

## Baxi Bermuda BBU 15 HE

### Condensing Back Boiler Unit

These Instructions must be read in conjunction with those for the separate Valor Dimension electric firefront. They include the Benchmark Commissioning Checklist and should be left with the user for safe keeping.

## Natural Gas

Baxi Bermuda BBU 15 HE  
G.C.No. 44 075 09

For use with the following electric firefronts:

Valor Dimension Classica Brass, Pewter or Black BBU Firefront

Valor Dimension Dream Gold, Chrome or Black BBU Firefront

Valor Dimension Innova BBU Firefront

Valor Dimension Regalia BBU Firefront

Valor Dimension Nano Chrome BBU Firefront

Valor Dimension Lyrica BBU Firefront

### The Benchmark Scheme

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit [www.centralheating.co.uk](http://www.centralheating.co.uk) for more information.

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## Building Regulations and the Benchmark Commissioning Checklist

Building Regulations (England & Wales) require notification of the installation of a heating appliance to the relevant Local Authority Building Control Department. From 1 April 2005 this can be achieved via a Competent Persons Self Certification Scheme as an option to notifying the Local Authority directly. Similar arrangements will follow for Scotland and will apply in Northern Ireland from 1 January 2006.

The Health & Safety Executive operates the 'Gas Safe Register', a self-certification scheme for gas heating appliances.

These arrangements represent a change from the situation whereby compliance with Building Regulations was accepted as being demonstrated by completion of the Benchmark Logbook (which was then left on site with the customer).

With the introduction of Self Certification Schemes, the Benchmark Logbook is being withdrawn. However, a similar document in the form of a commissioning checklist and service interval record is incorporated at the back of these instructions.

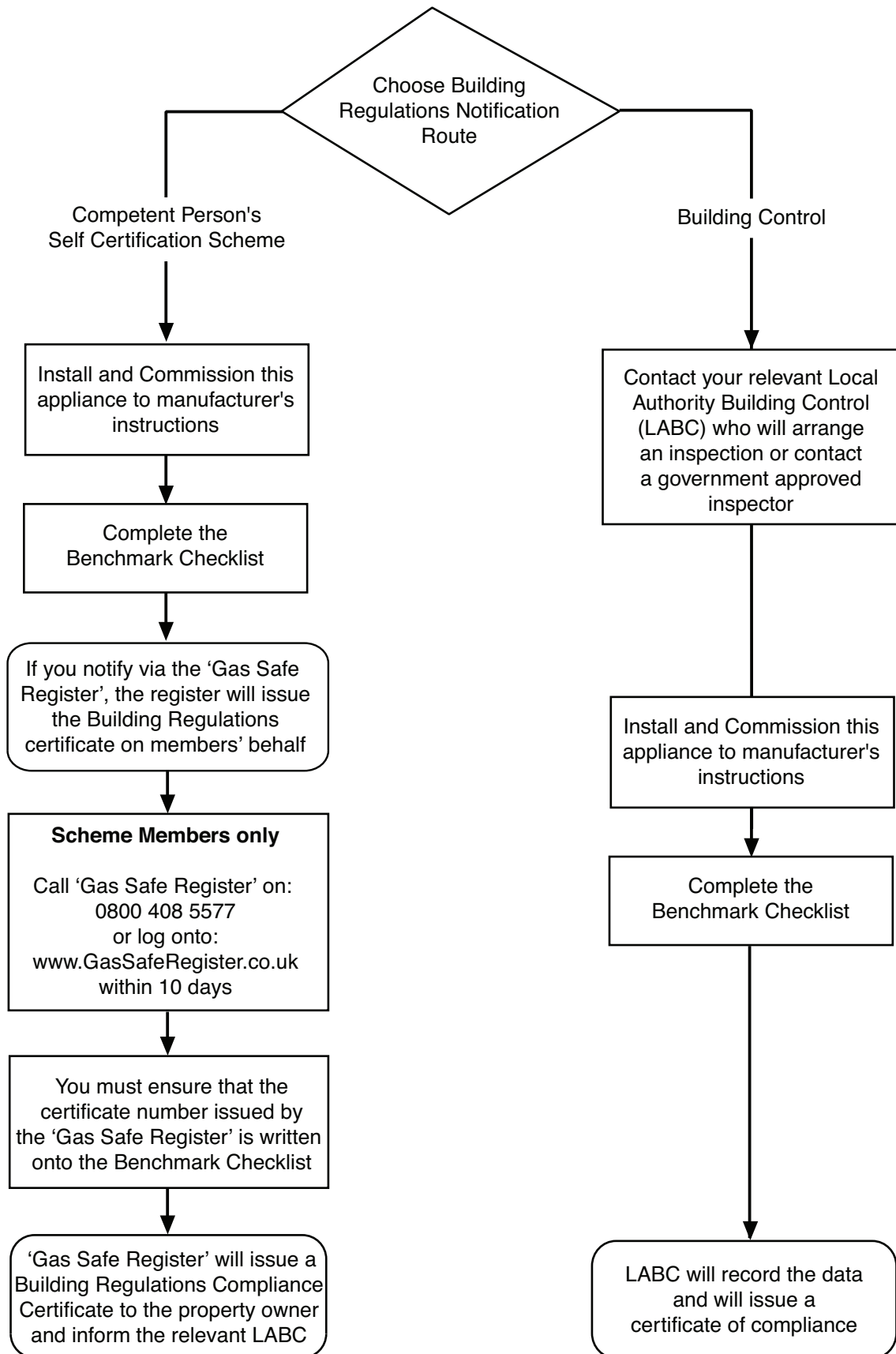
This company is a member of the Benchmark initiative and fully supports the aims of the programme. Its aim is to improve the standards of installation and commissioning of central heating systems in the UK and to encourage the regular servicing of all central heating systems to ensure safety and efficiency.

Building Regulations require that installations should comply with manufacturer's instructions. It is therefore important that the commissioning checklist is completed by the installer. The relevant section of Building Regulations only relates to dwellings. Therefore the checklist only applies if the appliance is being installed in a dwelling or some related structure.

The flowchart opposite gives guidance for installers on the process necessary to ensure compliance with Building Regulations.



This product has an energy rating (A) on a scale of A to G.  
For more information see [www.boilers.org.uk](http://www.boilers.org.uk). This is a certification mark.



### IMPORTANT - Installation, Commissioning, Service & Repair

This appliance must be installed in accordance with the manufacturer's instructions and the regulations in force. Read the instructions fully before installing or using the appliance.

In GB, this must be carried out by a competent person as stated in the Gas Safety (Installation & Use) Regulations.

**Definition of competence:** A person who works for a Gas Safe registered company and holding current certificates in the relevant ACS modules, is deemed competent.

In IE, this must be carried out by a competent person as stated in I.S. 813 "Domestic Gas Installations".

The addition of anything that may interfere with the normal operation of the appliance without express written permission from the manufacturer or his agent could invalidate the appliance warranty. In GB this could also infringe the Gas Safety (Installation and Use) Regulations.

**Warning -** Check the information on the data plate is compatible with local supply conditions.

All Gas Safe registered engineers carry an ID card with their licence number and a photograph. You can check your engineer is registered by telephoning 0800 408 5500 or online at [www.GasSafeRegister.co.uk](http://www.GasSafeRegister.co.uk)

The boiler meets the requirements of Statutory Instrument "The Boiler (Efficiency) Regulations 1993 N° 3083" and is deemed to meet the requirements of Directive 92/42/EEC on the energy efficiency requirements for new hot water boilers fired with liquid or gaseous fuels:-

Type test for purpose of Regulation 5 certified by:  
Notified Body 0087.

Product/Production certified by:  
Notified Bodies 0086.

For GB/IE only.

This company declare that no substances harmful to health are contained in the appliance or used during appliance manufacture.

**The appliance is suitable only for installation in GB and IE and should be installed in accordance with the rules in force, and only used in a suitably ventilated location.**

In GB, the installation must be carried out by a Gas Safe Registered Installer. It must be carried out in accordance with the relevant requirements of the:

- Gas Safety (Installation & Use) Regulations.
- The appropriate Building Regulations either The Building Regulations, The Building Regulations (Scotland), Building Regulations (Northern Ireland).
- The Water Fittings Regulations or Water Byelaws in Scotland.
- The Current I.E.E. Wiring Regulations.

Where no specific instructions are given, reference should be made to the relevant British Standard Code of Practice.

In IE, the installation must be carried out by a competent Person and installed in accordance with the current edition of I.S. 813 'Domestic Gas Installations', the current Building Regulations and reference should be made to the current ETCl rules for electrical installation.

**All systems must be thoroughly flushed and treated with inhibitor (see section 6.2).**

**Codes of Practice**, most recent version should be used

**In GB the following Codes of Practice apply:**

Standard	Scope
BS 6891	Gas Installation.
BS 5546	Installation of hot water supplies for domestic purposes.
BS 5449	Forced circulation hot water systems.
BS 6798	Installation of gas fired hot water boilers.
BS 5440 Part 1	Chimneys.
BS 5440 Part 2	Ventilation.
BS 7074	Expansion vessels and ancillary equipment for sealed water systems.
BS 7593	Treatment of water in domestic hot water central heating systems.

**Also the following standard includes relevant information about builders openings:**

BS 5871 Part 1	Installation of gas fires, convector heaters, fire/back boilers and heating stoves.
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**In IE the following Codes of Practice apply:**

Standard	Scope
I.S. 813	Domestic Gas Installations.
The following BS standards give valuable additional information;	
BS 5546	Installation of hot water supplies for domestic purposes.
BS 5449	Forced circulation hot water systems.

## General

The following advice should be adhered to, from when first handling the boiler to the final stages of installation, and also during maintenance.

Most injuries as a result of inappropriate handling and lifting are to the back, but all other parts of the body are vulnerable, particularly shoulders, arms and hands. Health & Safety is the responsibility of EVERYONE.

There is no 'safe' limit for one man - each person has different capabilities. The boiler should be handled and lifted by TWO PEOPLE.

Do not handle or lift unless you feel physically able.

Wear appropriate Personal Protection Equipment e.g. protective gloves, safety footwear etc.

## Preparation

Co-ordinate movements - know where, and when, you are both going.

Minimise the number of times needed to move the boiler - plan ahead.

Always ensure when handling or lifting the route is clear and unobstructed. If possible avoid steps, wet or slippery surfaces, unlit areas etc. and take special care on ladders/into lofts.

## Technique

When handling or lifting always use safe techniques - keep your back straight, bend your knees. Don't twist - move your feet, avoid bending forwards and sideways and keep the load as close to your body as possible.

Where possible transport the boiler using a sack truck or other suitable trolley.

Always grip the boiler firmly, and before lifting feel where the weight is concentrated to establish the centre of gravity, repositioning yourself as necessary. See the 'Installation' section of these instructions for recommended lift points.

## Remember

The circumstances of each installation are different. Always assess the risks associated with handling and lifting according to the individual conditions.

If at any time when installing the boiler you feel that you may have injured yourself STOP !!

DO NOT 'work through' the pain - you may cause further injury.

**IF IN ANY DOUBT DO NOT HANDLE OR LIFT THE BOILER - OBTAIN ADVICE OR ASSISTANCE BEFORE PROCEEDING !!**

## Working at Height

In order to reduce the number of fatalities and major accidents attributable to working at height, the Health and Safety Executive has introduced comprehensive regulations and guidance that should be followed by all businesses working at height.

The following paragraphs consider some of the main features of the regulations and guidance. This is, however, only a limited summary and it is recommended that all businesses planning on undertaking air source heat pump heating installations obtain a copy of the regulations and guidance issued by the Health and Safety Executive and carefully consider the contents.

The regulations and guidance state that you are required to carry out a risk assessment for all work conducted at height and to put in place arrangements for:

- Eliminating or minimising risks from work at height.
- Safe systems of work for organising and performing work at height.
- Safe systems for selecting suitable work equipment.
- Safe systems for protecting people from the consequences of work at height.

### The regulations and guidance highlight a hierarchy for safe work at height:

- **Avoid** the risk by not working at height if practicable.
- **Prevent** falls. Where it is not reasonably practicable to avoid work at height, you are required to take suitable and sufficient steps to prevent the risk of a fall including selecting the most suitable work equipment (in accordance with the regulations).
- **Mitigate** the consequences of a fall; where the risk of a person or object falling still remains, take suitable and sufficient measures to minimise the distance and consequences of any fall.

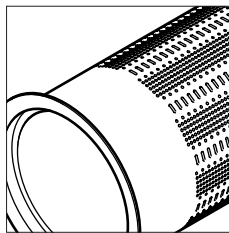
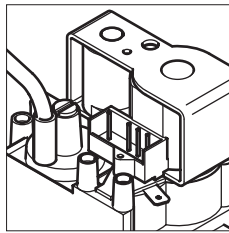
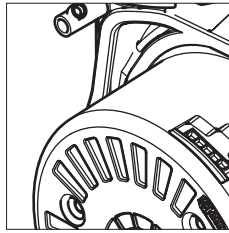
Collective protection measures, such as guard rails on scaffold, should be given priority over personal protection measures, such as safety harnesses.

Within the regulations' framework, you are required to:

- 1) Assess the risk to help you decide how to work safely.
- 2) Follow the hierarchy for safe work at height (i.e. avoid, prevent and mitigate).
- 3) Plan and organise your work properly, taking account of weather conditions and the possibility of emergencies.
- 4) Make sure those working at height are competent.
- 5) Make use of appropriate work equipment.
- 6) Manage the risks from working on or around fragile surfaces and from falling objects.
- 7) Inspect and maintain the work equipment to be used and inspect the place where the work will be carried out for both access and egress.

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## 1.0 Introduction

### 1.1 Description

1. The Baxi Bermuda BBU 15 HE is a central heating boiler designed for installation within a builders opening in the living space of a dwelling.

2. The boiler is a fully automatic gas fired condensing boiler. It is room sealed and fan assisted.

3. The boiler output will automatically modulate between:

Max	Min
15kW	4.6kW
15.7kW (condensing)	4.83kW (condensing)

According to system load

4. It must be fitted in conjunction with one of the available electric firefront units as listed on page 2. The separate electric firefront is intended for hearth mounting. All instructions, fixings etc. needed to fit the firefront are included in the firefront pack.

5. These instructions relate to the central heating boiler section of the appliance (Fig. 1).

6. The appliance is designed for use on NATURAL GAS (G20) only.

7. It can be used on sealed or open vented systems. It must NOT be fitted on any type of gravity system. The boiler is suitable for fully pumped systems ONLY.

8. The boiler is fitted with an integral pump unit for the removal of condensate.

9. The boiler data badge gives details of the model, serial number and Gas Council number and is situated on the front case panel.

10. The boiler is intended to be installed in a residential environment on a governed meter supply only.

11. The boiler must be installed with one of the MULTIFIT vertical concentric Flexi Flue kits available:- 10m kit 710143901 or 12.5m kit 710144001.

12. **All systems must be thoroughly flushed and treated with inhibitor (see section 4.2).**

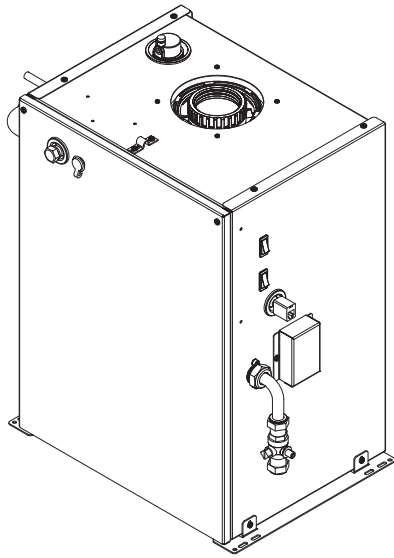


Fig. 1

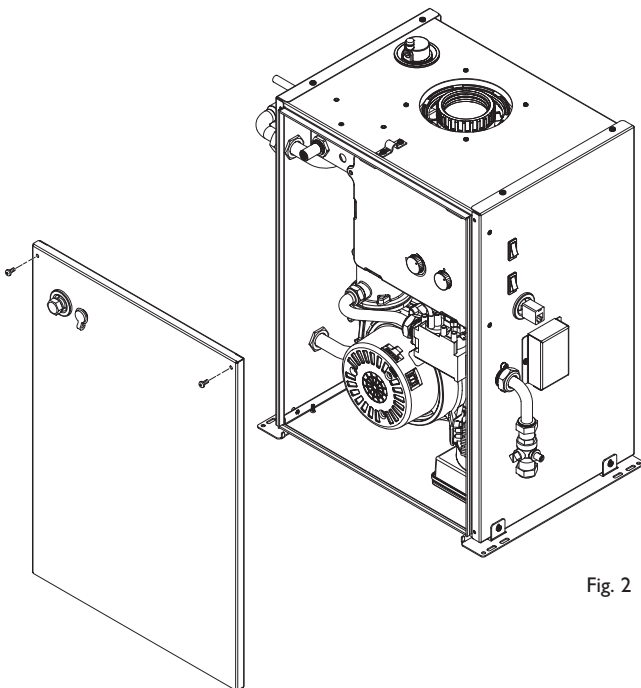


Fig. 2

### 1.2 Contents

1. The boiler pack contains:

- Boiler Unit
- Plumbing Kit
- Condensate Pipe & Elbow
- Fixings Kit
- Literature Pack

2. The flue pack contains:

- Terminal Cap
- Flue Duct Adaptor (inc. seal)
- Air Cowl
- Air Duct Collar (inc. 4 screws)
- Air Duct Clamp
- Closure Plate
- Boiler Concentric Adaptor (inc. 2 seals)
- 10m or 12.5m of Concentric Flexible Duct
- 2 x 60mm grey Seals
- 1 x 100mm red Seal

