

THE WHITE BOILER COMPANY

# Instructions for Use Installation and Servicing

To be left with the user

**HIGH EFFICIENCY**

**CONDENSING**

SYSTEM BOILER

**WH SYSTEM 6 - 24**

**WH SYSTEM 9 - 32**

Natural Gas (G20) I<sub>2H</sub> - II<sub>2H3+</sub>

G.C. No.

LPG (G30-G31) I<sub>3+</sub> - II<sub>2H3+</sub>

G.C. No.



Listed by The United Kingdom Water  
Fitting Byelaws Scheme



**CE 86**



Technical and illustrative data are not binding and can be modified without prior notice.  
The descriptions and illustrations in the present booklet are for guideline purposes only.

THE WHITE BOILER COMPANY, CHARTISTS WAY

a Ravenheat Group Company

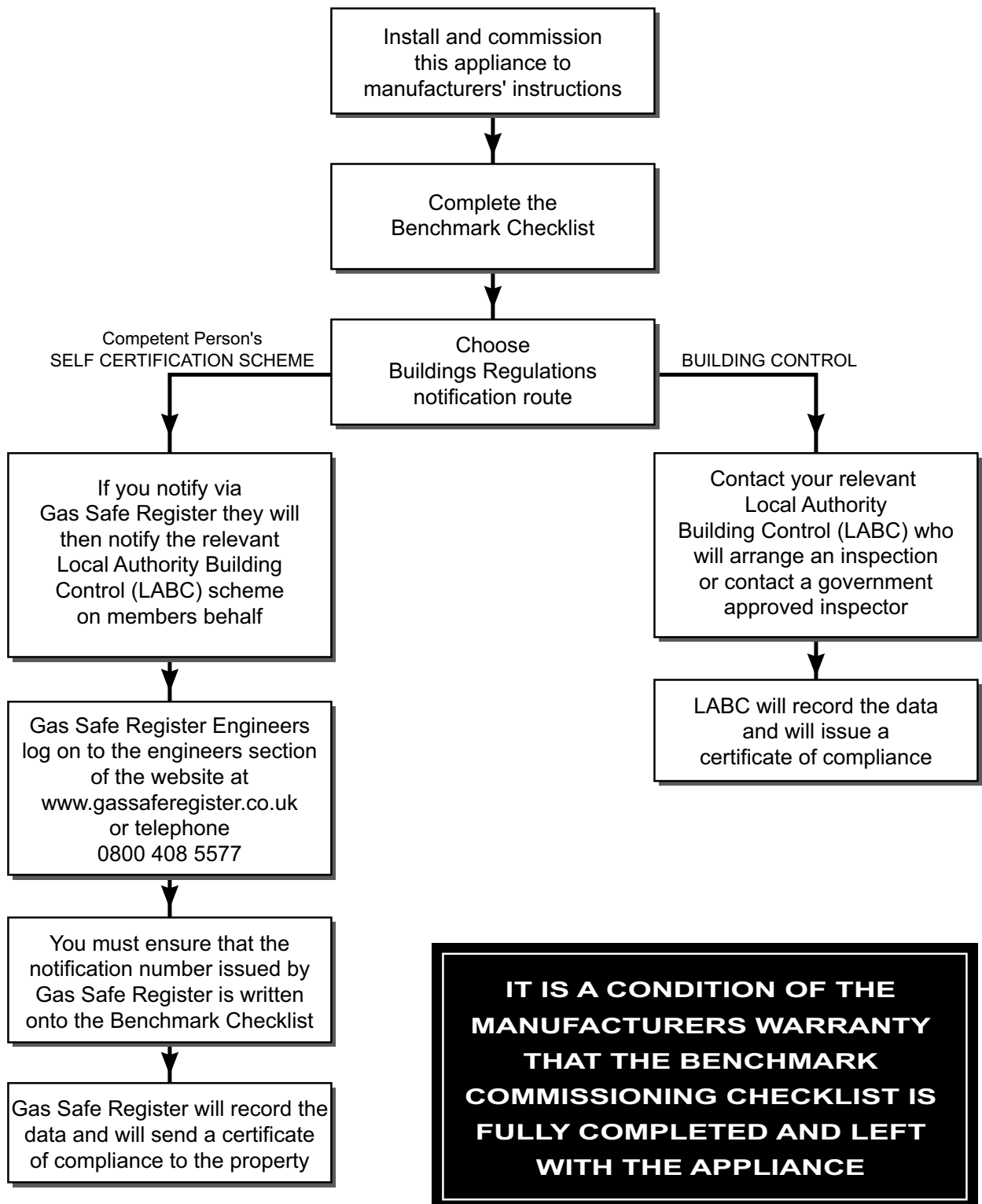
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# INSTALLER NOTIFICATION GUIDELINES

A change to Building Regulations (England and Wales) requires the installer to notify when installing a heating appliance, as from 1st April 2005.



## HIGH EFFICIENCY CONDENSING BOILER

### CENTRAL HEATING BOILER

This new super high efficient turbo-modulating boiler is designed to meet central heating requirements at super high efficiency, unheard of only a few years ago.

#### POSITION

The appliance is extremely versatile as it can be fitted in almost any room. The appliance is room sealed, there is no contact between combustion chamber and living accommodation. This guarantees maximum safety and efficiency. Indeed, our front cover has been designed to fit, achieving maximum air tight seal using screw down fasteners. Each boiler has been designed and manufactured in our modern plant to exacting ISO 9001 discipline, all boilers carry full CE marking of approval. Technical sales and commercial service are available throughout the UK. This product is guaranteed by The White Boiler Company, Chartists Way, Morley, LEEDS, LS27 9ET. Telephone No (0113) 252 7007.

#### BASIC COMPONENTS - (See figure 1).

Guarantee is a full 12 months from date of purchase providing the appliance has been fitted in accordance with these instructions and relevant codes of practice.

#### MAJOR COMPONENTS

- Gas valve.
- Variable head pump suitable for any type of central heating system.
- Burner with flame stabiliser designed to operate under all thermal conditions.
- Primary heat exchanger constructed from aluminium
- Unique **patented condensing heat exchanger** for high thermal flue transfer gases to water.
- Built in frost protection.
- Printed circuit board designed to connect to external control connection. Aesthetically pleasing panels and controls.
- On/Off ball valves for shutting off gas and central heating.
- Safety relief valve (for safety discharge).

All front panel controls not often used have been hidden. This achieves simplicity of operation with easy to clean panels.

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

#### COSHH - CONTROL OF SUBSTANCES HARMFUL TO HEALTH

##### IMPORTANT

This appliance contains materials that are indicated below.

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

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

#### GENERAL INFORMATION:

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

THE WHITE BOILER COMPANY use only high quality material for production of this product, in an effort to protect the environment components should be re-cycled.

## SECTIONS

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## GENERAL LAYOUT

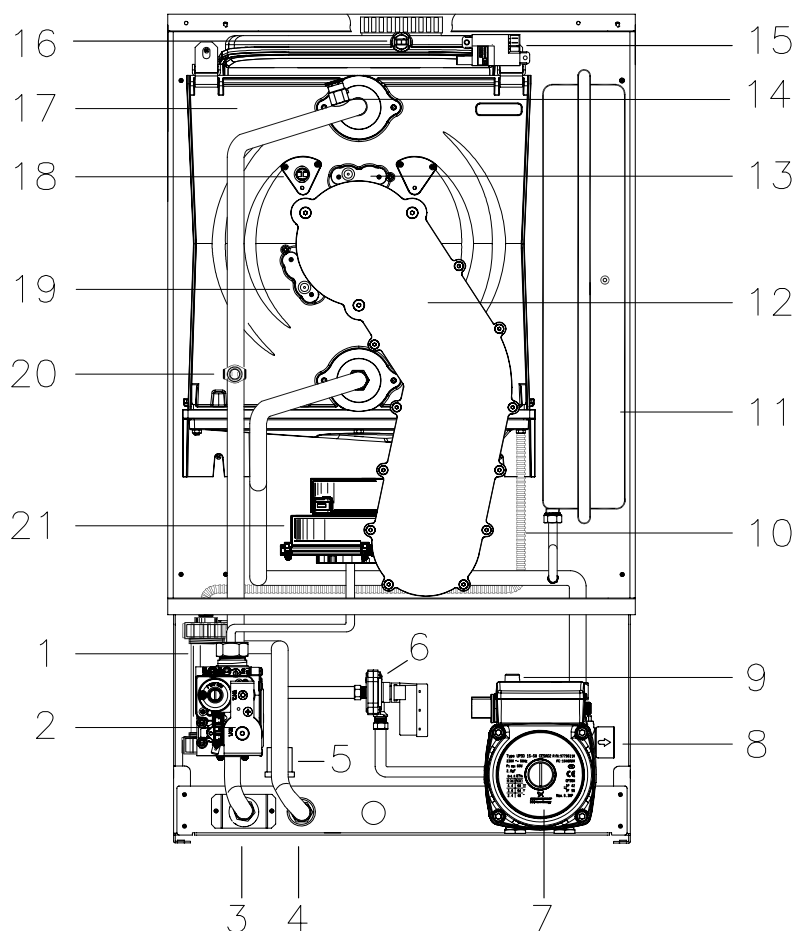


Fig. 1

### KEY

- |                                        |                                    |
|----------------------------------------|------------------------------------|
| 1 - Condensate drain                   | 12 - Burner manifold               |
| 2 - Gas valve                          | 13 - Spark electrode               |
| 3 - Gas inlet                          | 14 - Commissioning manual air vent |
| 4 - CH flow                            | 15 - Spark igniter                 |
| 5 - Water pressure sensor              | 16 - Flue temperature sensor       |
| 6 - Differential water pressure switch | 17 - Heat exchanger                |
| 7 - Circulation pump                   | 18 - Overheat cut off thermostat   |
| 8 - Safety pressure relief valve       | 19 - Sensing electrode             |
| 9 - Auto air vent                      | 20 - CH sensor                     |
| 10 - Condensate drain                  | 21 - Fan                           |
| 11 - Expansion vessel                  |                                    |

## OPERATING SCHEME

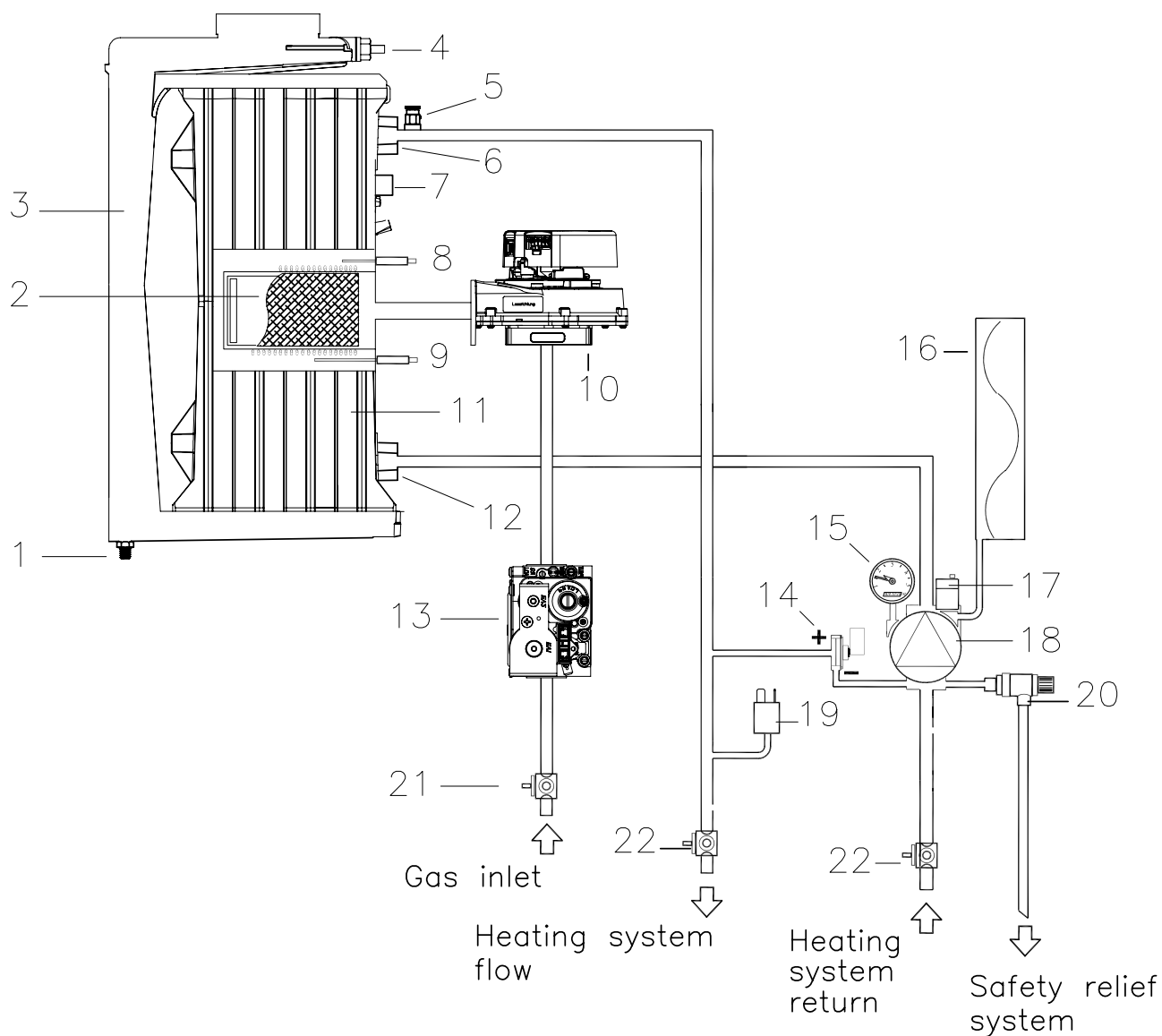


Fig. 2

### KEY

- |                                   |                                         |                                   |
|-----------------------------------|-----------------------------------------|-----------------------------------|
| 1 - Condensate drain              | 10 - Fan                                | 19 - Low water pressure switch    |
| 2 - Burner                        | 11 - Heat exchanger                     | 20 - Safety pressure relief valve |
| 3 - Flue gas exhaust manifold     | 12 - CH return                          | 21 - Gas service cock             |
| 4 - Flue temperature sensor       | 13 - Gas valve                          | 22 - Compression ball valves      |
| 5 - Commissioning manual air vent | 14 - Differential water pressure switch |                                   |
| 6 - CH flow                       | 15 - Water pressure gauge               |                                   |
| 7 - Overheat thermostat           | 16 - Expansion vessel                   |                                   |
| 8 - Spark electrode               | 17 - Auto air vent                      |                                   |
| 9 - Sensing electrode             | 18 - Circulation pump                   |                                   |

## SECTION 1 INTRODUCTION

- 1.1** The WH System 6-24 / 9-32 boilers are a fully automatic, wall mounted, room sealed condensing high efficiency boiler for central heating and hot water with a separate indirect hot water storage cylinder is also incorporated in the system. The system boilers which incorporates a circulation pump, expansion vessel, safety valve, pressure gauge and electronic ignition.

The boilers are equipped with a front cover which can be removed for servicing. The data badge with technical data, Gas Council number, model name and serial number is placed on the lower part of the left hand side panel.

- 1.2** Fig.1 Illustrates the general layout of components.  
Fig.2 Illustrates the operating principles described in section 2.

## SECTION 2

### 2 DESCRIPTION OF CONTROL SYSTEM AND SEQUENCE OF OPERATION

#### 2.2 Operating mode

- 2.2.1** With a demand for heating, the pump circulates water through the circuit.
- 2.2.2** The spark ignition system is powered which in turn commences the spark igniter to operate and light the burner.  
At this point the ignition board opens the gas valve to light the burner.
- 2.2.3** When the electrode sensor senses the signal that the burner is alight, the spark igniter stops.
- 2.2.4** From the fan speed setting the boiler increases to the maximum permissible speed over a period of 5 seconds and will remain at its maximum required power until its maximum regulated temperature is achieved and then will modulate to maintain this.
- 2.2.5** When the demand is satisfied the burner is extinguished and pump continues to run for a period of 3 minutes.
- 2.2.6** The boiler is fitted with an anti-cycling device on the control board. This delays the boiler from re-firing within 10 minutes.  
If the heating temperature goes 20°C below the set point, the burner restarts immediately.

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

#### 2.5 Safety device

The WH System 6-24 / 9-32 boilers safe operation are ensured by a control board which shuts off the main burner, if the fan stops or the flue or combustion air intake duct is obstructed.

- 2.5.1** An overheat cut off thermostat acts to turn off the burner to resettable "lockout" (Fig. 33).
- 2.5.2** A safety valve is fitted on the primary circuit set at 3 bar.
- 2.5.3** A low water pressure switch set at 0.4 bar is fitted on heating circuit, to prevent the boiler operating below this boiler system pressure.

## OVERALL DIMENSION

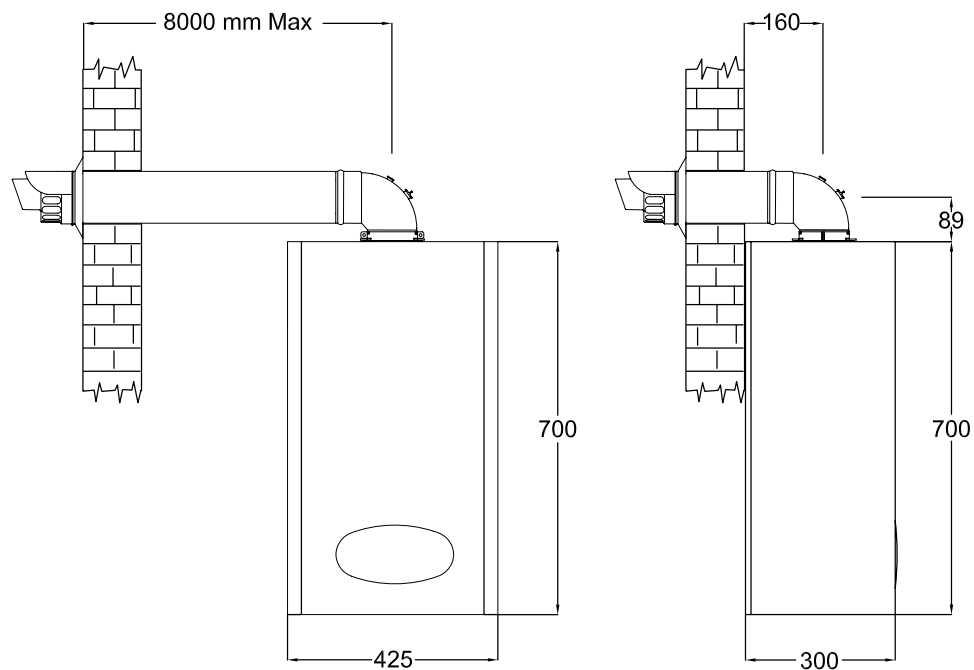
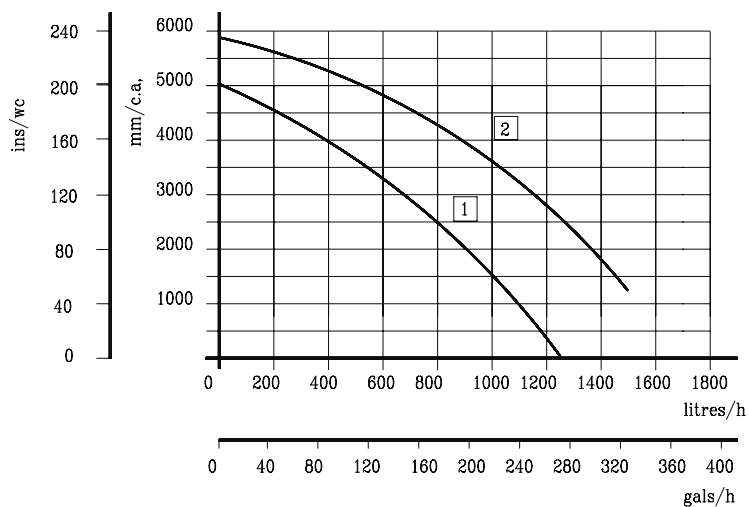
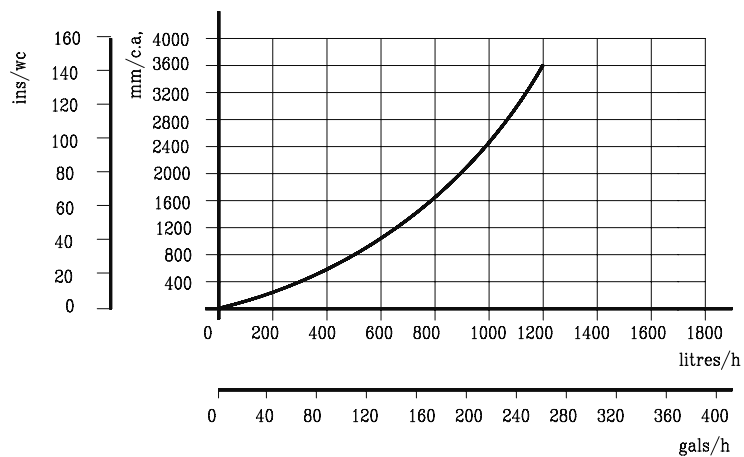


Fig. 3



AVAILABLE PUMP HEAD  
Fig. 4a



PRESSURE DROP ACROSS APPLIANCE  
Fig. 4b

## SECTION 3 TECHNICAL DATA

## WH SYSTEM 6 - 24

TABLE 1/A

NATURAL GAS (G 20) I<sub>2H</sub> - II<sub>2H3+</sub>

|                                                                                |                                                                                                        |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| NOMINAL HEAT INPUT NET QMS                                                     | 24.5 kW                                                                                                |
| MINIMUM HEAT INPUT NET                                                         | 6.8 kW                                                                                                 |
| NOMINAL HEAT OUTPUT                                                            | 24.1 kW                                                                                                |
| NOMINAL HEAT OUTPUT CONDENSING                                                 | 26.5 kW                                                                                                |
| MINIMUM HEAT OUTPUT                                                            | 6.7 kW                                                                                                 |
| MINIMUM HEAT OUTPUT CONDENSING                                                 | 7.4 kW                                                                                                 |
| GAS RATE                                                                       | max 2.5 m <sup>3</sup> /h                                                                              |
| AFTER 10 MINUTES                                                               | min 0.7 m <sup>3</sup> /h                                                                              |
| INLET PRESSURE                                                                 | 20 mbar                                                                                                |
| FAN SPEED Max 5400 rpm - 180 Hz<br>C.H. min 1650 rpm - 55 Hz                   | Combustion % CO <sub>2</sub> : G20 - 9.4 (+ 0.2 / - 0.5) Case ON<br>G20 - 9.2 (+ 0.2 / - 0.5) Case OFF |
| Mixer orifice: fucsia                                                          |                                                                                                        |
| ELECTRICAL SUPPLY                                                              | 230 V ~ 50 HZ                                                                                          |
| POWER CONSUMPTION                                                              | 160 W                                                                                                  |
| EXTERNAL FUSE RATING                                                           | 3A                                                                                                     |
| INTERNAL FUSE                                                                  | F1 - 3.15 A (20 mm to BS 4265)                                                                         |
| DRY WEIGHT                                                                     | 39.5 kg                                                                                                |
| WATER CONTENT C.H.                                                             | 2.0 litre                                                                                              |
| GAS SUPPLY CONNECTION                                                          | 15 mm compression isolating valve                                                                      |
| FLOW CONNECTION C.H.                                                           | 22 mm compression isolating valve                                                                      |
| RETURN CONNECTION C.H.                                                         | 22 mm compression isolating valve                                                                      |
| SAFETY DISCHARGE C.H.                                                          | 15 mm copper pipe                                                                                      |
| CONDENSATION DRAIN                                                             | 3/4" (21.5 mm) push fit over flow                                                                      |
| MAX COLD WATER CAPACITY WITHOUT ADDITIONAL EXPANSION VESSEL 110 LITRE          |                                                                                                        |
| SEALED WATER SYSTEM C.H.                                                       |                                                                                                        |
| MAX PRESSURE PHS                                                               | 2.5 bar                                                                                                |
| MINIMUM WORKING PRESSURE                                                       | 0.5 bar                                                                                                |
| 8 LITRES EXPANSION VESSEL PRE-CHARGE-PRESSURE                                  | 0.5 bar                                                                                                |
| CENTRAL HEATING OPERATING TEMPERATURE                                          | MAX 80°C min 45°C                                                                                      |
| DESIGN FLOW RATE 1383 l/h 20 °C RISE                                           |                                                                                                        |
| MINIMUM FLOW RATE C.H. 503 l/min                                               |                                                                                                        |
| FLUE OUTLET NOM. DIAMETER 100 mm specially supplied with boilers (If required) |                                                                                                        |
| DESTINATION: AT, DK, FI, SE & GR                                               | CATEGORY I <sub>2H</sub>                                                                               |
| DESTINATION: GB, IE, CH, ES, IT, PT & GR                                       | CATEGORY II <sub>2H3+</sub>                                                                            |
| FLUE TYPE - C <sub>13</sub> - C <sub>33</sub> - C <sub>53</sub>                | NO <sub>x</sub> 5 SEDBUK A                                                                             |

