler installations or replacements with CORGI. Upon registration a "Certification Number" will be issued followed by a "Declaration of Safety" Certificate. MTS (GB) Ltd cannot be called upon to carry out any work under the manufacturer's guarantee without proof of registration. The registration number must be quoted when requesting a service visit, and the "Declaration of Safety" Certificate subsequently shown to the service engineer. If the certificate is not made available, the engineer will not work on the appliance and a wasted call charge will be made.

If you have a problem with commissioning on installation, please contact our  
**Technical Department on 0870 241 8180**

Please remove the completed boiler  
commissioning checklist sticker from the  
front of the boiler and place in this box  
for customer reference

Manufacturer: **Chaffoteaux & Maury - France**

Commercial subsidiary: **MTS (GB) Limited**, MTS Building, Hughenden Avenue, High Wycombe, Bucks HP13 5FT



**CHAFFOTEAUX  
& MAURY**

## SPARE PARTS EXPLODED VIEW GAS WALL BOILERS

Model

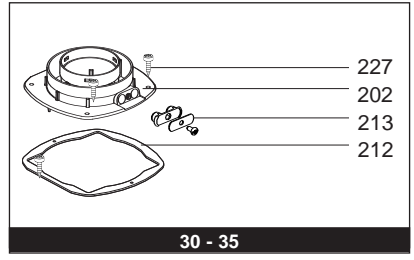
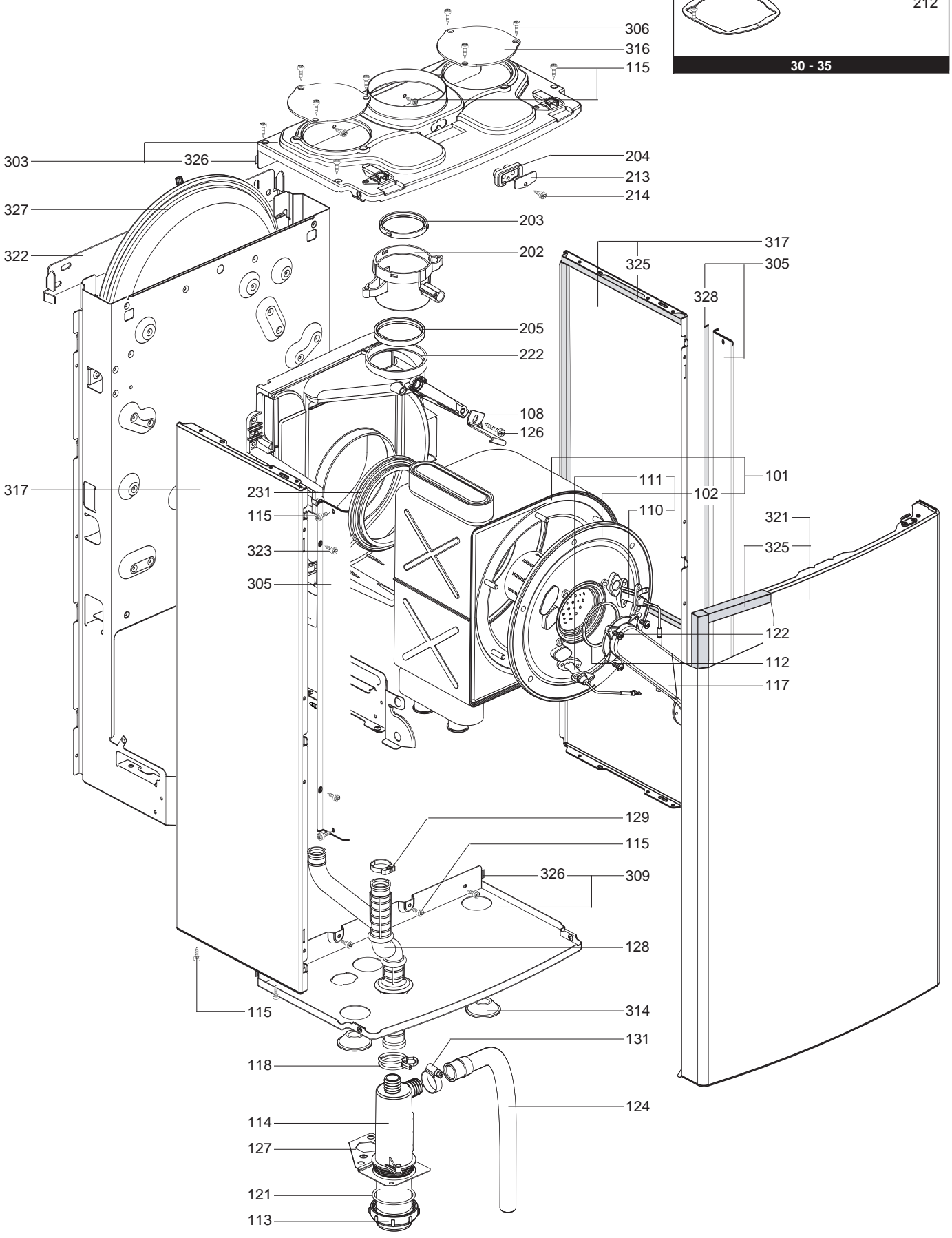
### **MINIMA HE - MINIMA HE SYSTEM**

