

# BAXI

## Installation & Servicing Instructions



### Baxi System 100 HE Plus

Wall Mounted Powered Flue Condensing  
Gas Fired Central Heating Boiler

## Natural Gas

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Baxi System 100 HE Plus  
G.C.N° 41 075 43

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 Body 0086.

For GB/IE only.



Baxi is a BS-EN ISO 9001  
Accredited Company

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.

## 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.

CORGI operate a Self Certification Scheme for gas heating appliances.

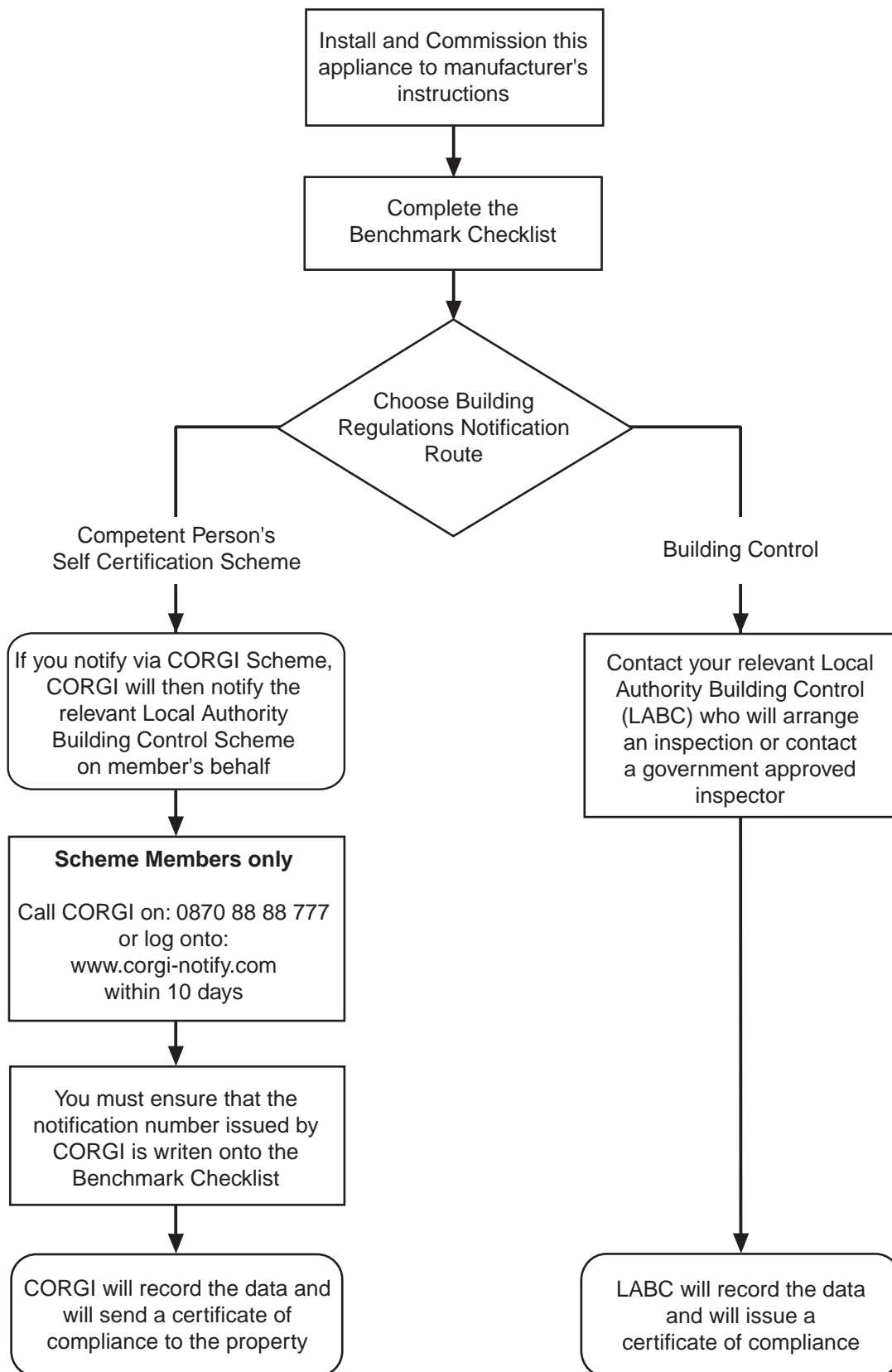
These arrangements represent a change from the situation whereby compliance with Building Regulations was accepted as being demonstrated by completion of the Benchmark Logbook (which was then left on site with the customer).

With the introduction of Self Certification Schemes, the Benchmark Logbook is being withdrawn.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.

Potterton 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.



### 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 CORGI 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".

**Lifting** - This product should be lifted and handled by two people. For recommended hand holds see section 8.4. Stopping should be avoided and protective equipment worn where necessary. Carrying & lifting equipment should be used as required, e.g. when installing in a loft space.

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.

**Baxi 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 CORGI 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 ETCI 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	Flues.
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.

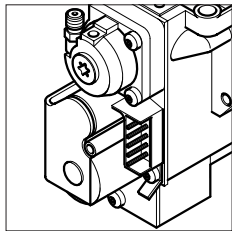
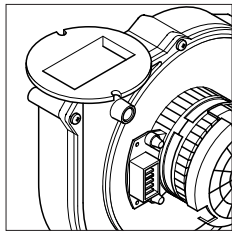
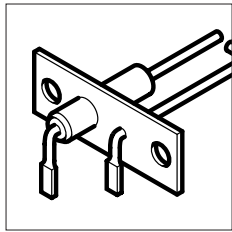
**In IE the following Codes of Practice apply:**

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.
BS 7074	Expansion vessels and ancillary equipment for sealed water systems.
BS 7593	Treatment of water in domestic hot water central heating systems.

All CORGI registered installers carry a CORGI identification card and have a registration number. You can check your installer is registered by telephoning 0870 4012300 or writing to:-

1 Elmwood,  
Chineham Business Park,  
Crockford Lane,  
Basingstoke. RG24 8WG

or check online at [www.corgi-gas-safety.com](http://www.corgi-gas-safety.com)