## SECTION 3 TECHNICAL DATA

## WH SYSTEM 6 - 24

TABLE 1/B

LPG (G 30 - G 31) I<sub>3+</sub> - II<sub>2H3+</sub>

|                                                                                |                                                                   |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------|
| NOMINAL HEAT INPUT NET QMS                                                     | 24.5 kW                                                           |
| MINIMUM HEAT INPUT NET                                                         | 6.8 kW                                                            |
| NOMINAL HEAT OUTPUT                                                            | 24.1 kW                                                           |
| NOMINAL HEAT OUTPUT CONDENSING                                                 | 26.5 kW                                                           |
| MINIMUM HEAT OUTPUT                                                            | 6.7 kW                                                            |
| MINIMUM HEAT OUTPUT CONDENSING                                                 | 7.4 kW                                                            |
| GAS RATE                                                                       | max G31 0.9 m <sup>3</sup> /h G30 0.7 m <sup>3</sup> /h           |
| AFTER 10 MINUTES                                                               | min 0.4 m <sup>3</sup> /h 0.3 m <sup>3</sup> /h                   |
| INLET PRESSURE                                                                 | G31 37 mbar G30 28-30 mbar                                        |
| FAN SPEED C.H. Max 4800 rpm - 160 Hz                                           | Combustion % CO <sub>2</sub> : G31 - 10.2 (+ 0.2 / - 0.5) Case ON |
| min 1650 rpm - 55 Hz                                                           | G30 - 11.0 (+ 0.2 / - 0.5) Case ON                                |
| FAN SPEED C.H. Max 4800 rpm - 160 Hz                                           | Combustion % CO <sub>2</sub> : G31 - 9.9 (+ 0.2 / - 0.5) Case OFF |
| min 1650 rpm - 55 Hz                                                           | G30 - 10.8 (+ 0.2 / - 0.5) Case OFF                               |
| Mixer orifice: fucsia                                                          |                                                                   |
| ELECTRICAL SUPPLY                                                              | 230 V ~ 50 HZ                                                     |
| POWER CONSUMPTION                                                              | 160 W                                                             |
| EXTERNAL FUSE RATING                                                           | 3A                                                                |
| INTERNAL FUSE                                                                  | F1 - 3.15 A (20 mm to BS 4265)                                    |
| DRY WEIGHT                                                                     | 39.5 kg                                                           |
| WATER CONTENT C.H.                                                             | 2.0 litre                                                         |
| GAS SUPPLY CONNECTION                                                          | 15 mm compression isolating valve                                 |
| FLOW CONNECTION C.H.                                                           | 22 mm compression isolating valve                                 |
| RETURN CONNECTION C.H.                                                         | 22 mm compression isolating valve                                 |
| SAFETY DISCHARGE C.H.                                                          | 15 mm copper pipe                                                 |
| CONDENSATION DRAIN                                                             | 3/4" (21.5 mm) push fit over flow                                 |
| MAX COLD WATER CAPACITY WITHOUT ADDITIONAL EXPANSION VESSEL 110 LITRE          |                                                                   |
| SEALED WATER SYSTEM C.H.                                                       |                                                                   |
| MAX PRESSURE PHS                                                               | 2.5 bar                                                           |
| MINIMUM WORKING PRESSURE                                                       | 0.5 bar                                                           |
| 8 LITRES EXPANSION VESSEL PRE-CHARGE-PRESSURE                                  | 0.5 bar                                                           |
| CENTRAL HEATING OPERATING TEMPERATURE                                          | MAX 80°C min 45°C                                                 |
| DESIGN FLOW RATE 1383 l/h 20 °C RISE                                           |                                                                   |
| MINIMUM FLOW RATE C.H. 503 l/min                                               |                                                                   |
| FLUE OUTLET NOM. DIAMETER 100 mm specially supplied with boilers (If required) |                                                                   |
| DESTINATION: BE, FR & GR                                                       | CATEGORY I <sub>3+</sub>                                          |
| DESTINATION: GB, IE, CH, ES, IT, PT & GR                                       | CATEGORY II <sub>2H3+</sub>                                       |
| FLUE TYPE - C <sub>13</sub> - C <sub>33</sub> - C <sub>53</sub>                | NO <sub>x</sub> 5 SEDBUK A                                        |

## SECTION 3 TECHNICAL DATA

TABLE 1/C

## WH SYSTEM 9 - 32

### NATURAL GAS (G 20) I<sub>2H</sub> - II<sub>2H3+</sub>

|                                                                                |                                                                                                        |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| NOMINAL HEAT INPUT NET Q <sub>MS</sub>                                         | 29.6 kW                                                                                                |
| MINIMUM HEAT INPUT NET                                                         | 7.8 kW                                                                                                 |
| NOMINAL HEAT OUTPUT                                                            | 29.0 kW                                                                                                |
| NOMINAL HEAT OUTPUT CONDENSING                                                 | 32.0 kW                                                                                                |
| MINIMUM HEAT OUTPUT                                                            | 7.6 kW                                                                                                 |
| MINIMUM HEAT OUTPUT CONDENSING                                                 | 8.4 kW                                                                                                 |
| GAS RATE                                                                       | max 3.4 m <sup>3</sup> /h                                                                              |
| AFTER 10 MINUTES                                                               | min 0.85 m <sup>3</sup> /h                                                                             |
| INLET PRESSURE                                                                 | 20 mbar                                                                                                |
| FAN SPEED Max 5400 rpm - 180 Hz<br>C.H. min 1650 rpm - 55 Hz                   | Combustion % CO <sub>2</sub> : G20 - 9.4 (+ 0.2 / - 0.5) Case ON<br>G20 - 9.2 (+ 0.2 / - 0.5) Case OFF |
| Mixer orifice: red                                                             |                                                                                                        |
| ELECTRICAL SUPPLY                                                              | 230 V ~ 50 HZ                                                                                          |
| POWER CONSUMPTION                                                              | 160 W                                                                                                  |
| EXTERNAL FUSE RATING                                                           | 3A                                                                                                     |
| INTERNAL FUSE                                                                  | F1 - 3.15 A (20 mm to BS 4265)                                                                         |
| DRY WEIGHT                                                                     | 42.5 kg                                                                                                |
| WATER CONTENT C.H.                                                             | 2.0 litre                                                                                              |
| GAS SUPPLY CONNECTION                                                          | 15 mm compression isolating valve                                                                      |
| FLOW CONNECTION C.H.                                                           | 22 mm compression isolating valve                                                                      |
| RETURN CONNECTION C.H.                                                         | 22 mm compression isolating valve                                                                      |
| SAFETY DISCHARGE C.H.                                                          | 15 mm copper pipe                                                                                      |
| CONDENSATION DRAIN                                                             | 3/4" (21.5 mm) push fit over flow                                                                      |
| MAX COLD WATER CAPACITY WITHOUT ADDITIONAL EXPANSION VESSEL 110 LITRE          |                                                                                                        |
| SEALED WATER SYSTEM C.H.                                                       |                                                                                                        |
| MAX PRESSURE PHS                                                               | 2.5 bar                                                                                                |
| MINIMUM WORKING PRESSURE                                                       | 0.5 bar                                                                                                |
| 8 LITRES EXPANSION VESSEL PRE-CHARGE-PRESSURE                                  | 0.5 bar                                                                                                |
| CENTRAL HEATING OPERATING TEMPERATURE                                          | MAX 80°C min 45°C                                                                                      |
| DESIGN FLOW RATE 1811 l/h 20 °C RISE                                           |                                                                                                        |
| MINIMUM FLOW RATE C.H. 503 l/min                                               |                                                                                                        |
| FLUE OUTLET NOM. DIAMETER 100 mm specially supplied with boilers (If required) |                                                                                                        |
| DESTINATION: AT, DK, FI, SE & GR                                               | CATEGORY I <sub>2H</sub>                                                                               |
| DESTINATION: GB, IE, CH, ES, IT, PT & GR                                       | CATEGORY II <sub>2H3+</sub>                                                                            |
| FLUE TYPE - C <sub>13</sub> - C <sub>33</sub> - C <sub>53</sub>                | NO <sub>x</sub> 5 SEDBUK A                                                                             |

## SECTION 3 TECHNICAL DATA

TABLE 1/D

## WH SYSTEM 9 - 32

### LPG (G 30 - G 31) I<sub>3+</sub> - II<sub>2H3+</sub>

|                                                                                |                                                                   |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------|
| NOMINAL HEAT INPUT NET Q <sub>MS</sub>                                         | 29.6 kW                                                           |
| MINIMUM HEAT INPUT NET                                                         | 7.8 kW                                                            |
| NOMINAL HEAT OUTPUT                                                            | 29.0 kW                                                           |
| NOMINAL HEAT OUTPUT CONDENSING                                                 | 32.0 kW                                                           |
| MINIMUM HEAT OUTPUT                                                            | 7.6 kW                                                            |
| MINIMUM HEAT OUTPUT CONDENSING                                                 | 8.4 kW                                                            |
| GAS RATE                                                                       | max G31 1.3 m <sup>3</sup> /h G30 0.99 m <sup>3</sup> /h          |
| AFTER 10 MINUTES                                                               | min 0.3 m <sup>3</sup> /h 0.25 m <sup>3</sup> /h                  |
| INLET PRESSURE                                                                 | G31 37 mbar G30 28-30 mbar                                        |
| FAN SPEED C.H. Max 4800 rpm - 160 Hz                                           | Combustion % CO <sub>2</sub> : G31 - 10.2 (+ 0.2 / - 0.5) Case ON |
| min 1650 rpm - 55 Hz                                                           | G30 - 11.0 (+ 0.2 / - 0.5) Case ON                                |
| FAN SPEED C.H. Max 4800 rpm - 160 Hz                                           | Combustion % CO <sub>2</sub> : G31 - 9.9 (+ 0.2 / - 0.5) Case OFF |
| min 1650 rpm - 55 Hz                                                           | G30 - 10.8 (+ 0.2 / - 0.5) Case OFF                               |
| Mixer orifice: red                                                             |                                                                   |
| ELECTRICAL SUPPLY                                                              | 230 V ~ 50 HZ                                                     |
| POWER CONSUMPTION                                                              | 160 W                                                             |
| EXTERNAL FUSE RATING                                                           | 3A                                                                |
| INTERNAL FUSE                                                                  | F1 - 3.15 A (20 mm to BS 4265)                                    |
| DRY WEIGHT                                                                     | 42.5 kg                                                           |
| WATER CONTENT C.H.                                                             | 2.0 litre                                                         |
| GAS SUPPLY CONNECTION                                                          | 15 mm compression isolating valve                                 |
| FLOW CONNECTION C.H.                                                           | 22 mm compression isolating valve                                 |
| RETURN CONNECTION C.H.                                                         | 22 mm compression isolating valve                                 |
| SAFETY DISCHARGE C.H.                                                          | 15 mm copper pipe                                                 |
| CONDENSATION DRAIN                                                             | 3/4" (21.5 mm) push fit over flow                                 |
| MAX COLD WATER CAPACITY WITHOUT ADDITIONAL EXPANSION VESSEL 110 LITRE          |                                                                   |
| SEALED WATER SYSTEM C.H.                                                       |                                                                   |
| MAX PRESSURE PHS                                                               | 2.5 bar                                                           |
| MINIMUM WORKING PRESSURE                                                       | 0.5 bar                                                           |
| 8 LITRES EXPANSION VESSEL PRE-CHARGE-PRESSURE                                  | 0.5 bar                                                           |
| CENTRAL HEATING OPERATING TEMPERATURE                                          | MAX 80°C min 45°C                                                 |
| DESIGN FLOW RATE 1811 l/h 20 °C RISE                                           |                                                                   |
| MINIMUM FLOW RATE C.H. 503 l/min                                               |                                                                   |
| FLUE OUTLET NOM. DIAMETER 100 mm specially supplied with boilers (If required) |                                                                   |
| DESTINATION: AT, DK, FI, SE & GR                                               | CATEGORY I <sub>2H</sub>                                          |
| DESTINATION: GB, IE, CH, ES, IT, PT & GR                                       | CATEGORY II <sub>2H3+</sub>                                       |
| FLUE TYPE - C <sub>13</sub> - C <sub>33</sub> - C <sub>53</sub>                | NO <sub>x</sub> 5 SEDBUK A                                        |

## SECTION 4 GENERAL REQUIREMENTS

### 4.1 SAFETY

#### Gas Safety (Installation and Use). Regulations.

It is law that all gas appliances are installed and serviced by a Gas Safe registered installer in accordance with the above regulations and these installation instructions. All registered installers carry a Gas Safe I.D. card and have a registration number. Both should be recorded in your Benchmark commissioning checklist. You can check your installer on the Gas Safe register. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure the law is complied with. Check the boiler and flue is the correct type for installation.

The installation of the boiler MUST be in accordance with the latest I.E.E. (BS 7671) Wiring Regulations, local building regulations, bye-laws of the local water authority, the building regulations and the Building Standards (Scotland) and any relevant requirements of the local authority.

#### 4.1.1 GENERAL INFORMATION

Both the user and the manufacturer rely heavily on the installer, whose job it is to install the combination boiler and connect it to a correctly designed heating system. Acquaint yourself with the relevant British Standards concerning installation requirements. If you need further advice on any points contact the Technical Services Office who would be pleased to help. It is recommended that tools suitable for brass fittings are used, and have a capability to accommodate hexagon sizes up to 50 mm.

CODES OF PRACTICE/Ref: Documents.

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

BS6891: Low pressure installation pipes.

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

BSEN12828

BSEN12831

BSEN14336

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

BS5440: 1 Flues (for gas appliances of rated input not exceeding 70 kW).

BS5440: 2 Ventilation (for gas appliances of rated input not exceeding 70 kW).

BSEN 677:1998 Gas fired central heating boilers.

In IE the following Codes of Practice apply:

| Standard                                                       | Scope                                                                |
|----------------------------------------------------------------|----------------------------------------------------------------------|
| I.S. 813                                                       | Domestic gas Installations.                                          |
| The followings standards give valuable additional information: |                                                                      |
| BS 5546                                                        | Installation of hot water supplies for domestic purposes.            |
| BS EN 12828                                                    | Heating systems in buildings.                                        |
| BS EN 12831                                                    | Heating systems in buildings. Circulation of load.                   |
| BS EN 14336                                                    | Installation & commissioning of water based heating systems.         |
| BS 7074                                                        | Expansion vessels and ancillary equipment for sealed water system.   |
| BS 7593                                                        | Treatment of water in domestic hot water and central heating system. |

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

The manufacturer's notes must NOT be taken, in any way, as overriding statutory obligations.

#### IMPORTANT:

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

Any direct connection of a control device not approved by The White Boiler Company could invalidate the certification and the normal appliance warranty.

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

#### NOTE:

The White Boiler Company WH System 6-24 / 9-32 boiler has been tested and examined by BSI, and is certified to comply with PrEN 483 and BS EN 625.

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

## 4.2 LOCATION OF BOILER

### 4.2.1 Siting of The White Boiler Company WH System 6-24 / 9-32 boiler must be as follows.

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

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

The The White Boiler Company WH System 6-24 / 9-32 boiler must be fitted on a flat and vertical wall capable of adequately supporting the weight of the boiler and any ancillary equipment.

The appliance may be installed on a combustible wall subject to the requirements of the Local Authority and Building Regulations.

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

## 4.3 CLEARANCES AROUND THE APPLIANCE

### 4.3.1 The following minimum free spaces, required for installation inspection and servicing, must be left around the boiler:

Above 125 mm

Below 75 mm min. recommended 150 mm

Front 450 mm

Sides 5 mm min. recommended 50 mm right side  
25 mm in front when installed in a cupboard.

## 4.4 IMPORTANT NOTICE

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

The system boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations, and in Scotland the electrical provisions of the Building Regulations applicable in Scotland, with respect to the installation of the system boiler in a room or internal space containing a bath or shower. Where a room sealed appliance is installed in a room containing a bath or shower, any electrical switch or appliance control, utilising mains electricity should be so situated that it cannot be touched by a person using a bath or shower.

A compartment used to enclose the system boiler MUST be designed and constructed specifically for this purpose. An existing cupboard, or compartment, may be used provided it is modified accordingly Samples of the WH System 6-24 / 9-32 boiler have been examined by B.G. Technology Notified Body, and is certified to comply with the essential requirements of the Gas Appliance.

Directive 90/396/EEC, the Low Voltage.

Directive 72/23/EEC and shows compliance with the Electro Magnetic Compatibility.

Directive 89/336/EEC and are therefore permitted to carry the CE Mark.

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

## 4.5 GAS SUPPLY

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

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

## 4.6 FLUE SYSTEM

### 4.6.1 The terminal should be located where dispersal of combustion products is not impeded and with due regard for the damage or discolouration that might occur to building products in the vicinity (see fig. 5).

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

The effect of such plumbing must be considered.

The terminal must not be closer than 25 mm (1 in) to any combustible material For protection of combustibles, refer to BS 5440.1.

Where a flue terminal is installed less than 1000 mm. from a plastic, or painted gutter; or 500 mm from painted eaves, an aluminium shield 1000 mm. long, should be fitted to the underside of the gutter or painted surface.

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

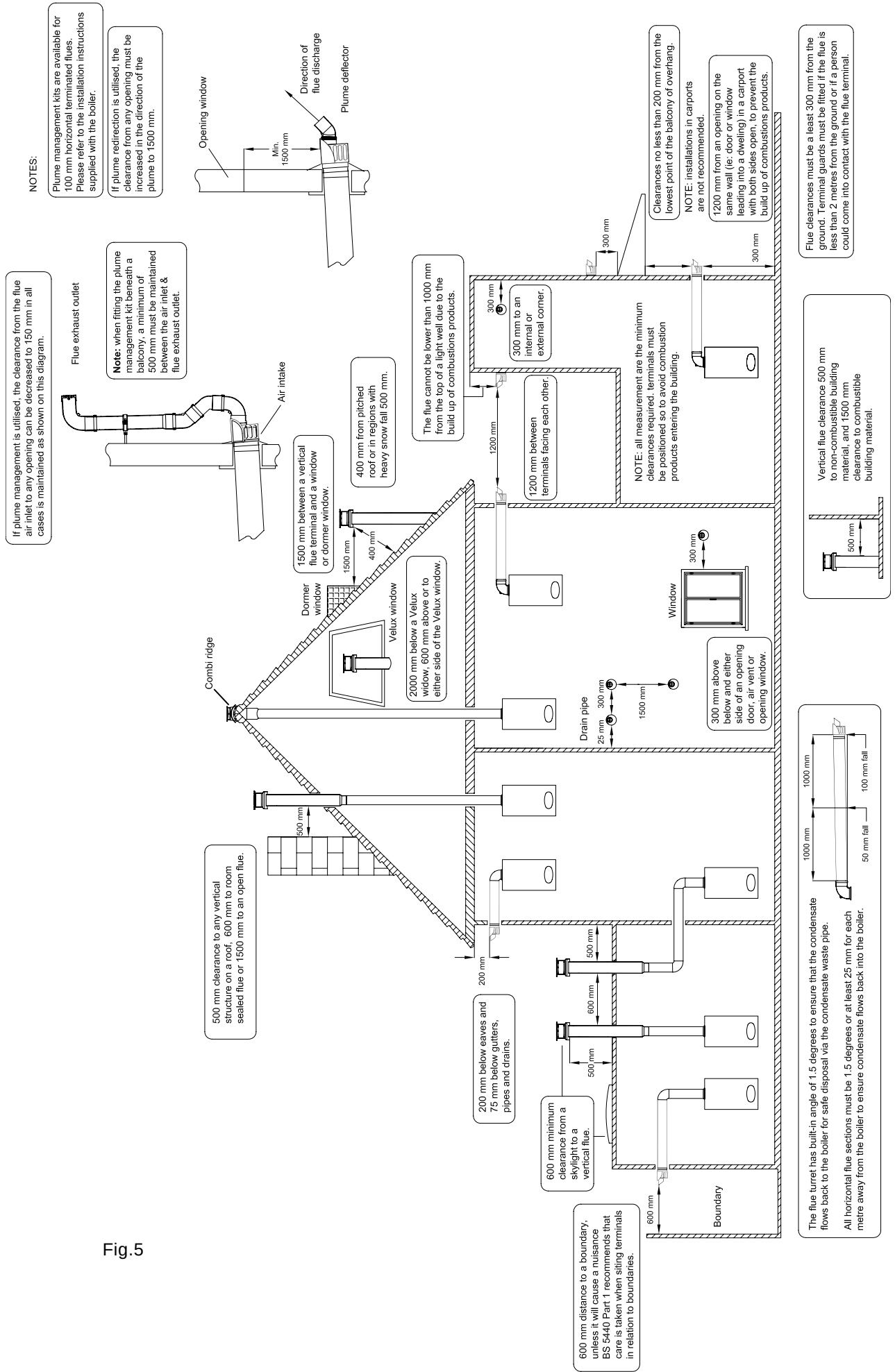
The flue must be installed in accordance with the recommendations of BS 5440: Part 1.

## IMPORTANT NOTES

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

FLUE TERMINAL POSITION

Fig.5



**IMPORTANT NOTICE:** If the flue terminates below a balcony, above the ground, above a flat roof to which people have access, then a suitable **terminal guard** must be fitted **PRO110100**.

Fit only recommended **FLUE TERMINAL GUARD** by securing concentrically around terminal with screws.

Available on request from:

The White Boiler Company  
Morley, Leeds, West Yorkshire  
ENGLAND LS27 9ET - UK  
Tel.0044(0)113 252 7007

**IMPORTANT:** The following notes are intended for general guidance.

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

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

Minimum acceptable spacing from the terminal to obstructions and ventilation openings are specified in Fig. 5.

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

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

**4.6.2** A concentric vertical flue kit is available for flueing applications up to a maximum height (see table 3 page 19).  
For further details see vertical flue installation instructions.

#### 4.7 AIR SUPPLY

**4.7.1** The following notes are intended for general guidance.  
The room sealed fan flued boiler does not require a permanent air vent for combustion air supply.  
Where installed in a cupboard or compartment ventilation is not required.

#### 4.8 WATER CIRCULATION (central heating)

**4.8.1** Detailed recommendations are given in BS6798 2009/5449:1990 - BSEN12828 - BSEN12831 - BSEN14336 (for smallbore and microbore central heating systems). The following notes are given for general guidance.

##### 4.8.2 PIPEWORK.

Copper tubing to BSEN 1057:1 2006, BSEN 1172, BSEN 1652 and BSEN 1653, is recommended for water pipes. Jointing should be either with capillary soldered or with compression fittings.  
Where possible pipes should have a gradient

to ensure air is carried naturally to air release points and water flows naturally to drain taps. It should be ensured as far as possible that the appliance heat exchanger is not a natural collecting point for air except where providing useful heat, pipes should be insulated to prevent heat loss and to avoid freezing. Particular attention should be paid to pipes passing through ventilated spaces in roofs and under floors.

##### IMPORTANT.

A minimum length of 1 metre of copper pipe **MUST** be fitted to both flow and return connections from the boiler before connection to any plastic piping.

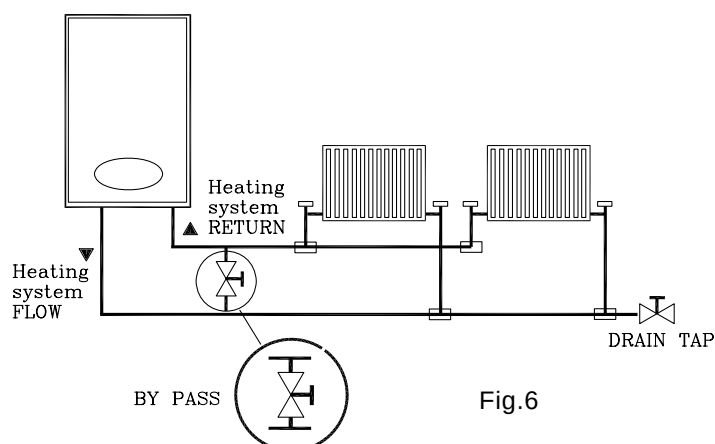
**4.8.3** The water through the appliance heat exchanger circuit must exceed the min. 2.38 gals/min. (650 lt/h) when the burner is firing. It is important to ensure that this rate is achieved when sections of the system are shut off either manually or by automatic controls.

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

##### 4.8.4 BOILER INTERLOCK CONTROL

Central heating systems controls should be installed to ensure the boiler is switched off when there is no demand for heating, in compliance with Building Regulations. If the system has thermostatic radiator valves on all radiators, or two port valves, then a **bypass circuit must be fitted** with an automatic bypass valve to ensure a flow of water should all valves be in the closed position. (See fig. 6).

**4.8.5** It is important that the system is flushed thoroughly before the appliance is fitted or left to operate (as recommended in BS 7593) in order to maintain an efficiently operating heating system. For replacement installations, the system **MUST** be flushed with the old boiler in situ. In order to prevent system debris. Once the system has been flushed, an inhibitor (suitable for stainless steel heat exchanger) should be added. See section 4.8.11.