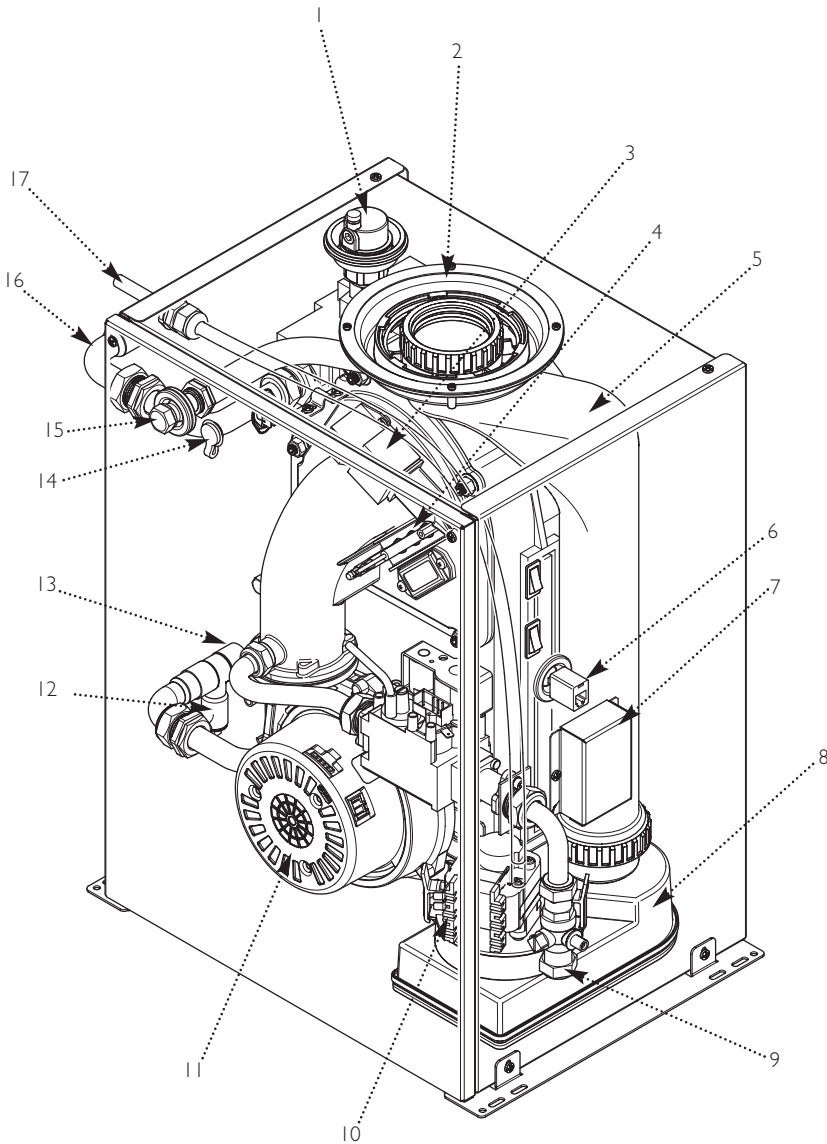
## 2.0 General Layout

### 2.1 Layout (Fig. 3)

1. Automatic Air Vent
2. Flue Connection
3. Spark Generator
4. Spark & Sensing Electrodes
5. Heat Exchanger
6. Boiler Control Connector
7. Control Wiring Connector
8. Condensate Sump
9. Gas Cock
10. Condensate Pump
11. Fan
12. Drain
13. Return Connection
14. Air Sampling Point
15. Flue Sampling Point
16. Flow Connection
17. Condensate Outlet
18. PCB Control Box (shown removed for clarity)
19. Boiler Control (cover open)

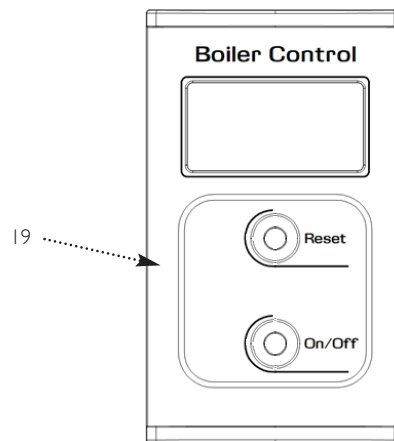
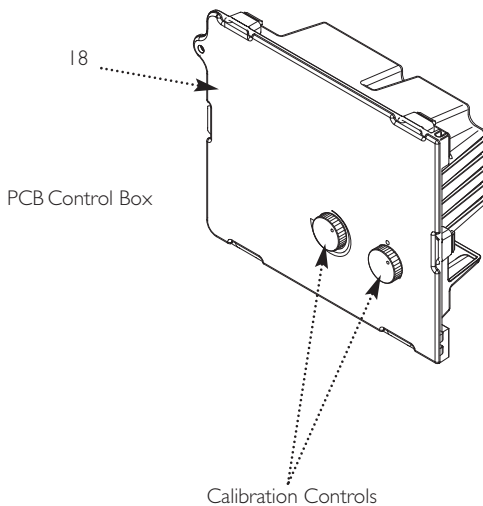
The Boiler Control operates the boiler remotely. This is supplied with the firefront and is fitted, in operation, to the firefront spacer frame.

**IMPORTANT:** To commission the boiler it is necessary to remove the Boiler Control from the firefront packaging and connect it to the boiler at the upper right hand side (item 6).



PCB Control Box  
removed for clarity

Fig. 3





## 2.0 General Layout

### 2.2 Flue Kit (10m & 12.5m) (Fig. 3a)

1. Terminal Cap
2. Flue Duct Adaptor
3. Air Cowl
4. Air Duct Collar
5. Air Duct Clamp
6. Closure Plate
7. Boiler Adaptor
8. 60mm Ø Seal
9. Collar Securing Screws x 4
10. 100mm Ø Seal
11. 60mm Ø Flue Duct
12. 100mm Ø Air Duct
13. 'C' Clip

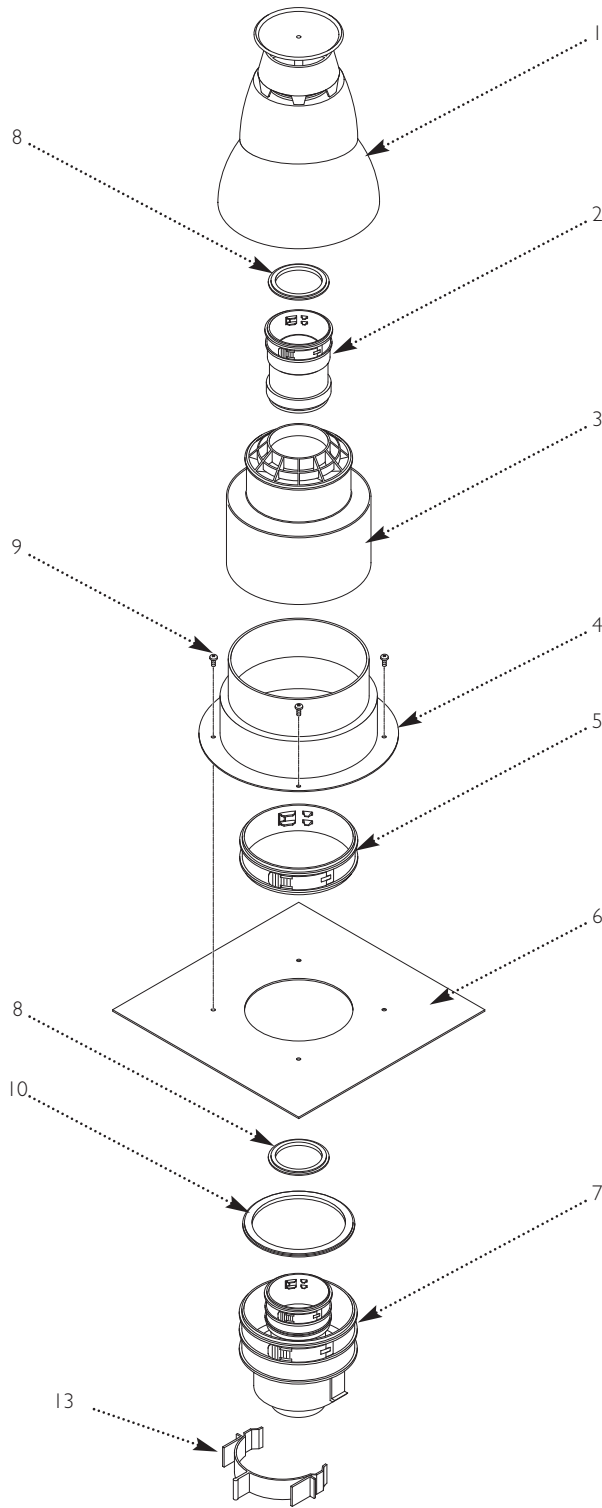
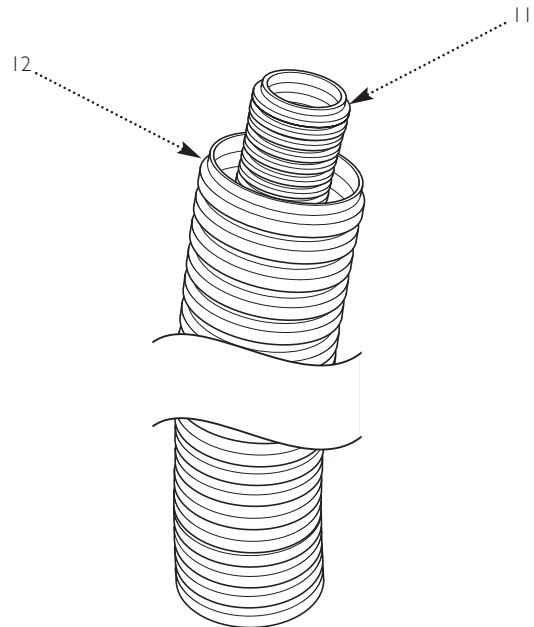


Fig. 3a



## 3.0 Technical Data

### 3.1 Bermuda HE CBBU 15 HE

Appliance Type	C <sub>33</sub>	
Appliance Category	CAT I <sub>2H</sub>	
Inlet Pressure (Natural Gas - G20)	mbar 20	
Injector (Natural Gas - G20)	420 (4.2 mm)	
NO <sub>x</sub> Class	5 (31mg/kWh)	
Heat Input (Net)	Max	Min
kW	15.4	5.0
Heat Input (Gross)	Max	Min
kW	17.1	5.7
Heat Output (Non-Condensing)	Max	Min
kW	15.0	4.88
Heat Output (Condensing)	Max	Min
kW	15.7	5.25
Boiler Set Temperature	Max	Min
°C	75	25
Gas Rate (Natural Gas - G20) (After 10 mins)	Max	Min
m <sup>3</sup> /h	1.63	0.54
Electrical Supply	230V~ 50Hz (Appliance must be connected to an earthed supply)	
Boiler Power Consumption	112W	
Boiler Electrical Protection	IPX0	
Boiler External Fuse Rating	3A	
Connections		
Gas Supply	-	15mm compression
Flow	-	22mm male copper
Return	-	22mm male copper
Weights		
Packaged Boiler Carton	28 kg	
Installation Lift Weight	27 kg	
Flue Length	Max	Min
Metres	12.5	3.0
Dimensions		
Casing Height	- 538mm	
Casing Width	- 383mm	
Casing Depth	- 306mm	

#### Firefront

See the instructions supplied with the firefront for all Technical Data

#### Sedbuk Declaration For Bermuda BBU 15 HE

The seasonal efficiency (SEDBUK) is 90.1%

This value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated has been certified by 0087.

## 4.0 System Details

### 4.1 Water Circulating Systems

1. The appliance is suitable for use on fully pumped systems ONLY which may be sealed or open vented.

2. **The following conditions should be observed at all times:**

- The static head must not exceed 30m of water.
- The static head must not be less than 1m of water.
- The boiler must not be used with a direct cylinder.
- Drain cocks should be fitted to all system low points.
- All gas and water pipes and electrical wiring must be installed in such a way that they do not restrict the servicing of the boiler.
- Position isolating valves as close as possible to the circulating pump.
- There is a drain cock supplied in the plumbing kit.

### 4.2 Treatment of Water Circulating Systems

All recirculatory water systems will be subject to corrosion unless they are flushed and an appropriate water treatment is applied. To prevent this, follow the guidelines given in BS 7593 "Treatment of Water in Domestic Hot Water Central Heating Systems" and the treatment manufacturers instructions.

Treatment must involve the use of a proprietary cleanser, such as Sentinel X300 or X400, or Fernox F3 and an inhibitor such as Sentinel X100 or Fernox MB-I.

Full instructions are supplied with the products, for further information contact Sentinel (0800 389 4670) or Fernox (0870 870 0362).

**Failure to flush and add inhibitor to the system will invalidate the appliance warranty.**

It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the inhibitor manufacturer's instructions. (Test kits are available from inhibitor stockists.)

For information or advice regarding any of the above contact Technical Enquiries 0844 871 1555.

## 4.0 System Details

### 4.3 Pipework

1. The sizes of the flow and return pipes from the boiler should be determined by normal methods according to the requirements of the system.

2. It is recommended that the system is designed for a drop in temperature across the system of between  $11 & 20^{\circ}\text{C}$ .

3. In systems using non-metallic pipework it is necessary to use copper pipe for the boiler Flow and Return. The copper must extend at least 1 metre from the boiler and include any branches. The copper pipe must not be insulated (Fig. 4).

### 4.4 System Controls

1. The system in which the appliance is installed should include a control system.

2. Such a system would comprise a timer control and a separate room and/or cylinder thermostat as appropriate.

3. The boiler should be controlled so that it operates on demand only.

### 4.5 Fully Pumped Open Vent System (Fig. 5)

1. The sizes of the system pipes should be determined by normal methods.

2. The open vent pipe should be a minimum of 22mm and must rise continuously to a point above the feed and expansion tank.

3. The flow pipe from the boiler forms part of the vent pipe. No part of the open vent may contain a valve.

4. Inverted pipe runs must be avoided.

5. On low capacity systems with a maximum available flow rate of less than  $8.3\text{ l/min}$  (temperature differential  $>25^{\circ}\text{C}$ ) an external bypass must be fitted.

6. The bypass must be of the automatic pressure operated type.

### 4.6 Storage Systems

1. For information regarding the use of a Bermuda BBU 15 HE boiler with a storage system, contact the appropriate storage system manufacturer.

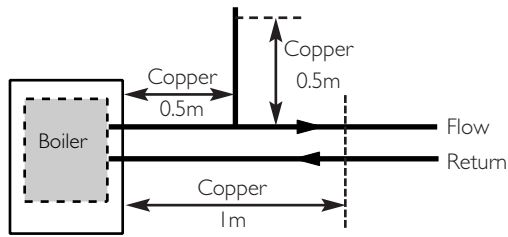
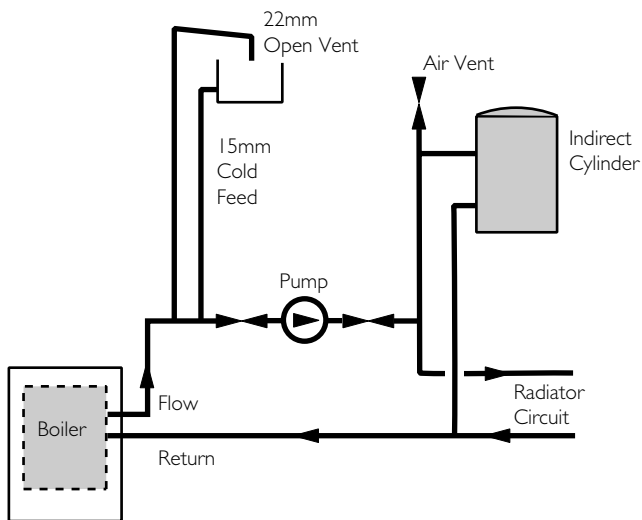


Fig. 4



Fully Pumped System

Fig. 5

## 4.0 System Details

### 4.7 Sealed Systems (Figs. 6, 7 & 8)

1. **SAFETY VALVE** - A safety valve complying with the requirements of BS 6750 Part 1 must be fitted close to the boiler on the flow pipe by means of a horizontal or vertically upward connection with no intervening valve or restrictions and should be positioned to facilitate testing. The valve should be pre-set and non-adjustable to operate at a pressure of 3 bar. It must be arranged to discharge any water or steam through a pipe to a safe outlet position.

2. **PRESSURE GAUGE** - A pressure gauge of minimum range 0-4 bar with a fill pressure indicator must be fitted to the system, preferably at the same point as the expansion vessel in an easily visible position.

3. **EXPANSION VESSEL** - An expansion vessel complying with the requirements of BS 4814 must be fitted to the system by means of a connection close to the inlet side of the circulating pump in accordance with the manufacturers instructions, the connecting pipe being unrestricted and not less than 15mm nominal size. The volume of the vessel should be suitable for the system water content and the nitrogen or air charge pressure should not be less than the system static head (See Fig. 7).

Further details of sealed system design can be obtained from BS 5449 and the British Gas publication entitled 'Specifications for Domestic Wet Central Heating Systems'.

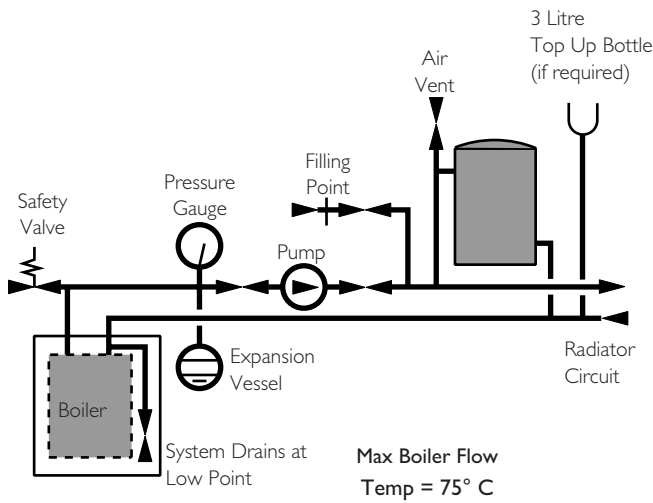


Fig. 6

Vessel Charge Pressure (Bar)	Initial System Pressure (Bar)	Multiply Total Water Content Of System By (Litres)
0.5	0.5	0.067
	1.0	0.112
	1.5	0.207
	2.0	0.441
1.0	1.0	0.087
	1.5	0.152
	2.0	0.330
1.5	1.5	0.125
	2.0	0.265

Fig. 7

Example :- System Volume = 75 litres  
 Vessel Charge Pressure = 1.0 bar  
 Initial System Pressure = 1.5 bar  
 Then :-  $75 \times 0.152 = 11.4$  litres  
 Expansion Vessel Volume

#### NOTE

Where a vessel of the calculated size is not obtainable then the next available larger size should be used.

### 4.7 Sealed Systems (cont)

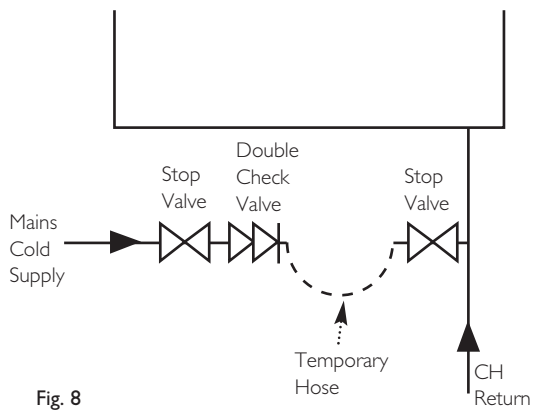


Fig. 8

**4. FILLING POINT** - A filling point connection on the central heating return pipework must be provided to facilitate initial filling and pressurising and also any subsequent water loss replacement / refilling. The sealed primary circuits may be filled or replenished by means of a temporary connection between the primary circuit and a supply pipe provided a 'Listed' double check valve or some other no less effective backflow prevention device is permanently connected at the inlet to the circuit and the temporary connection is removed after use. The filling method adopted must be in accordance with all relevant water supply regulations and use approved equipment.