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## 1.0 Introduction

### 1.1 Description

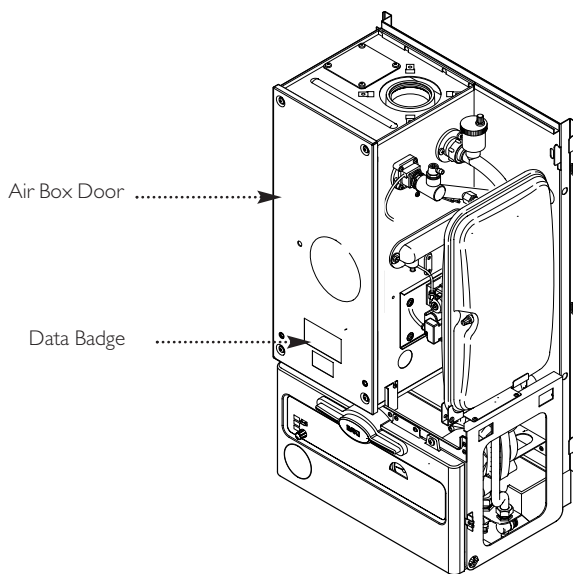
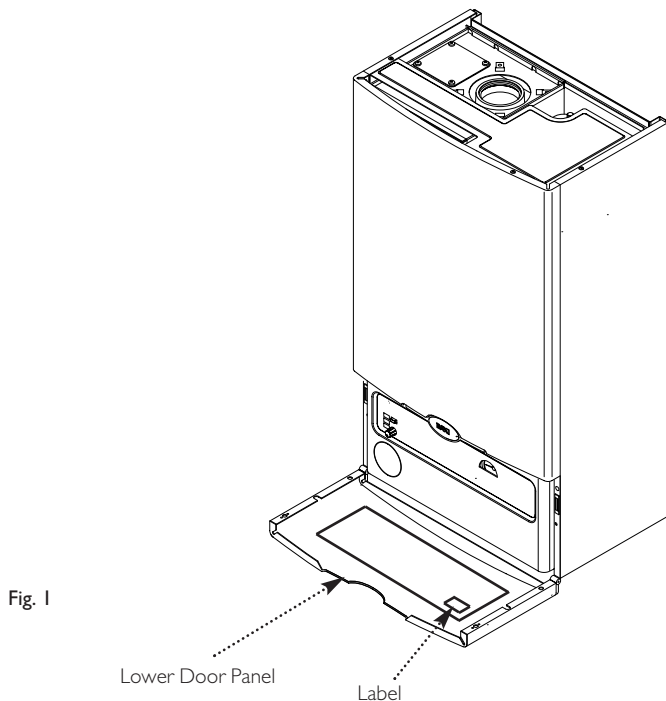
1. The Baxi System 100 HE Plus is a gas fired room sealed fan assisted condensing central heating system boiler.
2. The maximum output of the boiler is preset at 75,000 Btu/hr. The boiler will automatically adjust down to 30,000 Btu/hr according to the system load. If required, the output can be set to 100,000 Btu/hr. Please refer to section 8.7.
3. It is designed for use on Natural Gas (G20).
4. The boiler is suitable for sealed central heating and domestic hot water systems.
5. A label giving details of the model, serial number and Gas Council number is situated on the rear of the lower door panel (Fig. 1).
6. The boiler data badge is positioned on the air box door (Fig. 2).
7. The boiler is intended to be installed in residential / commercial / light industrial E.M.C. environments on a governed meter supply only.
8. The boiler must be installed with one of the purpose designed flues such as the standard horizontal flue kit, part n° 236921.

### 1.2 Important Information

#### Man-made mineral fibre

- Some component parts of this appliance (insulation pads, gaskets and rope seals) are manufactured from man-made mineral fibre.
- Prolonged or excessive exposure to this material may result in some irritation to the eyes, skin or respiratory tract.
- It is advisable to wear gloves when handling these items.
- Irritant dust will only be released from the items if they are broken up or subjected to severe abrasion. In these instances a suitable dust mask and goggles should be worn.
- Always thoroughly wash hands after installation, servicing or changing components.
- When disposing of any items manufactured from man-made mineral fibre care must be exercised.
- If any irritation of the eyes or severe irritation of the skin is experienced seek medical attention.

**NOTE:** All illustrations show the PCB Connection Cover removed unless otherwise shown.



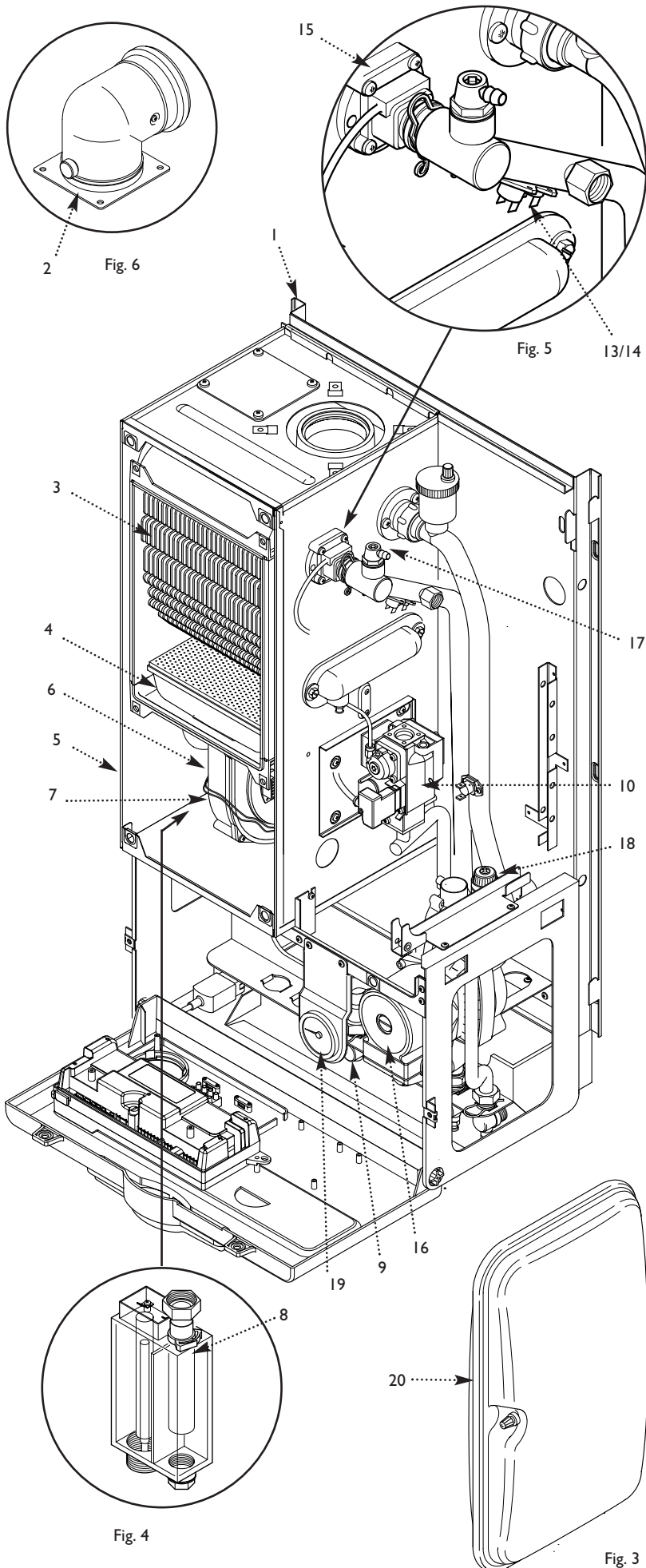
## 2.0 General Layout

### 2.1 Layout (Figs. 3, 4 & 5)

1. Wall Plate
2. Flue Elbow
3. Heat Exchanger
4. Burner
5. Air Box
6. Fan Protection Thermostat
7. Fan Assembly
8. Condensate Trap
9. Gas Tap
10. Gas / Air Ratio Valve
13. Flow Temperature Safety Thermostat - Black
14. Flow Temperature Thermistor - Red
15. Flow Switch (dry fire protection)
16. Circulation Pump
17. Manual Air Vent
18. Pressure Relief Valve
19. Water Pressure Gauge
20. Expansion Vessel

### 2.2 Optional Extras

KIT	PART N°
FLUE EXTENSION KITS (110/70)	
Flue Extension 0.25M	241692
Flue Extension 0.5M	241694
Flue Extension 1M (Use two kits for 2M etc.)	241695
Flue Bend x 2 - 45° (Reduce overall length of flue by 0.5m when fitting this bend)	241689
Flue Bend - 90° (Reduce overall length of flue by 1m when fitting each bend)	241687
Horizontal Extended Flue (1.75M)	5111457
VERTICAL FLUE (110/70)	
Vertical Flue Terminal	242802
Vertical Flue Adaptor	5106888
VERTICAL FLUE (80/80)	
Kit Boiler Connection Twin	242757



### 3.1

1. **Switched Live To Boiler On:** When the switched live switches on if the flow temperature is less than the set point then pump on occurs. When the switched live to the boiler switches on if the flow temperature is greater than the set point then pump overrun occurs.