#### 4.8.6 Draining tap

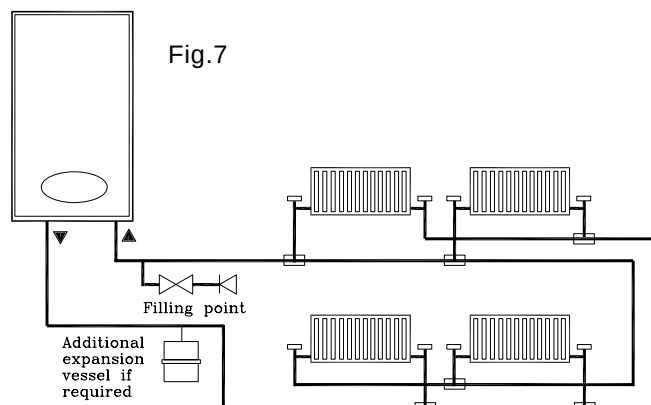
These must be located in accessible positions to permit the draining of the whole system. The taps must be at least 15 mm nominal size and manufactured in accordance with BS 2870 1980.

#### 4.8.7 Air release points

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

#### 4.8.8 The appliance has an integral sealed expansion vessel to accommodate the increase of water volume when the system is heated.

It can accept up to 8 lts of expansion water. If the appliance is connected to a system with an unusually high water content, calculate the total expansion (see table 2) and add additional sealed expansion capacity as appropriate (Fig. 7). In general, modern systems below 8 litre should not present any problem.



#### 4.8.9 Mains water feed: central heating

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

#### 4.8.10 Permissible methods of filling

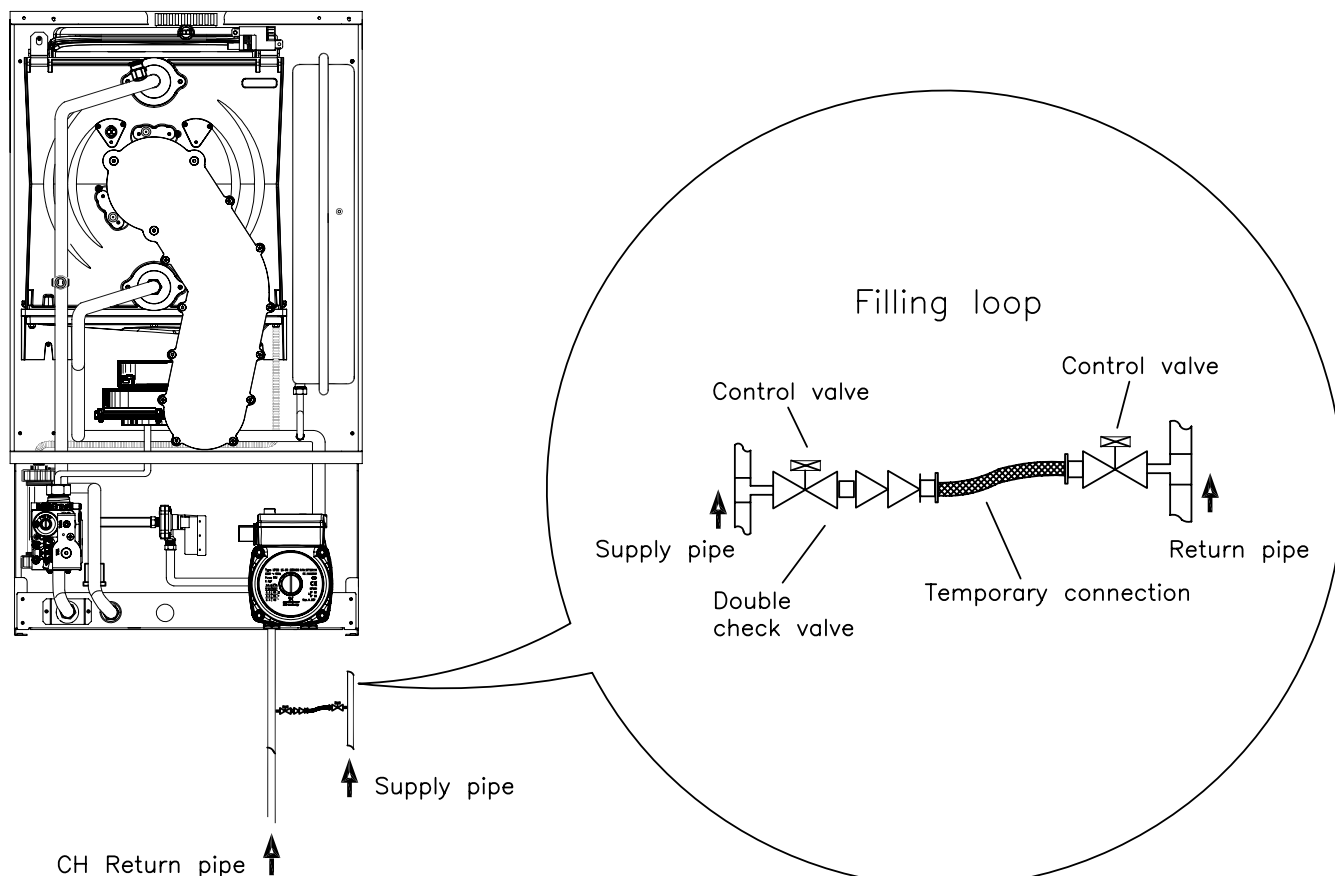


Fig.8

Figure depicts the requirements of Diagram R24.2a of the Water Supply (Water Fittings) regulations 1999.

## SIZING OF ADDITIONAL EXPANSION VESSEL: TABLE 2

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

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

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

B) Where fitting of a make up vessel would be difficult, re pressurisation of the system can be done. See section on FILLING. If the capacity of the central heating system should exceed 110 Litres, an additional vessel should be installed on the return to the combination boiler from the heating system (Fig. 7). Guidance on vessel sizing is given in (Table 2).

Reference should be made to British Gas Publications, «Material and Installation Specifications for Domestic Central Heating and Hot Water». Draining taps should be at least 1/2" in BSP nominal size and be in accordance with BS 2879.

### 4.8.11 Installation to an existing central heating system

The combination boiler is designed to operate on a sealed system only. Therefore if the existing system is of the open water type it will have to be modified to comply with BS 5376 Part 2.

Before installing a new combination boiler to an existing system, flush out the old system with a recommended descaling agent.

If the boiler is installed in an existing system any unsuitable additives *MUST* be removed by thorough cleaning.

BS 7593:2006 details the steps necessary to clean domestic central heating system. Also check pipework and renew any corroded pipework or fittings. Valve glands must be repacked or replaced wherever necessary and any defective controls exchanged.

### WATER TREATMENT

This boiler has a aluminium heat exchanger, The White Boiler Company recommended the use of FERNOX or SENTINEL, or other treatment products recognised by The White Boiler Company which must be used in accordance with the manufacturers instructions.

## 4.9 ELECTRICAL SUPPLY

**Warning: this appliance must be earthed**

- 4.9.1** External wiring to the appliance must be carried out by a competent person and be in accordance with the current I.E.E. Regulations and local regulations which apply. The White Boiler Company boiler is supplied for connection to a 230 V ~ 50 Hz single phase supply. **The supply must be fused at 3 A.**

NOTE. The method of connection to the electricity supply MUST facilitate complete electrical isolation of the appliance, by the use of a fused, double pole isolator, having a contact separation of at least 3 mm in all poles. The point of connection to the electricity supply must be readily accessible and adjacent to the appliance except, where the appliance is installed in a bathroom.

**When the current electrical wiring regulations must be followed in GB the IEE Wiring Regulations and in IE the ETGI Rules.**

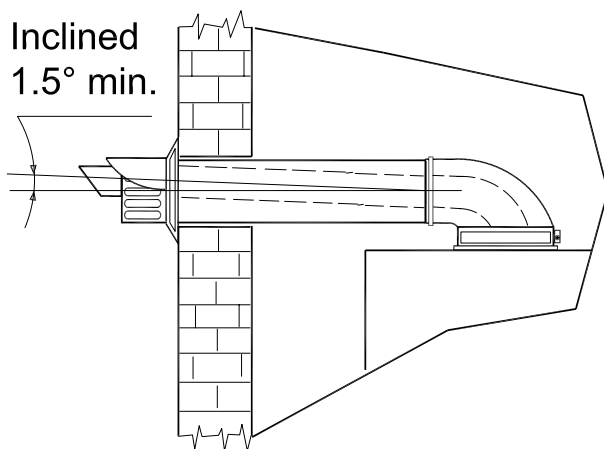


Fig.9

## SECTION 5 INSTALLATION

### 5.1 WARNING

- 5.1.1** It is MOST IMPORTANT that this appliance is installed in a VERTICAL POSITION, with the flue air duct passing through the wall. **Make sure the flue is at a 1.5° incline, rising from the boiler with 50 mm. Flue terminal diagram states 1.5° - 25 mm, fall back on flue (see fig. 5).**

### 5.2 DELIVERY

- 5.2.1 The appliance carton contains**
- a) boiler fully assembled with flue adaptor
  - b) installation instructions, user instructions and Benchmark log book
  - c) white paper template
  - d) hanging bracket
  - e) guarantee card
  - f) Polythene bag containing:
    - 1-15 mm gas service
    - 2-22 mm compression ball valves complete with 3/4" washers
    - 4 coach bolts and wall plugs
    - screws and dowels.

### IMPORTANT NOTES :

This appliance will produce a plume of condensation in cool weather. This is due to the High Efficiency and hence low flue gas temperature of the boiler. See Optional extras (Fig.12).

### 5.3 UNPACKING OF BOILER

- 5.3.1 IMPORTANT:** With regard to the Manual Handling Operations, 1992 Regulations, the following lift operation exceeds the recommended weight for a one man lift.
- 5.3.2**
- Stand the boiler carton upright.
  - Open the top of the carton.
  - Rest the carton on the floor (keeping the flaps open).
  - Turn the carton over with the boiler inside and then pull the carton up away from the boiler.
  - Rest the boiler on its back on the floor to prepare it for installation.

### 5.4 POSITIONING OF THE BOILER

- 5.4.1** Remove the 2 lower and the 2 upper screws that secure the front panel, and then lift off.
- 5.4.2** Unscrew the 4 screws that fasten the lower grating on the casing and remove it from the bottom of the casing.
- 5.4.3** Make sure the casing and screws are put to one side in a safe place.

**IMPORTANT :** Please, lubricate the internal part of the seals before being fitted.

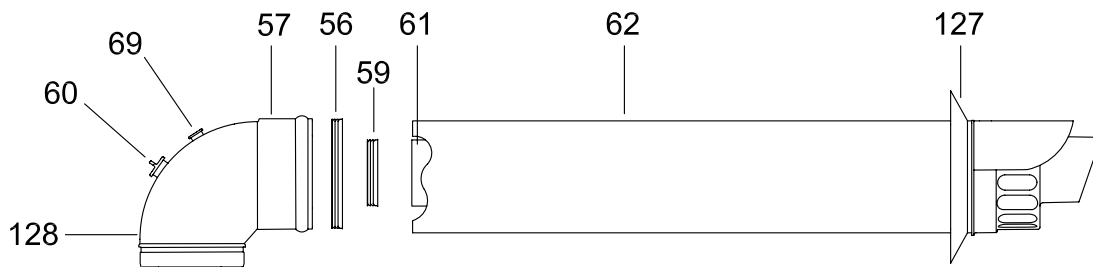
**OPTIONAL EXTRAS:** (See Table 4 page 25)

**HORIZONTAL FLUE KIT BOX CONTAINING** (Fig 10):

- 59 - Rubber seal Ø 60
- 60 - Fumes sample point
- 61 - Flue exhaust duct
- 62 - Air intake duct
- 69 - Air sample point
- 127 - Terminal Rubber wall seal
- 128 - Elbow header

Generally speaking, oils and greases are not suitable for the “peroxide -EPDM”, therefore we suggest a correct lubrication using silicon-substances, for instance “Silikon Spray” (Arexons) or the same product from the company “Solteco s.r.l.”.

Fig 10



**FLUE EXTENSION BOX CONTAINING** (Fig. 11):  
1000 mm flue extension duct as an extra cost only when requested for side and vertical flue applications.

**WARNING:** with horizontal concentric flue  
Maximum allowable flue length 8 m maximum, flue duct extension used with standard flue (see table 3).

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

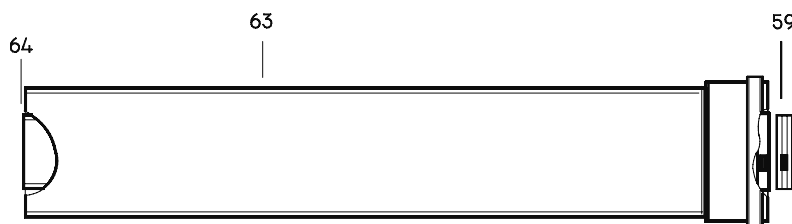


Fig 11

| TYPE OF FLUE SYSTEM (All types) - minimum and maximum distance |                        |                        |                          |                          | TABLE 3                      |
|----------------------------------------------------------------|------------------------|------------------------|--------------------------|--------------------------|------------------------------|
| Flue type                                                      | C <sub>13</sub>        |                        | C <sub>33</sub>          |                          | C <sub>53</sub> <sup>1</sup> |
| Flue Diameter                                                  | 60/100<br>(concentric) | 80/125<br>(concentric) | 60/100<br>(concentric)   | 80/125<br>(concentric)   | 80mm<br>single pipe          |
| Minimum length (m)                                             | 0.3                    | 0.3                    | 1.0<br>(vertical length) | 1.0<br>(vertical length) | 0.5                          |
| Maximum length (m)                                             | 8.0                    | 23.0                   | 13.0                     | 26.0                     | 43.0                         |
| Equivalent length of 45° bend (m)                              | 0.5                    | 1.25                   | 0.5                      | 1.25                     | 1.25                         |
| Equivalent length of 90° bend (m)                              | 1.0                    | 2.5                    | 1.0                      | 2.5                      | 2.5                          |

## OPTIONAL EXTRAS:

### PLUME MANAGEMENT KIT (Fig 12)

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

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

**IMPORTANT :** Please, lubricate the internal part of the seals before being fitted.

### FLUE EXHAUST DEFLECTION BEND (Fig 12a)

Flue exhaust deflection bend are also available. These come in both 45° and 90° degree versions. These bends fit directly onto the flue exhaust terminal to deflect the flue gas plume in an upward or sideways direction.

Although they are not substitute for a plume kit, they can be considered useful where condensate plumbing is causing a nuisance or can be used to eliminate condensate collecting on the end of the horizontal flue terminal.

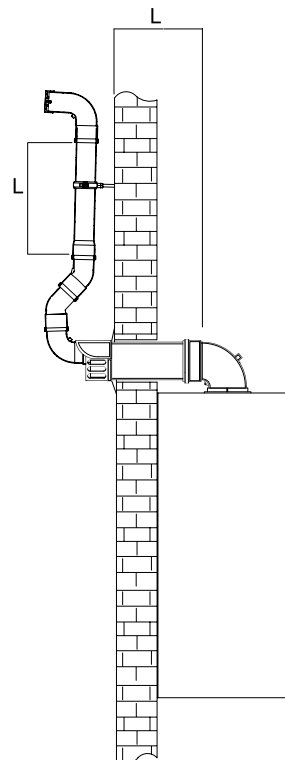


Fig. 12

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

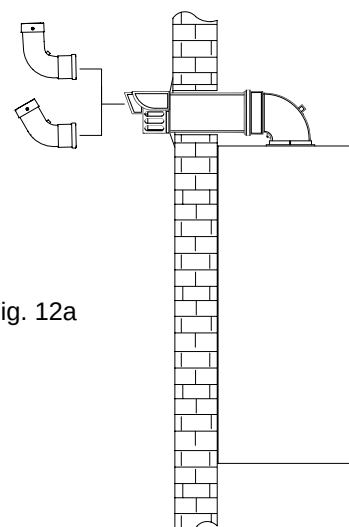


Fig. 12a

**5.5 INSTALLING THE APPLIANCE FOR REAR FLUE OUTLET (Fig. 13 15 16 17 18 19).  
FOR APPLIANCE CLEARANCES SEE 4.3.1 AND FIG. 5.**

- 5.5.1** Use adhesive tape to attach the template to the wall, making sure that the centre line is vertical and that the distance clearance is no less than that shown in Fig. 13.
- Mark the two holes to fix the hanging bracket on the wall as well as the centre of the flue duct.
  - Detach the template from the wall.
  - Use a 10 mm. dia drill to make the 2 holes. Insert the plastic expansion plugs.
  - Cut or core drill a 105 mm dia hole for inserting the flue duct.
  - Locate the wall hanging bracket and fix using the two coach bolts.
- Fit the elbow header positioning it towards the required direction (Fig 13), onto the boiler.

- 5.5.2** Make sure that the rubber Ø 60 is locate into the flue elbow header.

- 5.5.3** If using horizontal flue duct and it is too long it can be shortened. Should it be necessary to cut the flue always. Cut equal amounts from both inner and outer pipes.
- Note :** add 30 mm to overall flue length to allow for terminal wall cover.( Fig.10 item 127).

- 5.5.4** Insert the flue assembly into the wall.

- 5.5.5** Lift the boiler on to the wall (Fig.13), locating onto the fixing jig wall bracket.

- 5.5.6** Working above the boiler pull the flue exhaust duct towards the boiler in order to engage tube (Fig. 17 item 61) into its header. Position flue into elbow header and push so as to locate inner and outer flue correctly ensuring good seal is made with "O" rings.

- 5.5.7** Fit terminal rubber wall seal and if necessary terminal guard.

- 5.5.8** Extensions kits are available to order for flue extension of up to 7 metres total length (Fig.18).

- 5.5.9** Each extension length extends the pipe by approximately 1000 mm long up to a maximum of seven extensions. Pipeline length can be established using the instructions in section 5.5 for rear flue outlets and section 5.6 for side flue outlets. Extensions must be installed with the widened end of the air intake pipe and the tapered end of the flue pipe aimed towards the exhaust terminal.

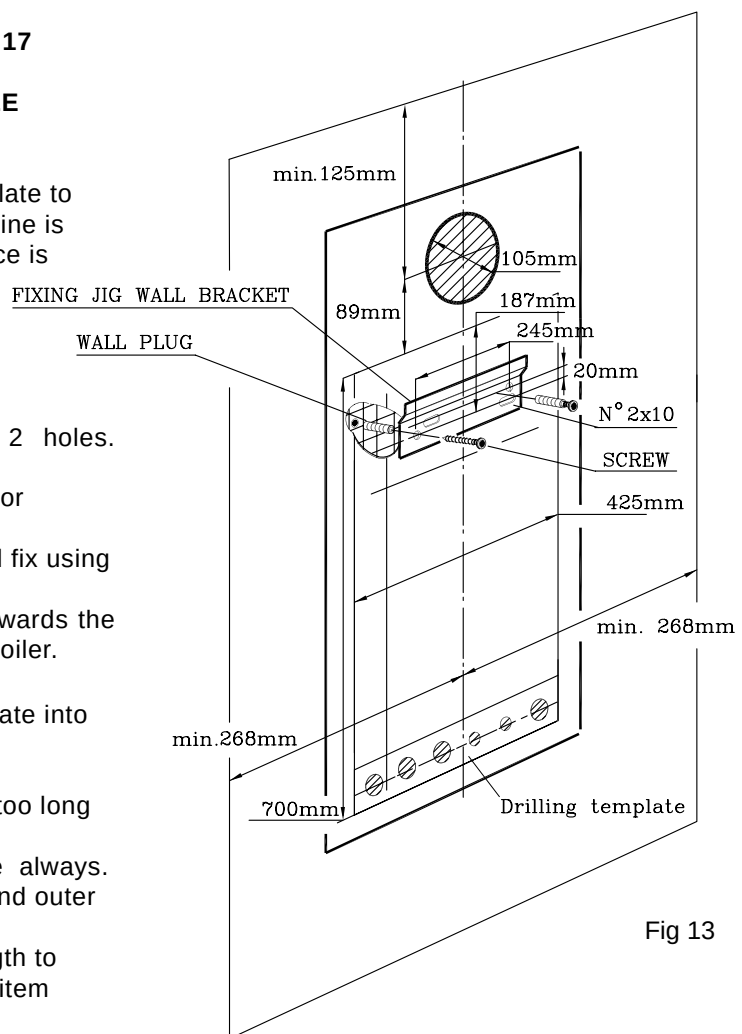


Fig 13

**5.6 INSTALLING THE APPLIANCE FOR SIDE FLUE OUTLET (Fig. 14 15 16 17 18 19)**

- 5.6.1**
- Attach the template to the wall with adhesive tape, making sure that the centre line is vertical and that the distance from the centre line to the nearest side wall is not less than measurement in Fig.14.
  - Mark the two fixing bracket securing holes on the wall and extend the axis of the flue duct hole to the side wall ensuring it is horizontal.
  - **Make sure flue slopes 1.5° down towards the boiler that is 25 mm fall per metre of the flue length.**
  - Trace the centre of the flue duct hole measure distance . From the corner of the wall (Fig.14), measure the distance (160 mm) between the centre of flue duct hole to the corner. Detach the template from wall.
  - Use a 10 mm. dia. drill to make the 2 holes for securing hanging bracket fixing. Insert the plastic expansion plugs. Core drill a 105 mm dia. hole in the side wall for inserting the flue duct.

**5.6.2** Positioning the elbow towards the required direction on the boiler.

**5.6.3** Make sure that rubber seal Ø 60 is located into the elbow.

**5.6.4** If using horizontal flue duct and it is too long it can be shortened. Should it be necessary to cut the flue always. Cut equal amounts from both inner and outer pipes.

**Note :** add 30 mm to overall flue length to allow for terminal rubber wall seal. ( Fig.10 item 127).

- Remove the centering spring, pull the flue terminal disengage inner flue duct.
- Measure the thickness of the wall.
- Cut the outer air duct (100 mm. dia.) at right angles.
- Cut the inner flue duct (60 mm dia.) at right angles.
- Outer air duct and inner flue duct must be de-burred.
- Reassemble the two tubes.

**5.6.5** Insert the flue assembly into the wall, making sure it will not interfere when fixing the boiler on the wall.

**5.6.6** Lift the boiler on the wall. Locate onto the wall fixing bracket.

**5.6.7** Working above the boiler pull the flue duct towards the elbow in order to engage the tube into its header (Fig.10). Position flue into straight header and push so as to locate inner and outer flue correctly. Ensuring good seal is made with "O" rings.

**5.6.8 IMPORTANT:** Terminal rubber wall seal must be fitted (Fig.10 item 127).

**5.6.9** Each extension length extends the pipe by approximately 1000 mm long up to a maximum of seven extensions. Pipeline length can be established using the instructions in section 5.5 for rear flue outlets and section 5.6 for side flue outlets. Extensions must be installed with the widened end of the air intake pipe and the tapered end of the flue pipe aimed towards the exhaust terminal. Extensions must be joined together with the standard terminal pipe, and inserted in each other as far as they can go. If an extension must be shortened, this must be done from the straight end, and not from the widened or tapered end. To measure the pipeline properly all components must be assembled and total length measured before cutting. The straight end of the extension connects to the boiler. The flue output and air intake pipes fits into the boiler header until it stops (Fig.17 - Fig.18).

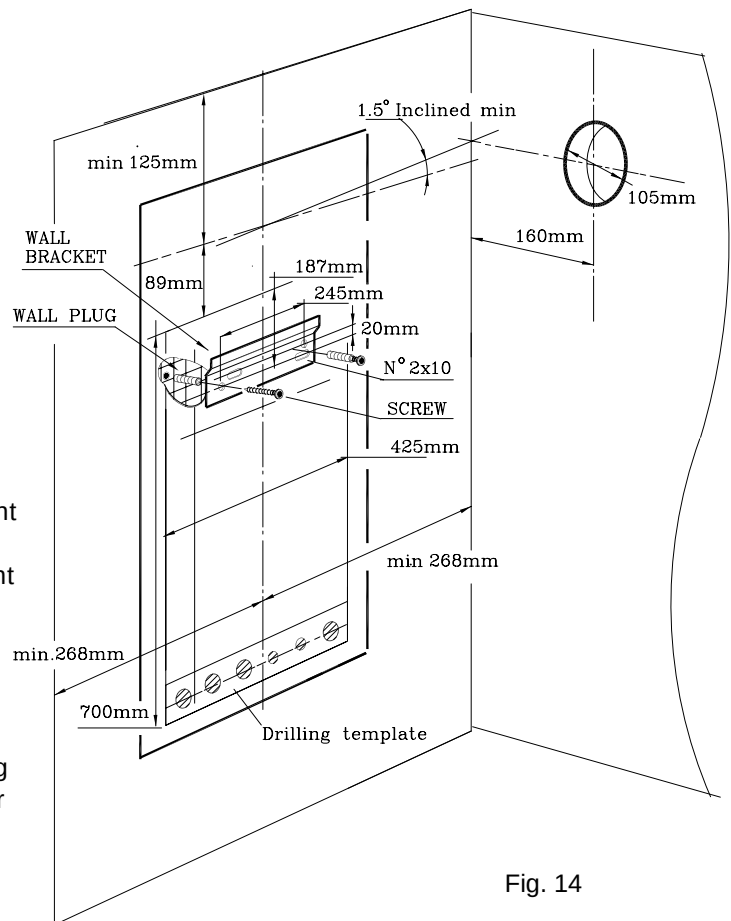


Fig. 14

When cutting both inner and outer ducts of the extension, always ensure that the reduced end (male) of the inner and outer duct are square and to the same length.