R8202809-02EN - Edition 02 - 12/04/2005



3650007	31	MINIMA HE 24 NAT	...	...
3650008	31	MINIMA HE 30 NAT	...	...
3650009	31	MINIMA HE 35 NAT	...	...
3650010	31	MINIMA HE SYSTEM 24 NAT	...	...
3650011	31	MINIMA HE SYSTEM 30 NAT	...	...
3650012	31	MINIMA HE SYSTEM 35 NAT	...	...
Reference	Ind.	Model type	Begin	End

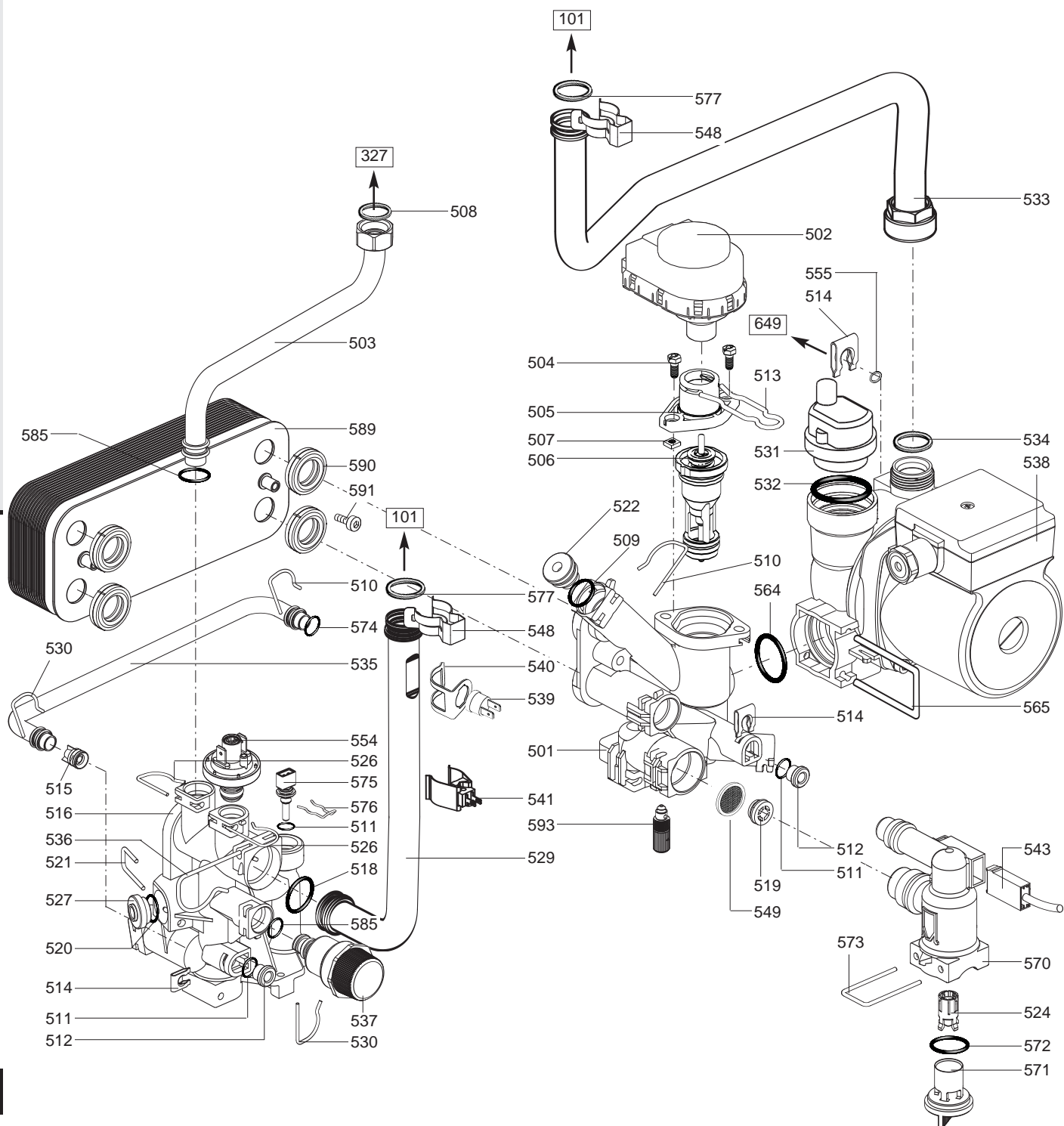
100  
200  
300



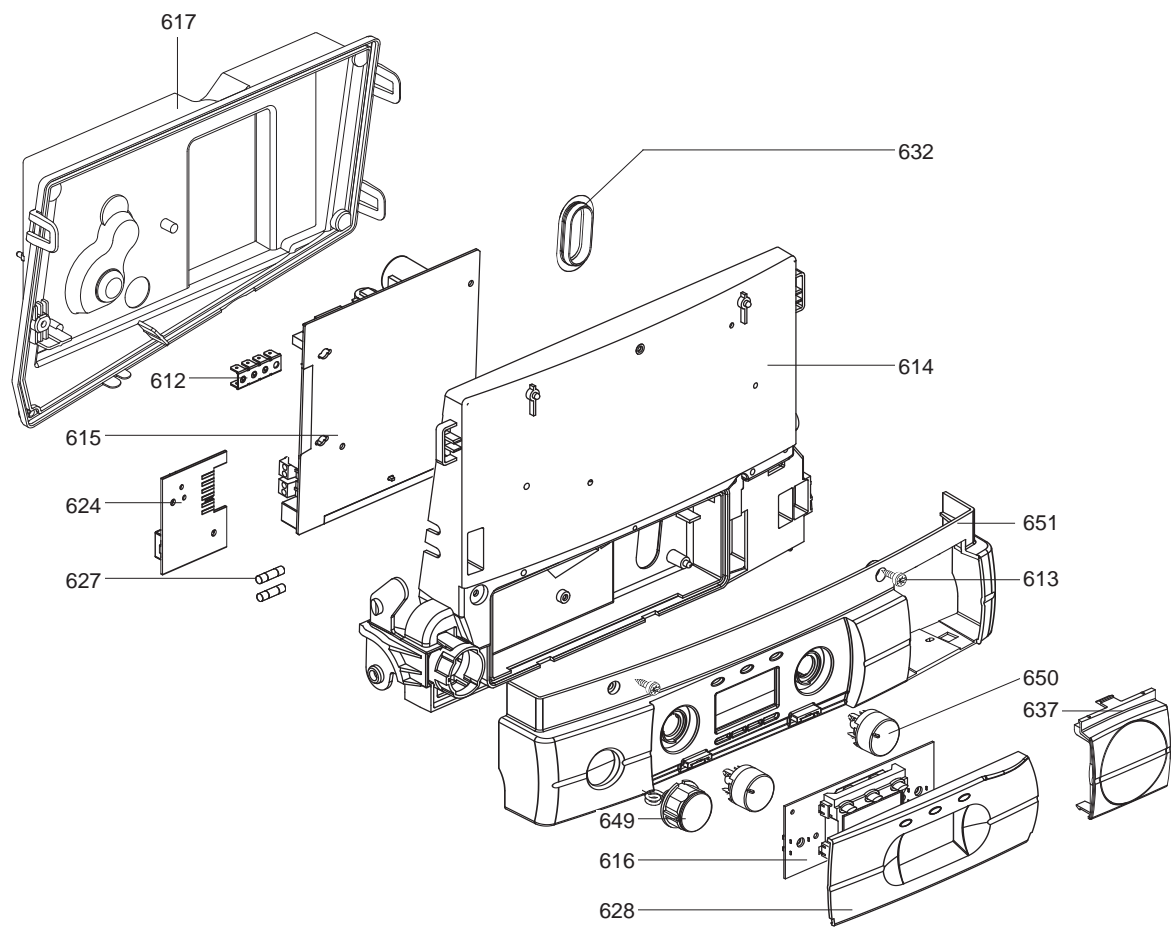








Key N°	Description	Manf. Pt. N°	Other	Type	24/30/35			24/30/35			Manf. date	
					MINIMA HE			MINIMA HE SYSTEM				
					CF	VMC	FF	CF	VMC	FF	from	to
0500	HYDRAULIC BLOCK											
0501	RIGHT HAND BLOCK	61315545						•	•	•		
	RIGHT HAND BLOCK + V3V	61315546			•	•	•					
0502	MOTOR - THREE-WAY VALVE	61302483			•	•	•					
0503	TUBE (Expan vessel)	61312602			•	•	•	•	•	•		
0504	SCREW CHc M 5-12	61018365			•	•	•	•	•	•		
0505	INTERFACE	61304003			•	•	•	•	•	•		
0506	VALVE KIT	61311597			•	•	•	•	•	•		
0507	NUT M 5	61016604			•	•	•	•	•	•		
0508	SHEET GASKET D: 12-8.1-1	60061853-05			•	•	•	•	•	•		
0509	"O" RING D: 13.6-2.7	61009834-18	E00633		•	•	•	•	•	•		
0510	CLIP	61010112	277830		•	•	•	•	•	•		
0511	"O" RING D: 5.7-1.9	60024164-10	366123		•	•	•	•	•	•		
0512	PLUG	61016752			•	•	•	•	•	•		
0513	PIN	61304002			•	•	•					