Your attention is drawn to, for GB: Guidance G24.2 and recommendation R24.2 of the Water Regulations Guide. for IE: the current edition of I.S. 813 "Domestic Gas Installations".

**5. MAKE UP SYSTEM** - A method of replacing water lost from the system should be provided either by means of a make up vessel of not more than 3 litres (5 pints) capacity, mounted above the highest point of the system, or by re-pressurisation of the system.

**6. VENTING** - A method of venting the system during filling and commissioning must be provided by fitting automatic air vents or by venting manually.

**7. HOT WATER STORAGE** - The hot water storage vessel must be of the indirect coil type. All components used in the system must be suitable for operation at 110°C and at the pressure allowed by the safety valve.

## 5.0 Site Requirements

### 5.1 Builders Opening (Fig. 9)

1. The boiler unit is designed to fit within a standard builders opening, the minimum dimensions of which are as shown.

Height	570mm
Width	584mm
Depth	305mm

2. The opening should be soundly constructed of brick, pre-cast concrete or be a proprietary builders opening.

3. **The base of the opening should be sound and non-combustible and must be flat and level.**

4. The base of the builders opening should be at the same height as the finished level of the hearth.

**IMPORTANT: If a false chimney breast is intended to house the boiler, a simulated builders opening, within the breast, must be provided.**

5. The builders opening must not communicate with voids, pipe ducts or spaces other than the room in which the appliance is situated.

### 5.2 Location

1. The appliance must be installed in the living space of a dwelling. It is recommended that it is a ground floor location.

2. Restrictions to the siting of the appliance are covered by BS 5546. The appliance may not be installed in bathrooms or shower rooms, bedrooms or bed sitting rooms.

### 5.3 Fireplace Opening & Surround

1. If a fireplace surround is to be used, it must be centrally placed and have opening sizes as shown in Fig. 9.

### 5.4 Firefront Frame Extension Kit

1. To accommodate the firefront there must be at least 115mm from the surround or finished face to the front of the boiler.

2. If necessary this can be increased by the use of Frame Extension Kits. Each extension increases the effective depth of the opening by 50mm.

3. See the instructions supplied with the firefront for full details.

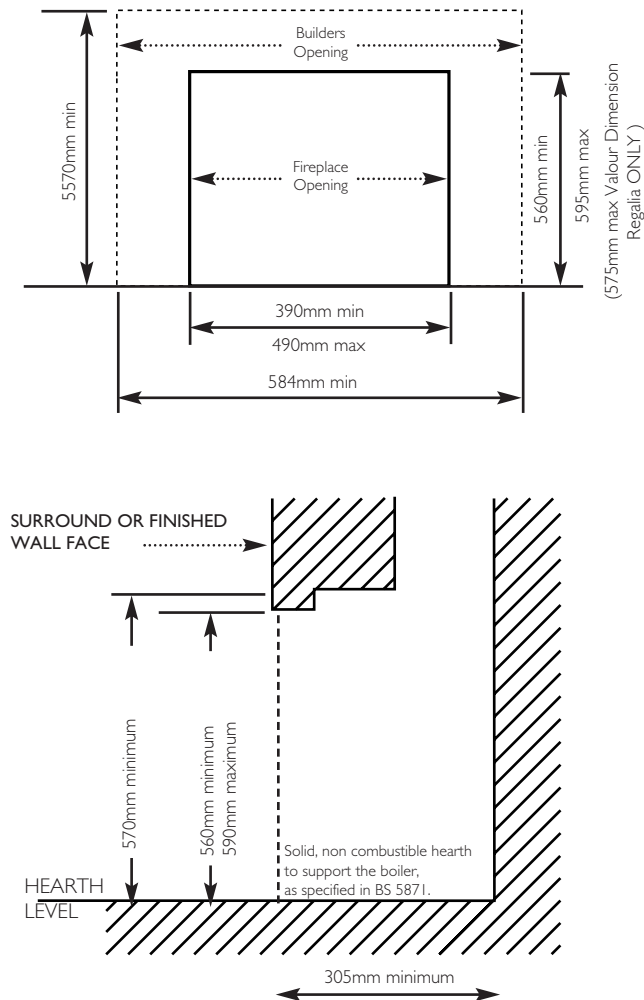


Fig. 9

## 5.0 Site Requirements

### 5.5 Flue

1. The following guidelines indicate the general requirements for installation of flues. For GB recommendations are given in BS 5440 Part 1. For IE recommendations are given in the current edition of I.S. 813 "Domestic Gas Installations".

2. Only one of the two available MULTIIFIT vertical concentric Flexi Flue kits approved for use with the boiler can be used (10m kit 710143901 or 12.5m kit 710144001). Any proprietary flue systems, terminals, adaptors etc. **MUST NOT BE USED**.

3. The available flue kits are intended for installation within an existing chimney. This should be clean and sound, and any other previously installed flue components (liners, dampers etc.) removed.

4. The flue must have a minimum vertical height of 3m and have no bends greater than 45°.

**NO HORIZONTAL RUNS ARE PERMITTED !**

5. The terminal must be sited so that free passage of air across it can occur at all times.

6. It must also be a MINIMUM of 150mm from any other terminals or obstructions (A). When adjacent to windows or openings on pitched or flat roofs it must be at least 600mm away (B). A minimum dimension of 2000mm must be maintained when below windows or openings in pitched roofs (C) (Fig. 10).

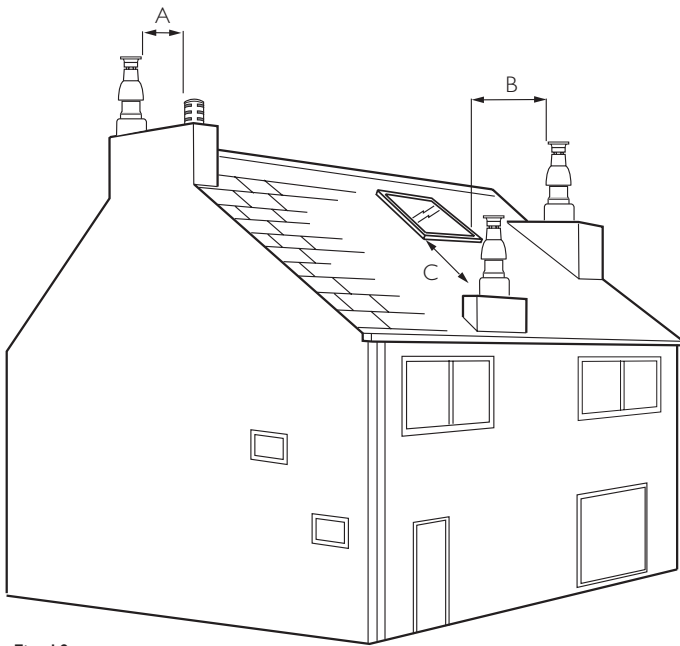


Fig. 10



## 5.0 Site Requirements

### 5.6 Ventilation

1. No ventilation is required for the boiler in the room of installation.

### 5.7 Gas Supply (Fig. 11)

1. The gas installation should be in accordance with relevant standards. In GB this is BS 6891. In IE this is I.S. 813 "Domestic Gas Installations". The connection at the appliance is 15mm copper tail located at the rear of the gas tap.

2. Ensure the pipework from the meter to the appliance is of adequate size. It is necessary to route the gas supply pipe to the right hand side of the builders opening. It must be routed so as not to restrict the installation and servicing of the appliance.

### 5.8 Electrical Supply (Fig. 11)

1. External wiring must be correctly earthed, polarised and in accordance with relevant regulations/rules. In GB this is the current I.E.E. Wiring Regulations. In IE reference should be made to the current edition of the ETCL rules. The mains supply is 230V ~ 50Hz fused at 3A.

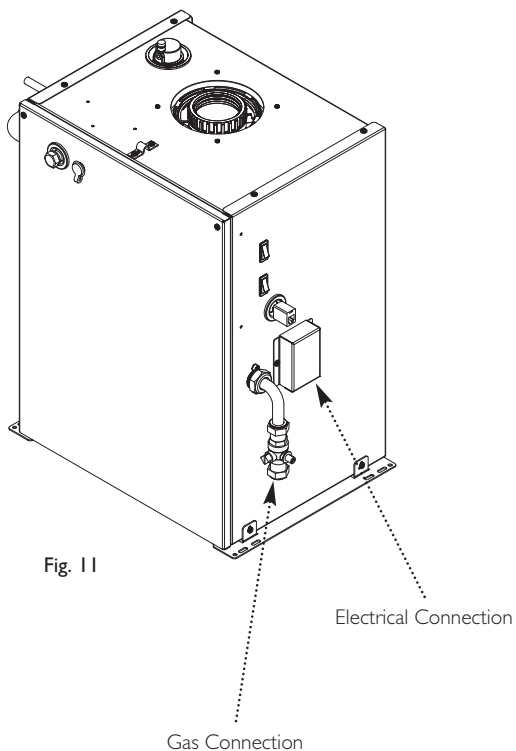
**NOTE:** The method of connection to the electrical supply must facilitate complete electrical isolation of the appliance. Connection may be made via a fused double pole isolator with a contact separation of at least 3mm on all poles and serve the boiler and system controls only. The boiler **MUST NOT** be connected to the same supply as the firefront as their fuse ratings are different and subsequent damage may occur.

2. **IMPORTANT:** The appliance requires a **PERMANENT LIVE** for correct operation !

3. The boiler supply cable within the builders opening should be 0.75mm<sup>2</sup> to IEC 53 code 227 (heat resistant).

4. It is preferable to route the electrical supply cable to the right hand side of the builders opening. If however it must come from the left hand side it must be routed so as not to restrict the servicing of the appliance.

5. The cable must be routed to avoid contact with any part of the boiler.



## 5.0 Site Requirements

### 5.9 Condensate Drain - General

Failure to install the condensate discharge pipework correctly will affect the reliable operation of the boiler.

1. Ensure the discharge of condensate complies with any national or local regulations in force.

**BS 6798 & Part HI of the Building Regulations give further guidance.**

2. If any further drain pipe is required (additional to that supplied with the boiler), it should be run in a proprietary material e.g. PVC, PVC-U, ABS, PVC-C or PP. John Guest 'Speedfit' components are recommended.

3. Metal pipework is NOT suitable for use in condensate discharge systems.

4. Any pipe fitted externally must be kept as short as possible to minimise the potential of freezing and must be insulated using waterproof material.

5. When discharging condensate into a soil stack or waste pipe the effects of existing plumbing must be considered.

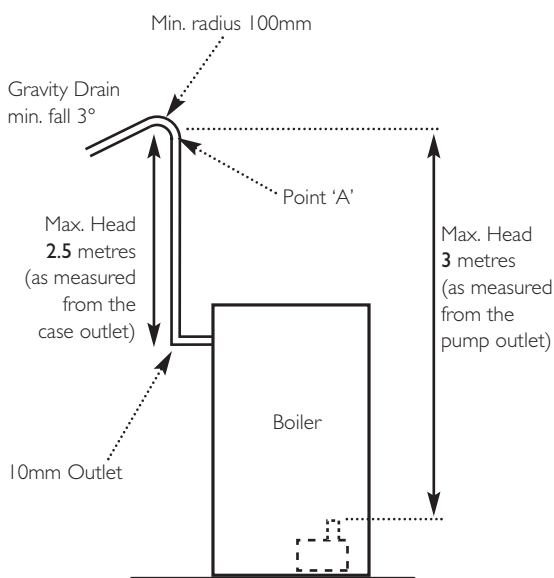


Fig. 12

**Note:** The point of discharge from the pumped length of condensate pipe (point 'A') must be 150mm above the base level of the boiler, whether discharging direct into a drain or into an additional gravity drain.

### 5.10 Condensate Disposal (Fig. 12)

1. This boiler incorporates an automatic pumped condensate system. The pump is submerged in a sump assembly and is activated by the discharge float switch. A second (safety) float switch is fitted.

2. The pump has an **effective head of 3 metres**. The condensate case outlet connection is positioned at the top left of the boiler (approximately 0.5 metres above the pump). It is 10mm diameter plastic.

3. 3.5 metres of flexible 10mm condensate discharge pipe and a 10mm push fit elbow are supplied with the boiler.

4. The 10mm pipe can be routed to a maximum of 2.5 metres vertically as measured from the outlet (equivalent to the total available head of 3 metres) and then discharge via gravity or be routed horizontally.

5. A combination of vertical and horizontal runs is permissible, but it is recommended that the total length of horizontal runs is kept to a maximum of approximately 1 metre. This does not affect the maximum permitted vertical dimension.

6. The pipe must be adequately supported, either using suitably spaced clips or run within larger diameter pipe. When using clips take care not to deform the pipe.

7. When routing the pipe through a wall it must be suitably sleeved. Also the pipe must not be exposed to sources of heat, and should be protected in locations where it may be damaged.

8. The pipe should be routed so that any sharp bends, dips and loops are avoided. A minimum radius of 100mm is recommended for any bends. No slope is necessary and air breaks are not required on the pumped part of the run.

9. Any part of the condensate drain system that is outside the dwelling, or in an unheated part of it must be at least 21.5mm diameter and suitably insulated.

## 5.0 Site Requirements

### 5.10 Condensate Disposal (cont.)

9. Ensure that the condensate can discharge freely (without blockage or restriction of the pipe) into the drain.

10. Examples are shown of condensate pipe methods of termination:-

- i) via an internal discharge branch (e.g. sink waste) - Fig. 13.
- ii) to an internal or external soil and vent pipe - Fig. 14.
- iii) to a drain or gully - Fig. 15. Ensure that the condensate can discharge freely (without blockage or restriction of the pipe) into the drain.
- iv) to a soakaway - Fig. 16.

Termination via internal discharge branch e.g. sink waste - downstream

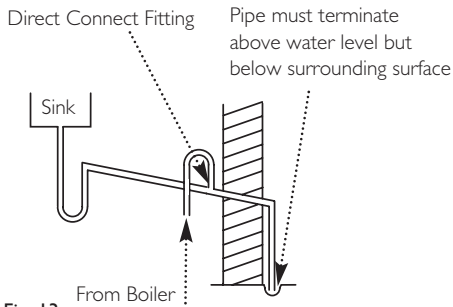
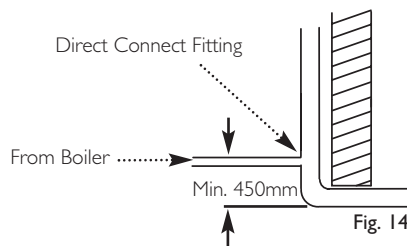


Fig. 13

Termination to an internal soil and vent pipe



Termination to a drain or gully

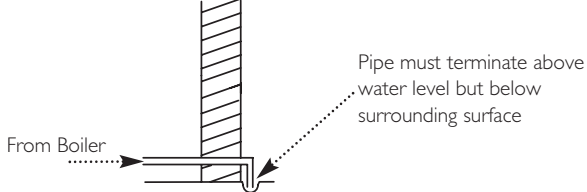
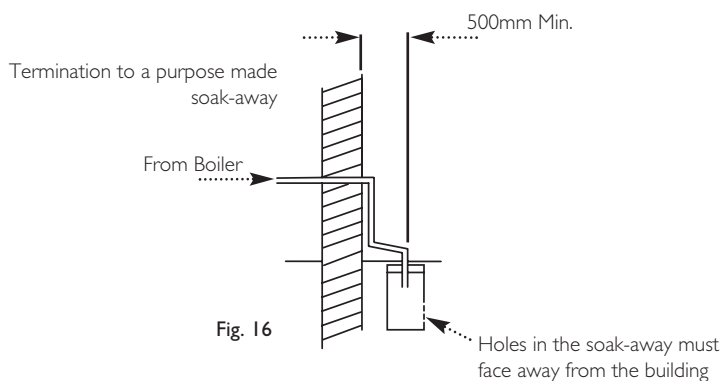


Fig. 15



### 5.11 Condensate Pump Operation

1. The pump operates for 2 seconds when mains voltage is applied to the boiler, e.g. when the power has been interrupted and then reinstated.

2. If the boiler reset rocker switch has been operated the pump will run also for 2 seconds.

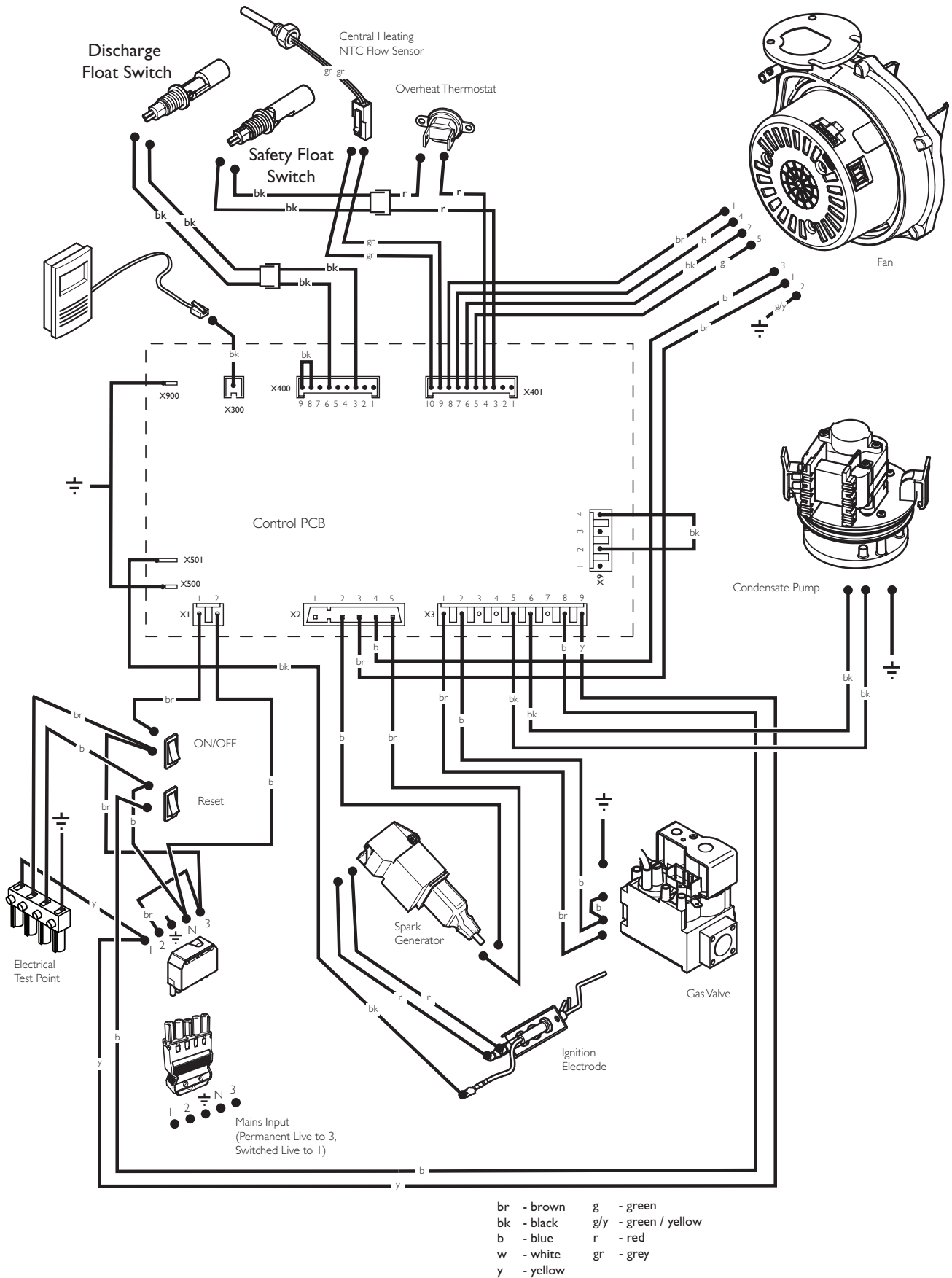
3. When the level of condensate in the sump is sufficient to activate the discharge float switch the pump will run for 7 seconds, during which time about 0.6 litres of condensate will be discharged.