All joints must be sealed with the rubber seals supplied.

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

**NOTE:** a suitable support bracket is available from The White Boiler Company and should be used to support flue length at least every one metre preferably at each joint this bracket should be secured to wall and flue duct.

## 5.7 COMPLETING BOILER INSTALLATION

### 5.7.1 Reassemble the outer casing (sect 5.4) in reverse order.

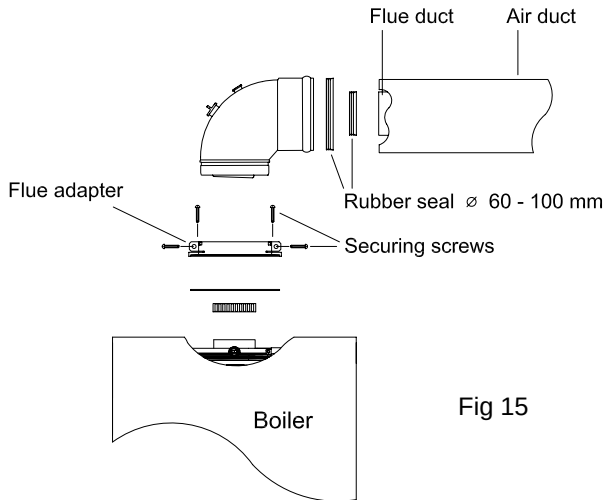


Fig 15

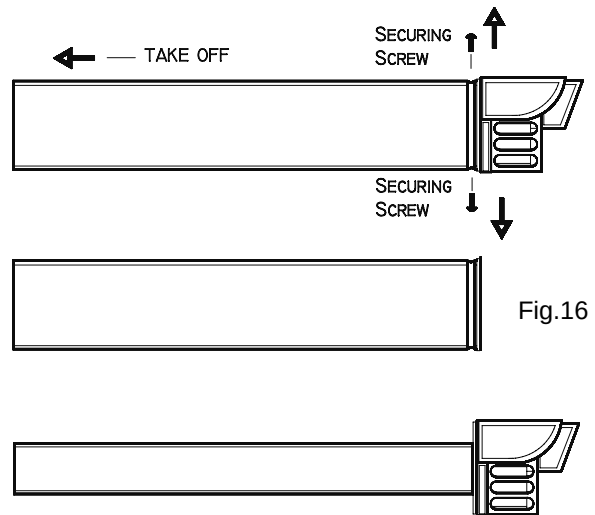


Fig.16

### 5.7.2 IN LINE FLUE BEND

Measure the distance between the flue bends or the flue/terminal assembly. The measurements should be taken from the outer edge of the flue and bend (Fig. 19).

**IMPORTANT:** inline flue bend - 1000 mm must be deducted from overall length for each 90° bend. Obtuse flue bend - 500 mm must be deducted from overall length for each 135° bend (Table 3 page 19).

## INTAKE AND EXHAUST TERMINAL COMPONENTS

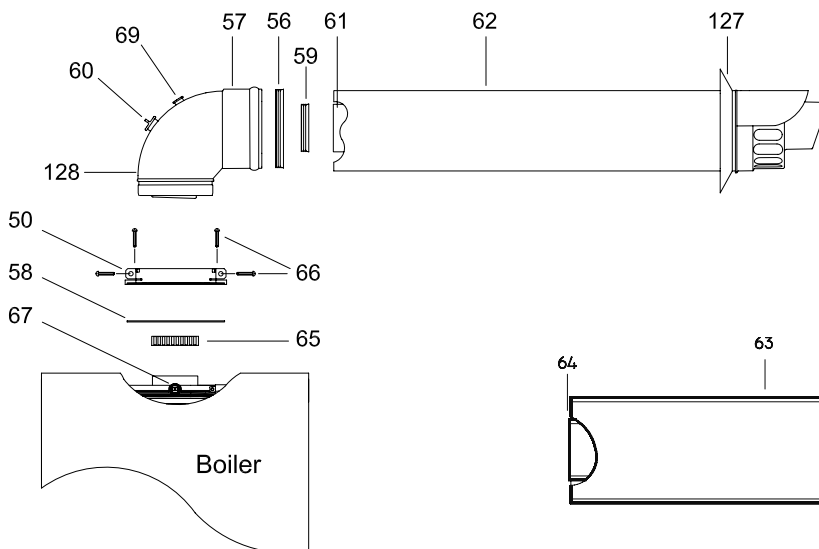


Fig.17

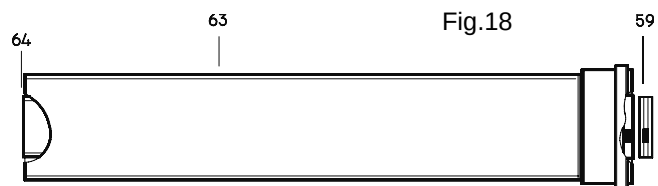


Fig.18

### KEY

- 56 - Flue adapter
- 57 - Elbow header
- 58 - Header gasket
- 59 - Rubber seal Ø 60
- 60 - Fumes sample point

- 61 - STD flue exhaust duct
- 62 - Terminal
- 63 - Flue extension
- 64 - Flue exhaust duct extension
- 65 - Flue manifold rubber seal

- 66 - Securing screw
- 67 - Flue temperature sensor
- 69 - Air sample point
- 127 - Terminal Rubber wall seal

## IN LINE FLUE BEND AND FLUE EXTENSION

**IMPORTANT:** Please, lubricate the internal part of the seals before being fitted.

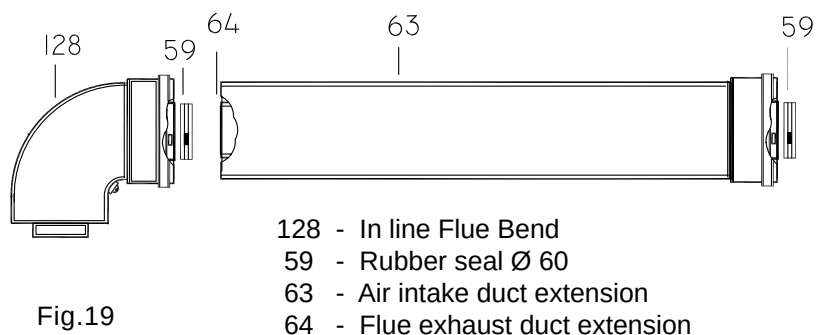


Fig.19

- 128 - In line Flue Bend
- 59 - Rubber seal Ø 60
- 63 - Air intake duct extension
- 64 - Flue exhaust duct extension

### 5.7.3 VERTICAL FLUE INSTRUCTION ONLY (Fig. 20-21-22) SEE FIG. 5 FOR PERMISSIBLE FLUE POSITION

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

The vertical flue kit is intended for use where a horizontal flue outlet is not possible or desired. The vertical flue can be used either with a flat roof or a pitched roof (maximum pitch 60°). Where a straight vertical flue is not possible or desired, an offset vertical flue can be used in conjunction with a side horizontal flue extension piece and inline 135°/90° flue bend (Fig. 20).

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

Proceed with installation as detailed in section 5 up to 5.5.8., of the main Installation and Servicing Instruction, ignoring all references to horizontal flue installations.

Use adhesive tape to attach the template to the wall, making sure that the centre line is vertical and that the flue centre line is virtually below the point at which the flue will exit the roof.

**L + L = 8m Max**

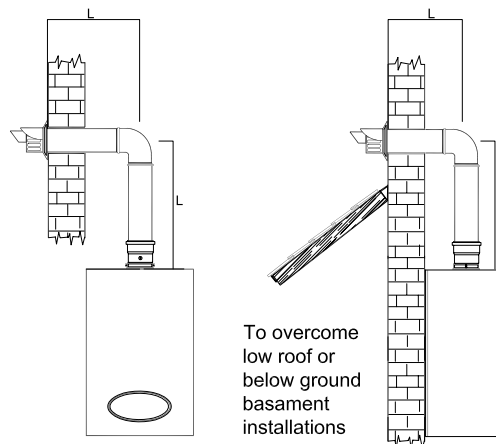


Fig. 20

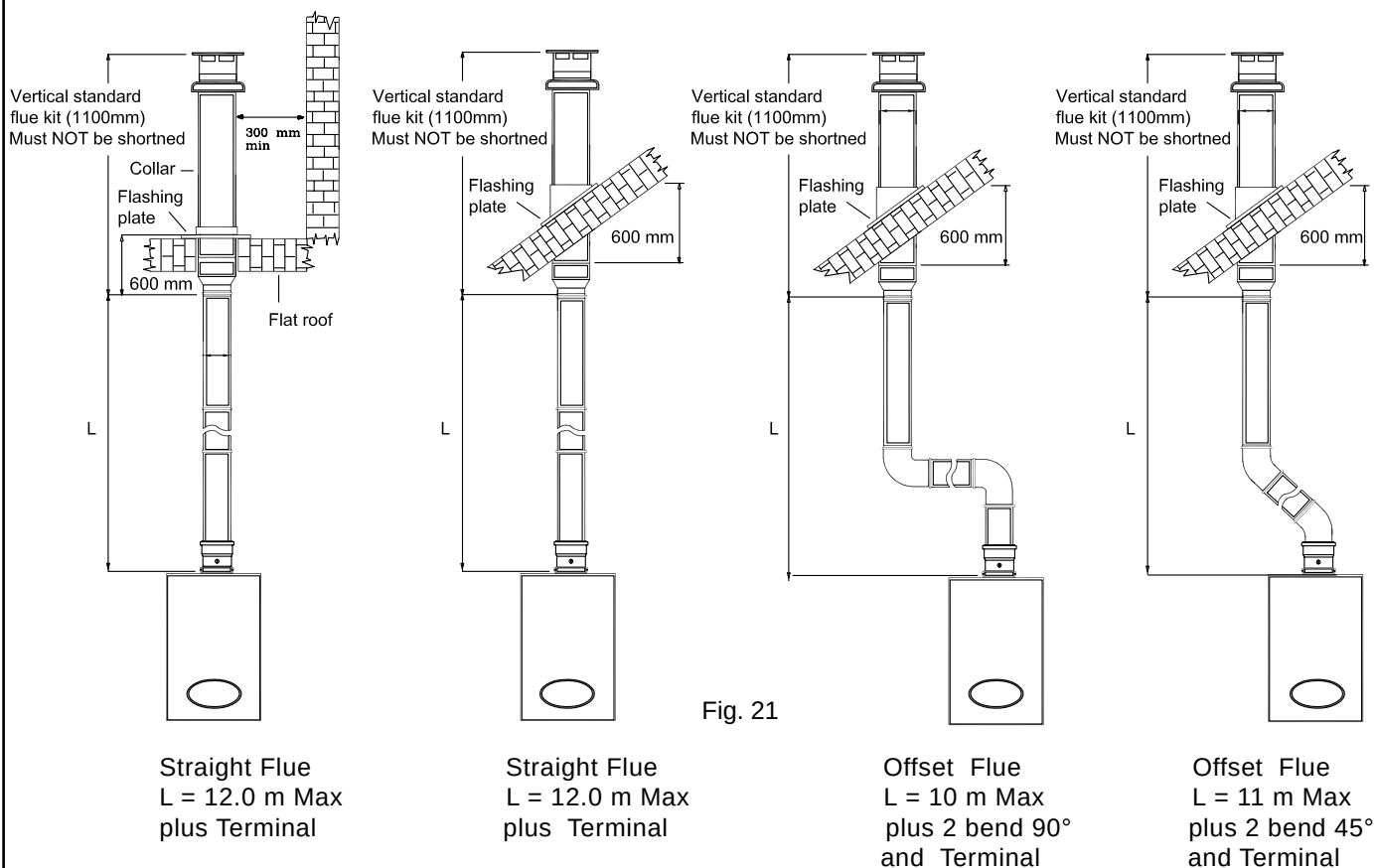


Fig. 21

- Ensure that the maximum permissible flue length is not exceeded (Fig. 21 and table 3).
- Mark the two wall fixing bracket securing holes on the wall.
- Detach the template from the wall.
- Use a 10 mm dia. drill to make the 2 holes securing fixing hanging bracket.
- Insert plastic expansion plugs (Fig. 18).
- Screw in the two coach bolts.

- Position the flue sample point starter (must be fitted) and fix the securing screw on the flue adaptor appliance (Fig. 23) item 66, and ensure that the gasket is correctly fitted.

**Important:** Make sure that the flue extension dia 60 mm duct is inserted fully into the flue manifold, and the flue manifold rubber seal is correctly fitted.

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

Fit a roof flashing slate to the roof, available from The White Boiler Company.

Insert the Vertical Flue terminal assembly through the flashing slate from the outside.

Fix the appliance to the wall, locating onto the wall fixing bracket.

Measure the vertical distance between the top of the flue and the bottom of the flue terminal assembly (Fig. 22). The measurements should be taken from the outer diameter of the flue.

NOTE: Where this length does not match any standard combination of the extensions, only extension can be cut to the required length (Fig. 24).

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

**ACCESSORIES CONCENTRIC FLUE 60/100 EXTRAS:**

| Part. No.  | Description                                |
|------------|--------------------------------------------|
| PR5094110A | Straight flue header / sample point 60/100 |
| PRFE       | Flue Extension 60/100 L1000                |
| PR45FBI    | 45° bend 60/100                            |
| PR90FBI    | 90° Elbow bend 60/100                      |
| PR5023016  | Horizontal terminal 60/100                 |
| PR5023016  | Horizontal flue kit                        |
| TER110200  | Vertical flue Terminal                     |

**TABLE 4**

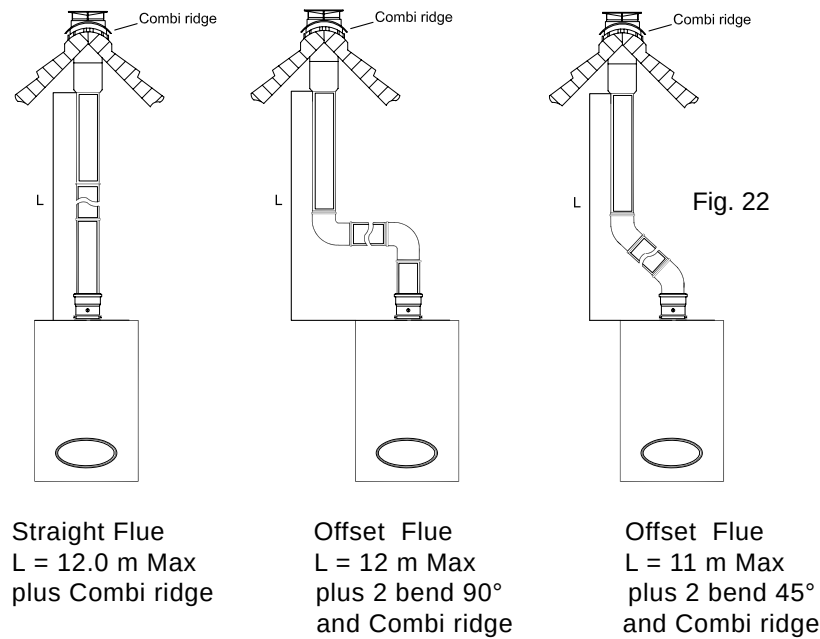


**Fig. 22**

**Fig.24**



Starting at the appliance end, assemble the extension duct sections, making each inner and outer (flue) joint by inserting the spigot end into the socket end of the next tube, making sure the seal rings are correctly located (Fig. 23). Make sure that the entire flue is adequately supported. Use at least one bracket for each extension used.

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

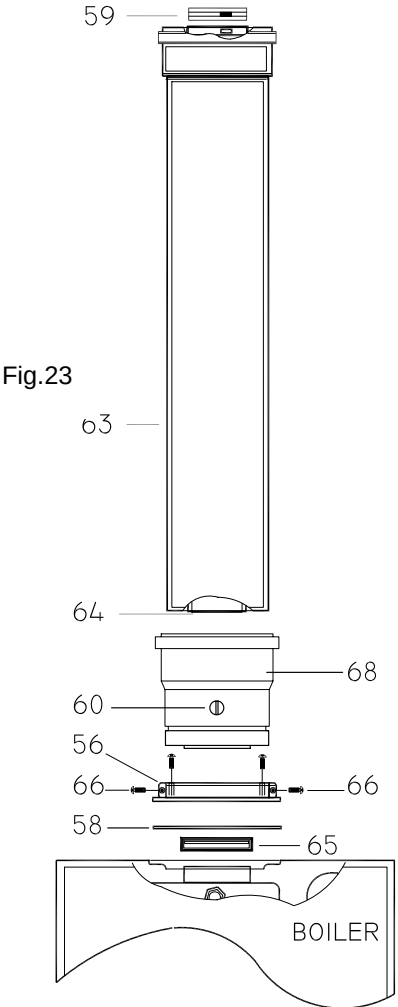


**Fig.23**

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

**IMPORTANT: Please, lubricate the internal part of the seals before being fitted.**

## 5.8 INSTALLATION INSTRUCTIONS FOR TWIN FLUE PIPE (ECCENTRIC FLUE DUCT SYSTEM)

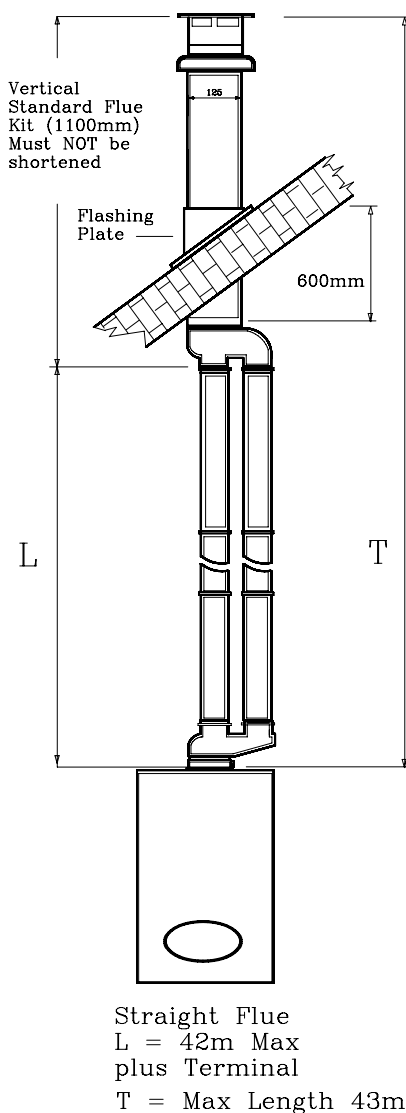


Fig. 25

**IMPORTANT: Please, lubricate the internal part of the seals before being fitted.**

### IMPORTANT

These instructions must be read in conjunction with the main installation and servicing instructions. As with all flues the kits must be installed taking due account of the current issue of BS 5440 parts 1 & 2 and timber frame housing DM2 is referenced to the Institute of Gas Engineers Document IGE/UP/7. Also note that the requirements will vary depending upon the kit being installed. Guidance is provided but unless otherwise stated, always comply with the recommendations of the relevant codes of practice.

| Part. No  | Description                      |
|-----------|----------------------------------|
| SDO110050 | Twin flue header F80/F80         |
| PRO110200 | Straight pipe L.1000 80          |
| CUR110150 | 90° elbow bend 80                |
| CUR110200 | 45° bend 80                      |
| GRI110050 | Air inlet terminal 80            |
| GRI110100 | Exhaust terminal 80              |
| TER060110 | Vertical eccentric flue Terminal |

### 5.8.1 TWIN FLUE INSTRUCTIONS

This part of the installation manual covers the installation and fixing instructions of the twin flue eccentric flue duct systems only. When ordering twin flue it must be stated for WH 100/130 range. Typical installation procedures are illustrated by drawings. Remove the front panel of the case (sect.8.1). Unscrew the screw (Fig.17 item 66) on the flue adapter.

Make sure that the Flue manifold rubber seal is located into the flue manifold, and lubricate the internal part of the seal before assembly. Locate the header gasket on the twin flue header and push into the flue adaptor (Fig.17 item 56) making sure that the inner plastic exhaust locates firmly in the outlet spigot of the flue manifold, and screw the securing screw that secures the twin flue header on the boiler.

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

Figures show the versatility of this flueing system. Measurements and bends must be calculated correctly so as not to oversize maximum flue lengths.

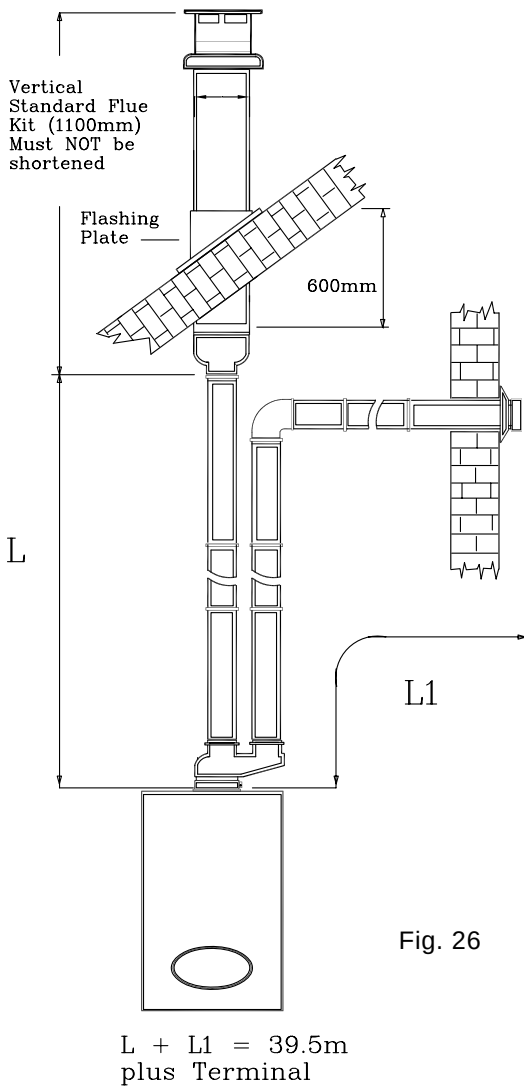
All located 'O' rings must be lubricated with a silicone grease to ensure easy, snug fit.

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

#### Spacing Clips

Spacing Clips are available on request should they be required.

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

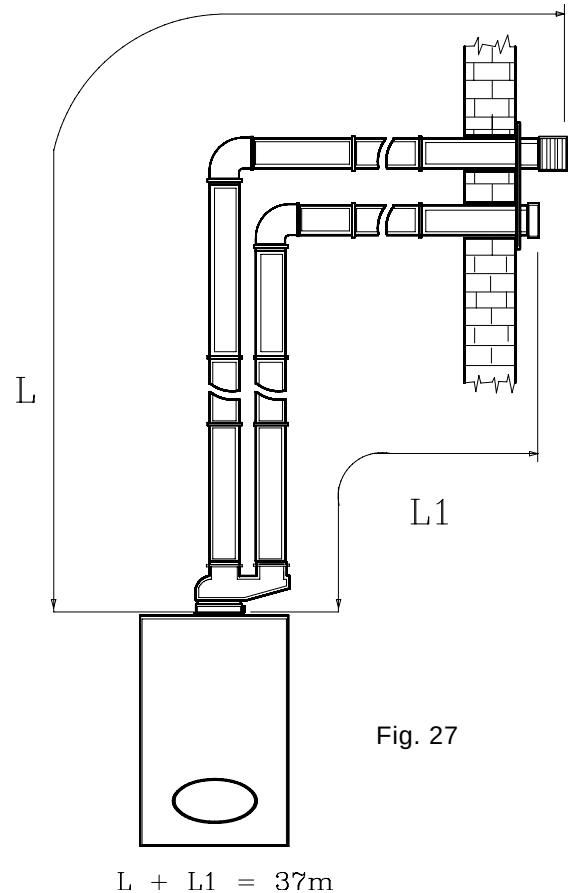


**IMPORTANT:**

- See Fig. 5 for terminal clearances.
- The pressure loss see table 3.

**IMPORTANT NOTICE:**

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



**5.8.2 Exhaust/suction system with concentric pipes for flat or sloping roofs. Extensions with two separate pipes ( Fig. 25).**

Maximum distance :  $T = L = 21 + 21 = 42$  metre + Terminal

Minimum distance :  $L = 0.5 + 0.5 = 1$  metre + Terminal

**Exhaust terminal must not be cut.**

NOTE:

- If bends are used in the exhaust flue then horizontal sections must be avoided and there must be a  $1.5^\circ$  slope towards the boiler 25 mm fall per metre.