0514	CLIP	61002406	277848		•	•	•	•	•	•		
0515	CY-PASS D:20	61316013			•	•	•	•	•	•		
0516	LEFT HAND HYDRAULIC BLOCK	61315510			•	•	•					
	LEFT HAND HYDRAULIC BLOCK	61315512						•	•	•		
0518	"O" RING D: 17-4	60024164-51	E00604		•	•	•	•	•	•		
0519	FLOW REGULATORE 8L/MN (RED)	61017288-08			•							
	FLOW REGULATORE 10L/MN (WHITE)	61017288-10				•						
	FLOW REGULATORE 12L/MN (BROWN)	61017288-12					•					
0520	"O" RING D: 13.6-2.7	60024164-18	366048		•	•	•	•	•	•		
0521	PIN	61012909-02			•	•	•	•	•	•		
0522	PLUG	61313056			•	•	•	•	•	•		
0524	PISTON	61311314			•	•	•					
0526	CLIP	61010005	277841		•	•	•	•	•	•		
0527	PLUG	61002490	E23554		•	•	•	•	•	•		
0529	HEATING FLOW BEND	61314879			•	•		•	•			
	HEATING FLOW BEND	61315150					•			•		
0530	CLIP	61313953			•	•	•	•	•	•		
0531	AIR SEPARATOR HEAD ASSEMBLY	61304608			•	•	•	•	•	•		
0532	GASKET KIT	61304618			•	•	•	•	•	•		
0533	HEATING RETURN TUBE	61314880			•	•	•	•	•	•		
0534	"O" RING D: 16-1.9	61009833-37	E00615		•	•	•	•	•	•		
0535	BYPASS TUBE D:15	61314383			•	•	•	•	•	•		
0536	PIN	61302332			•	•	•	•	•	•		
0537	PRESSURE RELIEF VALVE	61312668			•	•	•	•	•	•		
0538	PUMP + AIR SEPARATOR 15/50	61301964			•	•	•	•	•	•		
	PUMP + AIR SEPARATOR 15/60	61303461			•	•	•	•	•	•		
0539	OVERHEAT THERMOSTAT 100°C	61010572	277783		•	•	•	•	•	•		