4. In the event of condensate not being discharged the safety float switch will operate when the volume of condensate in the sump reaches 1.05 litres. Once the safety float switch has been activated the boiler will lockout.

5. The total volume of the sump is 1.5 litres.

## 6.0 Boiler Internal Wiring

### 6.1 Boiler Internal Illustrated Wiring Diagram



## 7.0 Installation

### INSTALLATION SEQUENCE

There are 4 main elements to the installation of the Baxi Bermuda BBU 15 HE:-

- Preparation of pipework & opening
- Inserting the flue into the chimney
- Siting & fixing the boiler
- Fitting the terminal assembly

The sequence in which these are performed may depend upon various factors beyond the scope of these instructions. The above list is intended as a guide based on a typical installation.

It is not necessary to open the firefront pack until the boiler and flue are installed, and the boiler is ready to be commissioned. The firefront pack includes full instructions.

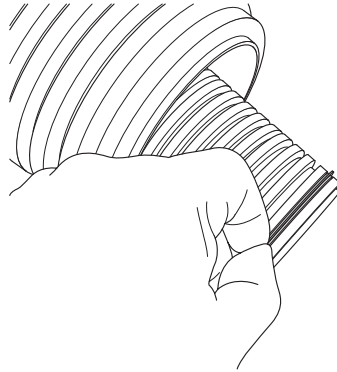


Fig. 17

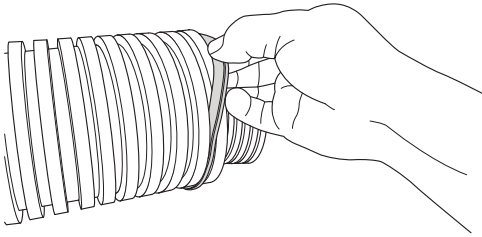


Fig. 18

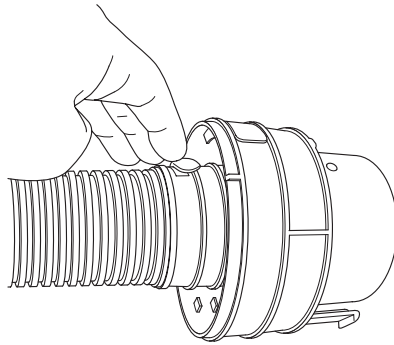


Fig. 19

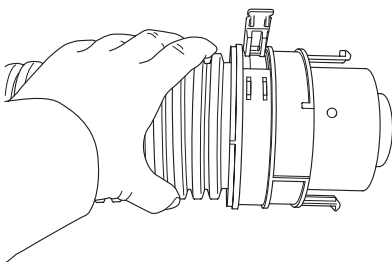


Fig. 20

### 7.1 Initial Preparation

1. Remove the outer carton from the boiler pack. Discard the packing pieces and remove the fitting kit.
2. Ensure that the base of the builders opening is clean and level.
3. Complete any pipework installation and routing of electrical cables within the builders opening that may be difficult once the boiler is in place.

### 7.2 Flue System

1. The actual length of flue (as opposed to the vertical distance from the boiler top to the chimney outlet) **MUST** be established before commencing.
2. The flue must have a minimum vertical height of 3m and have no bends greater than 45°. **NO HORIZONTAL RUNS ARE PERMITTED!**
3. Depending on the actual flue length it may be beneficial to shorten the flue at this point to enable easier handling.
4. Take one of the 60mm lip seals supplied and fit to the first groove in the flue duct. Also fit the 100mm lip seal to the air duct. (Figs. 17 & 18).

**NOTE:** Talcum powder may be used to ease fitting of the adaptors over the seals. **DO NOT** use oil, grease or soap.

5. Unfasten the clips on the boiler adaptor and insert the end of the flue duct with the seal into the 60mm socket. Ensure the seal is positioned past the clips, then engage the clips over the larger diameter 'rib' on the duct (Fig. 19).
6. Repeat the process for the 100mm air duct (Fig. 20)

## 7.0 Installation

### 7.2 Flue System (cont.)

8. It is recommended that the Pull Cone Flue Adaptor (part no. 720111801) is used as shown to ease the fitting of the flue into the chimney and prevent damage to the adaptor.

9. The cone has two internal lugs that engage on the boiler adaptor in a bayonet action (Figs. 21 & 22).

10. A suitable weight should then be tied to the guide rope fixed to the cone. The weight can then be passed into the chimney and will draw the guide rope down (Fig. 23).

11. Once the Pull Cone is visible in the builders opening it can be removed. It can be re-used indefinitely on other installations.

Note: It is recommended that the boiler is installed at this point. See Sections 8.3 to 8.7

12. Remove the plastic plug from the boiler flue outlet. Grasp the adaptor and locate it into the boiler, ensuring the two large barbs lock into position under the boiler top panel (Fig. 24) Fit the 'C' clip to the adaptor to secure the flue. **It must fit into the barbs and clip securely into place** (Fig. 24a).

13. There will now be an excess of flue and air duct protruding from the chimney.

14. Cut the excess concentric ducts to leave approximately 300 to 500mm protruding from the chimney and pass the square closure plate over the air duct (Figs. 25 & 26).

15. Cut the 100mm air duct ONLY that 5 'ribs' are above the level of the chimney, taking care not to damage the 60mm flue duct.

16. In a similar way to fitting the boiler adaptor fit the air duct clamp to the air duct. This will prevent the duct falling back into the chimney (Fig. 27).

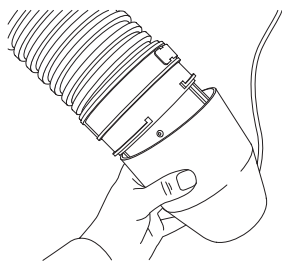


Fig. 21

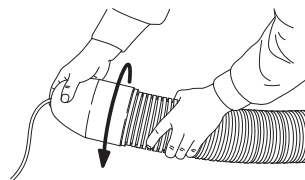


Fig. 22

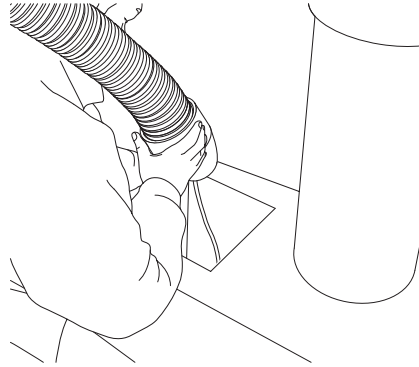


Fig. 23

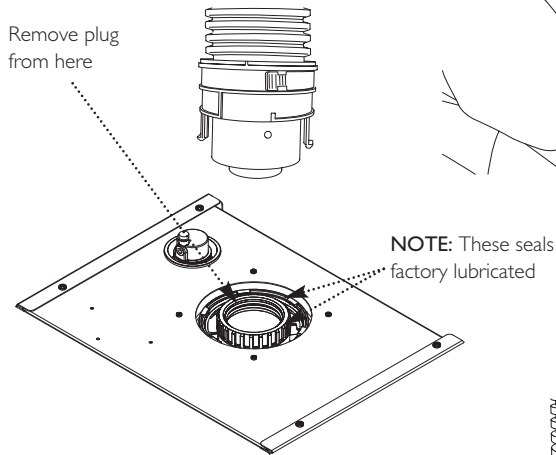


Fig. 24

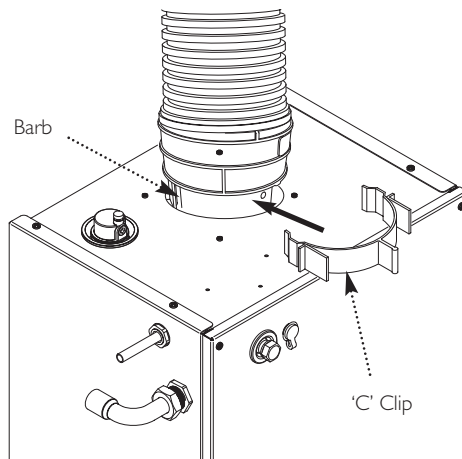


Fig. 24a

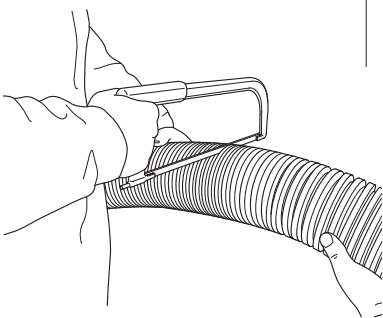


Fig. 25

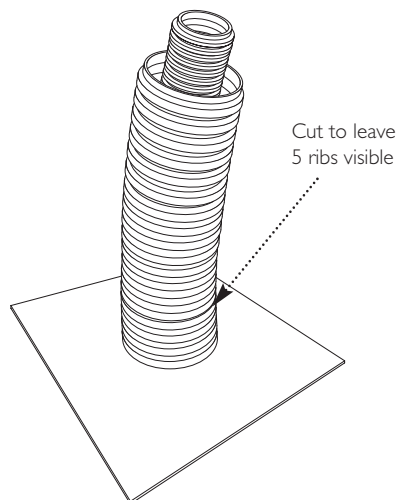


Fig. 26

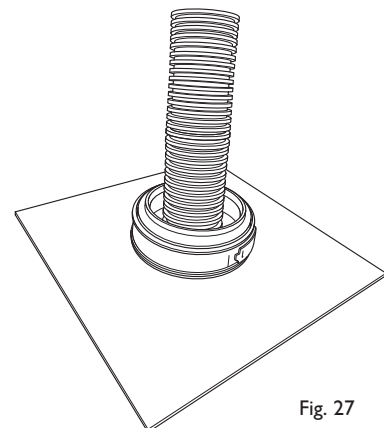


Fig. 27

## 7.0 Installation

### 7.2 Flue System (cont.)

16. Pass the air duct collar and air cowl over the 60mm flue duct (Fig. 28) and secure the collar to the closure plate with the screws supplied (Fig. 29). The air cowl will fit snugly over the collar.

17. Cut the protruding 60mm flue duct down so that 5 ribs are visible and fit the remaining 60mm lip seal into the first groove (Fig. 30). The flue duct adaptor can now be fitted in the same manner as the boiler adaptor (Fig. 31).

18. Fit the terminal cap over the flue duct adaptor and air cowl. Once the cap is clipped into position it cannot be removed easily without damage (Fig. 33).

19. Cement over the closure plate and air duct collar to a depth of approximately 100mm. Consideration should be given to the potential accumulation of snow in this area, and the possibility of it blocking the air inlet (Fig. 34).

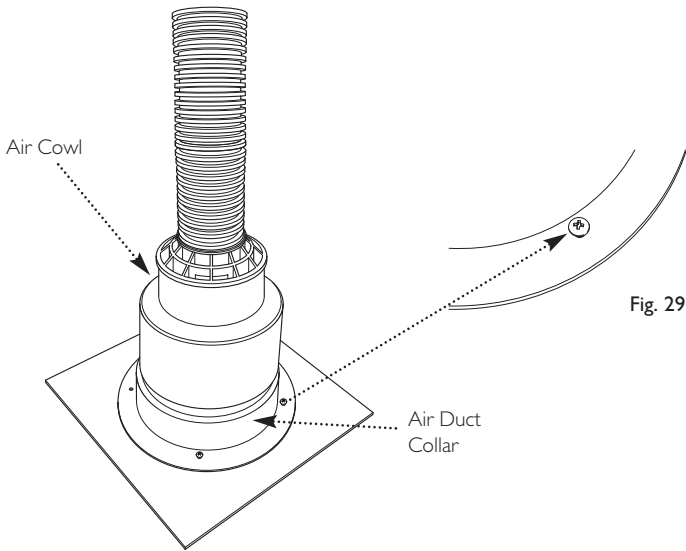


Fig. 28

Fig. 29

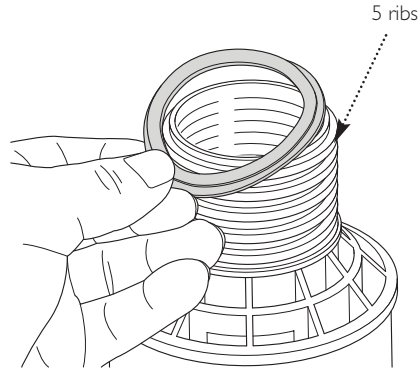


Fig. 30

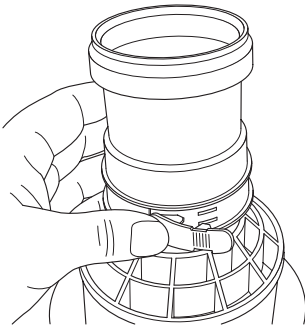


Fig. 31

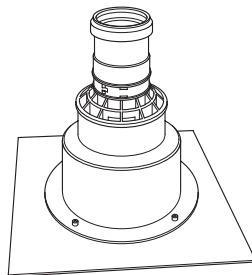


Fig. 32

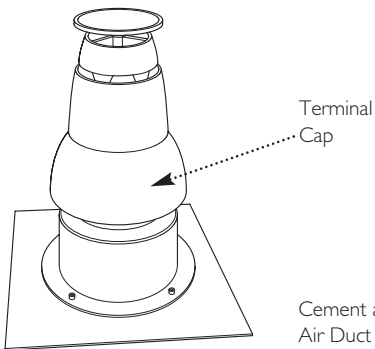


Fig. 33

Terminal Cap

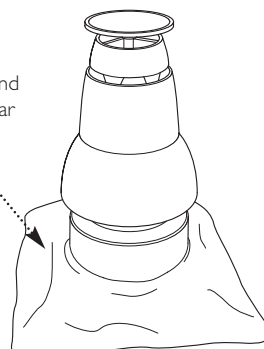


Fig. 34

## 7.0 Installation

### 7.3 Siting the Boiler

**IMPORTANT** - This product should be lifted and handled by two people. Stooping should be avoided and protective equipment worn where necessary. Carrying & lifting equipment should be used as required, e.g. when installing on another floor.

1. Lift the boiler from the packing base and place into the opening.
2. Align the boiler centrally as far back in the opening as possible, and ensure the distance between each side and the opening is equal. Check that the boiler is level.
3. Mark the hearth through two of the slots in the base (Fig. 35). Remove the boiler and drill the hearth. Insert suitable plugs. Replace the boiler & check the alignment within the opening. Secure the boiler with suitable screws.

### 7.4 Water Connections

1. The boiler has one return and one flow connection. The flow is the upper connection. It is essential the flow and return pipes are connected correctly (Fig. 36).

### 7.5 Gas Connection

1. Connection to the gas supply is a 15mm compression fitting on the gas cock. The gas supply pipe must be routed from the right hand side.
2. The positioning of the gas supply pipe must not restrict the servicing of the boiler or installation of the firefront.

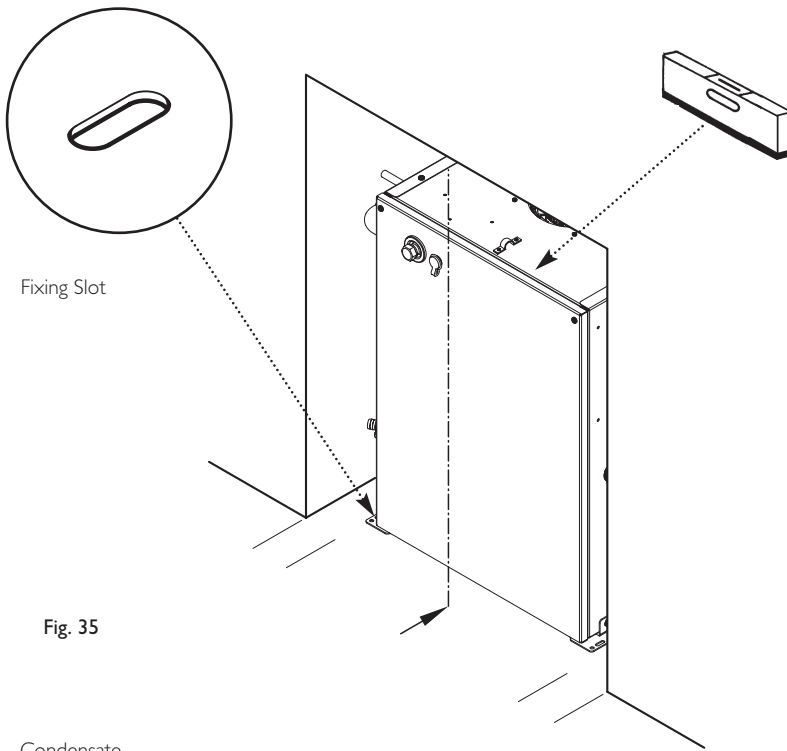
### 7.6 Electrical Connection

1. The boiler requires an electrical supply from the heating controls system.

**WARNING:** The appliance must be earthed. The input cable for the appliance should be 0.75mm<sup>2</sup> to IEC Code 227 (heat resistant). The system external controls and the boiler must be supplied by the same isolator. The boiler **MUST NOT** be connected to the same supply as the firefront as their fuse ratings are different.

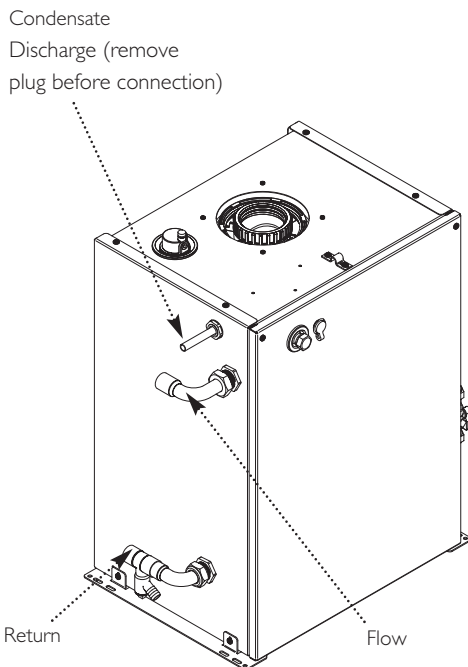
### 7.7 Making the Electrical Connection

1. Take the 5 pin plug from the boiler fitting kit, remove the securing screws and hinge the cover open.
2. Route the mains inlet cable under the cable clamp and connect Permanent Live, Neutral & Earth to 3, N &  $\perp$  respectively. Ensure that the Earth lead is longest.
3. Connect the switched output from the system external control system to terminal 1.
4. Refit the cover, tighten the screws to secure the cable and connect the plug to the one on the boiler.