**5.8.3 Exhaust/suction system with two separate rated 80 dia. Pipes - exhaust on flat or sloping roof, suction from vertical wall ( Fig. 26).**

Maximum distance  $D = L + L1 = 39.5$  metre + Terminal

Minimum total length = 2 metre

NOTE: Exhaust flue must slope  $1.5^\circ$  down towards the boiler 25 mm fall per metre.

**5.8.4 Exhaust/suction system with two separate pipes through a single vertical wall ( Fig. 27 ).**

Maximum distance :  $D = L + L1 = 37$  metre

Minimum distance :  $D = L + L1 = 1$  metre

Min distance between pipe 50 mm.

**IMPORTANT: Please, lubricate the internal part of the seals before being fitted.**

Available on request from:  
**THE WHITE BOILER COMPANY**  
 Chartist Way, Morley, Leeds, West Yorkshire  
 ENGLAND LS27 9ET - U.K.  
 Tel. 0044(0) 113 252 7007

## 5.9 INSTALLATION INSTRUCTIONS FOR CONCENTRIC 80/125 FLUE SYSTEM

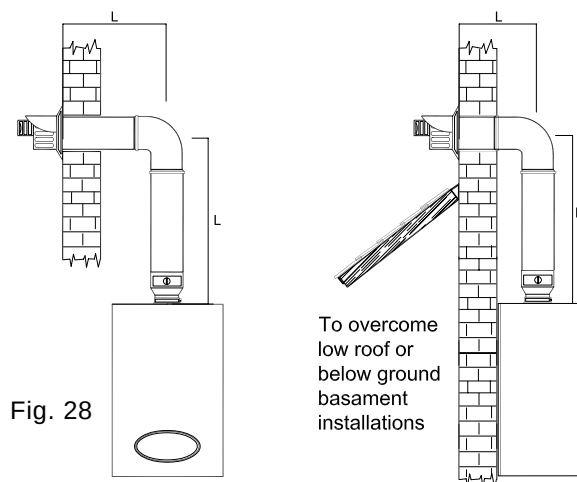
**5.9.1** The vertical 80/125 flue kit is intended for use where a horizontal 60/100 flue outlet is not possible or desired. The vertical flue can be used either with a flat roof or a pitched roof (maximum pitch 60°). Where a straight vertical flue is not possible or desired, an offset vertical flue can be used in conjunction with a side horizontal flue extension piece and an inline 135°/90° flue bend (Fig. 28).

### IMPORTANT:

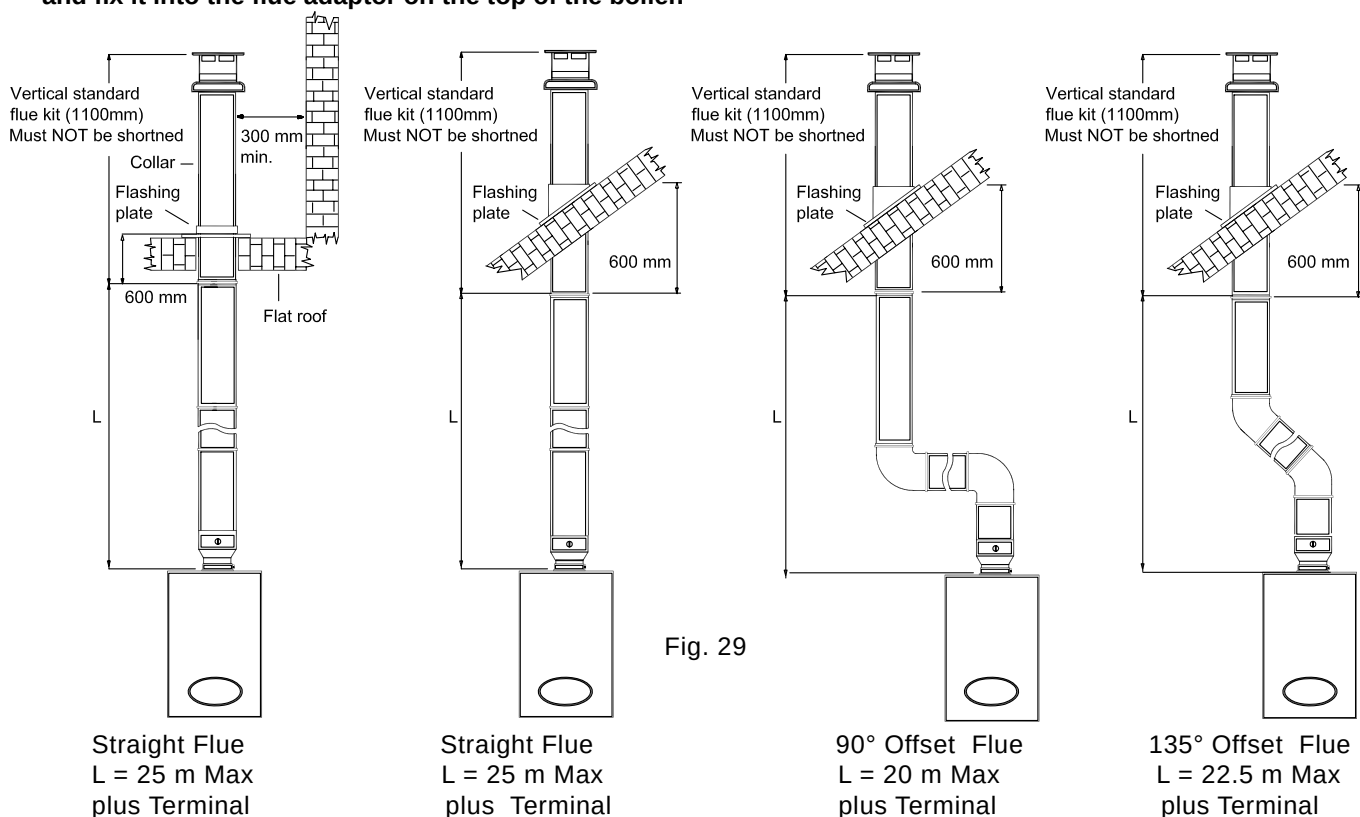
- See Fig. 5 for terminal clearances.
- The pressure loss see table 3 page 19.

### IMPORTANT NOTICE:

- When using our vertical flue kit the 125 mm x 100 reducer is supplied complete with the vertical terminal simply remove this and fix it into the flue adaptor on the top of the boiler.



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



**NOTE :** If using Flue arrangement in Fig. 28 then the 125x100 Flue reducer must be purchased separately.

| Part No    | Description                                |
|------------|--------------------------------------------|
| PR5094110A | Straight flue header / sample point 60/100 |
| PRO110300  | Flue Extension 80/125 L1000                |
| RID110050  | 125/80 to 100/60 Flue reducer              |
| CUR110250  | 45° flue bend 80/125                       |
| CUR110300  | 90° elbow flue bend 80/125                 |
| TER010050  | Horizontal Flue Terminal 80/125            |
| TER110200  | Vertical Flue Terminal 80/125              |
| TEG060050  | Flashing sleeve/slate                      |

**IMPORTANT:** Please, lubricate the internal part of the seals before being fitted.

Available on request from:  
**THE WHITE BOILER COMPANY**  
 Chartist Way, Morley, Leeds, West Yorkshire  
 ENGLAND LS27 9ET - U.K.  
 Tel. 0044(0) 113 252 7007

## 5.10 ASSEMBLE BOILER

### 5.10.1 Fitting valve pack

Remove plastic caps from boiler connection and fit valves as per Fig. 31 using washers provided.

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

## 5.11 GAS CONNECTION (Fig. 31)

**5.11.1** A minimum working gas pressure of 20 mbar (8 in w.g.) must be available at the boiler inlet at full flow rate (37 mbar for propane, 29 mbar for butane).

**5.11.2** Fit gas service cock to the boiler via the union nut and connect gas pipe. Do not overtighten and use another spanner as a counter force to avoid straining internal connections. Important consult (sect 4.5.1).

## 5.12 CENTRAL HEATING CONNECTION (Fig. 31)

### IMPORTANT:

when initially filling the system (with the front cover off) open the manual air vent (fig. 30) taking care to avoid spilling water, and re-close prior to commissioning and operating the boiler.

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

- Connect the central heating return pipe to the isolating cock.
- Connect the central heating flow pipe to the isolating cock marked CHF.
- Pipe dimensions and positions are marked on template supplied and fig. 32.

Manual air vent

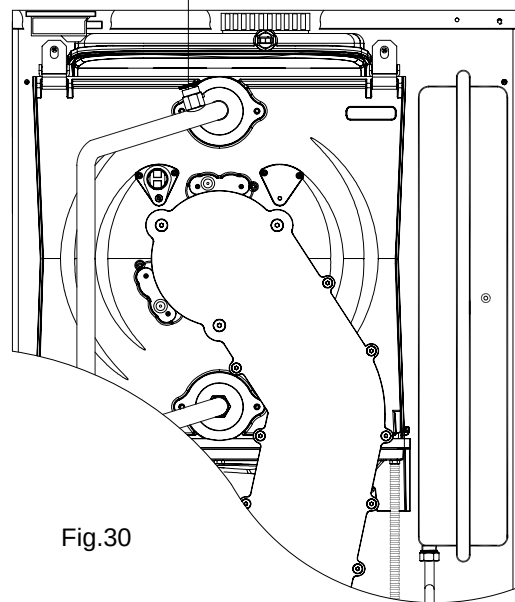
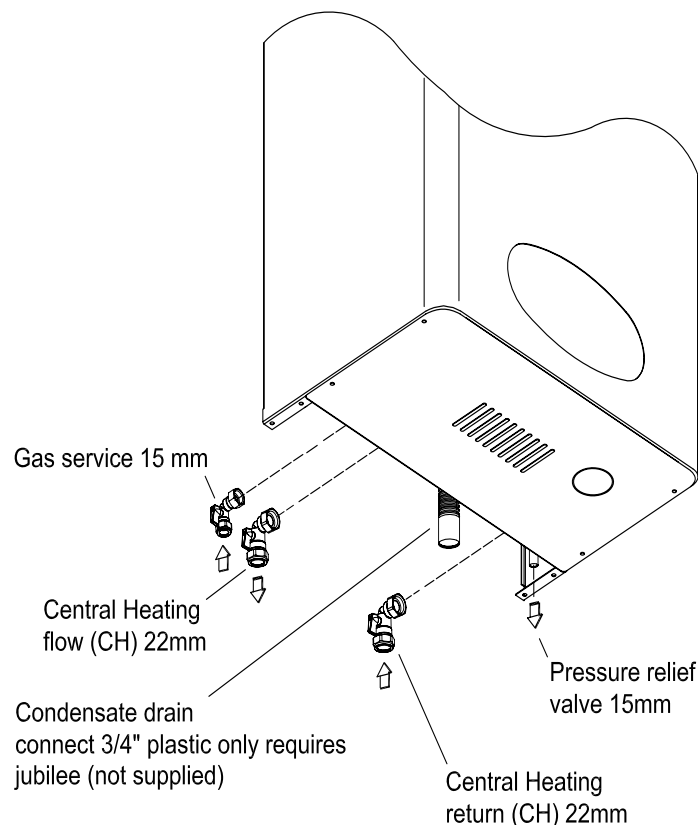


Fig.30

Fig.31



## 5.14 SAFETY VALVE DISCHARGE

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

## 5.15 CONDENSATE DRAIN CONNECTION

- 5.15.1** The condensate drain connection is a flexible 3/4" pipe and is therefore adjustable Fig. 31.

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

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

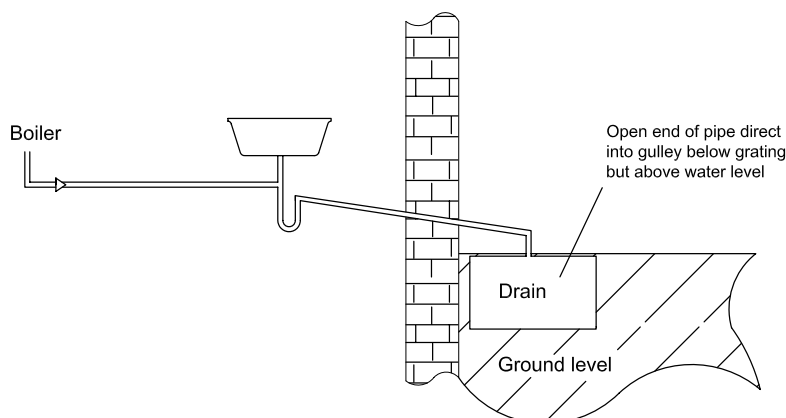
It is recommended that any external condensate drain pipe is insulated and also must be of 40 mm (1 1/2") diameter, through the outside wall to prevent freezing in adverse weather conditions. The condensate is discharged periodically in "slugs" by siphonic action. It is not necessary to provide air breaks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

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

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

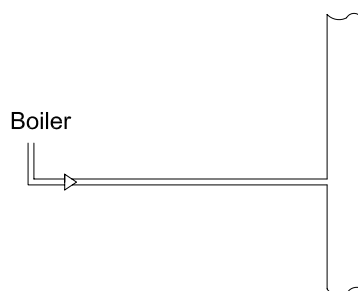
**Notes: ALL EXTERNAL PIPE RUNS MUST BE IN ACCORDANCE WITH BS 6798**

### 1 - INTERNAL TO SINK WASTE UPSTREAM OF SINK WASTE TRAP

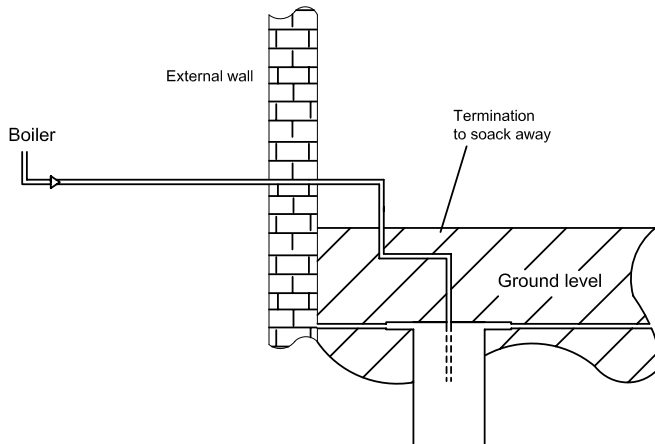


### 2 - INTERNAL CONNECTION TO SOIL AND VENT STACK

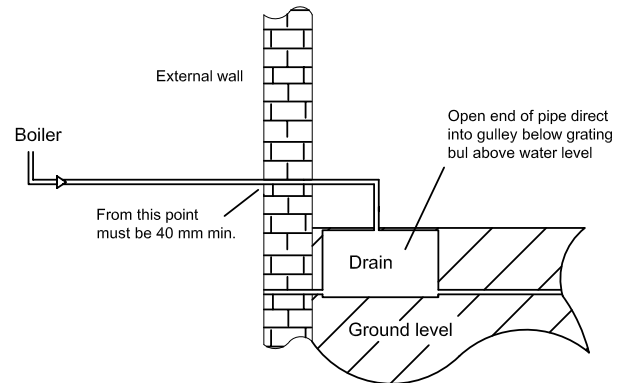
Make connection to SVP using a solvent welded saddle.



### 3 - TERMINATION TO SOAK AWAY



### 4 - TERMINATION TO DRAIN / GULLY



#### 5.16 CONVERTING THE APPLIANCE TO DIFFERENT GAS TYPES

**5.16.1** Boilers are factory set to work for use with Natural gas or LPG gas. This is clearly marked on the packing and boiler data badge.

**To convert a boiler from one gas to another this operation must be carried out by a qualified competent person, with all necessary equipment authorised by the manufacturer.**

It will also be necessary to obtain a data badge conversion kit directly from The White Boiler Company.

- 1 - Remove the case.
- 2 - Check gas mains pressure at the gas valve test nipple upstream (Fig.34) with boiler operating. Sect.6.8.
- 3 - Adjust Fan Speed as Sect.3 (technical data).
- 4 - Measure the level of CO<sub>2</sub> as sect.6.9 and adjust to correct data settings information.
- 5 - Affix new data badge.
- 6 - Replace in reverse order.

#### 5.17 ELECTRICAL CONNECTIONS

**5.17.1 IMPORTANT:** Electricity supply must be as specified in clause (sect. 4.10).

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

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

- To gain access to the electrical box remove the front panel of the case as described in clauses sect. 8.1.4. You can slide towards the top the instrument panel box and push the retaining latches and remove the instrument panel (Sec. 8.19).
- Heat resistant flexible cable is fitted between the isolator and the terminal block A 3 core cable of 0.75 mm<sup>2</sup> (24x0,2 mm) to BS 6500.

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

The cable must be fastened with its cord anchorage and connected so that should the cable slip from the anchorage the current carrying conductors become taut before the earthing conductor. Securely tighten all terminal screws and arrange the cable with slack between the cord anchorage and the terminal block.

**WARNING: If the supply cord is damaged, it must be replaced by a service engineer (supply cord available from The White Boiler Company).**

#### 5.18 OUTDOOR SENSOR

For use, consult Outdoor Sensor instructions

## POSITION OF WATER AND GAS CONNECTIONS

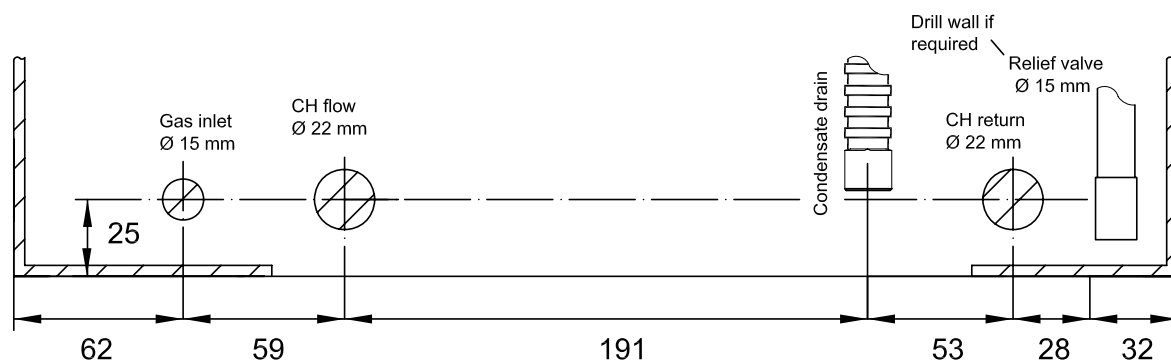


Fig. 32

## INSTRUMENT PANEL

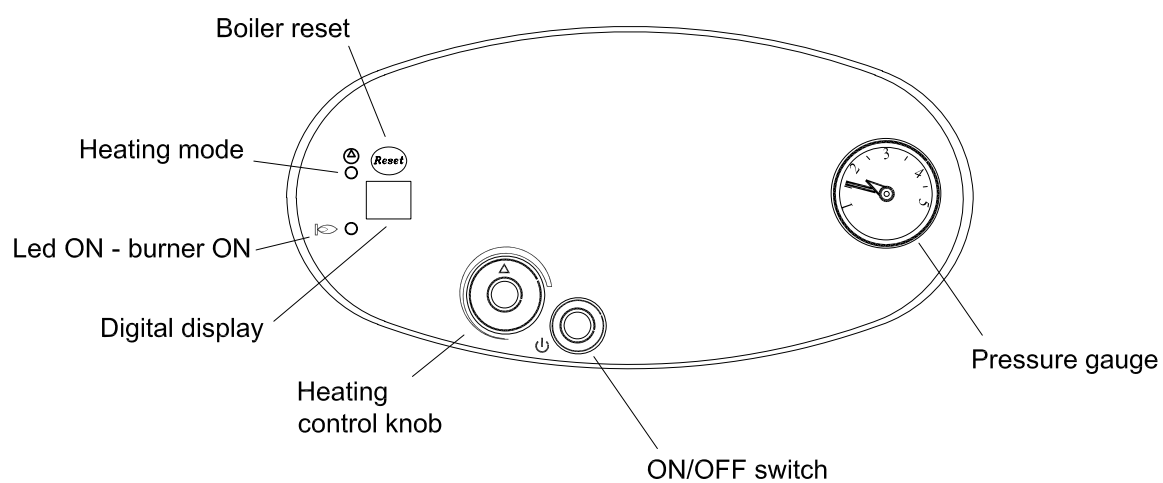


Fig. 33

## SECTION 6 COMMISSIONING

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

### 6.2 GAS SUPPLY INSTALLATION

**6.2.1** Inspect the entire installation including the gas meter, test for soundness and purge, all as described in BS 6891.  
In IE refer to IS 813:2002.

### 6.3 ELECTRICAL INSTALLATION

Preliminary electrical systems checks to ensure electrical safety shall be carried out by a competent person.  
ALWAYS carry out the preliminary electrical system checks:  
i.e. earth continuity, polarity, resistance to earth and short circuit, using a suitable test meter.

### 6.4 INITIAL FILLING OF THE SYSTEM

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

- Close all air release taps on the central heating system.
- Gradually open stopcock at the filling point connection to the central heating system until water is heard to flow.
- Starting with the lowest radiator open each air release tap in turn. Close it only when clear water, free of bubbles, flows out. In the same way release air from any high points in the pipework.

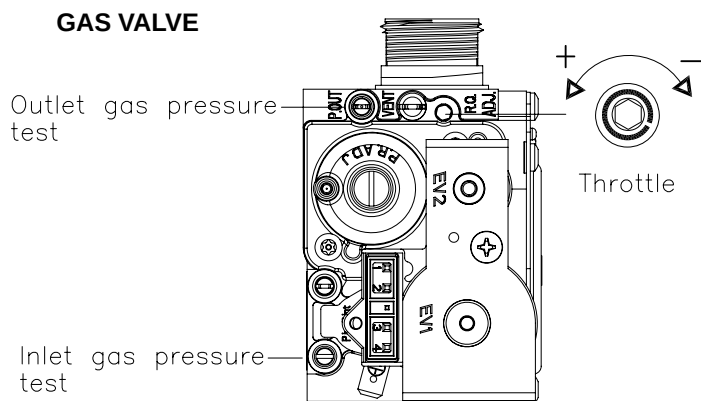


Fig. 34

### 6.5 SETTING THE HEATING SYSTEM DESIGN PRESSURE

The design pressure must be a min. 1 bar and max. 1.5 bar. These figures are read off the pressure gauge.

- The actual reading should ideally be 1 bar + the height in metres to the highest point of the system above the base of the appliance (up to max of 1,5 bar).  
N.B.: The safety valve is set to lift at 3 bar (30 mt/42.5 psi).
- To lower the system pressure to the required value remove at the drain point (fig. 35) or drain on the heating circuit.

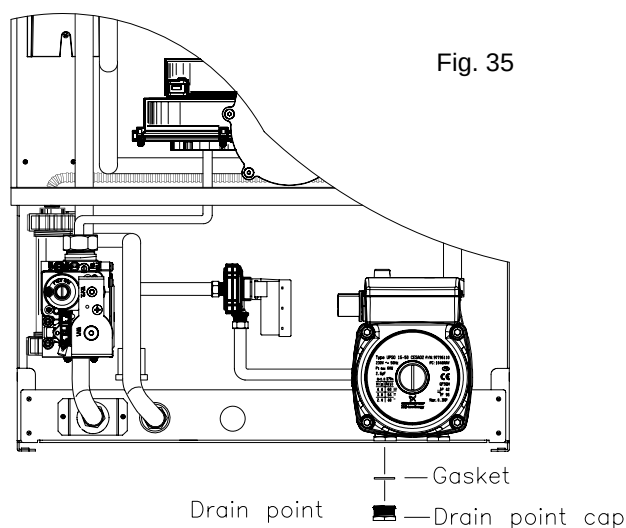
### 6.6 LIGHTING THE BOILER

Before lighting the boiler make sure that the heating circuit flow and return valves are open.

Make sure that the external control, by switching wire (Line), are call for heat. (Sect. 8.24)

#### IMPORTANT:

Before switching on the boiler POWER SWITCH FOR THE FIRST TIME when commissioning, turn the heating control knob (Fig.33) DOWN TO ITS MINIMUM setting leaving it at minimum for approx 5 mins to purge air safely from the boiler heat exchanger.



- Turn control knob (Fig.33) down to its **minimum** setting.
  - Push the power main switch to on (Fig.33)
  - The digital display will show water set point temperature in central heating.
  - The fan starts and after a second or so the digital led display will show that the ignition has commenced.
  - **NOTES : It maybe necessary to reset the Digital Timer on boiler (if fitted) to start. Put the timer to on position (Fig.33).**
  - The ignition control will automatically have three attempts , but initially this may be due to air in the gas supply line.If the burner fails to light, the digital led display and fan will stop, and the display will show the lockout code.
  - If necessary push the boiler Reset button (Fig.33) and the boiler will restart automatically.
  - After the boiler has lit, allow to warm at minimum temperature setting to purge any air from the system.
  - Once the system has been purged of air turn the control knob to the desired position.
- With leak detection fluid test for gas tightness of all gas components and joints.See paragraph 6.14 for regulating the heating circuit control knob.

## 6.8 CHECK THE GAS PRESSURE

Check the gas mains pressure at the gas valve inlet pressure test (Fig.34) with boiler operating.