2. **Pump On:** The pump is on while the fan, spark generator and gas valve are off. After 10 seconds if the flow switch has made then fan pre-purge occurs. After 10 seconds if the flow switch has not made then anti-cycle occurs.

3. **Fan Pre-Purge:** The pump and fan are on while the spark generator and gas valve are off. After 5 seconds ignition occurs.

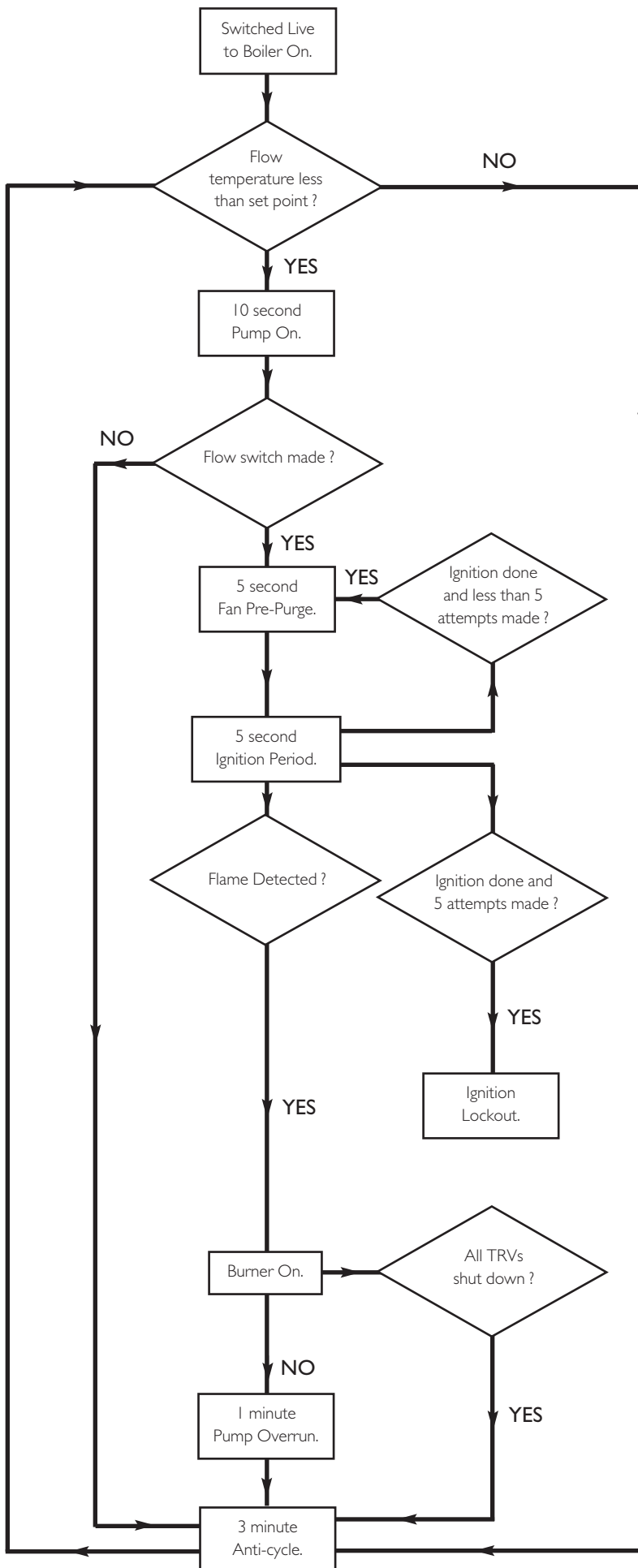
4. **Ignition:** The pump, fan, spark generator and gas valve are on. If a flame is detected then burner on occurs. If a flame is not detected within 5 seconds and less than 5 ignition attempts have been made then fan purge occurs. If a flame is not detected within 5 seconds and 5 ignition attempts have been made then ignition lockout occurs.

5. **Burner On:** The pump, fan and gas valve are on while the spark generator is off. Flow temperature is controlled by varying the fan speed (and thereby the gas rate) to achieve optimum operation. If the flow temperature is greater than the set point then pump overrun occurs. If the TRVs all shut down then anti-cycle occurs.

6. **Pump Overrun:** The pump is on while the fan, spark generator and gas valve are off. After 1 minute anti-cycle occurs.

7. **Anti-cycle:** The pump, fan, spark generator and gas valve are off. After 3 minutes if the flow temperature is less than the set point then pump on occurs. After 3 minutes if the flow temperature is greater than the set point then pump overrun occurs.

8. **Ignition Lockout:** The pump, fan, spark generator and gas valve are off. The boiler can only be reset by manually using the reset button.





<b>Appliance Type</b>	C <sub>13</sub>	C <sub>33</sub>
<b>Appliance Category</b>	CAT I <sub>2H</sub>	
<b>Heat Input Gross</b>	Max	Min
kW	33.76	10.2
Btu/h	115,200	34,840
<b>Heat Output</b> (Non Condensing 70° C Mean Water Temp)	Max	Min
kW	30.18	9.14
Btu/h	102,980	31,180
<b>Heat Output</b> (Condensing 40° C Mean Water Temp)	Max	Min
kW	32.61	10.1
Btu/h	111,280	34,520
<b>Max Gas Rate</b>	(Natural Gas) (After 10 Mins)	
Btu/hr	102,980	75,000
m³/h	2.95	2.36
ft³/h	104.2	83.3
<b>Inlet Pressure</b> (Natural Gas)		
Min	18.1 mbar	
Max	22.5 mbar	
	(see Section 10.1)	
<b>Injector</b> (Natural Gas) 6.3mm Diameter		
<b>No<sub>x</sub> Class</b>	5	
<b>CO/CO<sub>2</sub> Ratio</b>	0.001	

<b>Connections</b>	compression	
Gas Supply	-	1/2" BSPF
Central Heating Flow	-	22mm
Central Heating Return	-	22mm
Pressure Relief Discharge	-	15mm
Condensate Drain	-	1" BSP
<b>Outer Case Dimensions</b>		
Overall Height Inc Flue Elbow	-	1000mm
Casing Height	-	850mm
Casing Width	-	490mm
Casing Depth	-	320mm
<b>Clearances</b> (For unventilated compartments see Section 7.2)		
Both Sides	5mm Min	
Above Casing	200mm Min	
Below Casing	200mm Min	
Front (For Servicing)	500mm Min	
Front (In Operation)	5mm Min	
<b>Weights</b>	kg	lb
Packaged Boiler Carton	53.6	118
Packaged Flue Kit	3.6	8.0
Weight Empty	48.6	107
Installation Lift Weight	40.2	88.6
<b>Recommended System Temperature Drop</b>	Condensing	20°C 36°F
<b>Central Heating Primary Circuit Pressures</b>	bar	lb/in²
Safety Discharge	3	43.5
Max Operating	2.5	36.3
Min Operating	0.7	10.2
Recommend Operating	1-2	14.5-29