Fixing Slot

Fig. 35



Condensate Discharge (remove plug before connection)

Return Flow

Fig. 36

**IMPORTANT:** The appliance requires a PERMANENT LIVE supply for correct operation !

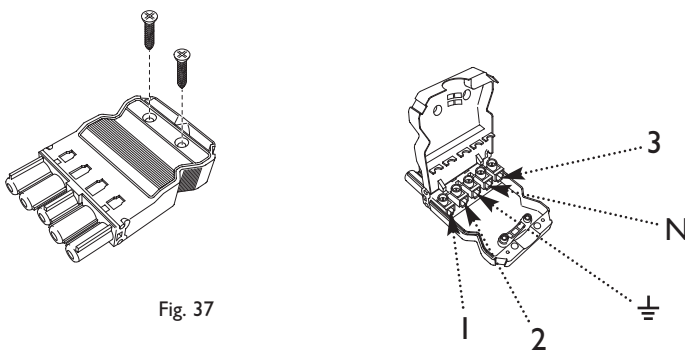


Fig. 37



## 8.0 Completion & Commissioning

### 8.1 Completion

1. Seal off any secondary openings within the builders opening after wrapping the gas and water pipes through the brickwork and within the opening itself. (B.S. 5871 Part 1).
2. Take the Boiler Control from the firefront packaging and connect it to the boiler (Fig. 38).

### 8.2 Commissioning the Boiler

1. Reference should be made to BS 5449 Section 5 when commissioning the boiler.
2. At the time of commissioning, complete all relevant sections of the Benchmark Checklist at the rear of this publication.

**IMPORTANT:** The heat exchanger air vent on top of the boiler (Fig. 38) **MUST** be opened before filling the primary system.

3. Ensure all valves in the water system are turned on.
4. The system must be flushed in accordance with BS 7593 (see Section 5.2) and the flushing agent manufacturers instructions.
5. Turn the gas supply on and purge according to in GB BS 6891 and in IE I.S. 813 "Domestic Gas Installations".
6. Test for gas soundness.
7. Ensure all external controls e.g. room stat, timer etc. are calling for heat and turn on the mains electrical supply. Turn the rocker switch at the top right of the boiler to ON. The fan and condensate pump will run briefly.
8. The display will count down from 7 to 0, then the current water temperature will be displayed.
9. When there is a demand for heating the bar on the top left of the display will be shown and the boiler will commence the ignition sequence.
10. When ignition is established the 'flame' symbol on the display is illuminated. The display will indicate the flow temperature. The appliance is fully preset, therefore no adjustment is required.
11. If the boiler fails to ignite within the three ignition attempts the error code E133 will appear in the display, 'E1' alternating with '33'.
12. To reset the boiler press the reset button for at least 3 seconds. The ignition sequence will then recommence. A maximum of four resets in a five hour period are allowed.
13. When the reset button is activated the number of available reset attempts will be displayed

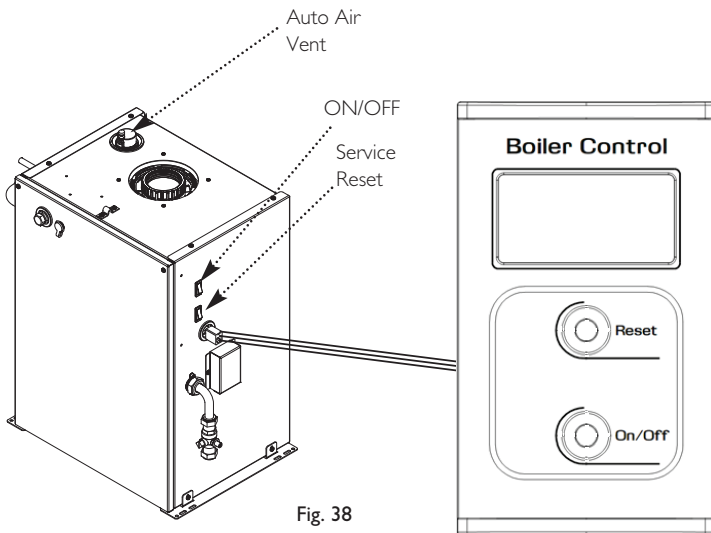


Fig. 38

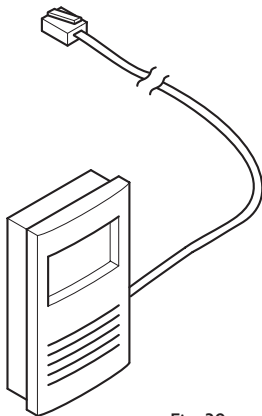


Fig. 39

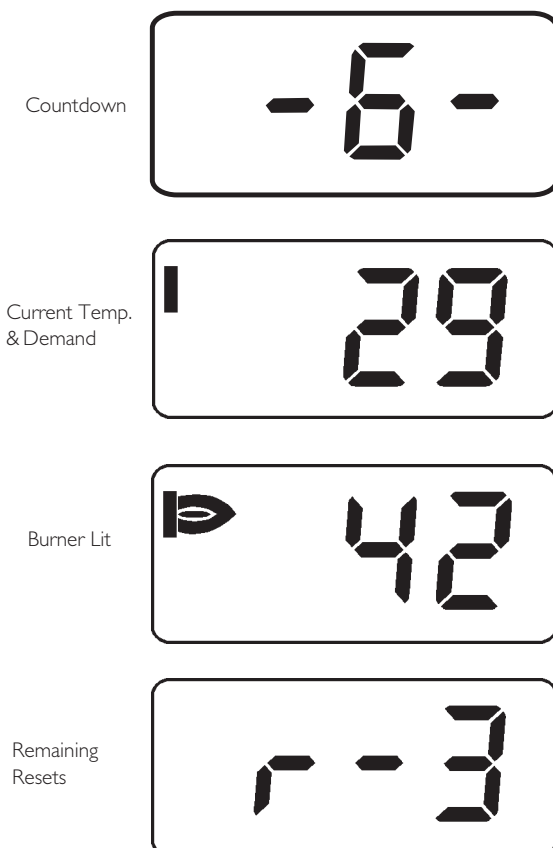


Fig. 40

### 8.2 Commissioning the Boiler (cont.)

**IMPORTANT:** The combustion for this appliance has been checked, adjusted and preset at the factory for operation on the gas type specified on the appliance data plate. No measurement of the combustion is necessary. Do not adjust the air/gas ratio valve.

Having checked:

That the boiler has been installed in accordance with these instructions.

The integrity of the flue system and the flue seals, as described in Section 7.2.

Proceed to put the boiler into operation as follows:

#### Check the Operational Gas Inlet Pressure

14. Set the boiler to operate at maximum rate as described in Section 11.1.2 to 11.1.6.

15. With the boiler operating in the maximum rate condition check that the operational gas pressure at the inlet gas pressure test point is 20mb (Fig. 40a).

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

#### Measure the Gas Rate

17. With any other appliances & pilot lights turned OFF the gas rate can be measured. It should be between 1.55 and 1.71m<sup>3</sup>/h.

18. Carefully read and complete all sections of the Benchmark Commissioning Checklist at the rear of this publication that are relevant to the boiler and installation. These details will be required in the event of any warranty work. The publication must be handed to the user for safe keeping and each subsequent regular service visit recorded.

For IE, it is necessary to complete a "Declaration of Conformity" to indicate compliance with I.S. 813. An example of this is given in I.S. 813 "Domestic Gas Installations". This is in addition to the Benchmark Commissioning Checklist.

19. Disconnect the Boiler Control and fit the firefront in accordance with the instructions supplied with it.

**IMPORTANT:** The loose boiler serial number label supplied in the boiler kit must be applied to an area of the spacer frame that is visible to the end user e.g. lower right hand side.

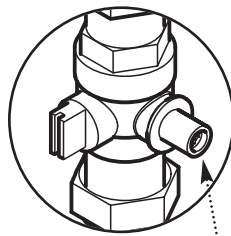


Fig. 40a

Inlet Gas Pressure  
Test Point

### Electrical Test Point

This test point must be used to confirm complete isolation of the appliance if a Service Inspection is to be performed (Section 9.2). From left to right the terminals are Switched Live, Live, Neutral and Earth. With the Mains Input Plug removed, check using a suitable multimeter.

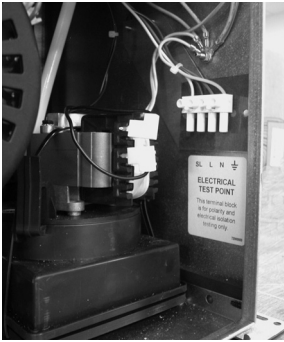


Fig. 40b

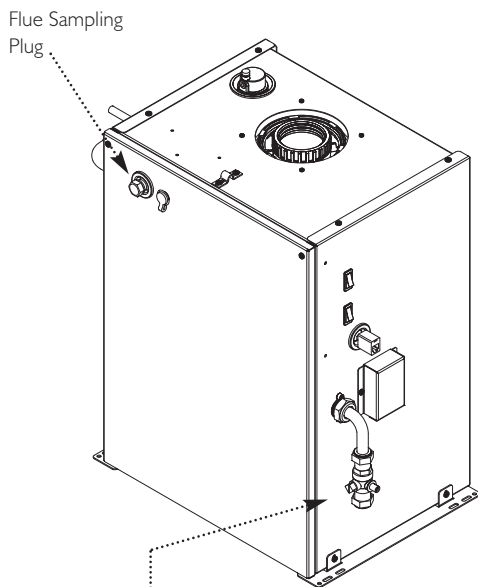


Fig. 41

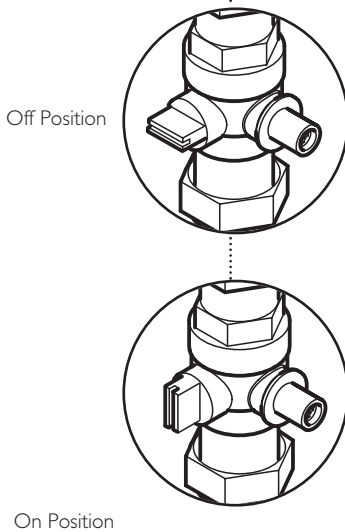


Fig. 42

### 9.1 Annual Servicing

1. For reasons of safety and economy, it is recommended that the boiler is serviced annually. Servicing must be performed by a competent person in accordance with B.S. 7967-4.

2. After servicing, complete the relevant Service Interval Record section of the Benchmark Commissioning Checklist at the rear of this publication.

3. Disconnect the firefront electric supply. Remove the fascia from the firefront. Unhook its hanging brackets from the slots in the top of the firefront. On Classica and Innova models also disengage the retaining magnets at the lower part of the fascia.

4. Slacken the firefront retaining wire and unthread it from the bracket on top of the boiler. The firefront can now be manoeuvred away from the boiler. Do not drag the firefront as it may damage the hearth. To completely remove the firefront disconnect the boiler control cable.

**IMPORTANT:** 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, as described in Section 7.2.

The integrity of the boiler combustion circuit and relevant seals as described in Section 9.2.

The operational gas inlet pressure as described in Section 8.2.14 to 8.2.16 and the gas rate as described in 8.2.17.

The combustion performance as described in 9.1.5 to 9.1.6.

#### Competence to carry out checking Combustion Performance

B.S. 6798 'Specification for Installation & Maintenance of Gas Fired Boilers not exceeding 70kW' 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-EN50379-3 and be calibrated in accordance with the analyser manufacturers' requirements.

Competence can be demonstrated by satisfactory completion of the CPA I ACS assessment, which covers the use of electronic portable combustion gas analysers in accordance with BS 7967, Parts 1 to 4.

#### Check the Combustion Performance

5. Set the boiler to operate at maximum rate as described in Section 11.1.2 to 11.1.6.

6. Remove the threaded plug from the sampling point, insert the analyser probe and obtain the CO/CO<sub>2</sub> ratio. **This must be less than 0.004.**

7. If the combustion reading is greater than this, and the integrity of the flue system and combustion circuit seals has been verified, and the inlet gas pressure and gas rate are satisfactory either adjust the gas valve (Section 11.0), replace the gas valve (Section 10.8) or contact the 'heateam' Technical Helpline (0844 871 1555).

## 9.0 Annual Servicing

### 9.2 Annual Servicing - Inspection

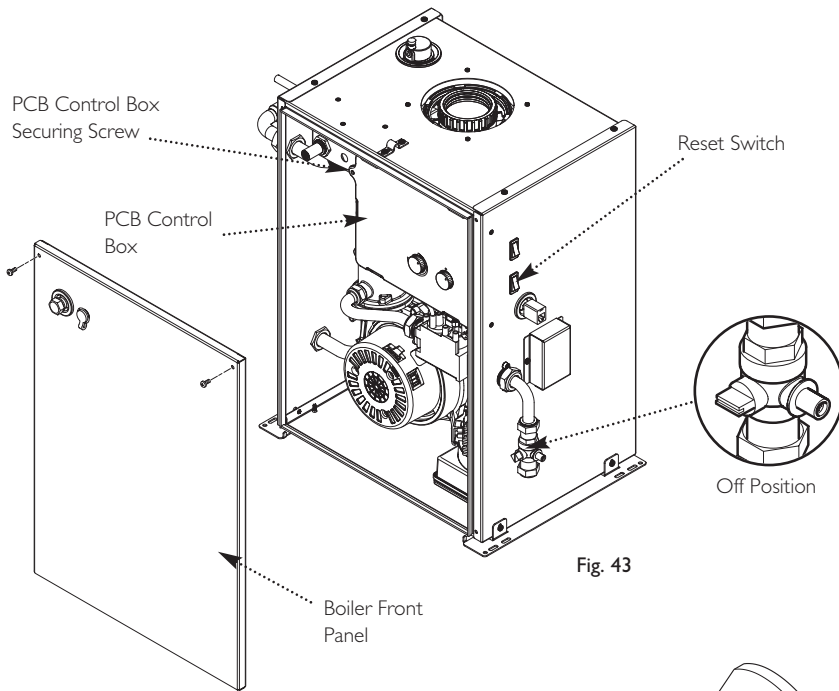


Fig. 43

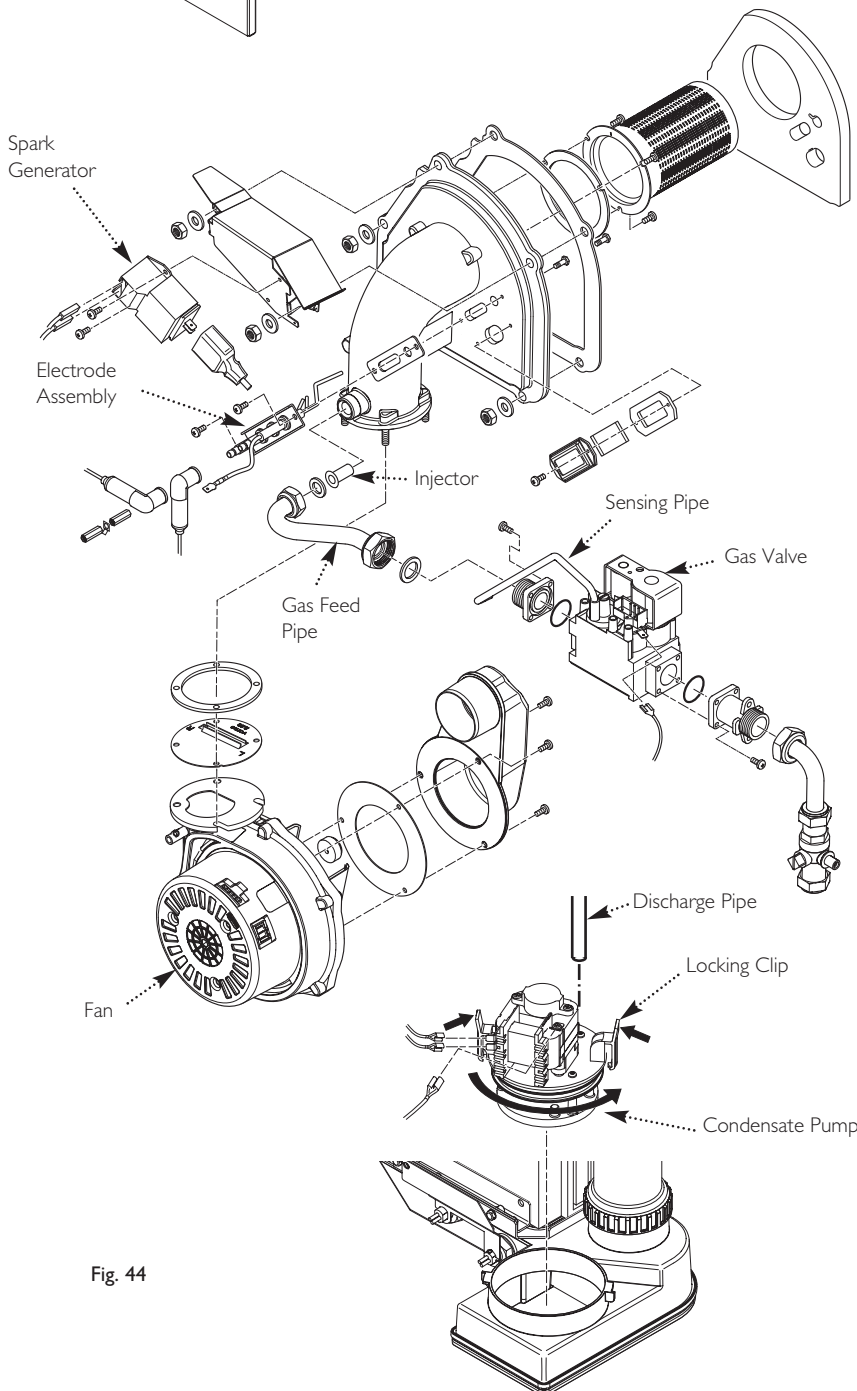


Fig. 44

1. Ensure that the boiler is cool.

2. Ensure that the gas supply to the boiler is isolated.

3. Operate the Reset switch (Fig. 41) to activate the condensate pump and then repeat. This will empty most of the condensate from the sump. **9. Isolate the boiler from the electrical supply** (see Electrical Test Point, fig. 40b).

4. Undo & remove the flue sampling plug and washer. Remove the screws retaining the boiler front panel, and lift the panel away (Fig. 43).