Check with the Local Gas supplier if the pressure differs significantly from 20 mbar G20 (natural gas), 37 mbar G31 (propane) and 29 mbar G30 (butane).

**IMPORTANT : the Gas Valve Throttle adjuster is required to be sealed with tamper proof paint after adjustment (fig. 34).**

## 6.9 COMBUSTION CHECK

Check gas carrying components along with, the combustion of the appliance which should be checked as follows.  
Remove the front panel of the case.  
Ensure the boiler and external controls are calling for heat. Turn on electrical supply.  
Open the Hot water tap at maximum flow rate.  
Wait at least five minutes or until the unit has reached its operating temperature.

Unscrew the test sample screw on the boiler elbow bend (Fig.10 item 60). Measure the level of CO<sub>2</sub>. Check the reading against the corresponding value in sect.3 TECHNICAL DATA. If adjustment proves necessary then proceed as follows.

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

Refer to tables 1/A, 1/B, 1/C and 1/D section 3 adjust the maximum level of CO<sub>2</sub> by turning the Throttle (allen screw 2.5 mm) on the gas valve (Fig.34).

Anti-clockwise to increase CO<sub>2</sub>.

Clockwise to decrease CO<sub>2</sub>.

After any new regulation wait to stabilise about one minute.

- Replace the sample point screw on the flue manifold ( Fig.10 item 60).
- Replace the front panel of the case.

**IMPORTANT:** do not insert analyser probe into the sample point immediately or for long periods. This will prevent saturation of the analyser.

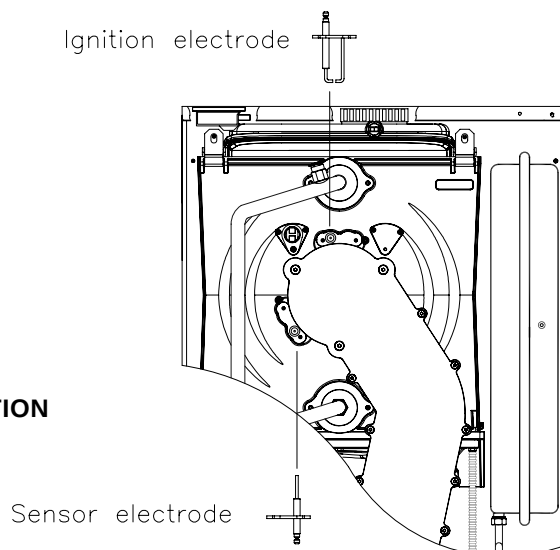
During the calibration function the combustion ratio may increase for short time while the boiler performance is optimised.

The person carrying out a combustion measurement should have been assessed as competent in the use of a flue gas analyser and be able to interpret of the results.

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

## ELECTRODES POSITION

Fig. 36



**ATTENTION**  
**IT IS A CONDITION OF THE MANUFACTURERS WARRANTY THAT THE BENCHMARK**  
**COMMISSIONING CHECKLIST IS FULLY COMPLETED AND LEFT WITH THE APPLIANCE**



Once the process of commissioning the boiler is complete, the commissioning engineer **MUST** complete his section in the Benchmark log book.

## 6.10 CHECKING THE FLUE SYSTEM

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

## 6.11 CHECKING THE HEATING THERMOSTAT

**6.11.1** Allow the system to warm up and then turn the C.H thermostat to ensure the main burner modulates from "high" to "low" and "low" to "off" and vice versa (scale range covers approx 45°C - 80°C).

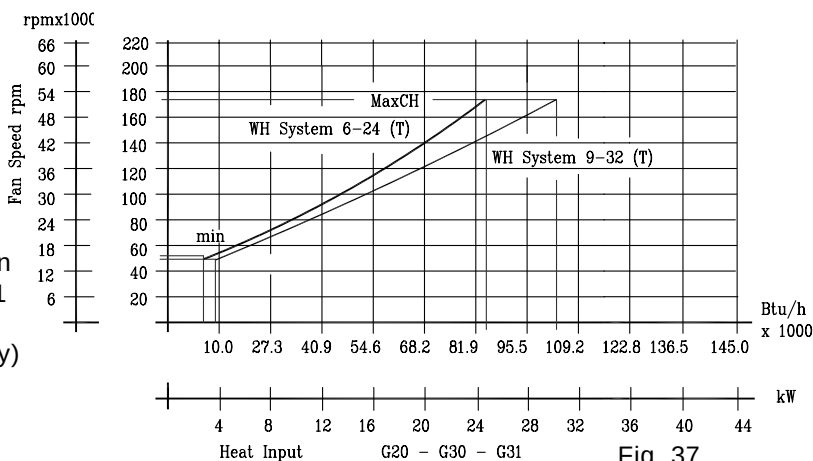
## 6.12.3 CHECKING MAX/MIN. FAN SPEED (see tables 5/A and 5/B).

**6.12.4** To check max fan speed, place the jumper on JP16, See sect. 6.14.1 fig. 38.  
 To check min fan speed, place the jumper on JP16, turn control knob down to its minimum setting. See sect. 6.14.1 and fig. 38.  
 This can be checked using a (frequency) meter JP2.

**TABLE 5**

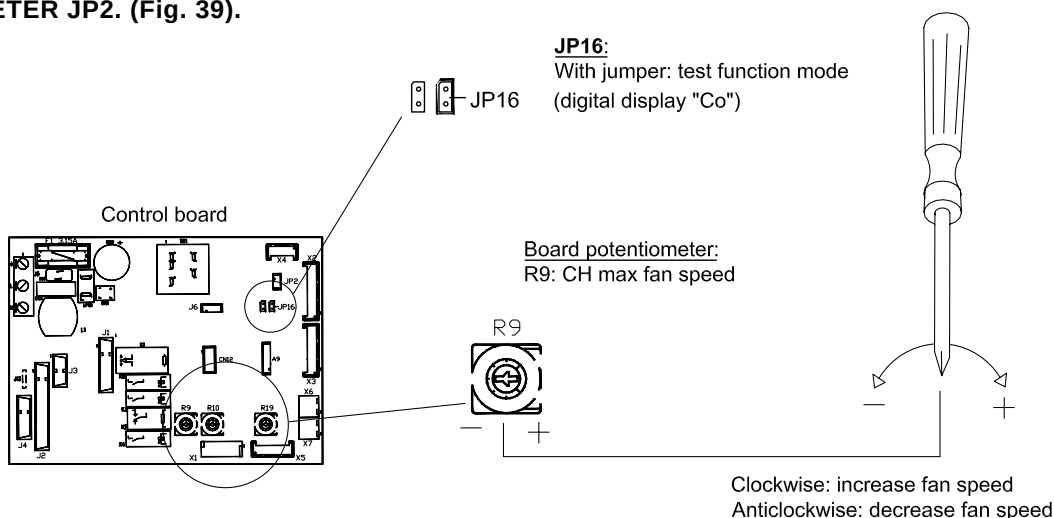
| Range rating regulation of Central Heating |                 |                |                 |                |
|--------------------------------------------|-----------------|----------------|-----------------|----------------|
| C.H. regulations                           | Heat input (kW) |                | Fan speed (rpm) |                |
|                                            | WH System 6-24  | WH System 9-32 | WH System 6-24  | WH System 9-32 |
| Maximum setting                            | 24,5            | 31,4           | 5400            | 5400           |
| minimum setting                            | 6,8             | 9,8            | 1650            | 1650           |

**RATIO BETWEEN FAN SPEED AND HEAT INPUT**



**IMPORTANT: DO NOT ADJUST THE MINIMUM SET POTENTIOMETER R10, THIS IS SET AN SEALED. THIS CAN BE CHECKED USING A FREQUENCY METER JP2. (Fig. 39).**

Fig. 38



## 6.14 RANGE RATING CENTRAL HEATING

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

**6.14.1** When the boiler operates in the C.H. mode, the fan speed, can be set between the min. and max. values. (See fig. 37). This permits capacity to be adjusted to suit system demand. if adjustment is required proceed as follows:

- Remove front casing (sect. 8.1.4).
- Push the retaining latches and remove the front of the instrument panel (Fig. 54).
- Place instrument front panel into service holding bracket (just above control box (Fig. 55).
- Place jumper on JP16 for test mode function, "Co" (Control) is displayed on the digital display (see sect. 7.1).
- Using a small screw driver to adjust the potentiometer R9 (CH max fan speed), clockwise to decrease the fan speed and anti-clockwise to increase the fan speed.
- When viewing fan speed slightly move the potentiometer to display the speed and adjust only if necessary (fig. 37) the fan speed will flash the first two digits on the display in the control panel in rpm (eg. 42 = 4200 rpm).

## 6.15 HANDING OVER TO THE USER

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

- Hand the "User's Instructions" to the Householder and explain His/Her responsibilities under the "Gas Safety Regulations 2000".
- Explain and demonstrate the lighting and shutting down procedures.

- The operation of the boiler including the use and adjustment of ALL system controls which should be fully explained to the Householder. This then ensures the greatest possible fuel economy consistent with household requirements of both heating and hot water consumptions.

Advise the User of the precautions necessary to prevent damage to the system, and to the building, in the event of the system remaining inoperative during frost conditions.

- Explain the function and the use of the boiler, the summer/winter switch, the ON/OFF switch and the reset of the digital display.
- Explain and demonstrate the function of temperature controls, neon lights, radiator valves etc for the economic use of the system.
- Stress importance of regular servicing by a qualified Heating Engineer and that a comprehensive service should be carried out AT LEAST ONCE A YEAR.
- Fill in the Benchmark log book and leave completed with the customer.

**JP2:**  
Frequency meter connection

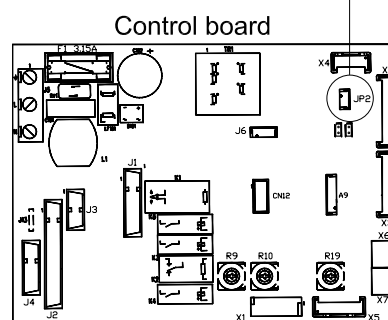


Fig. 39

## SECTION 7 SERVICING INSTRUCTIONS

The White Boiler Company is a member of the Benchmark initiative and fully supports the aims of the programme. Benchmark was instructed to improve the standards of installation and commissioning of central heating systems in the UK and to encourage in the regular servicing of all central heating systems to ensure safety and efficiency.



Combustion testing must be carried out by competent person using a combustion analyser conforming to BS7927.

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

- The integrity of the flue system and the flue seals.
- The integrity of the boiler combustion circuit and the relevant seals.
- The operational dynamic (working) gas inlet pressure at maximum rate.
- The gas rate.
- The combustion performance.

### COMPETENCE TO CARRY OUT THE CHECK OF COMBUSTION PERFORMANCE.

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

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

### 7.1 SERVICE INFORMATION FUNCTION

When the jumper JP16 is inserted, "Co" (Control) is displayed on the digital display (fig. 33), when heating led are ON and the yellow led is ON the boiler is running. It is possible to set the maximum CH power by R9 trimmer. Moving the knob of a trimmer the fan speed is displayed flashing for 10 seconds on the digital display (see Technical data section 3, table 5 page 35 and fig. 38).

### 7.2 SEQUENCE HISTORY CODES

It is possible to see up to the last ten sequence of events on the digital display by pushing the reset button for 10 seconds.

In this case, when the function is enabled the 3 leds on the panel start flashing. Pushing the reset button again it is possible to view the others codes up to a maximum of ten.

After the tenth, push the reset button to repeat the history.

Exit from history is automatic after 10 seconds.

The sequence history starts after 1 hour of first continuous power onto the board.

### 7.3 BOILER FROST PROTECTION

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

The burner will switch off when the temperature reaches 27°C.

When the frost protection device operates "AF" is displayed on the digital display.

#### IMPORTANT NOTE:

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

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

**WARNING**

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

The Data badge is positioned low on left panel.

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

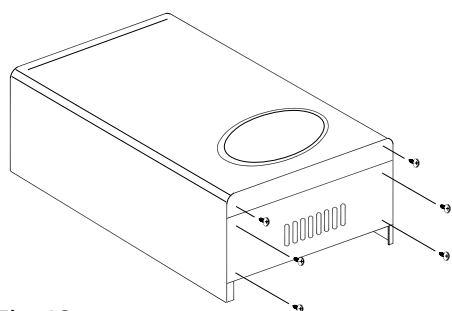
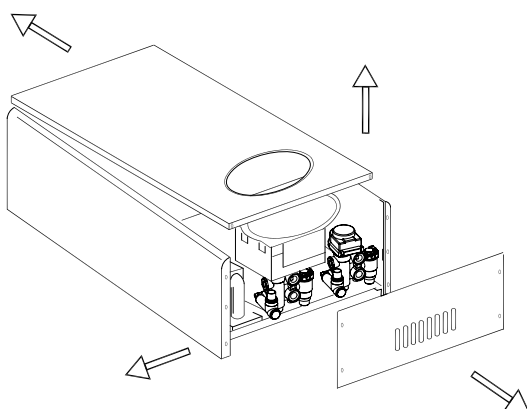


Fig.40



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

**7.5 TO INSPECT AND CLEAN THE APPLIANCE**

7.5.1 Before carrying out cleaning operation, cover the electrical control panel with a piece of waterproof material to protect it from debris.

7.5.2 Inspect the heat exchanger for any blockage. Deposits of any material should be brushed away using a soft brush.

**NOTE:** Do not use brushes with metallic bristles.

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

7.5.4 Examine and remove loose debris from the combustion chamber using a soft brush and vacuum cleaner. Carefully flush, by spraying water any remaining debris through the condensate trap. (Ensure the water is kept away from electrical components).

7.5.5 Inspect the siphonic condensate trap for a blockage. Remove the cap at the base of the condensate trap. Remove any solid found. Remove the float to clean it.

Any deposits should be flushed out. Reassemble and refit the condensing trap. When refitting the cap ensure that a watertight seal is achieved, but do not use excessive force.

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

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

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

## SECTION 8 REPLACEMENT OF PARTS

### 8.1 GENERAL

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

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

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

8.1.4 For replacement of parts, the front, side and bottom panel panels of the boiler will need to be removed.

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

To remove the bottom panel unscrew the four screws and lift off.

To remove the side panels, remove the front and bottom panels, unscrew the screws below and remove (Fig.40) .

### 8.2 TO REMOVE/REPLACE SPARK IGNITER BOX (Fig. 41)

8.2.1 Remove the front casing (sect. 8.1.4).

8.2.2 Detach all the connectors from the igniter control box.

8.2.3 Remove the 2 screws that secure the spark igniter to the bracket.

8.2.4 Replace in reverse order.

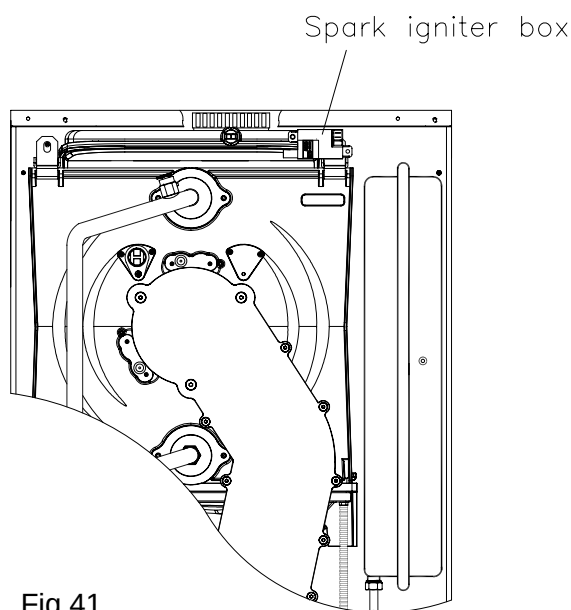


Fig.41

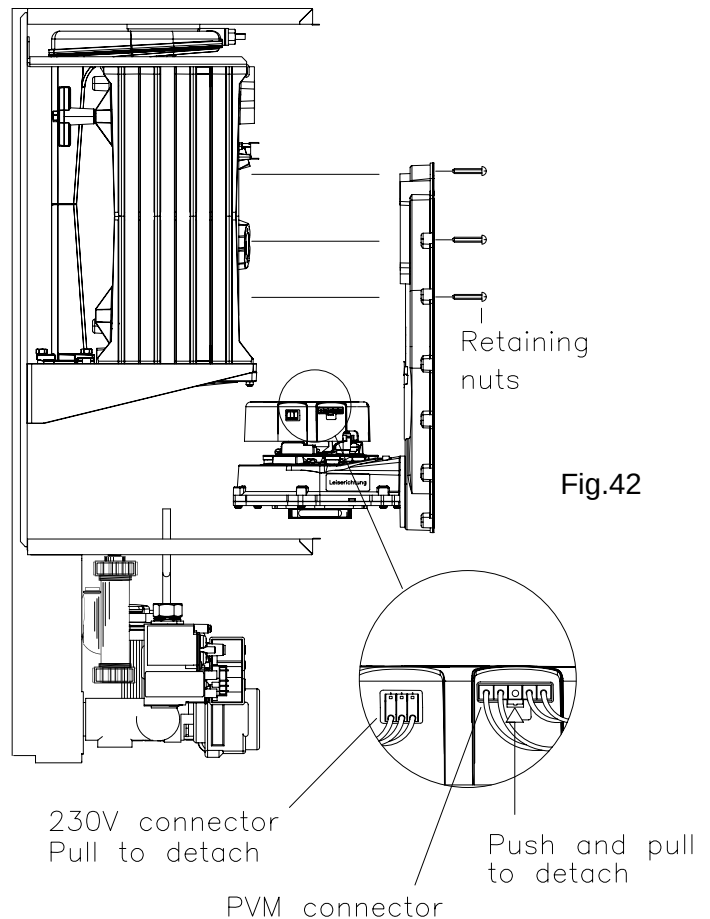


Fig.42

### 8.3 TO REMOVE/ REPLACE THE ELECTRODES (Fig.36)

8.3.1 Remove the front casing panel (sect. 8.1.4).

8.3.2 Remove the ignition and/or sensing lead plug.

8.3.3 Unscrew the two securing screws and put them into a container so that they don't get lost. Withdraw the Spark electrode and /or sensing electrode carefully from the combustion chamber cover being careful not to damage the seal.

8.3.4 Replace with new electrode in reverse order. Ensure gap is correct and there is a good seal when replaced.

### 8.4 TO REMOVE/REPLACE FAN (Fig. 42-43)

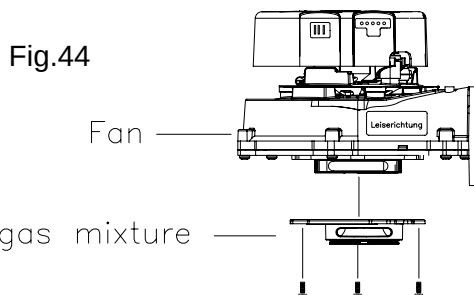
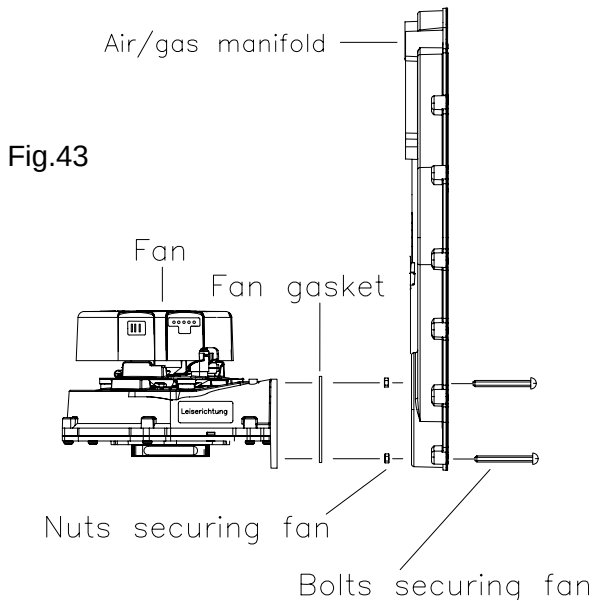
8.4.1 Remove front panel only (sect. 8.1.4).

8.4.2 Remove three manifold/burner retaining nuts Fig. 42). Pull forward and lift up manifold slightly to remove.

**8.4.3** Detach power supply cables to fan (Fig.42). The fan and the manifold can then be removed from the boiler.

**8.4.4** To separate the fan from manifold remove the two retaining bolts and the three screws retaining the air/gas mixture plate (Fig. 43/44).

**8.4.5** Reassemble in reverse order. Ensure wires are connected correctly.



## **8.6 TO REMOVE/REPLACE THE HEAT EXCHANGER.**

**8.6.1** Remove front casing (sect 8.1.4) and the bottom, left and right side panels.

**8.6.2** Drain the boiler.

**8.6.3** Follow instruction to remove fan (sect. 8.4 to 8.4.3).

**8.6.4** Remove the clip securing the condense pipe out of the bottom of the heat exchanger and pull down to remove the pipe.

**8.6.5** Disconnect the flow and return pipes at the heat exchanger.

**8.6.6** Disconnect the pipes at the flow manifold and pump then move away from the heat exchanger.

**8.6.7** Disconnect the pipes to the expansion vessel.

**8.6.8** Remove the spark igniter box (sect. 8.2).

**8.6.9** Loosen the four heat exchanger securing screws and clamps then carefully ease heat exchanger out.

**CAUTION :** There will be water in the heat exchanger.

**8.6.10** Replace in reverse order, always use a new "O" rings seals.

## **8.5 TO REMOVE/REPLACE THE BURNER (FIG.45)**

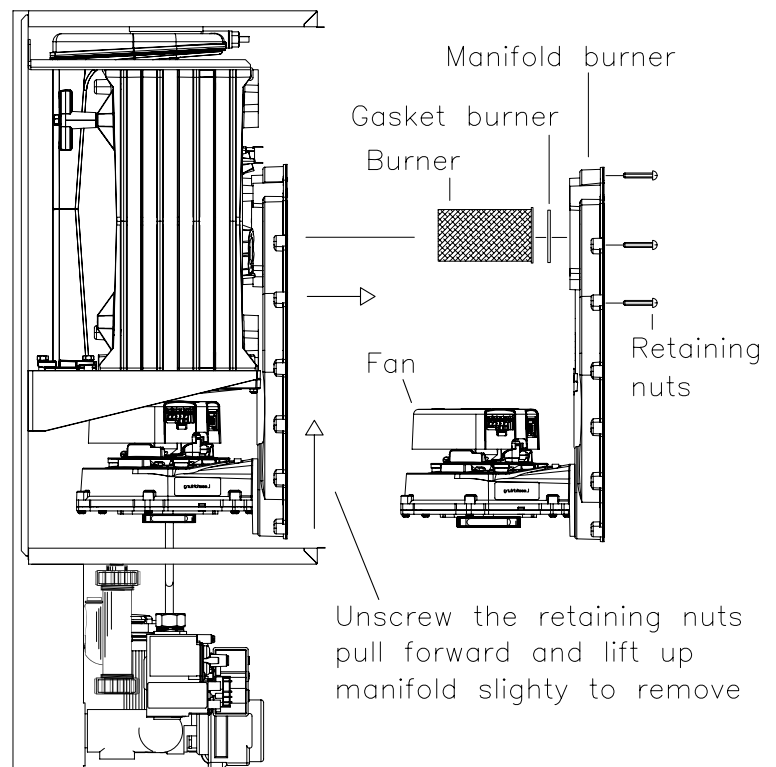
**8.5.1** Remove front casing (sect. 8.1.4).

**8.5.2** Follow instruction to remove fan (sect. 8.4 to 8.4.3).

**8.5.3** Remove the burner from the main heat exchanger. Important: the burner gasket may require replacing.

**8.5.4** Replace in reverse order.

Fig.45



## 8.7 TO REMOVE/REPLACE GAS VALVE . (Fig.46).

8.7.1 Remove front casing (sect 8.1.4). Remove the bottom panel and the left side panel.

8.7.2 Drop down the control panel into the service position (Fig. 54).

8.7.3 Unscrew and disconnect gas valve pipe (Fig. 46).

8.7.4 Remove the electrical plug from the gas valve and unscrew the four screws to the gas inlet pipe.

8.7.5 Remove the gas valve.

8.7.6 Reassemble in reverse order and replace the gasket.

8.7.7 **IMPORTANT** : When gas control valve will be re-fitting, **check combustion CO<sub>2</sub> and adjusted if necessary** see section 6.9.