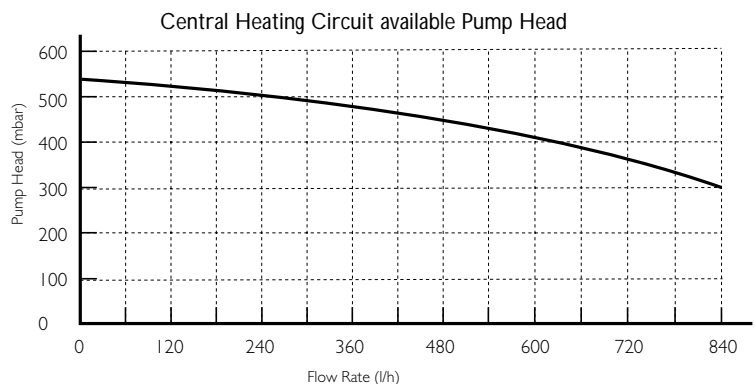
<b>Electrical Supply</b>	230V~ 50Hz (Appliance must be connected to an earthed supply)	
<b>Power Consumption</b>	200W	
<b>External Fuse Rating</b>	3A	
<b>Internal Fuse Rating</b> (BS 4265) Fuse	3.15 AT (PCB)	
<b>Electrical Protection</b>	IPX2	
<b>Water Content</b>	litres	3.5
	pints	6.2
<b>Expansion Vessel</b>	- (For Central Heating only. Integral with appliance)	
Min Pre-charge Pressure	bar	lb/in²
	0.95	13.6
Nominal Pre-charge Pressure	l	14.5
	litre	gal
Max Capacity of CH System	125	27.5
<b>Controls</b>	boiler thermostat, safety thermostat, flow switch, electronic flame sensing, temperature protection thermostat & condensate blockage sensor.	
<b>Horizontal Flue Terminal Dimensions</b>	Diameter	110mm
	Projection	150mm

## SEDBUK Declaration For Baxi System 100 HE Plus

The seasonal efficiency (SEDBUK) is 90.9 %

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 have been certified by 0086.

**NOTE:** The maximum output of the boiler is factory set at 22.0kW (75,000 Btu/hr). This can be altered to 30.18kW (102,980 Btu/hr) - see section 8.7.



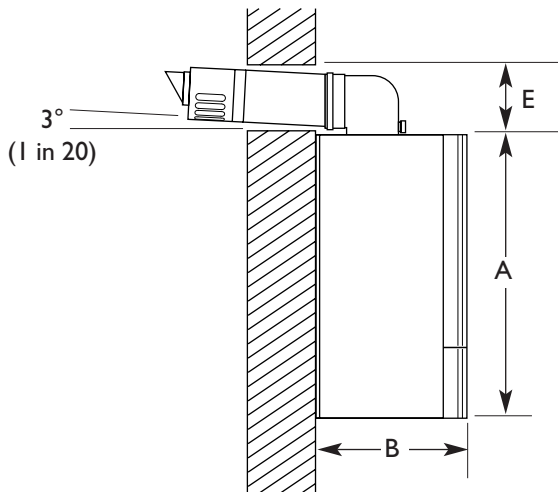


Fig. 7

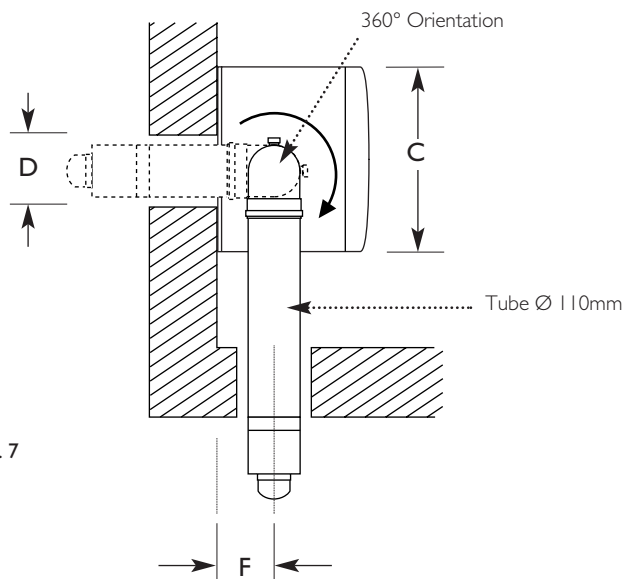
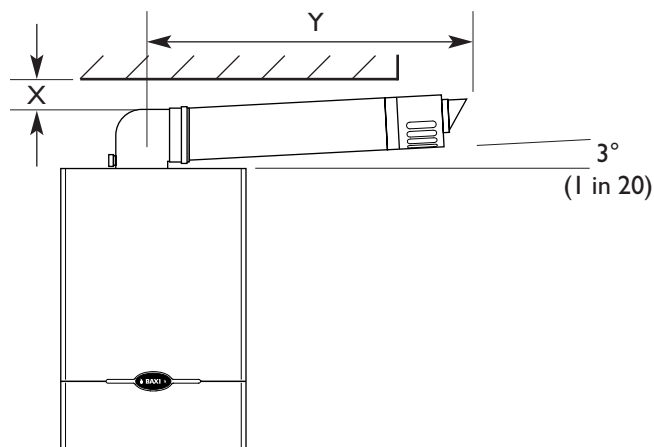


Fig. 8

### DIMENSIONS

A	850mm
B	320mm
C	490mm
D	125mm Ø Min.
E	150mm
F	125mm

The 3° (1 in 20) fall provided by the elbow is to allow condensate to run back to the boiler, for disposal through the condensate discharge pipe.



### SIDE FLUE (left and right)

For every 1m of horizontal flue length, the clearance above the top of the flue elbow should be 55mm to incorporate the 3° (1 in 20) fall in the flue from the terminal to the elbow.

Flue length (Y)	Clearance (X)
up to 1m	55mm
1m - 2m	110mm
2m - 3m	165mm

## 6.0 System Details

### 6.1 Water Circulating Systems

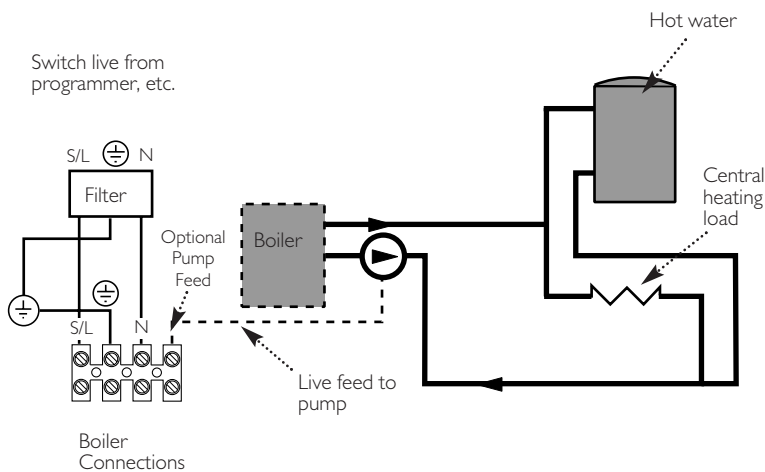
1. The appliance is suitable for fully pumped sealed systems only.

**The following conditions should be observed on all systems:**

- 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 a way which would not restrict the servicing of the boiler.
- Air vents should be fitted to all system high points.
- An air rejection separator is recommended to ensure correct operation of all appliance components.

2. If the system requires an output from the boiler greater than 75,000 Btu/hr then an additional external pump will need to be fitted.