5. Remove the screw securing the PCB control box and swing the box to the right (Fig. 43).

6. Disconnect the two plugs from the fan motor and remove the sensing pipe from between the gas valve and fan outlet.

7. Remove the gas feed pipe and washers, and extract the injector from the gas/air inlet manifold.

8. For ease of access disconnect the following:-  
 a) 2 pin plug on NTC lead  
 b) all wires from electrode assembly  
 c) all wires from spark generator  
 d) both wires from the overheat thermostat  
 e) the red and black wires connected together

9. Undo the two securing nuts and remove the spark generator and bracket.

10. Undo the combustion panel securing nuts and remove the special spring washers. Remove the complete fan & panel assembly from the boiler.

11. Lay the assembly to one side. The outer insulation panel is fitted to the rear of the combustion box panel.

12. Clean inside the heat exchanger and examine the condition of the fins.

13. Examine the burner, electrodes, insulation and seal, replacing if necessary. Also check the condition of the three insulation pieces in the rear of the heat exchanger.

14. Disconnect the wires on the condensate pump motor and pull off the plastic discharge pipe. Cut and remove the transit cable tie. It is not necessary to replace this item.

15. Squeeze the two retaining clips and turn the pump anticlockwise to remove it. Draw it upwards from the sump.

16. Clean any debris from the sump and examine the condition of the pump seal, replacing if necessary.

17. Reassemble in reverse order of dismantling, checking and replacing any components as necessary. Recommission the boiler and complete the relevant Service Interval Record section of the Benchmark Commissioning Checklist at the rear of this publication.

## 10.0 Changing Components

### 10.1 Changing Components

1. To change any components on the back boiler it is necessary to remove the firefront.
2. Refer to the Installer Guide that accompanies the firefront for details of removal.
3. Ensure that the boiler is cool and that the electrical and gas supplies are isolated.
4. After changing any components carry out gas soundness checks.
5. Undo & remove the flue sampling plug and washer. Remove the screws retaining the boiler front panel, and lift the panel away.

6. Remove the screw securing the PCB control box and swing the box to the right.

### 10.2 Spark Generator (Fig. 46)

1. Note the position of the two leads on the spark generator and disconnect them. Also disconnect the earth wire and plug, and remove the screws securing the spark generator to the bracket.
2. Remove the spark generator. Replace in reverse order of dismantling, using the screws previously removed.
3. Ensure that the leads and plug are pushed fully on to their terminals.

### 10.3 Electrode Assembly (Fig. 47)

1. Note the position of the two leads on the electrode assembly and disconnect them. Disconnect the in-line connection on the black wire and the earth wire.
2. Undo the securing screws and remove the electrode assembly and earth tag from the combustion box panel.
3. Replace in reverse order of dismantling, using the screws previously removed. Examine the sealing gasket and replace if necessary.
4. Ensure that the leads are pushed fully on to their terminals.

### 10.4 Condensate Pump (Fig.48)

1. Note the position of the two leads and earth wire on the pump motor and disconnect them.
2. Cut and remove the transit cable tie. It is not necessary to replace this item.
3. Squeeze in the two locking clips and turn the pump anti-clockwise. Pull the condensate discharge pipe off its connection and remove the pump.
4. Replace in reverse order of dismantling. Examine the sealing ring and replace if necessary.
5. Ensure that the leads are pushed fully on to their terminals.

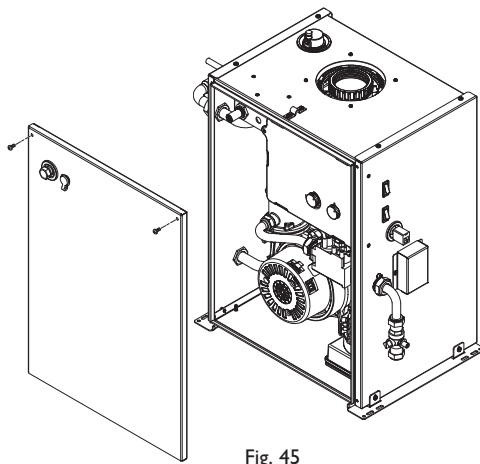


Fig. 45

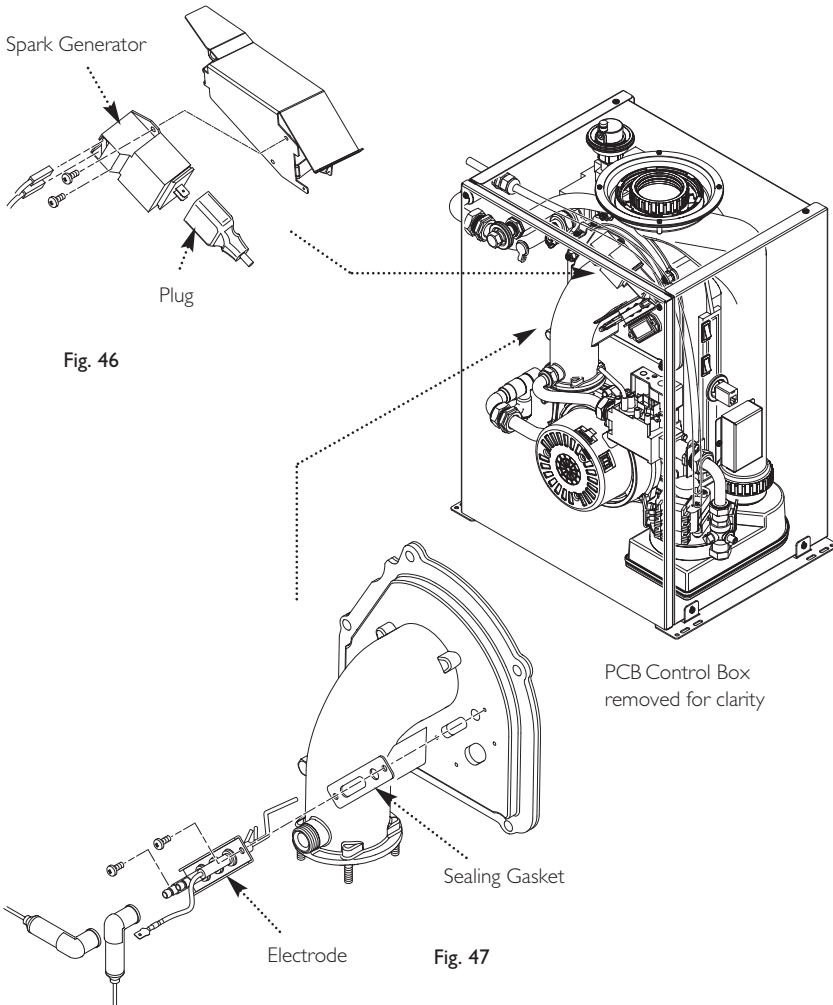


Fig. 46

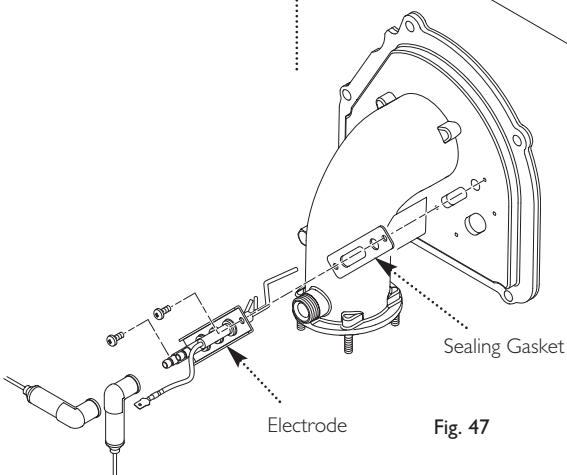


Fig. 47

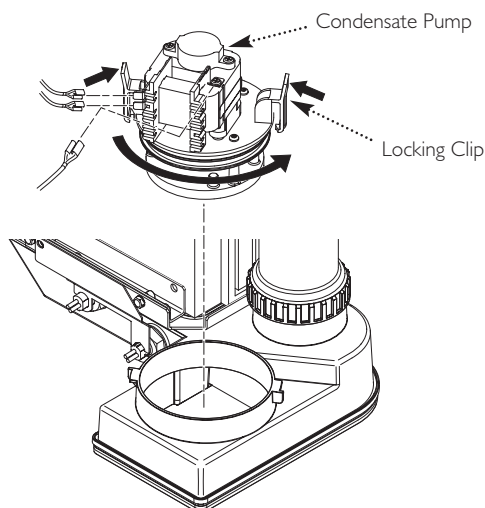


Fig. 48

## 10.0 Changing Components

### 10.5 Fan (Fig. 49)

1. Disconnect the two plugs from the fan motor and remove the sensing pipe from between the gas valve and fan outlet.
2. Remove the gas feed pipe and washers, and extract the injector from the gas/air inlet manifold.
3. For ease of access disconnect the following:-
  - a) 2 pin plug on NTC lead
  - b) all wires from electrode assembly
  - c) all wires from spark generator
  - d) both wires from the overheat thermostat
  - e) the red and black wires connected together
4. Undo the two securing nuts and remove the spark generator and bracket.
5. Undo the combustion panel securing nuts and remove the special spring washers. Remove the complete fan & panel assembly from the boiler. Check the condition of the insulation piece.
6. Undo and remove the nuts and washers securing the fan to the gas/air inlet. **NOTE THE POSITION OF THE RESTRICTOR PLATE !**
7. Remove the securing screws and transfer the fan inlet to the new fan. Use a new sealing gasket if necessary.
8. Replace in reverse order. **ENSURE THAT THE RESTRICTOR PLATE IS CORRECTLY FITTED ! THE SLOT MUST BE TO THE REAR.** Check the condition of the sealing gaskets between the fan and gas/air inlet and the combustion panel and heat exchanger and replace if necessary.

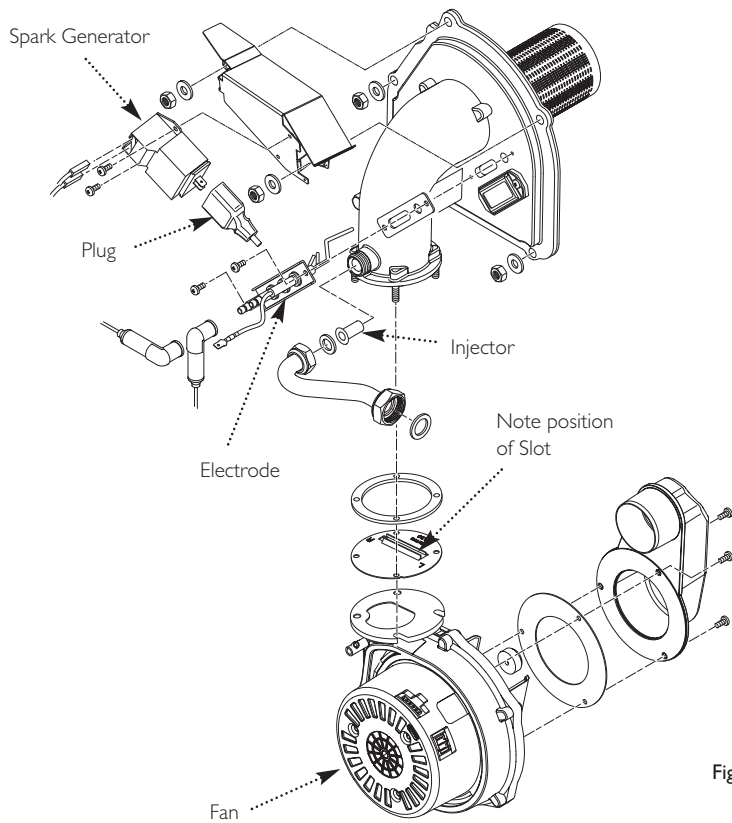
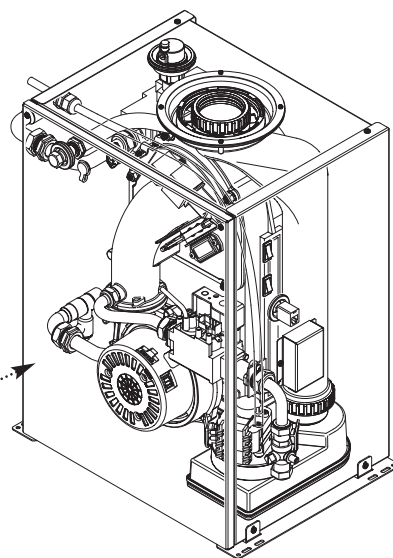


Fig. 49



PCB Control Box removed for clarity

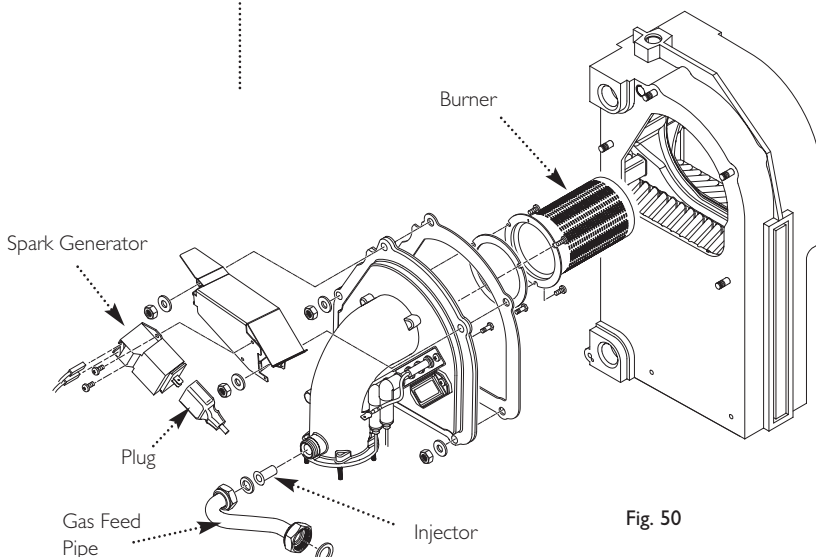


Fig. 50

### 10.6 Burner (Fig. 50)

1. Proceed as described in points 1. to 5. above.
2. Undo the screws securing the burner to the combustion panel. Remove the burner.
3. Replace in reverse order of dismantling, using the screws previously removed. Examine the sealing gasket and replace if necessary.

### 10.7 Injector (Fig. 50)

1. Remove the gas feed pipe and washers, and extract the injector from the gas/air inlet manifold.
2. Replace in reverse order of dismantling. Examine the sealing washers and replace if necessary.

## 10.0 Changing Components

### 10.8 Gas Valve (Fig. 51)

**IMPORTANT:** After replacing the valve the CO<sub>2</sub> must be checked and adjusted as detailed in Section 11.0 Setting the Gas Valve. Only change the valve if a suitable calibrated combustion analyser is available, operated by a competent person - see Section 9.1

1. Disconnect the plug and earth wire from the gas valve and remove the sensing pipe from between the valve and fan outlet.
2. Remove the gas feed pipe and washers, and extract the injector from the gas/air inlet manifold.
3. Undo the nut on the pipe from the gas cock to the valve inlet adaptor, and remove the screws securing the adaptor to the boiler side panel.
4. Remove the valve complete with the inlet and outlet adaptors, and the seal on the inner face of the side panel. Transfer the adaptors to the new valve, using new 'O' rings if necessary.
5. Replace in reverse order of dismantling, using the screws previously removed. Examine all sealing gaskets and washers and replace if necessary.

**NOTE:** To assist the boiler to light prior to final setting, use a suitable hexagon key to wind out the Gas/Air adjustment screw until it is flush with the valve body, then turn the screw 4 full turns clockwise (Fig. 51). If the boiler will not light, or the correct CO<sub>2</sub> cannot be achieved contact the 'heateam' technical helpline.

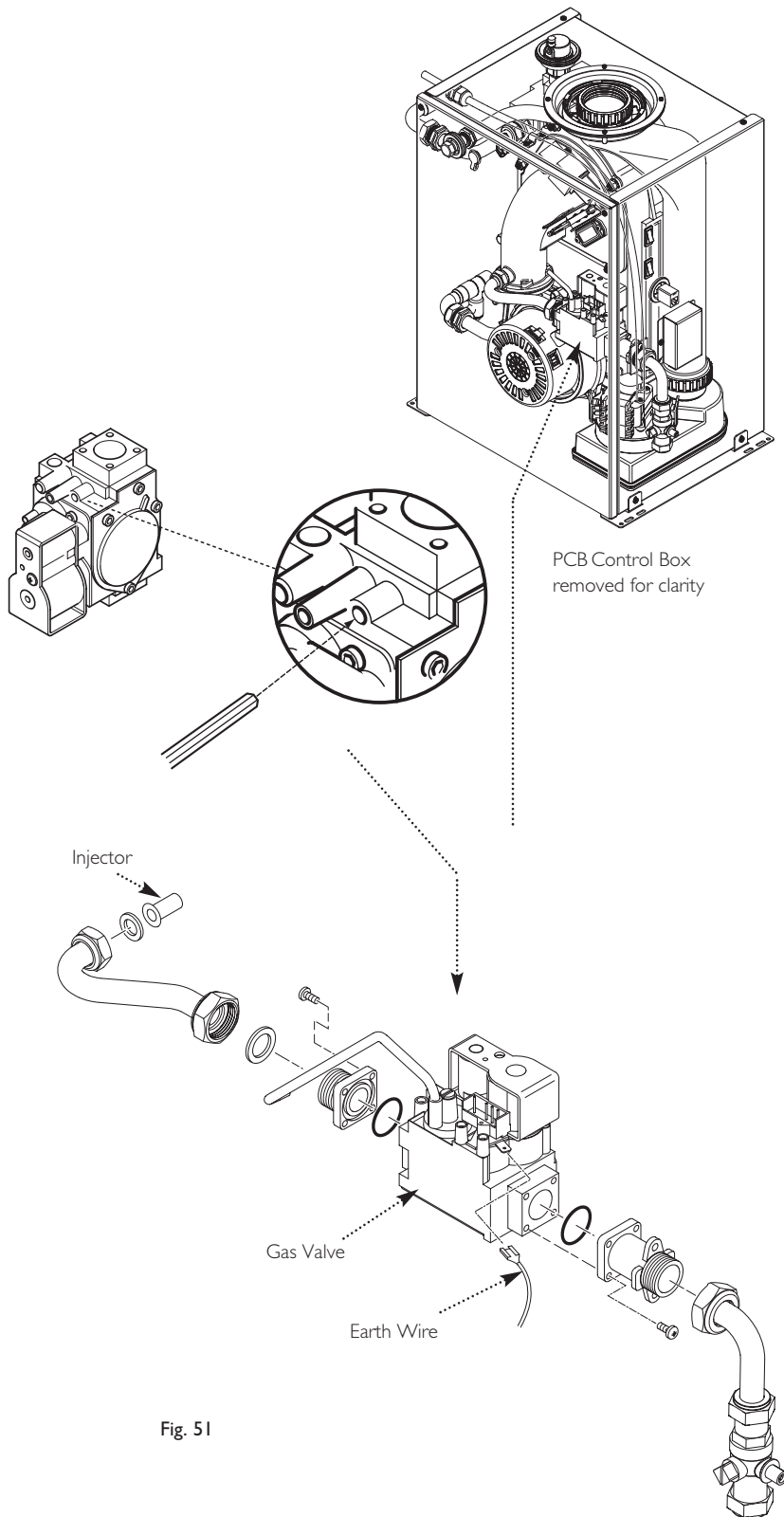


Fig. 51

## 10.0 Changing Components

### 10.9 PCB (Fig. 54)

1. Pull off the two control knobs and disengage the securing tabs of the cover. Undo the screws securing the PCB.

2. Draw the PCB forwards and disconnect the wiring. Transfer the two potentiometer drive pins to the new PCB and replace in reverse order of dismantling.