0540	CLIP	61010050	277782		•	•	•	•	•	•		
0541	TEMPERATURE PROBE + CLIP (C.H. - T335D)	990686			•	•	•	•	•	•		
0543	STOPPED WATER THROTTLE	61311745			•	•	•					
0548	CLIP	61307589			•	•	•	•	•	•		
0549	WATER FILTER	61301924			•	•	•					
0550	CAPACITOR	61000652-10	E00616		•	•	•	•	•	•		
0554	PRESSURE SENSOR 0.8b	61310364			•	•	•	•	•	•		
0555	O RING D: 5.7-1.9	61009834-10	E00621		•	•	•	•	•	•		
0564	"O"ING D: 24.6-3.6	61009834-30			•	•	•	•	•	•		
0565	PIN	61305185			•	•	•	•	•	•		
0570	STOPPED WATER THROTTLE BODY	61314149			•	•	•					
0571	PLUG	61314175			•	•	•					
0572	"O" RING D: 25-2.4	60024164-32	366914		•	•	•					
0573	PIN	61016206-02			•	•	•					
0574	GASKET D: 15-3	61315715			•	•	•	•	•	•		
0575	PLUG	61010485						•	•	•		
	THERMISTOR TEMP. SENSOR	61314955			•	•	•					
0576	TEMPERATURE SENSOR CLIP	61002083	277835		•	•	•	•	•	•		
0577	"O" RING D: 17.86-2.62	61308091			•	•	•	•	•	•		
0585	"O" RING D: 8.9-2.7	61009834-14	E00605		•	•	•	•	•	•		
0589	WATER / WATER HEAT EXCHANGER	61302409			•							
	WATER/WATER HEAT EXCHANGER 16	61311400					•					
	WATER/WATER HEAT EXCHANGER 16	61314111					•					
0590	LIP SEAL	61002249	277860		•	•	•	•	•	•		
0591	SCREW CLX M 5-20	61017600			•	•	•	•	•	•		
0593	DRAIN SCREW ASSY	60081904			•	•	•	•	•	•		