3. If the system is fully TRV'd with no bypass then any external pump can be wired back to the boiler Optional Pump Feed connection. This will protect the pump by turning it off if all the TRVs are shut (sensed by the boiler flow switch). This is wired as in Fig. A. See section 8.7 for how to increase boiler output from 75,000 Btu/hr to 100,000 Btu/hr.



**Fig. A** Wiring an extra pump to the pump feed connection of boiler

### 6.2 Treatment of Water Circulating Systems

- All recirculatory water systems will be subject to corrosion unless an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.
- When upgrading existing systems that exhibit evidence of sludging, it is advisable to clean the system prior to treatment in order to remove any sludge and reduce the likelihood of these deposits damaging new components.
- When fitting new systems flux will be evident within the system, which can lead to damage of system components.
- All systems must be thoroughly drained and flushed out. The recommended flushing and cleansing agents are Betz-Dearborn Sentinel X300 or X400 and Fernox Superfloc Universal Cleanser which should be used following the flushing agent manufacturer's instructions.
- System additives - corrosion inhibitors and flushing agents/descalers should be suitable for aluminium and comply to BS7593 requirements. The only system additives recommended are Betz-Dearborn Sentinel X100 and Fernox-Copal which should be used following the inhibitor manufacturer's instructions.

**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 manufacturer's instructions. (Test kits are available from inhibitor stockists.)
- For information or advice regarding any of the above contact the Baxi Helpline.

## 6.0 System Details

### 6.3 System Controls

This boiler does not require a bypass.

This boiler does not require a permanent live.

An additional external pump is required if a boiler output of greater than 75,000 Btu/hr is required.

The additional external pump only needs wiring directly to the boiler for fully TRV'd systems.

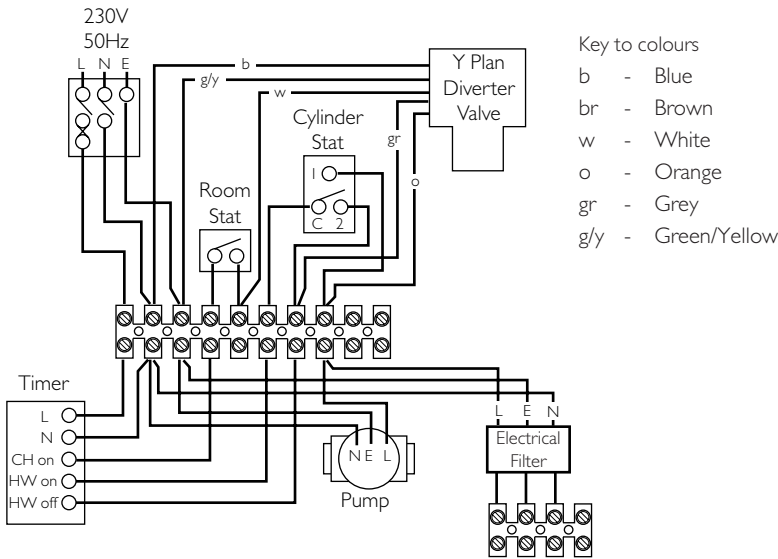
1. To comply with Part L1 of the Building Regulations the heating system into which the boiler is installed should include the following:

- zone controls
- timing controls
- boiler control interlocks

2. Such a system needs to be fully pumped and must provide independent temperature and time control to both the heating and hot water circuits and have a boiler interlock.

3. The boiler should be controlled so that it operates on demand only. Where it is proposed to effect control by thermostatic radiator valves, a room thermostat (or other device such as a flow switch - a flow switch is integral to this boiler) should also be provided to switch off the boiler when there is no demand for heating or hot water.

4. The interlock for the CH circuit can be provided by either a Room Thermostat or by a fully TRV'd system without a bypass. If an external pump is required and the boiler flow switch is being used as the system interlock then the additional pump will need to be wired back to the boiler optional pump feed connection. Connection diagrams for both options for Y and S plan systems are shown.

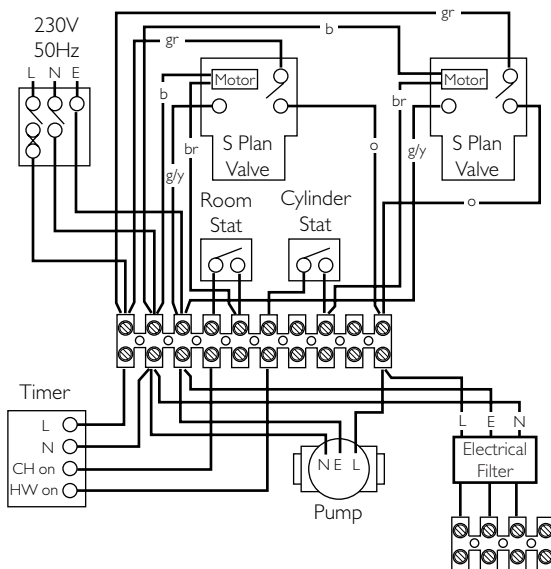


#### Y Plan, Room Thermostat System, CH Interlocked By Room Thermostat

At least the Radiator(s) near the Room Thermostat not TRV'd

Pump run from Switched Live

By-pass permitted but not required for Part L1 compliance

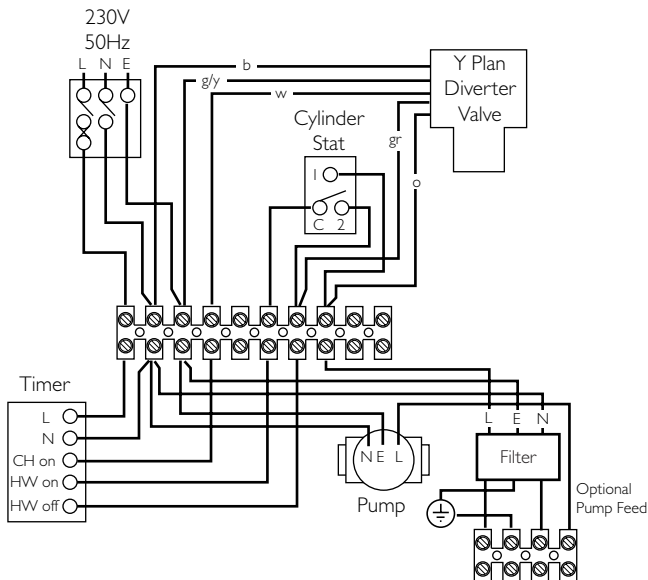


#### S Plan, Room Thermostat System, CH Interlocked By Room Thermostat

At least the Radiator(s) near the Room Thermostat not TRV'd

Pump run from Switched Live

By-pass permitted but not required for Part L1 compliance

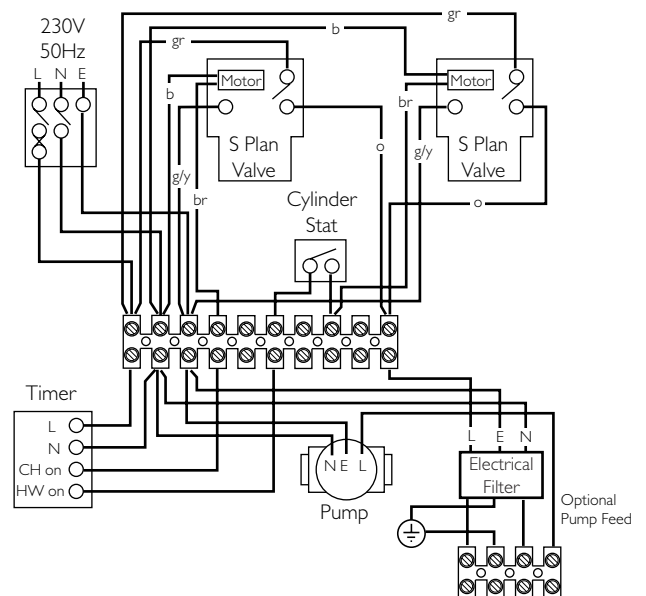


#### Y Plan, Fully TRV'd System, CH Interlocked By Boiler Flow Switch

Room Thermostat should not be fitted

Pump must be run from Boiler Optional Pump Feed connection for Part L1 compliance