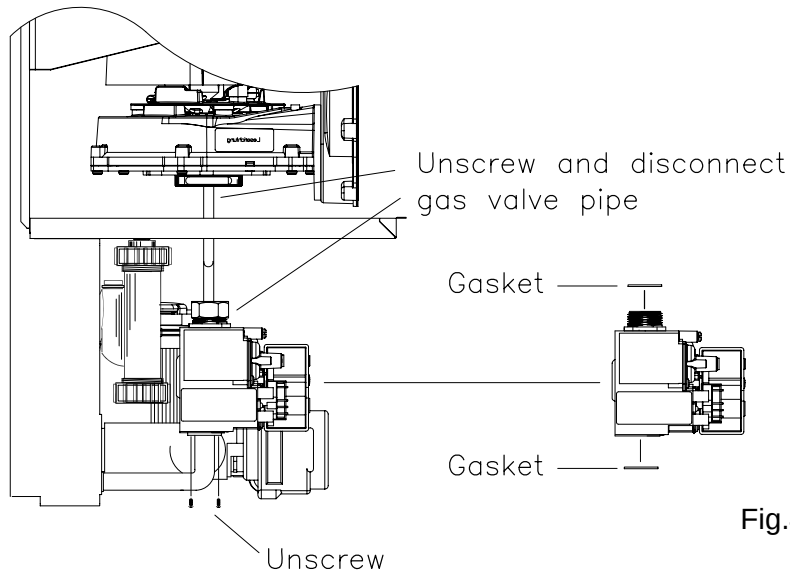


Fig.46

## 8.8 TO REMOVE/REPLACE EXPANSION VESSEL (Fig.47).

8.8.1 Remove front casing (sect 8.1.4) and the bottom panel. Remove the bottom panel and the right side panel.

8.8.2 Drain the boiler.

8.8.3 Unscrew the fixing bracket. Unscrew the nut connecting the expansion vessel, and lift up the vessel and remove.

8.8.4 Replace in reverse order.

NOTE: Always use new gasket.

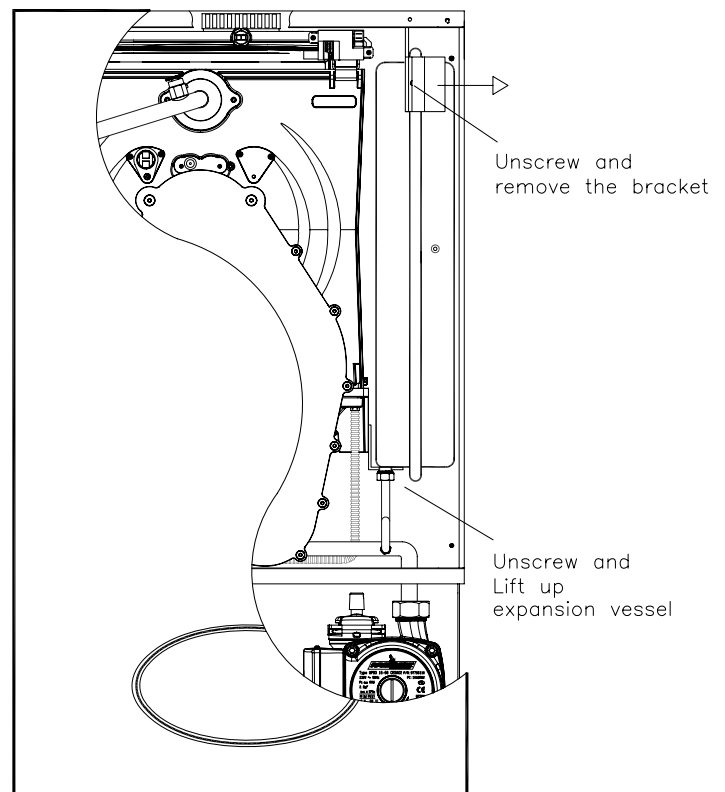


Fig.47

## 8.9 TO REMOVE/REPLACE PUMP (Fig.48).

- 8.9.1 Remove front casing (sect 8.1.4).  
Remove the bottom panel and the right side panel.
- 8.9.2 Drop down control box (sec. 8.16).
- 8.9.3 Detach the supply wire connector from the pump.
- 8.9.4 Remove the securing clip at the pump manifold (Fig. 48).
- 8.9.5 Remove the securing clip that fastens the pressure gauge to the pump. (Fig. 48).
- 8.9.6 Unscrew the nut that fastens the pump to the CH pipe and remove the pump.
- 8.9.7 Replace in reverse order.

**NOTE :** Always use new seal and new "O" ring when re-fitting new pump.

## 8.10 TO REMOVE/REPLACE AUTOMATIC AIR VENT (Fig. 48).

- 8.10.1 Remove front casing (sect 8.1.4).  
Remove the bottom panel and the right side panel.
- 8.10.2 Close the on/off valves for C.H. circuit and drain the water from at drain point Fig.35.
- 8.10.3 Remove the pump see sect.8.11.
- 8.10.4 Remove the retaining clip holding the automatic air vent.
- 8.10.5 Pull the automatic air vent from the pump.
- 8.10.6 Replace in reverse order and check for leak.

NOTE: Fit a new "O" ring.

## 8.11 TO REMOVE/REPLACE THE CENTRAL HEATING THERMISTOR (Fig. 1 item 27).

- 8.11.1 Remove front casing (sect 8.1.4).
- 8.11.2 Remove the wires that connect the C.H. thermistor.
- 8.11.3 Remove the retaining clip from the pipe.

NOTE: When reconnecting the polarity of the wiring to thermistor is unimportant.

- 8.11.4 Replace in reverse order.

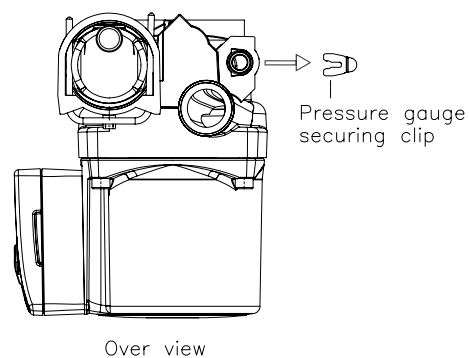
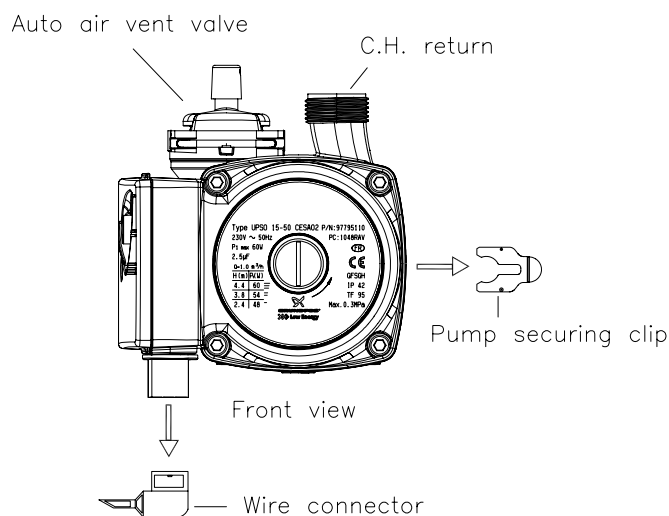


Fig.48



## 8.12 TO REMOVE/REPLACE OVERHEAT THERMOSTAT (Fig. 1 item 25).

- 8.12.1 Remove front casing (sect 8.1.4).
- 8.12.2 Remove the two wires that connect to the overheat thermostat.
- 8.12.3 Unscrew the thermostat to the heat exchanger and remove.
- 8.12.4 Replace in reverse order.

**8.13 TO REMOVE/REPLACE LOW WATER OR DIFFERENTIAL PRESSURE SWITCH (Fig. 49).**

- 8.13.1** Remove front casing (sect 8.1.4). Remove the bottom panel and the right side panel.
- 8.13.2** Close the on/off valves for central Heating circuit and drain the water from the boiler (Fig. 35).
- 8.13.3** Pull wires off and unscrew the low water pressure switch from pump manifold.
- 8.13.4** Remove the retaining clip that fix the electrical connection and unscrew the nut at the flow water pressure switch.
- 8.13.5** Replace in reverse order, fill the system as described in sect.6.4 and check for leaks.

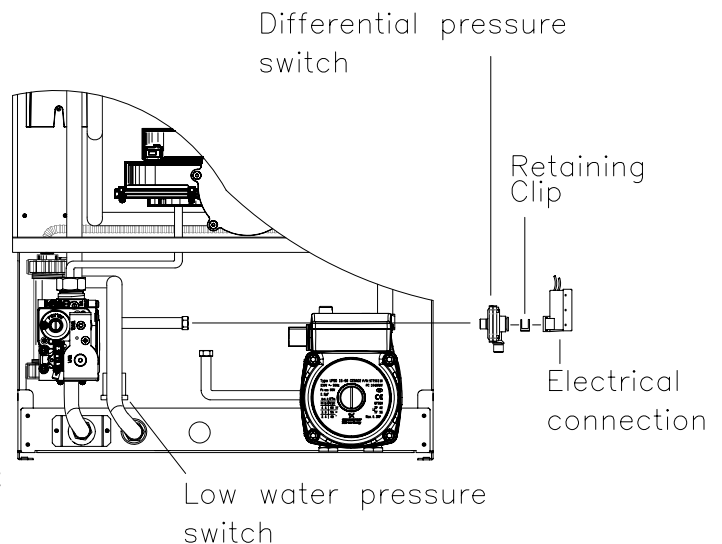


**Fig.49**

**8.14 TO REMOVE/REPLACE SAFETY DISCHARGE VALVE.**

- 8.14.1** Remove front casing (sect 8.1).
- 8.14.2** Drop down control box (sec. 8.16).
- 8.14.3** Close the on/off valves for central Heating circuit and drain the water from the boiler (Fig. 35).
- 8.14.4** Unscrew the screw below the valve.
- 8.14.5** Remove the securing clip and remove the pipe. Detach the valve.
- 8.14.6** Replace in reverse order, fill the system as described in sect.6.4 and check for leaks.

**8.15 TO REMOVE INSTRUMENT PANEL.**

- 8.15.1** Remove front casing (see sect. 8.1.4).
- 8.15.2** Push the four retaining latches and remove the front of the instrument panel (Fig. 51).
- 8.15.3** Rotate the instrument panel and put it in the service retaining clip instrument panel box bracket (Fig. 52).

**8.16 TO REMOVE CONTROL PANEL BOX (Fig. 53).**

- 8.16.1** Remove front casing (see sect. 8.1.4).
- 8.16.2** To move the control panel box into service position.
- 8.16.3** Draw forward the control panel box with both hands until it is slightly out of the boiler. As doing so move the box over to the left while still pulling it forward until the control box becomes free.
- 8.16.4** This will allow free access to lower part of the boiler.

**8.17 TO REMOVE/REPLACE CONTROL BOARD (Fig.55).**

**8.17.1** Remove front casing (sect 8.1.4).  
Remove instrument panel (sect. 8.15.2 to 8.15.3).

**8.17.2** Detach the connectors from the board.

**8.17.3** Detach the PCB board from its base by unscrewing the four securing screws. (Fig. 55).

**8.17.4** Replace in reverse order.

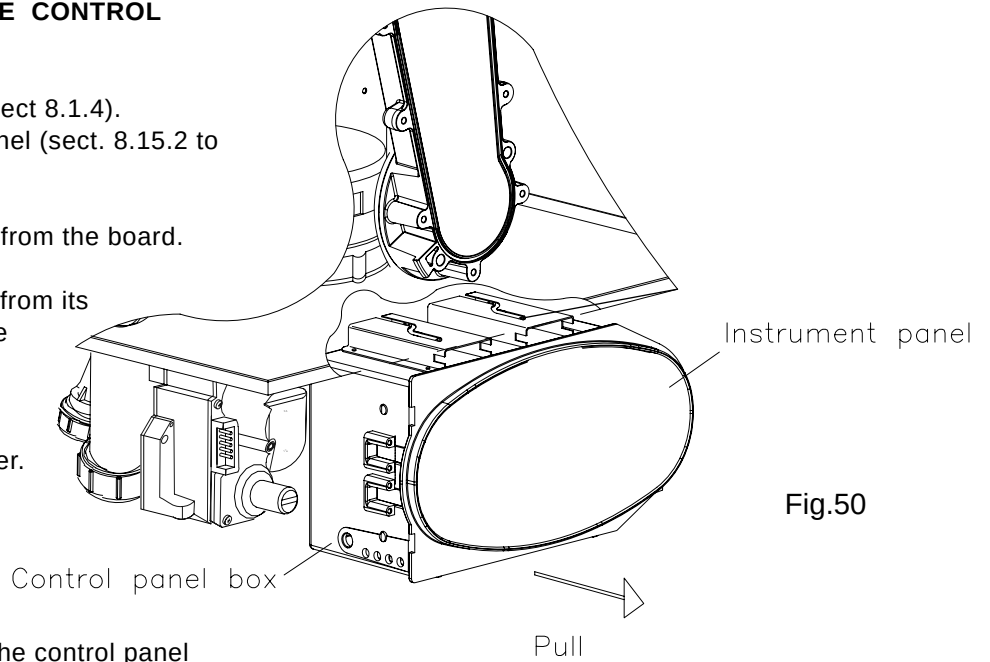


**Fig.50**

**NOTE:** When refitting the control panel ensure the leads are not trapped.

**Fig.51**

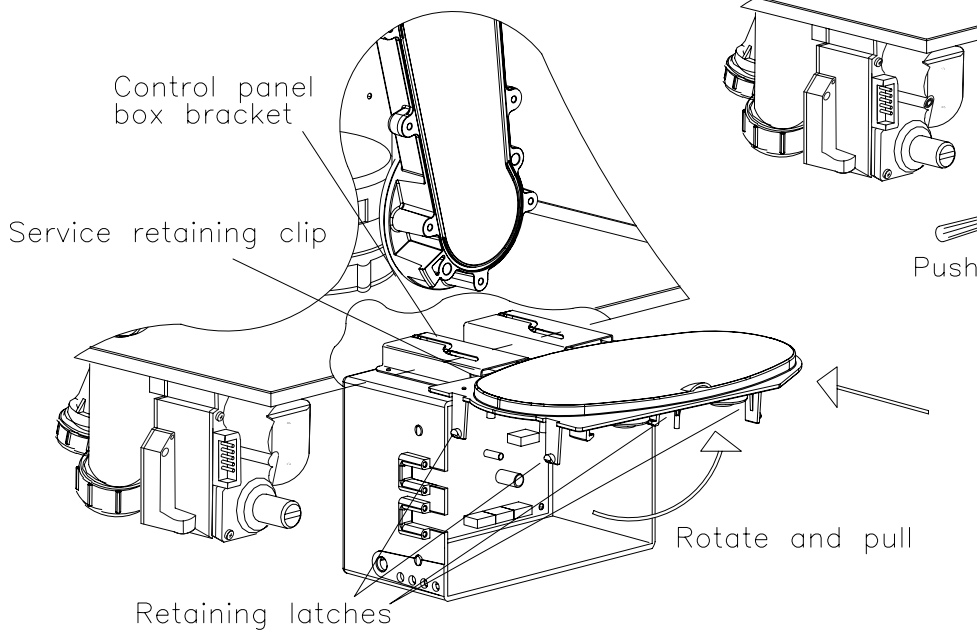


**Fig.52**

**8.18 TO REMOVE/REPLACE DIGITAL DISPLAY BOARD.**

**8.18.1** Remove front casing (sect 8.1.4).  
Remove instrument panel (sect. 8.15.2 to 8.15.3).

**8.18.2** Detach the connectors from control board. Detach the connectors from the board.

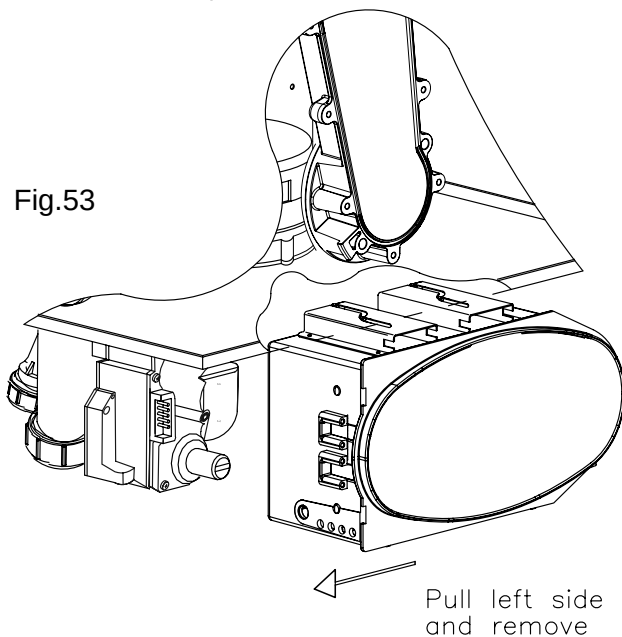
**8.18.3** Detach the Digital Display board from panel instruments by unscrewing the four securing screws.

**8.18.4** Replace in reverse order

**8.19 TO REMOVE/REPLACE THE MAIN SWITCH (Fig. 33).**

- 8.19.1** Remove front casing (sect 8.1.4) and push the retaining latches and remove the instrument panel.

Fig.53



- 8.19.2** Pull off the switch knob. Remove the switch out from the instrument panel by pressing the clamp springs.
- 8.19.3** Detach the wires that connect to the switch, make sure that these wires are later reconnected to the same poles.
- 8.19.4** Replace in reverse order.

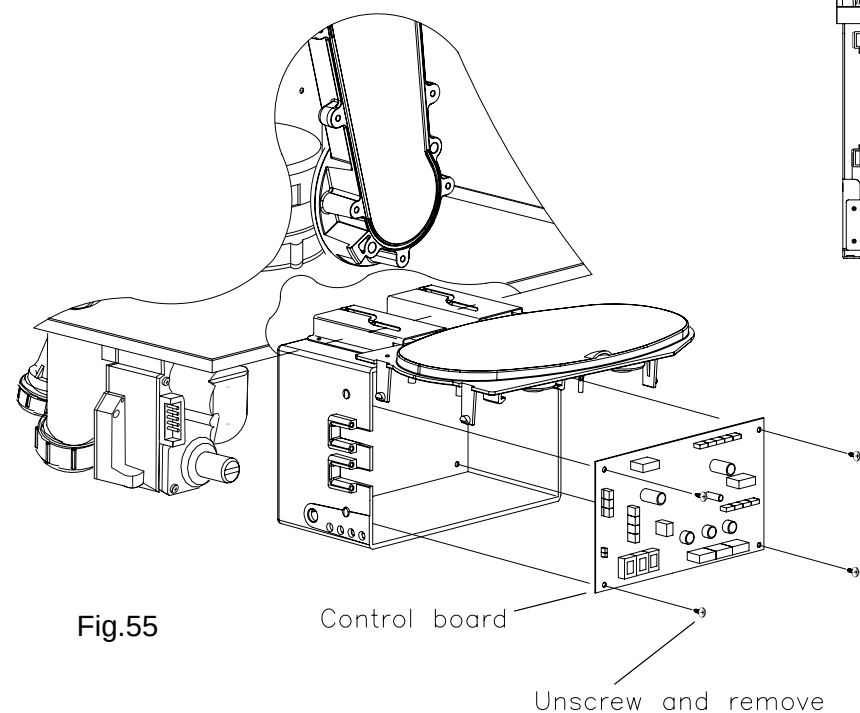


Fig.55

**8.20 TO CLEAN AND REMOVE/REPLACE CONDENSING TRAP (Fig.60).**

- 8.20.1** Remove front casing (sect 8.1.4). Remove the bottom panel and the left side panel.
- 8.20.2** Drop down control box (sec. 8.16).
- 8.20.3** Remove the securing clip and pull out the plastic pipe that connect the condensing trap at the heat exchanger.

- 8.20.4** Unscrew the nut that fasten the condensing trap to the depression chamber and remove it.
- 8.20.5** Replace in reverse order.

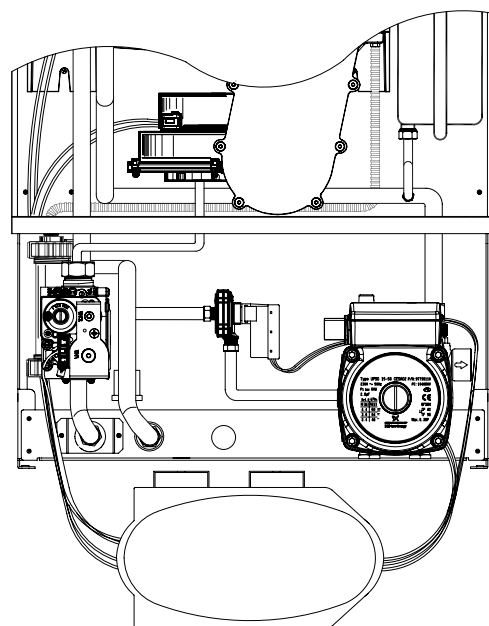


Fig.54

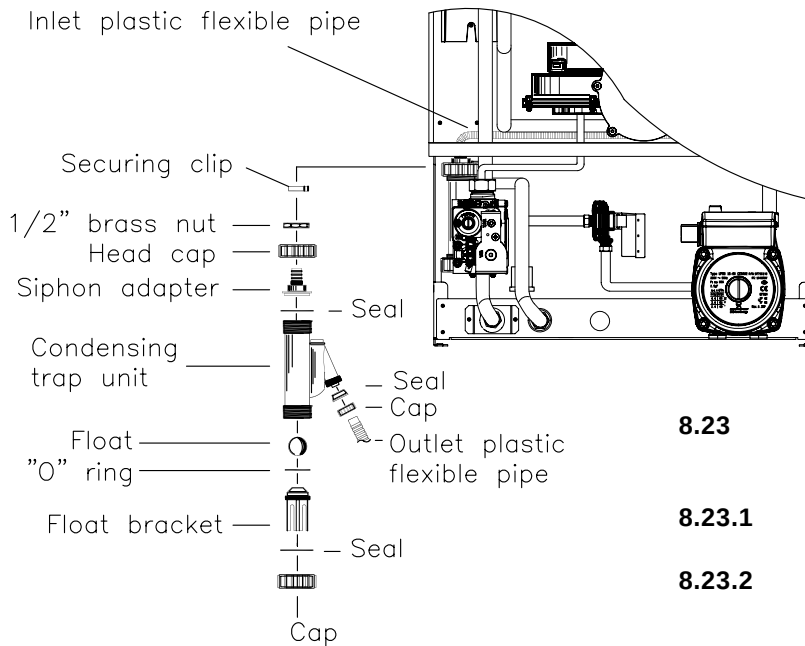


Fig.56

**8.22 TO REMOVE/REPLACE THE WATER PRESSURE GAUGE (Fig. 51).**

- 8.22.1** Remove front casing (sect 8.1.4). Remove the bottom panel and the right side panel.
- 8.22.2** Drop down control box (sec. 8.16).
- 8.22.3** Close the on/off valves for the heating circuit and drain the water at the drain point Fig.35. Remove the retaining clip on gauge pipe Fig. 48.
- 8.22.4** Remove the pressure gauge from the instrument panel by pressing its fastening springs.
- 8.22.5** Replace in reverse order.

**8.23 TO REMOVE/REPLACE FLUE TEMPERATURE SENSOR (Fig. 57).**

- 8.23.1** Remove front casing (sect 8.1.4).
- 8.23.2** Detach the electrical plug and unscrew the sensor.
- 8.23.3** Replace in reverse order.

Rotate and remove  
Flue temperature sensor

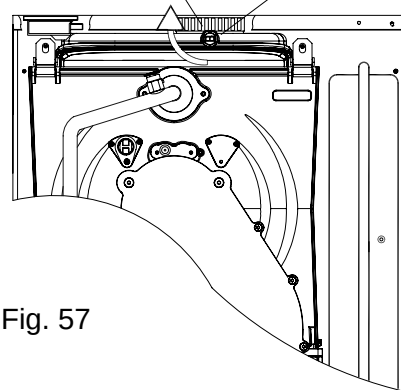


Fig. 57

**8.24 SWITCHING WIRE (Fig. 58).**

- 8.24.1** Remove front and bottom of the casing (sect 8.1.4).
- 8.24.2** Connect the external control connection to switching wire.

**8.25 FAN FREQUENCY CONTROL (Fig. 58).**

- 8.25.1** Remove front casing (sect 8.1.4) and push the retaining latches and remove the instrument panel.
- 8.25.2** Connect the instrument to the JP2 wire connection.