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900

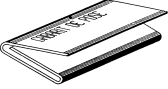
943

FITTING  
Kit

944

TAP  
Kit

946



947

PIPES  
Kit

[illegible]



## LIST OF THE ABBREVIATIONS

HW .....	: Hot water.
CW .....	: Cold water.
C .....	: Ceramic resistance (nomral heating).
Ca .....	: Ceramic resistance (accelerated heating)
TP .....	: Immersion heater.
1F .....	: With fittings.
2F .....	: Without fittings.
3F .....	: With fittings and another outlet connection.
AMI .....	: With mixing valve.
SMI .....	: Without mixing valve.
PUISS .....	: Power of th appliance.
PN .....	: Appliance with normal pression.
LP .....	: Appliance with low pression.
PV .....	: Appliance with variable power.
PF .....	: Appliance with fixed power..

## IDENTIFICATION PLATE

### NUMÉRO DE SÉRIE

Ex: 1 95 065004 - 31

1	95	065004	- 31
			Indice technique de l'appareil
			Code séquentiel
			Année de fabrication
			Mois de fabrication : de 1 à 9 → Janvier à Septembre
			O → Octobre
			N → Novembre
			D → Décembre

The indications mentionned on the prices, commercial or technical literature and the scheme are written for your guidance and are available at a given time. The CONSTRUCTOR retains the power to modify the presentation, the form, the size, the conception or the material of the products.