By-pass not permitted (must be valved off) for Part L1 compliance



#### S Plan, Fully TRV'd System, CH Interlocked By Boiler Flow Switch

Room Thermostat should not be fitted

Pump must be run from Boiler Optional Pump Feed connection for Part L1 compliance

By-pass not permitted (must be valved off) for Part L1 compliance

## 6.0 System Details

### 6.4 Pipework

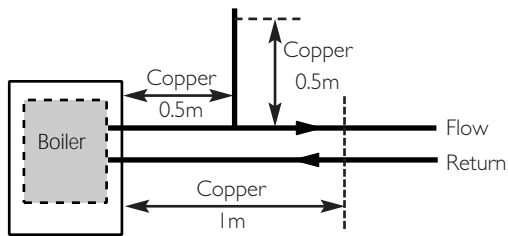


Fig. 9

1. The sizes of flow and return pipes from the boiler should be determined by normal methods, according to the requirements of the system. The connection to the boiler is 22mm compression fitting.

2. Due to space requirements at the rear of the tap bracket, pipework should comprise of solder fittings.

3. A 20 °C (36°F) drop in temperature across the system is recommended for condensing boilers. Existing radiators may be oversized and so allow this, but where radiator sizing is marginal it may be advisable to retain a system temperature drop of 11 °C (20°F).

4. 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 (Fig. 9).

### 6.5 Thermal Stores

1. When the Baxi System 100 HE Plus is fitted in conjunction with a thermal store, both jumpers must be removed from the Control PCB, see Fig. 34 Section 8.7.

## 6.0 System Details

### 6.6 System Filling and Pressurising (Fig. 10)

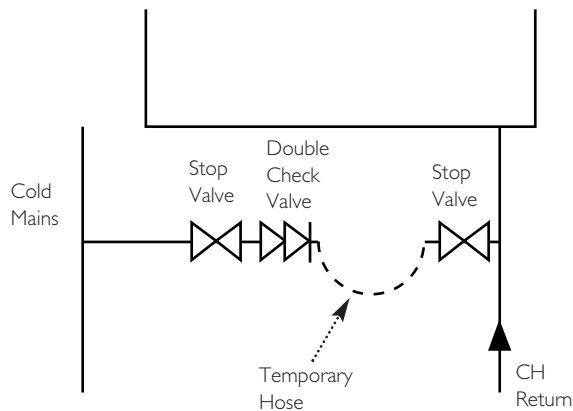


Fig. 10

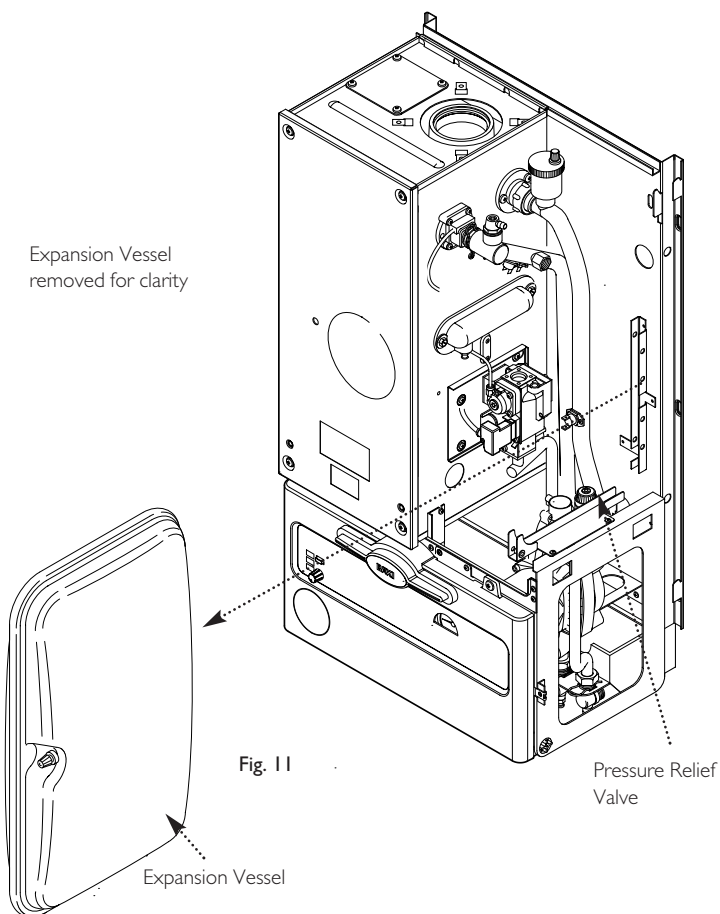


Fig. 11

1. 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.

2. The filling method adopted must be in accordance with the Water Supply (Water Fittings) regulations and the Water Bylaws (Scotland).

3. 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".

4. The sealed primary circuits may be filled or replenished by means of a temporary connection between the primary circuit and a supply pipe provided the arrangement in accordance with Diagram R24.2a of the Water Regulations Guide.

5. The temporary hose must be completely removed at both ends after use.

### 6.7 Expansion Vessel (Fig. 11)

1. The appliance expansion vessel is pre-charged to 1 bar (10 lb/in<sup>2</sup>). Therefore, the minimum cold fill pressure is 1 bar. The vessel is suitable for correct operation for system capacities up to 125 litres (27.5 gal). For greater system capacities an additional expansion vessel must be fitted - refer to BS 7074 Pt 1.

### 6.8 Pressure Relief Valve (Fig. 11)

1. The pressure relief valve is set at 3 bar, therefore all pipework, fittings, etc. should be suitable for pressures in excess of 3 bar.

2. The pressure relief discharge pipe should be not less than 15mm dia, run continuously downward, and discharge outside the building, preferably over a drain. It should be routed in such a manner that no hazard occurs to occupants or causes damage to wiring or electrical components. The end of the pipe should terminate facing down and towards the wall.

3. The discharge must not be above a window, entrance or other public access. Consideration must be given to the possibility that boiling water/steam could discharge from the pipe.

## 7.0 Site Requirements

### 7.1 Location

**NOTE:** Due to the high efficiency of the boiler a plume of water vapour will be discharged from the flue. This should be taken into account when siting the flue terminal.