3. Ensure that the wiring connectors are pushed fully on to the PCB terminals.

### 10.10 NTC (Fig. 53)

1. Disconnect the 2 pin plug. Remove the clip retaining the NTC in the heat exchanger pocket. Pull the NTC out of the pocket.

2. Apply suitable heat transfer paste to the new NTC. Replace in reverse order of dismantling, using the clip previously removed. Ensure that the plug is fully engaged.

### 10.11 Safety Thermostat (Fig. 52)

1. Disconnect the two leads from the thermostat.

2. Remove the screws securing the thermostat to the mounting plate on the flow pipe.

3. Replace in reverse order. The thermostat is not polarised - either wire can fit either terminal on the thermostat.

### 10.12 Float Switches (Fig. 55)

1. Remove the fan as described in Section 10.5, paragraphs 1 to 5.

2. The two float switches are the same, but oriented differently. The discharge switch is at the left, the safety at the right.

3. To remove either switch disconnect the lead and pull off the alignment bracket.

4. Undo the retaining nut. The sealing grommet will be released from the sump body and allow the switch to be removed.

5. Note the orientation of the alignment rib on the switch. It is positioned uppermost on the safety float switch and to the bottom on the discharge switch.

6. Take the new switch assembly and insert it into the sump. Hand tighten the nut and slide the alignment bracket in place to ensure the switch is in position. Tighten the nut a further 2 turns.

7. Reconnect the lead to the switch, ensuring it is fully engaged.

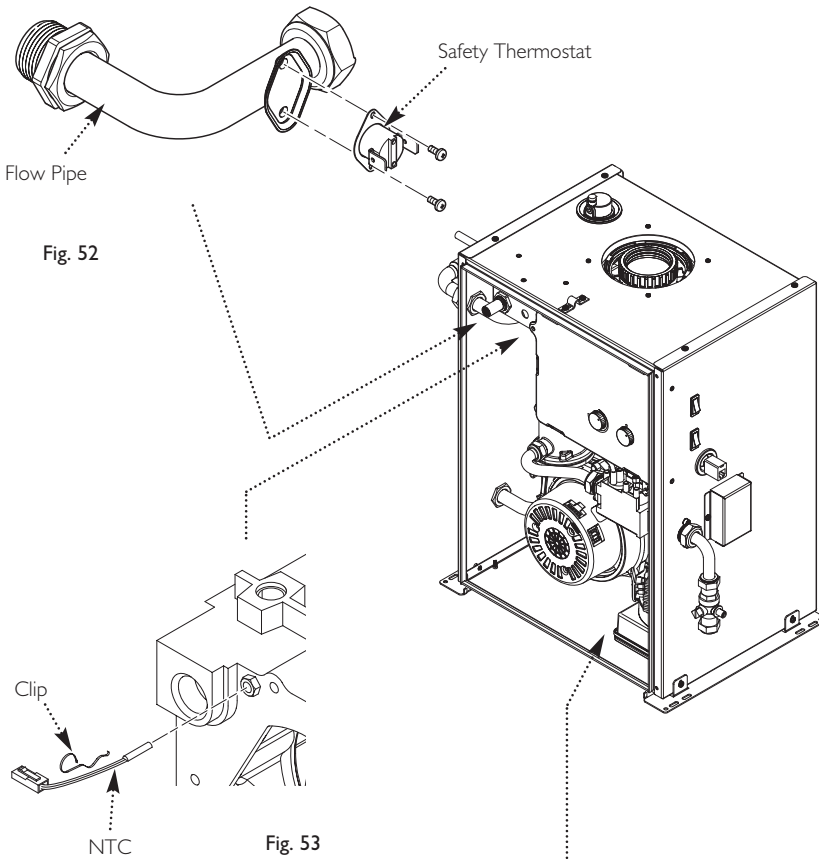


Fig. 52

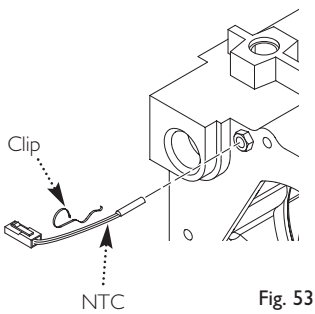


Fig. 53

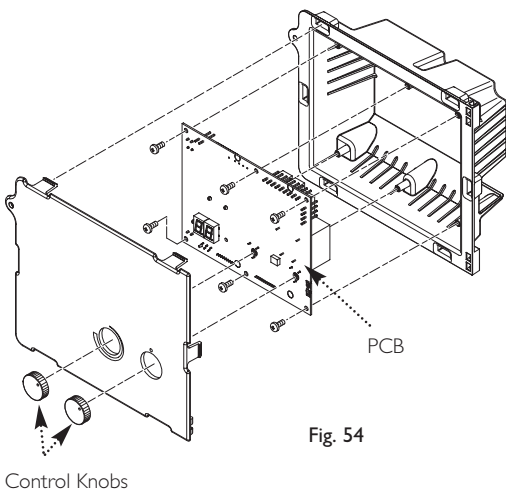


Fig. 54

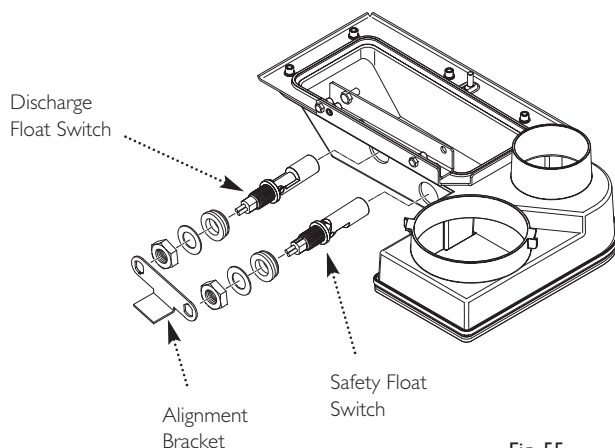


Fig. 55



## 11.0 Setting the Gas Valve

### 11.1 Setting the Gas Valve (CO<sub>2</sub> check)

**IMPORTANT:** The CO<sub>2</sub> must only be checked and adjusted to set the valve if a suitable calibrated combustion analyser is available, operated by a competent person - see Section 9.1

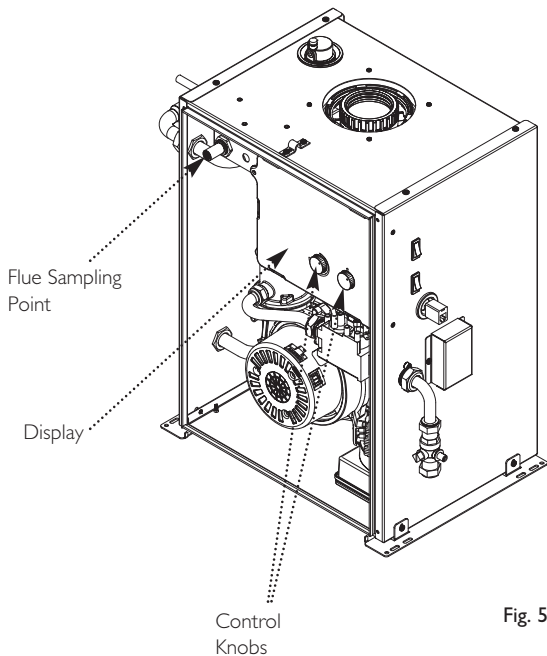


Fig. 56



Fig. 57

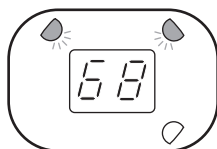


Fig. 58

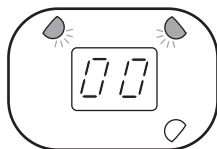


Fig. 59

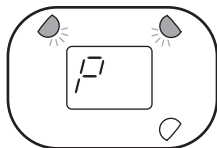


Fig. 60



Fig. 61

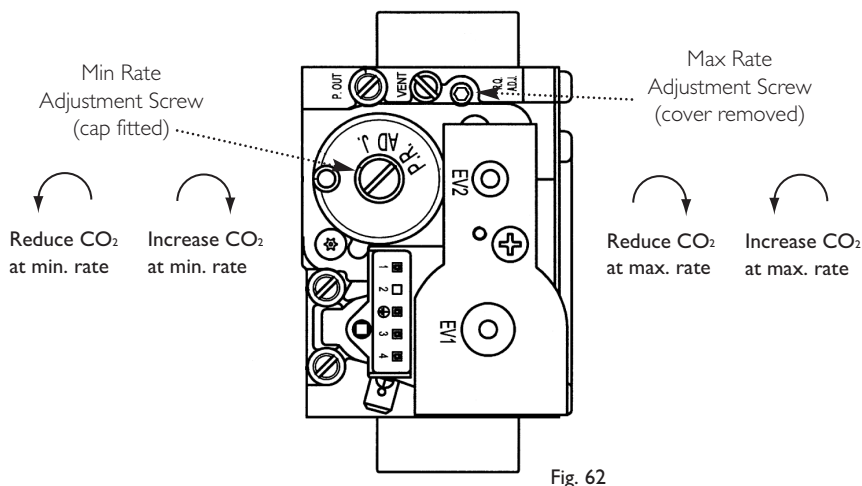


Fig. 62

If the CO<sub>2</sub> is reset at minimum rate it must be rechecked at maximum rate again and adjusted if required. If the CO<sub>2</sub> is reset at maximum rate it must be rechecked at minimum rate and adjusted if required.

1. The combustion (CO<sub>2</sub>) may be checked after running the boiler for several minutes. To do this it is necessary to set the boiler to 'Calibration Mode'.

2. **Ensure that all external controls are calling for heat.** The actual current boiler temperature is shown on the display.

3. Turn both control knobs fully anticlockwise, then quickly turn the right hand knob 1/4 clockwise twice and back fully anticlockwise (Fig. 56).

4. The display will now alternate between 'SF' and the current boiler temperature and both green LEDs will flash (Figs. 57 & 58).

5. Turn the left hand knob fully clockwise. As the knob is turned the display will change, indicating the fan speed.

6. The display will show '00', indicating maximum rate, then revert to 'P' alternating with the current boiler temperature (Figs. 59, 60 & 61).

7. Remove the plug from the flue sampling test point. Insert the analyser probe and allow sufficient time for the reading to settle (Fig. 56).

The CO<sub>2</sub> should be 9.3% ± 0.2

8. It is possible to alter the CO<sub>2</sub> by adjustment of the gas valve. Remove the plastic cover from the 'Max Rate' adjustment screw. At maximum rate the 'Max. Rate' adjustment screw should be turned, using a suitable hexagon key, until the correct reading is obtained (Fig. 62). Turning clockwise will reduce the CO<sub>2</sub>. Anticlockwise will increase the CO<sub>2</sub>.

9. The CO<sub>2</sub> must then be checked at minimum rate. Turn the left hand knob fully anti-clockwise. As the knob is turned the display will change, indicating the fan speed. When the display reads '0' the boiler runs at minimum rate.

The CO<sub>2</sub> should be 8.2% ± 0.2

10. With the boiler on minimum, the 'Min. Rate' adjustment screw must be altered, using a suitable hexagon key, after removing the cap (Fig. 62). Turning anti-clockwise will reduce the CO<sub>2</sub>. Clockwise will increase the CO<sub>2</sub>.

11. The 'Calibration Function' is maintained for 20 minutes unless the maximum CH temperature is exceeded. The function can be disabled at any time by turning the right hand knob.

12. Check the CO/CO<sub>2</sub> ratio. **This must be less than 0.004.**

## 12.0 Fault Finding

**NOTE:** When instructed to operate the reset button, press and hold for 5 seconds to reset the boiler.

Table Of Error Codes

E20	Central Heating NTC Fault
E28	Incorrect PCB Fitted
E50	Hot Water NTC Fault
E110	Safety Thermostat or Condensate Safety Float Switch Operated
E125	Circulation Fault (Primary Circuit)
E131	Interruption Of Power Supply while in fault mode
E133	Interruption Of Gas Supply or Flame Failure
E155	Lock Out of Boiler Control
E158	Condensate Discharge System Fault
E160	Fan or Fan Wiring Fault

### Service Reset

To perform a Service Reset it is necessary to have access to the boiler. By pressing the Reset rocker switch on the right of the boiler case for a minimum of 5 seconds when error codes are displayed it is possible to reset the boiler once the fault has been rectified.

### Restoring Boiler Control Default

Following a Service Reset it is necessary to restore the Boiler Control to default condition:-

Disconnect the main power supply

On reinstating the power supply the Boiler Control display will count down from 7.

Before the count reaches 3 press both the 'On/Off' and 'Reset' buttons simultaneously and hold until the count reaches 0.

The Boiler Control display will show 'SEt' to confirm default restoration.

### 12.1 Initial Fault Finding Checks

1. Check that gas, water and electrical supplies are available at the boiler.
2. Electrical supply = 230V ~ 50 Hz. Check the CH & DHW system. The preferred minimum gas pressure is 20 mbar.
3. Carry out electrical system checks, i.e. Earth Continuity, Resistance to Earth, Short Circuit and Polarity with a suitable meter.

**NOTE:** These checks must be repeated after any servicing or fault finding.

4. Ensure all external controls are calling for heat and check all external and internal fuses. Before any servicing or replacement of parts, ensure the gas and electrical supplies are isolated.

### 12.2 Error Codes

1. If a fault occurs on the boiler an error code may be shown on the boiler display and the Boiler Control.

2. The codes are either two or three digit, preceded by the letter 'E'. For example, code E133 will be displayed by 'E1' alternating with '33'. E20 is shown as 'E' then '20'

E20 & E28 indicate faulty or incorrect components.

E110 shows overheat of the primary water or excess condensate in the sump.

E125 is displayed if within 2 hours of the burner lighting the boiler temperature twice exceeds the selected temperature by 25°.

In these instances poor primary circulation or no water in the system is indicated.

E133 indicates that the gas supply has been interrupted, ignition has failed or the flame has not been detected.

E155 indicates a Boiler Control reset when Service & Boiler Control reset counters are out of step. Boiler Control default not restored correctly.

E158 indicates a condensate discharge system fault.

3. By pressing the 'Reset' button on the Boiler Control for a minimum of 5 seconds when E110 & E133 are displayed it is possible to relight the boiler.

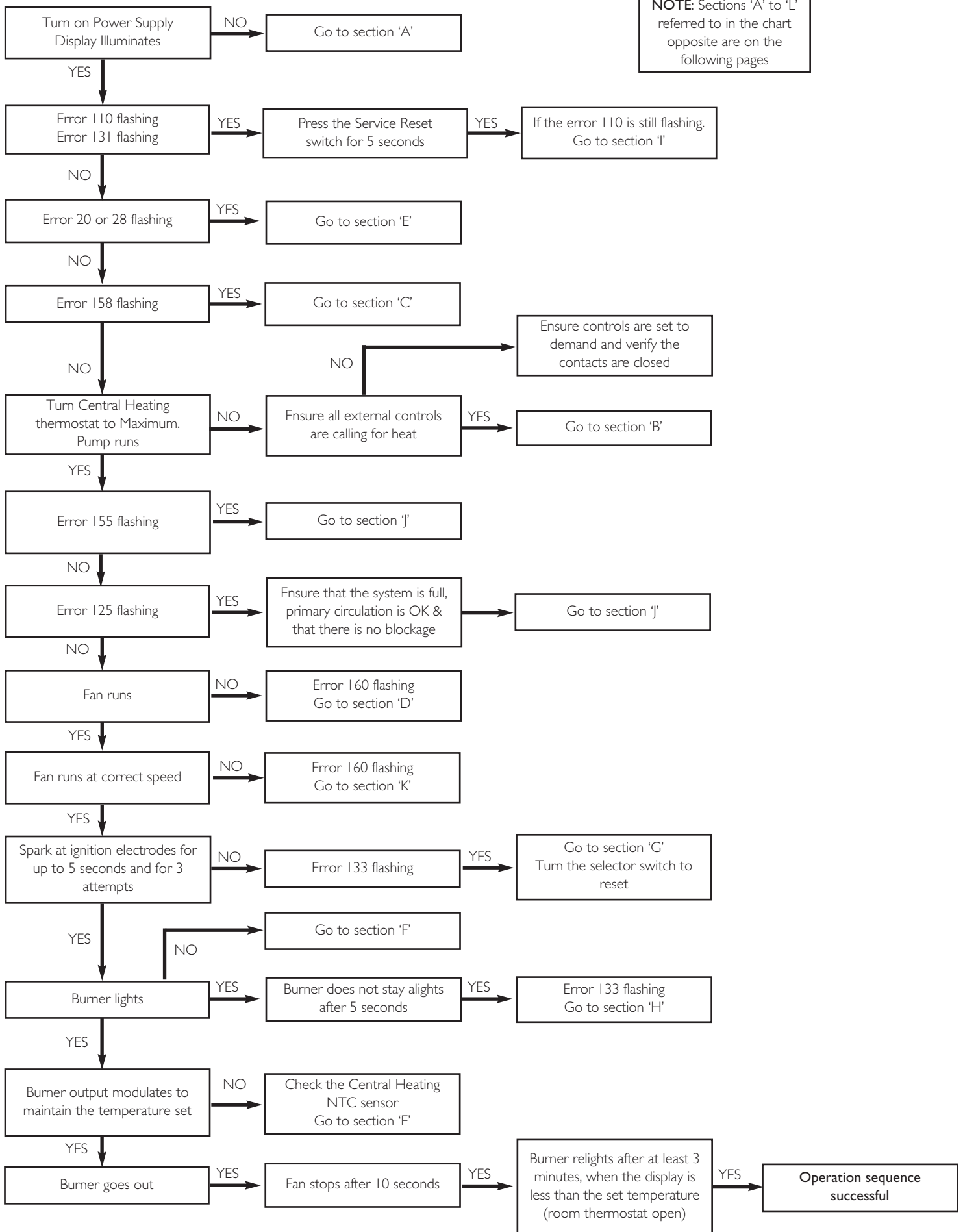
4. If this does not have any effect, or the codes are displayed regularly further investigation is required. It is possible to reset the boiler up to 4 times in any 5 hour period. Further resets via the Boiler Control are then blocked for 5 hours unless a Service Reset is performed.