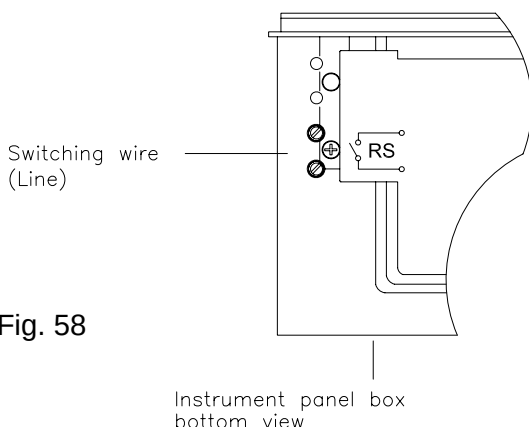
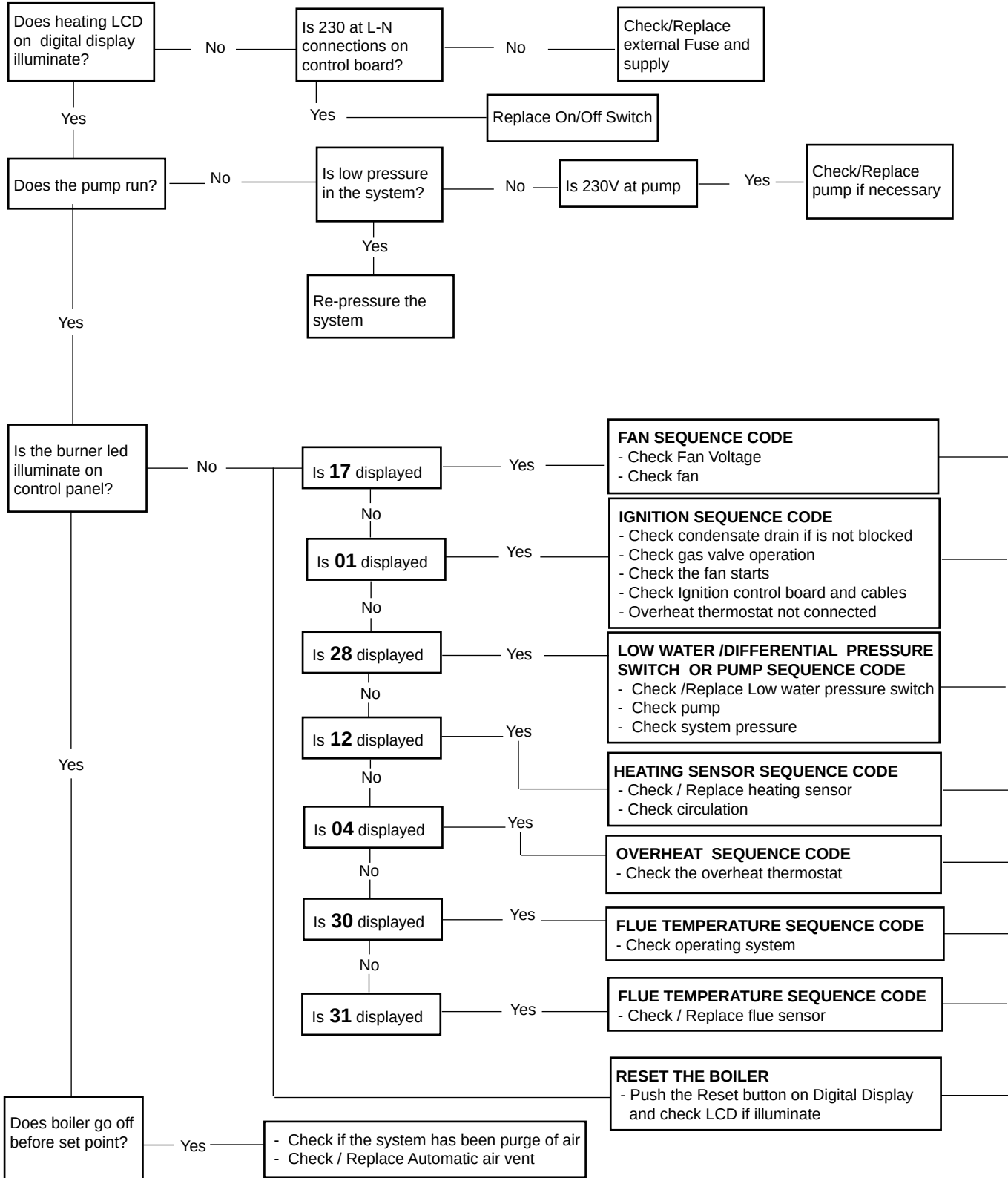


Fig. 58

## SECTION 9 FAULT FINDING

Before trying to operate the boiler make sure that:

- All gas supply cocks are open and the gas supply has been purged of air.
- The heating system pressure is at least 1 bar min to 1.5 bar Max.
- Main Switch on.
- Central Heating control knob to maximum.
- Ensure external controls calling for heat (Room stat/Timeclock/TRV).



**NOTE :** See Section 10 page 51 for LED DISPLAY CODE

## SECTION 10 ELECTRICAL SYSTEM DIAGRAM

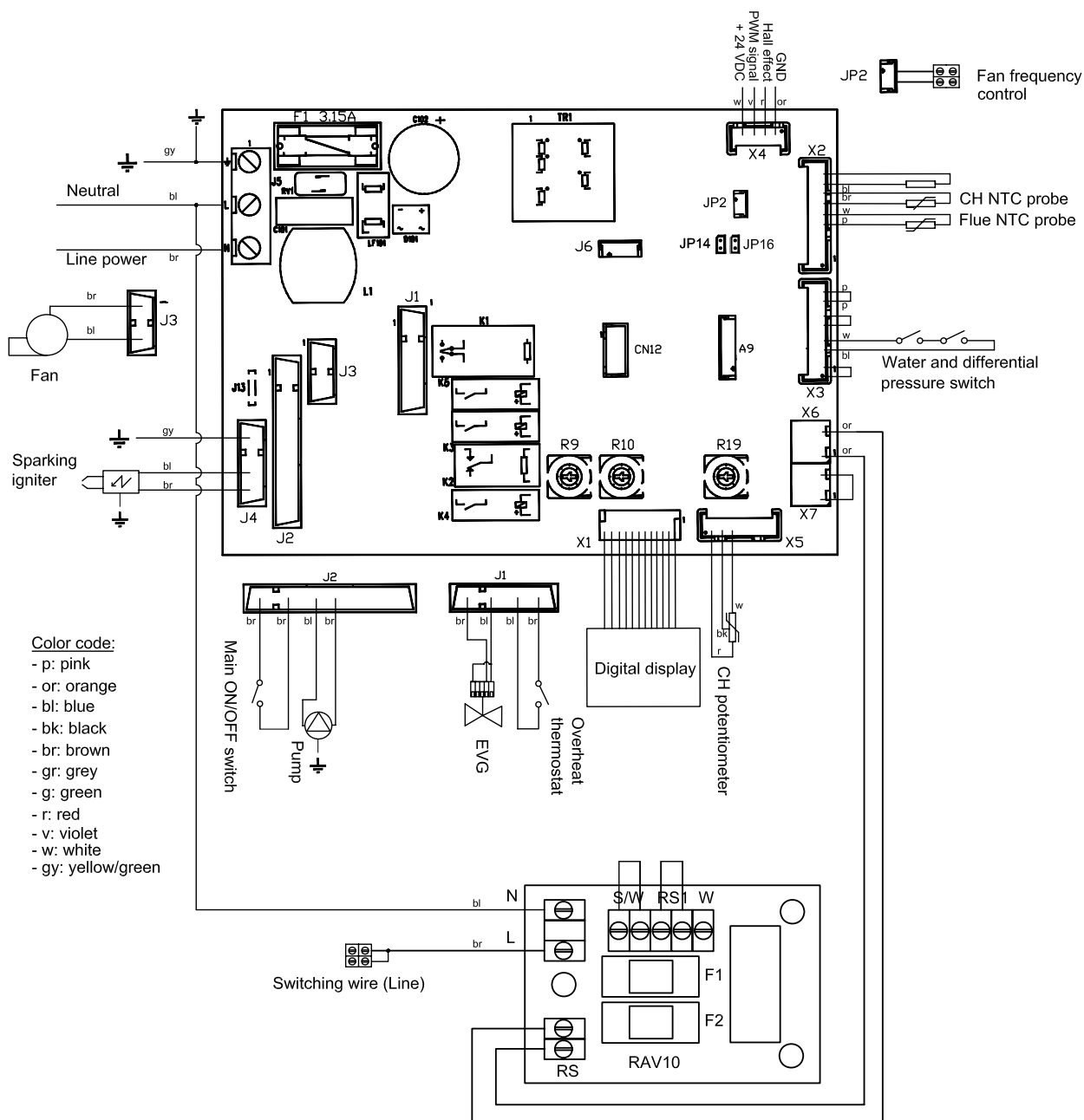
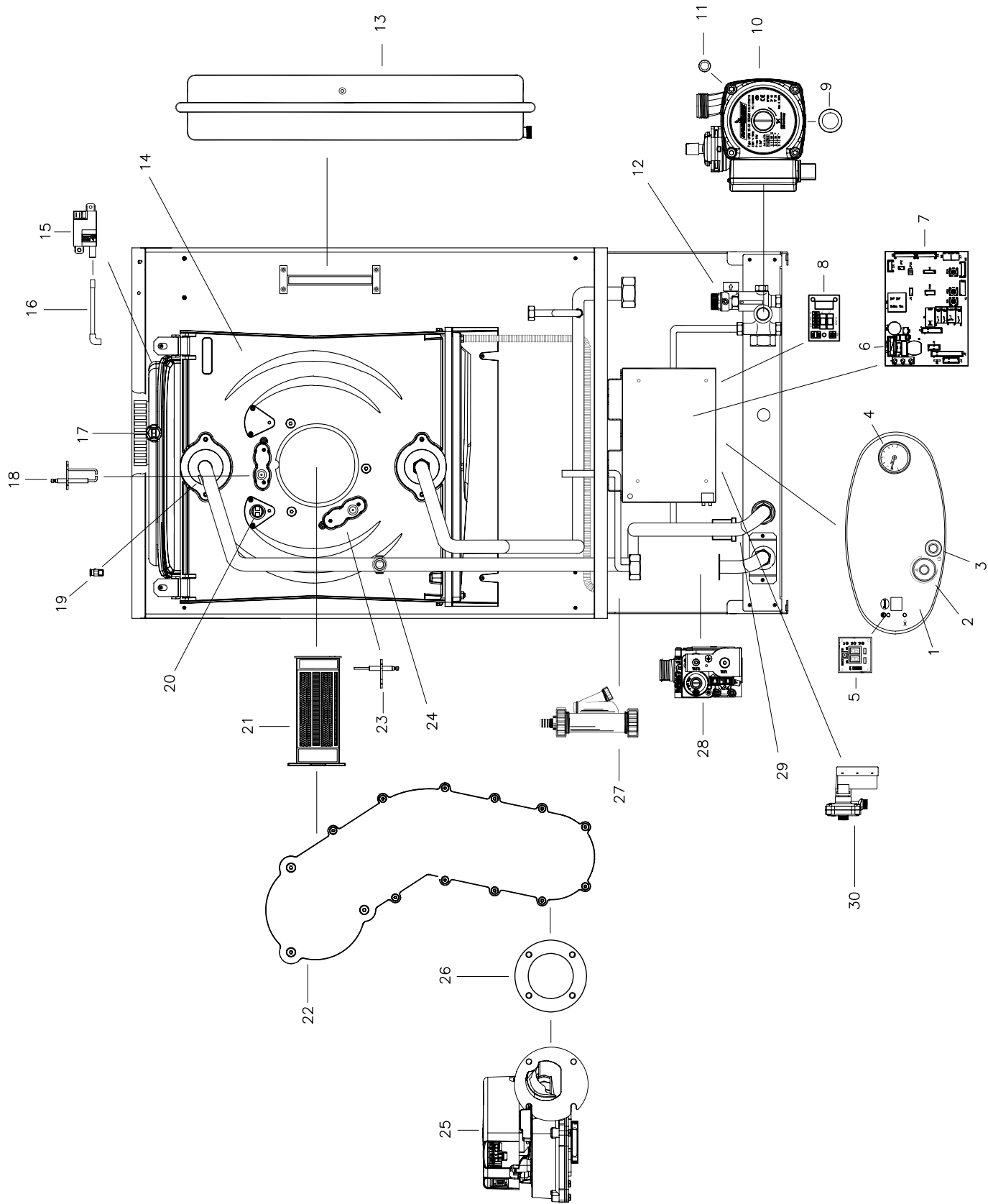


Fig. 59



**THE WHITE BOILER COMPANY**  
**WH SYSTEM 6-24 / 9-32**  
**HIGH EFFICIENCY CONDENSING COMBINATION BOILER**  
**SHORT LIST OF SPARE PARTS AND FLUE ACCESSORIES**

| Pos. | Part. No. | G.C.<br>Part. No. | Description                       |
|------|-----------|-------------------|-----------------------------------|
| 1    | PAN110200 |                   | Instrument panel                  |
| 2    | INT110051 |                   | CH Potentiometer assembly         |
| 3    | POT110050 |                   | Main switch                       |
| 4    | IDR110050 |                   | Water pressure gauge              |
| 5    | CIR110300 |                   | Digital display                   |
| 6    | FUS010150 |                   | Internal fuse 3.15 A              |
| 7    | CIR130050 |                   | Control board                     |
| 8    | CIR130100 |                   | Switching wire board              |
| 9    | ORI110350 |                   | Pump / Manifold "O"ring           |
| 10   | CIR130050 |                   | Circulation pump                  |
| 11   | ORI110150 |                   | Pump / Pressure gauge "O"ring     |
| 12   | VAL010181 |                   | Safety pressure relief valve      |
| 13   | VAS130050 |                   | Expansion vassel                  |
| 14   | SCA130150 |                   | Heat exchanger WH SYSTEM 6-24     |
| 14.1 | SCA130100 |                   | Heat exchanger WH SYSTEM 9-32     |
| 15   | TRA130050 |                   | Spark igniter                     |
| 16   | CAV130050 |                   | Spark cable                       |
| 17   | TER130050 |                   | Temperature flue sensor           |
| 18   | CAN130120 |                   | Spark electrode                   |
| 19   | VAL110200 |                   | Manual air vent                   |
| 20   | TER130050 |                   | Overheat thermostat               |
| 21   | BRU130150 |                   | Burner WH SYSTEM 6-24             |
| 21.1 | BRU130100 |                   | Burner WH SYSTEM 9-32             |
| 22   | COL130050 |                   | Air/gas manifold                  |
| 23   | CAN130100 |                   | Sensing electrode                 |
| 24   | TER050060 |                   | C.H. sensor                       |
| 25   | VEN130050 |                   | Fan                               |
| 25.1 | VEN130100 |                   | Fan/mixer WH SYSTEM 6-24 assembly |
| 25.2 | VEN130150 |                   | Fan/mixer WH SYSTEM 9-32 assembly |
| 26   | GUA110050 |                   | Fan gasket                        |
| 27   | RAC110050 |                   | Condensing trap                   |
| 28   | VAL130050 |                   | Gas valve                         |
| 29   | PRE050101 |                   | Low water pressure switch         |
| 30   | PRE110150 |                   | Differential pressure switch      |
|      |           |                   |                                   |
|      |           |                   |                                   |
|      |           |                   |                                   |
|      |           |                   |                                   |

## Plume Management Kit (page 20)

| Part. No. | Description                      |
|-----------|----------------------------------|
| TER110101 | 1 metre high plume kit           |
| CUR110050 | 45° flue exhaust deflection bend |
| CUR11010  | 90° flue exhaust deflection bend |

## Accessories concentric flue 60/100 (page 25 - Table 4)

| Part. No.  | Description                                |
|------------|--------------------------------------------|
| PR5094110A | Straight flue header / sample point 60/100 |
| PRFE       | Flue Extension 60/100 L1000                |
| PR45FBI    | 45° bend 60/100                            |
| PR90FBI    | 90° elbow bend 60/100                      |
| PR5023016  | Horizontal terminal 60/100                 |
| PR5023016  | Horizontal flue kit                        |
| TER110200  | Vertical flue Terminal                     |

## Accessories concentric flue 80/125 (page 28 )

| Part. No.  | Description                               |
|------------|-------------------------------------------|
| PR5094110A | Straight flue header / sample point 60/10 |
| PRO110300  | Flue Extension 80/125 L1000               |
| RID110050  | 125/80 to 100/60 Flue reducer             |
| CUR110250  | 45° bend 80/125                           |
| CUR110300  | 90° elbow bend 80/125                     |
| TER010050  | Horizontal Flue Terminal 80/125           |
| TER110200  | Vertical Flue Terminal 80/125             |
| TEG060050  | Flashing sleeve/slate                     |

## Accessories eccentric flue 80/80 (page 26)

| Part. No. | Description                      |
|-----------|----------------------------------|
| SDO110050 | Twin flue header F80/80          |
| PRO110200 | Straight pipe L1000 80           |
| CUR110150 | 90° elbow bend 80                |
| CUR110250 | 45° bend 80                      |
| GRI110050 | Air inlet terminal 80            |
| GRI110100 | Exhaust terminal 80              |
| TER060110 | Vertical eccentric flue terminal |

## THE WHITE BOILER COMPANY

a Ravenheat Group Company

**Chartists Way, Morley, Leeds, LS27 9ET**

**Telephone : 0044(0)113 252 7007**

**Tfax : 0044(0)113 238 0229**

**Website : [www.ravenheat.co.uk](http://www.ravenheat.co.uk)**

**E-mail : [sales@ravenheat.co.uk](mailto:sales@ravenheat.co.uk)**

Ravenheat reserves the right to make changes and improvements in our products which may affect the accuracy of the information contained in this leaflet.

## SECTION 12 BENCHMARK COMMISSIONING CHECKLIST DETAILS

| Boiler                                         | Page            | Page                                                             |
|------------------------------------------------|-----------------|------------------------------------------------------------------|
| Make and model .....                           | 8/11            | Burner operating pressure.....n/a                                |
| Appliance serial no. on data badge.....        | Left side panel | Central operating flow temp..... measure and record              |
| <b>Controls</b>                                |                 | Central operating return temp.....measure and record             |
| Time and temperature control to heating.....   | 15/45           | <b>For combination boilers only</b>                              |
| Time and temperature control to hot water..... | 15              | Scale reducer.....18                                             |
| Heating zone valves.....                       | n/a             | Hot water mode                                                   |
| TRV' s.....                                    | 15              | Max. operating burner pressure....measure and record             |
| Auto by-pass.....                              | 15              | Max. operating water pressure.....measure and record             |
| Boiler interlock.....                          | 15              | Cold water inlet temp..... measure and record                    |
| <b>For all boilers</b>                         |                 | Hot water temp..... measure and record                           |
| Flushing to BS7593.....                        | 17              | Water flow rate at max. setting.....measure and record           |
| Inhibitor.....                                 | 17              | <b>For condensing boiler only</b>                                |
| Central heating mode                           |                 | Condensate drain.....29/30                                       |
| Heat input.....to be calculated                |                 | <b>For all boilers: complete, sign &amp; hand over customer.</b> |

**NOTE TO THE INSTALLER: COMPLETE  
THE BENCHMARK COMMISSIONING  
CHECKLIST AND LEAVE THESE  
INSTRUCTIONS WITH APPLIANCE**



For assistance see The White Boiler Company technical helpline:  
telephone: (0113) 252 7007  
fax: (0113) 238 0229  
e-mail: sales@ravenheat.co.uk

# Code Of Practice

For the installation, commissioning and servicing  
of domestic heating and hot water products

Benchmark places responsibilities on both manufacturers and installers.\*

The purpose is to ensure that customers\*\* are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. Installers are required to carry out work in accordance with the following:

## Standards of Work

- Be competent and qualified to undertake the work required.
- Install, commission, service and use products in accordance with the manufacturer's instructions provided.
- Ensure that where there is responsibility for design work, the installation is correctly sized and fit for purpose.
- Meet the requirements of the appropriate Building Regulations. Where this involves notifiable work be a member of a Competent Persons Scheme or confirm that the customer has notified Local Authority Building Control (LABC), prior to work commencing.
- Complete all relevant sections of the Benchmark Checklist/Service Record when carrying out commissioning or servicing of a product or system.
- Ensure that the product or system is left in a safe condition and, whenever possible, in good working order.
- Highlight to the customer any remedial or improvement work identified during the course of commissioning or servicing work.
- Refer to the manufacturer's helpline where assistance is needed.
- Report product faults and concerns to the manufacturer in a timely manner.

## Customer Service

- Show the customer any identity card that is relevant to the work being carried out prior to commencement or on request.
- Give a full and clear explanation/demonstration of the product or system and its operation to the customer.
- Hand over the manufacturer's instructions, including the Benchmark Checklist, to the customer on completion of an installation.
- Obtain the customer's signature, on the Benchmark Checklist, to confirm satisfactory demonstration and receipt of manufacturer's instructions.
- Advise the customer that regular product servicing is needed, in line with manufacturers' recommendations, to ensure that safety and efficiency is maintained.
- Respond promptly to calls from a customer following completion of work, providing advice and assistance by phone and, if necessary, visiting the customer.
- Rectify any installation problems at no cost to the customer during the installer's guarantee period.



\*The use of the word "installer" is not limited to installation itself and covers those carrying out installation, commissioning and/or servicing of heating and hot water products, or the use of supporting products (such as water treatment or test equipment).

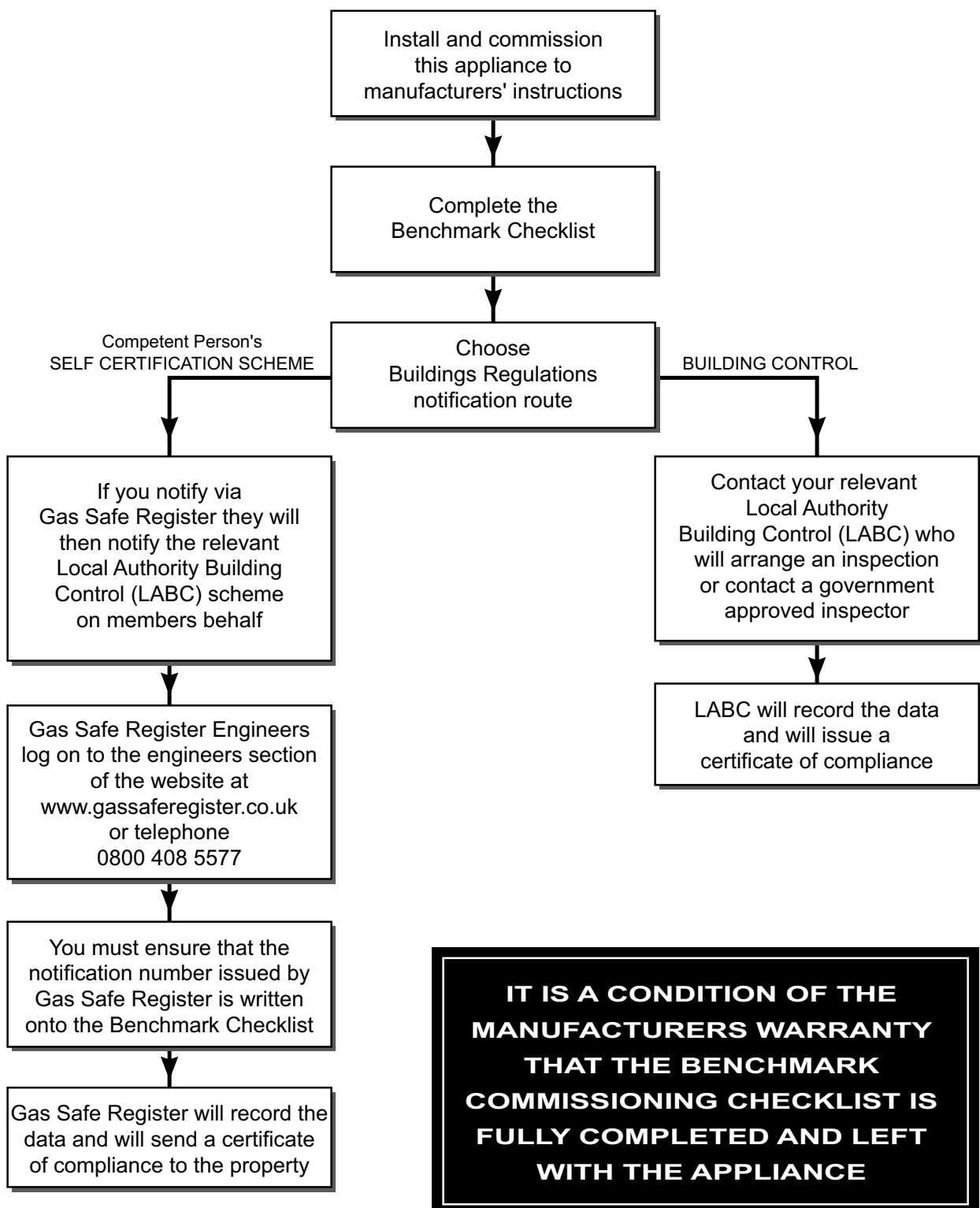
\*\*Customer includes householders, landlords and tenants.

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[www.centralheating.co.uk](http://www.centralheating.co.uk)

# INSTALLER NOTIFICATION GUIDELINES

A change to Building Regulations (England and Wales) requires the installer to notify when installing a heating appliance, as from 1st April 2005.



Commissioning Date \_\_\_\_\_

Building Regulations Notification Number (if applicable)

|                  |          |                          |
|------------------|----------|--------------------------|
| Boiler Interlock | Provided | <input type="checkbox"/> |
|------------------|----------|--------------------------|

What inhibitor was used? Quantity  litres

Central Heating Return Temperature   °C

What type of scale reducer has been fitted?

Water Flow Rate  l/min

If the condensate pipe terminates externally has the pipe diameter been increased and weatherproof insulation fitted? Yes ☐

The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the customer Yes ☐

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

**benchmark**  
COLLECTIVE MARK

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

# Service Record

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

## Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

**Service 1**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 2**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 3**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 4**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 5**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 6**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Operative ID No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 7**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 8**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 9**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

**Service 10**    Date: \_\_\_\_\_

Engineer Name: \_\_\_\_\_

Company Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_