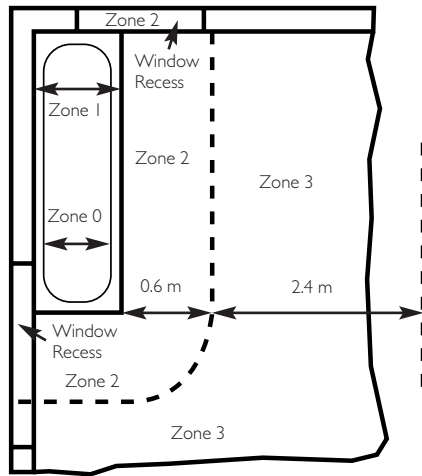


Fig. A In GB Only

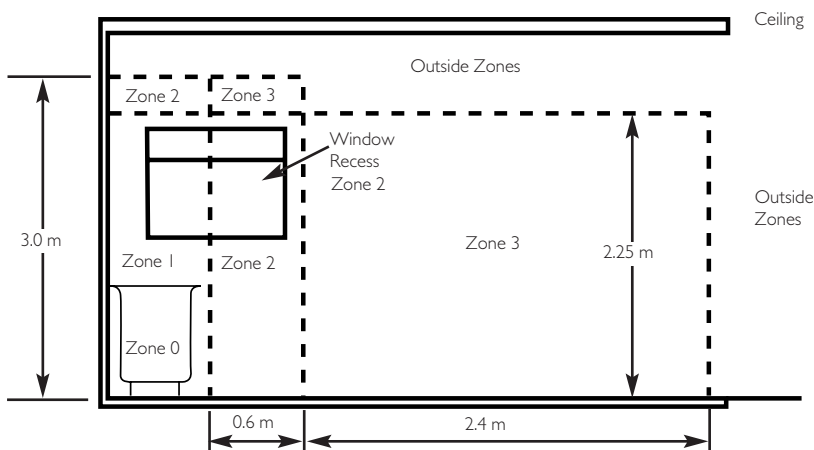


Fig. B In GB Only

1. The boiler may be fitted to any suitable wall with the flue passing through an outside wall or roof and discharging to atmosphere in a position permitting satisfactory removal of combustion products and providing an adequate air supply. The boiler should be fitted within the building unless otherwise protected by a suitable enclosure i.e. garage or outhouse. (The boiler may be fitted inside a cupboard - see Section 7.2).

2. If the boiler is sited in an unheated enclosure then it is recommended to incorporate in the system controls a suitable device for frost protection.

3. If the boiler is fitted in a room containing a bath or shower, it can only be fitted in zone 3, (Figs. A & B shows zone dimensions for a bathtub. For other examples refer to Section 601 of the Current I.E.E. Wiring Regulations) reference must be made to the relevant requirements. In GB this is the current I.E.E. Wiring Regulations and Building Regulations.

In IE reference should be made to the current edition of I.S. 813 "Domestic Gas Installations" and the current ETCI rules.

4. If the boiler is to be fitted into a building of timber frame construction then reference must be made to the current edition of Institute of Gas Engineers Publication IGE/UP/7 (Gas Installations in Timber Framed Housing).

### 7.2 Ventilation of Compartments

1. Where the boiler is installed in a cupboard or compartment, no air vents are required for cooling purposes providing that the minimum dimensions below are maintained.

Sides	25mm
Top	200mm
Bottom	200mm
Front	100mm

2. If the boiler is installed in a smaller cupboard or compartment it must be ventilated according to BS 5440 Part 2 and the minimum clearances given in section 4.0 "Technical Data" maintained.

3. Any compartment should be large enough to house the boiler only.

**NOTE:** The ventilation label on the front of the outer case **MUST NOT BE REMOVED** when the appliance is installed in a compartment or cupboard.

## 7.0 Site Requirements

### 7.3 Clearances (Figs. 13 & 14)

1. A flat vertical area is required for the installation of the boiler.
2. These dimensions include the necessary clearances around the boiler for case removal, spanner access and air movement. Additional clearances may be required for the passage of pipes around local obstructions such as joists running parallel to the front face of the boiler.
3. For unventilated compartments see Section 7.2.

### 7.4 Gas Supply

1. The gas installation should be in accordance with the relevant standards. In GB this is BS 6891. In IE this is the current edition of I.S. 813 "Domestic Gas Installations".
2. The connection to the appliance is  $\frac{1}{2}$ " BSPF.
3. Ensure that the pipework from the meter to the appliance is of adequate size. (22mm recommended at the appliance). **Do not use pipes of a smaller diameter than 22mm up to the boiler connection.**

### 7.5 Electrical Supply

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 ETCI rules.
2. The mains supply is 230V ~ 50Hz fused at 3A.

**NOTE:** The method of connection to the electricity supply must facilitate complete electrical isolation of the appliance. Connection may be via a fused double-pole isolator with a contact separation of at least 3mm in all poles and servicing the boiler and system controls only.