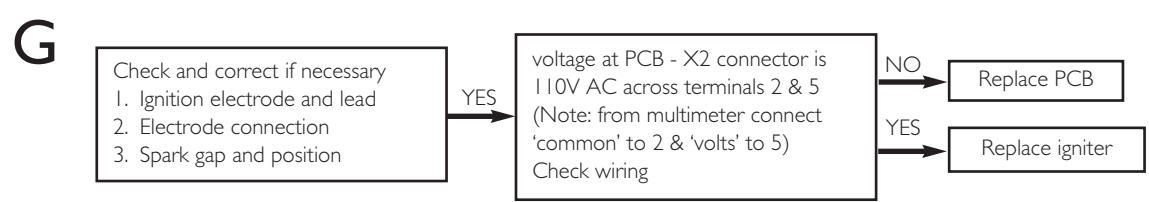
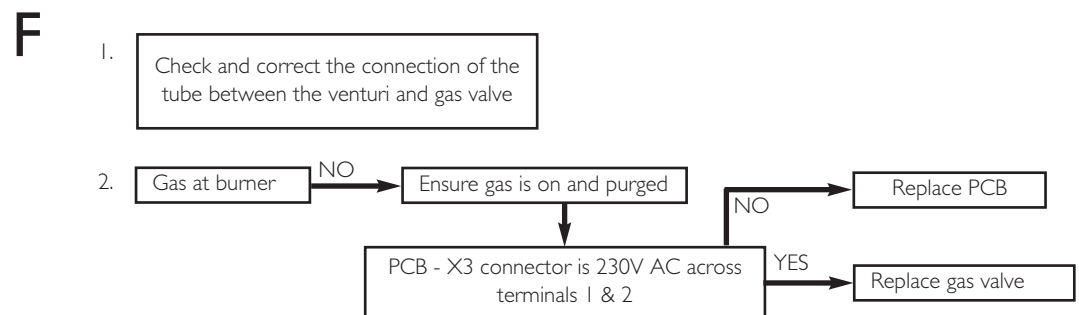
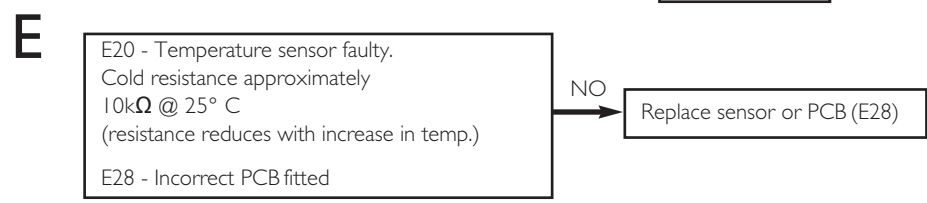
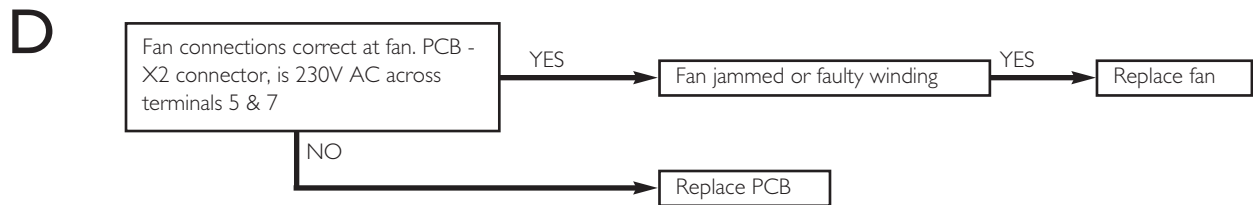
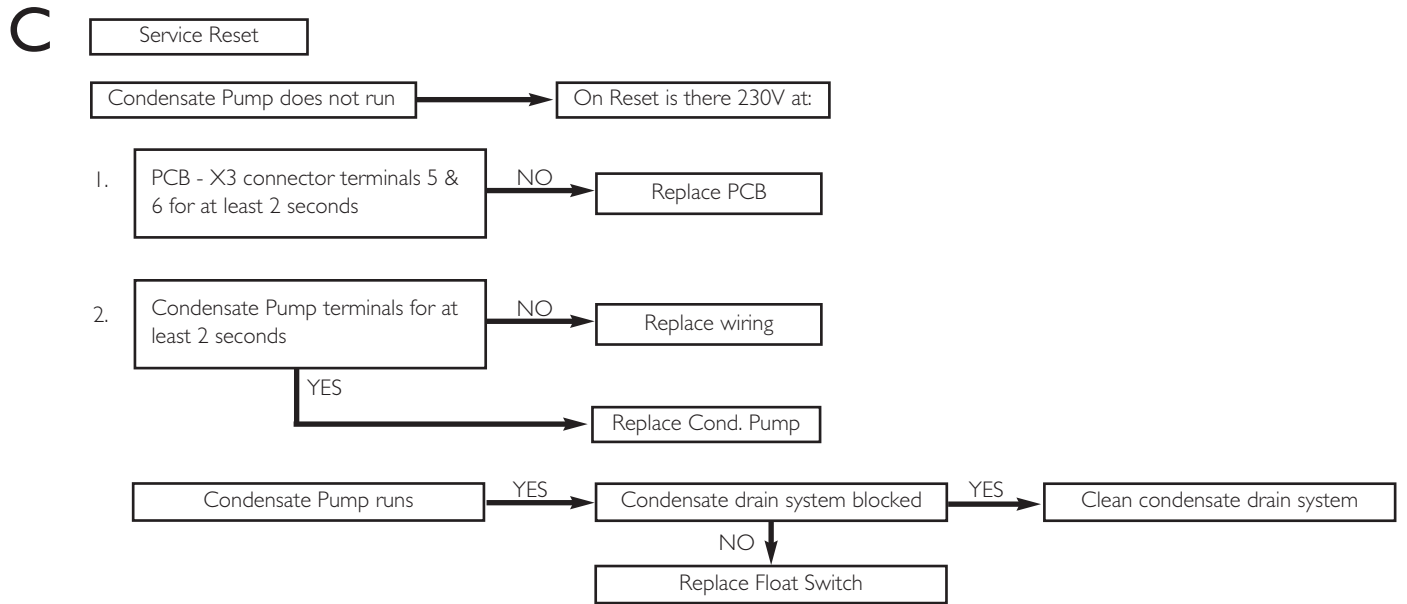
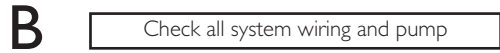
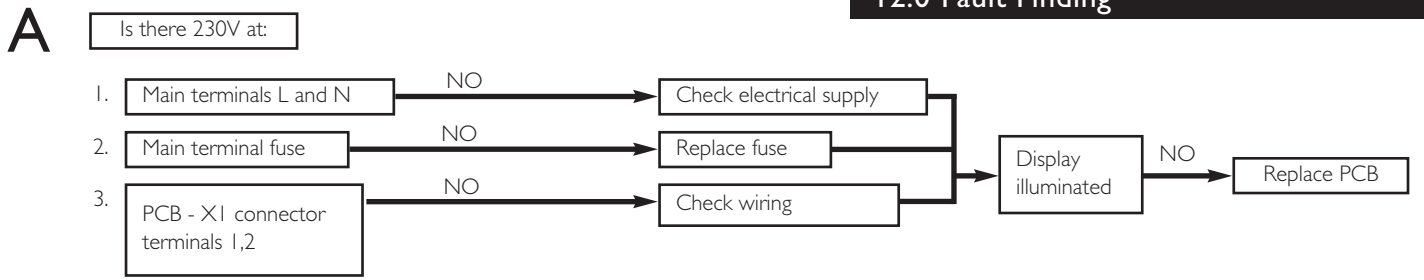
# 12.0 Fault Finding

Refer to Section 16.0 "Illustrated Wiring Diagram" for position of terminals and components

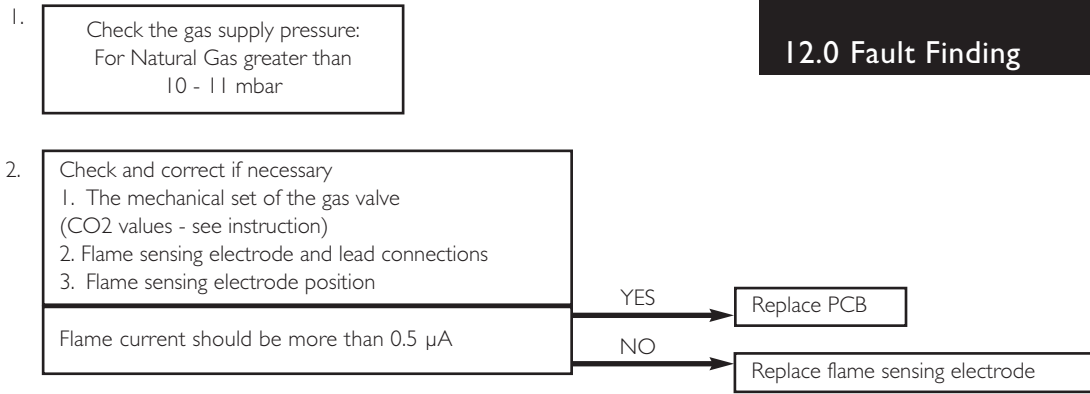
**Central Heating** - Follow operational sequence

**NOTE:** Sections 'A' to 'L' referred to in the chart opposite are on the following pages

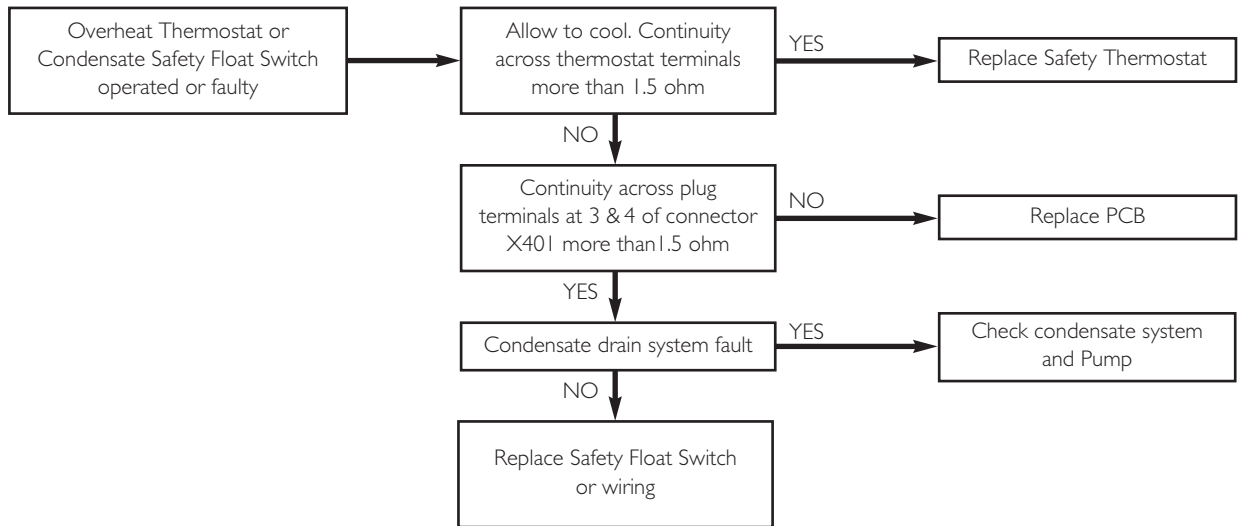




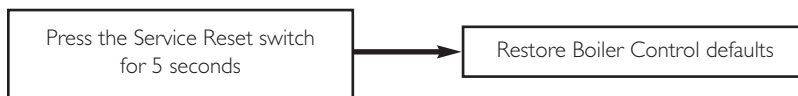
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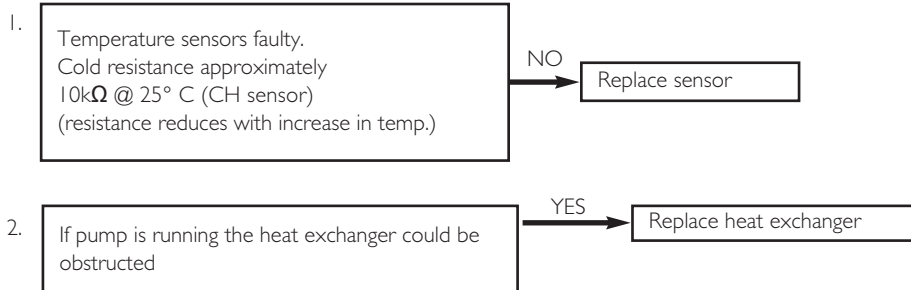
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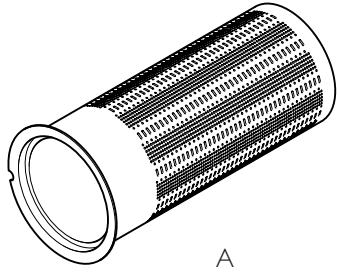


**IMPORTANT:** There is no limit to the number of repeated 'Service Reset' operations but the Boiler Control must be refreshed by 'Restoring Boiler Control Default' as described on p.34 following the final 'Service Reset' and before the Boiler Control reset is re-used.

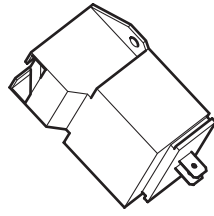
## 13.0 Short Parts List

### Short Parts List

Key No.	Description	Manufacturers Part No.
A	Burner Assy	720125701
B	Injector	720126301
C	Ignition Lead	720127501
D	Gas Valve	720127001
E	P.C.B	720125801
F	Fan	5121447
G	NTC Sensor	720126101
H	Float Switch (Safety or Discharge)	720126201
I	Safety Thermostat	720126401
J	Spark Generator	5114766
K	Condensate Pump	720125901



A



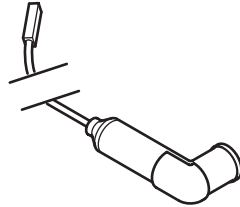
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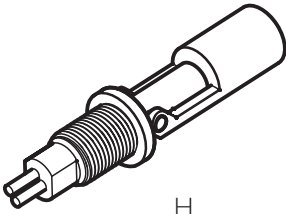
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B



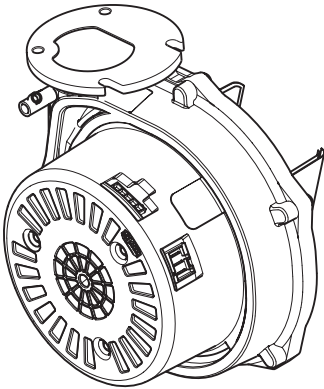
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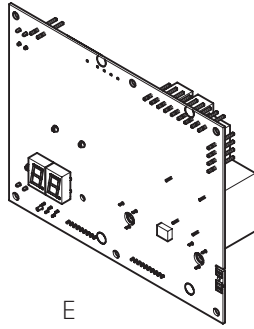
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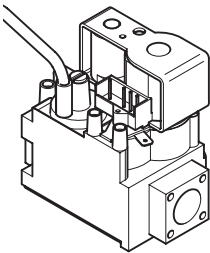
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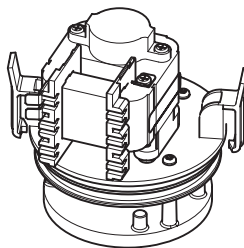
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# SERVICE RECORD

It is recommended that your heating system is serviced regularly and that the appropriate Service 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

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 2      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 3      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 4      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 5      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 6      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 7      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 8      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 9      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 10      Date

Energy Efficiency Checklist completed? Yes  No

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

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

Telephone Number \_\_\_\_\_

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

Comments \_\_\_\_\_

Signature \_\_\_\_\_

Please complete the boxes below

Serial Number

Date of Installation

D	D	M	M	Y	Y

Installer Details (name, address and contact number(s))

All descriptions and illustrations provided in this leaflet have been carefully prepared but we reserve the right to make changes and improvements in our products which may affect the accuracy of the information contained in this leaflet. All goods are sold subject to our standard Conditions of Sale which are available on request.

## BAXI

A Trading Division of Baxi Heating UK Ltd (3879156)  
A Division of Baxi Group  
Brooks House, Coventry Road, Warwick. CV34 4LL  
After Sales Service 0844 871 1525 Technical Enquiries 0844 871 1555  
Website [www.baxi.co.uk](http://www.baxi.co.uk)  
e&oe

  
A BAXI GROUP company

## 9.0 Warranty & Service

### Standard Warranty Terms & Conditions

To activate your second year free warranty you must register your boiler with **heateam** the service division of Baxi Heating UK Ltd either by completing and returning the registration card or calling our telephone registration line on **0800 013 7989**.

It is also a requirement of the warranty that the boiler has an annual service (every 12 months) in accordance with the installation and servicing instructions, performed by a Gas Safe registered engineer. If you would like **heateam** to carry this out please call on **0844 871 1525**.

### Our promise to you

If you experience a fault with your new boiler, we aim to provide a safe and high quality repair service supported by our dedicated national network of highly skilled engineers. If your installer can't resolve the problem for you, we will do everything we can to get an engineer out to you as quickly as possible. Nothing in this warranty will affect your statutory consumer rights.

### What you need to do if you experience a problem with your heating system or the operation of the boiler

You should always contact your installer first, because the cause of the fault may not be related to the boiler. If your installer confirms that the fault is with the boiler and he/she can't repair it, our friendly customer service team is on hand to help. Simply call our service division **heateam** on **0844 871 1525** to book an engineer visit or for any general advice that you may need. Our contact centre is open Monday to Friday 8am - 6pm, weekends and Bank Holidays 8.30am - 2pm, excluding Christmas Day and New Years Day.

When calling **heateam** it would be helpful if you could have the following information to hand:-

- 1 Boiler serial number (see opposite).
- 2 Boiler make and model number.
- 3 Your installer name and address details.
- 4 Proof of purchase (if you do not have the boiler serial number).

### What this warranty covers

Free of charge repair or replacement of components found to be of faulty manufacture.

Free of charge replacement of the complete unit provided always that the failure is related to a manufacturing fault that cannot be repaired or is uneconomic to repair.

### What this warranty does not cover

Repairs to boilers which haven't been installed and commissioned properly, and as set out in the installation instructions (this includes the need to flush the system effectively and add a suitable corrosion inhibitor).

Any damage caused by hard water scale deposits and/or aggressive water resulting from corrosion.

Any other defects or failures, either in the connected heating system or outside of the boiler itself.

Faults caused by inadequate supply of electricity, gas or water to the property.

Installations within commercial settings for which this boiler was not designed.

Reimbursement of any third party repair or replacement costs that we haven't been told about or agreed with you in advance.

Compensation for consequential losses (e.g. loss of earnings, business losses, stress and inconvenience) arising from a production breakdown, including repair delays caused by factors outside our reasonable control.

**After Sales Service 0844 871 1525**