**WARNING:** The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.

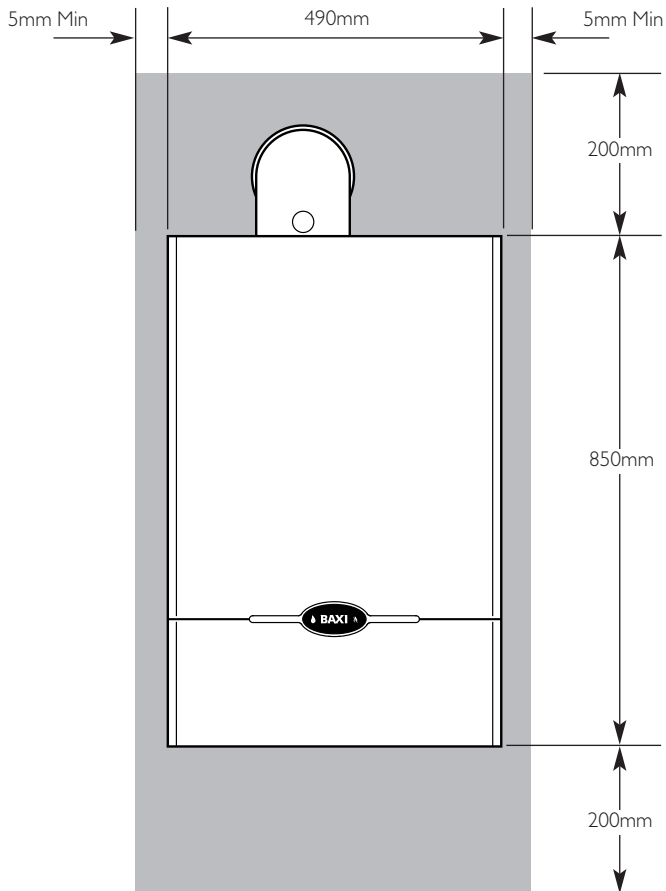


Fig. 13

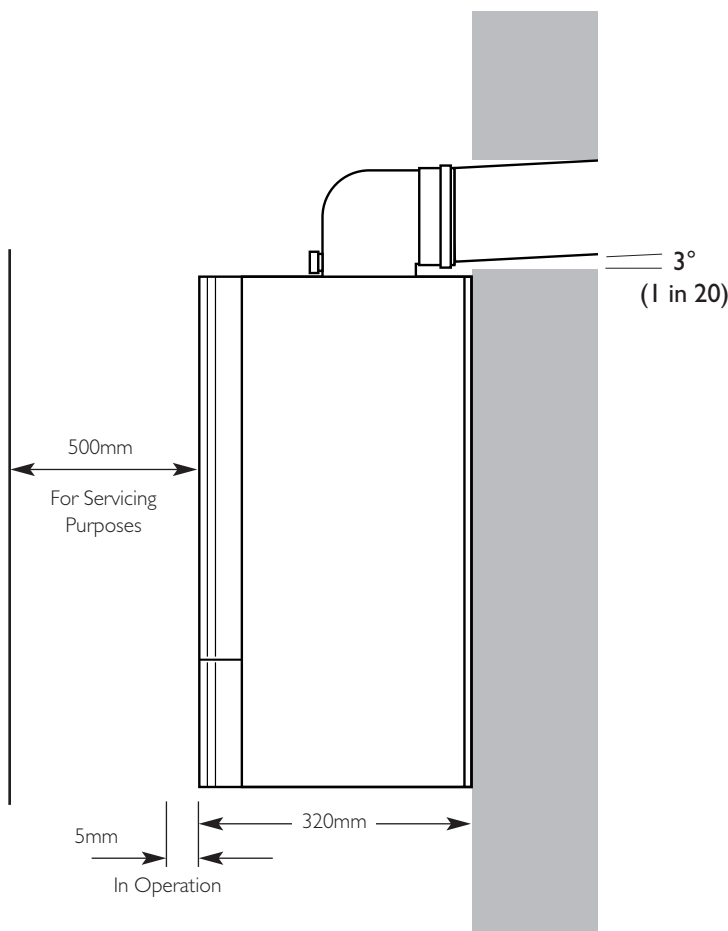


Fig. 14



## 7.0 Site Requirements

### 7.6 Condensate Drain

**FAILURE TO INSTALL THE CONDENSATE DISCHARGE PIPEWORK CORRECTLY WILL AFFECT THE RELIABLE OPERATION OF THE BOILER**

The condensate discharge pipe **MUST NOT RISE** at any point along its length. There **MUST** be a fall of **AT LEAST 2.5° (50mm per metre)** along the entire run.

**NOTE:** It is unnecessary to fit an air break in the discharge pipe.

1. The condensate outlet terminates in a 1" BSP nut and seal for the connection of 21.5mm (¾in) plastic overflow pipe which should generally discharge internally into the household drainage system. If this is not possible, discharge into an outside drain is acceptable.

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

**BS 6798:2000 & Part H1 of the Building Regulations** give further guidance.

3. The discharge pipe should be run in a proprietary drain pipe material e.g. PVC, PVC-U, ABS, PVC-C or PP.

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

5. The pipe should be a minimum of 21.5mm diameter and must be supported using suitably spaced clips to prevent sagging.

6. Any pipe fitted externally must be kept as short as possible to minimise the potential of freezing.

7. Any condensate discharge pipework external to the building (or in an unheated part of it e.g. garage) must be insulated to protect against frost. It is also recommended that the pipe diameter is increased to 32mm.

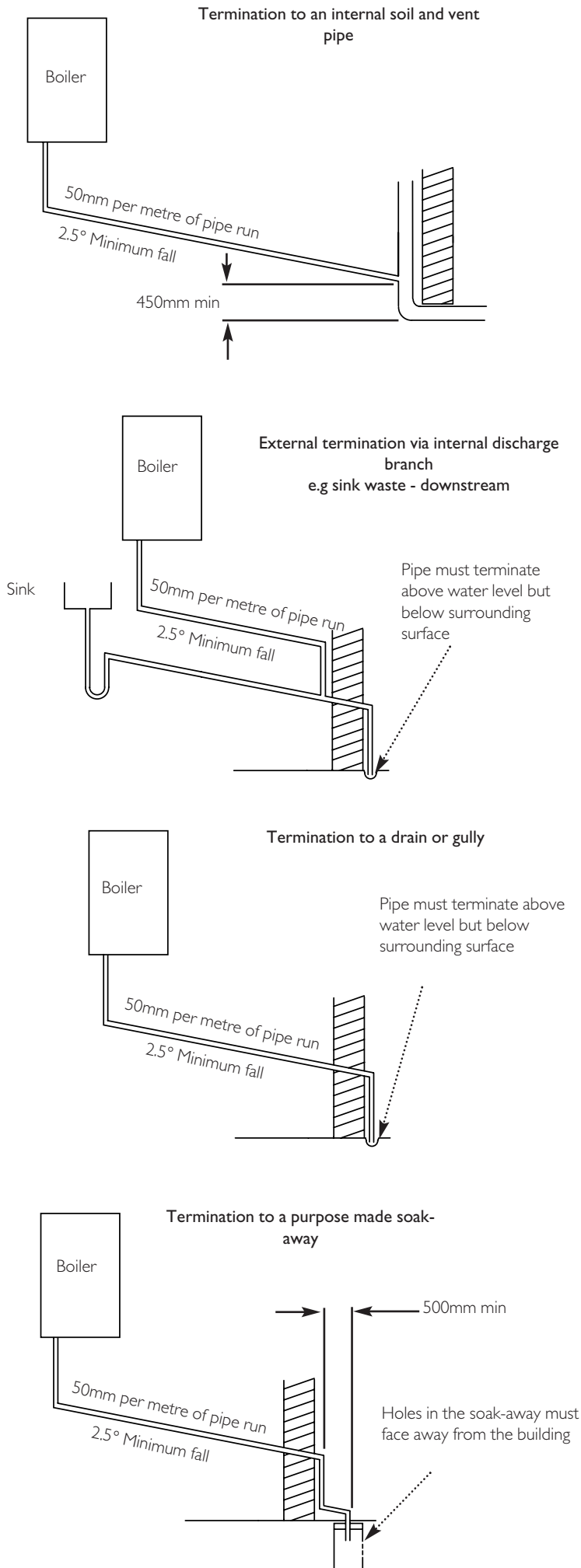
8. If the boiler is fitted in an unheated location the entire condensate discharge pipe should be treated as an external run.

9. In all cases discharge pipe must be installed to aid disposal of the condensate. To reduce the risk of condensate being trapped, as few bends and fittings as possible should be used.

10. When discharging condensate into a soil stack or waste pipe the effects of existing plumbing must be considered. If soil pipes or waste pipes are subjected to internal pressure fluctuations when WC's are flushed or sinks emptied then back-pressure may force water out of the boiler trap and cause appliance lockout.

Examples are shown of the following methods of termination:-

- to an internal soil & vent pipe
- via an internal discharge branch (e.g. sink waste)
- to a drain or gully
- to a purpose made soakaway



## 7.0 Site Requirements

### 7.7 Flue

**NOTE:** Due to the high efficiency of the boiler a plume of water vapour will be discharged from the flue. This should be taken into account when siting the flue terminal.

1. The following guidelines indicate the general requirements for siting balanced flue terminals. For GB recommendations are given in BS 5440 Pt. 1. For IE recommendations are given in the current edition of I.S. 813 "Domestic Gas Installations".

2. If the terminal discharges onto a pathway or passageway, check that combustion products will not cause a nuisance and that the terminal will not obstruct the passageway.

3. Take into consideration the effect the plume of vapour may have on neighbours when siting the flue.

4. Adjacent surfaces close to the flue terminal may need protection from the effects of condensation. Alternatively a flue deflector kit (part no. 248167) is available.

5. For installation of the flue into an internal corner at the 25mm dimension the flue deflector kit (part no. 248167) must be fitted.

6. \* Reduction to the boundary is possible down to 25mm but the flue deflector kit (part no. 248167) must be fitted.

7. If required a suitable terminal guard is available from Baxi for use with the flue deflector.

8. For fitting under low soffits and eaves it is acceptable for the flue to project up to 500mm from the face of the wall to the inside of the air intake. This can be painted if required using a suitable external paint.

9. If a terminal is less than 2 metres (78<sup>3</sup>/<sub>4</sub> in) above a balcony, above ground or above a flat roof to which people have access, then a suitable terminal guard must be provided.

Terminal Position with Minimum Distance (Fig. 16) (mm)

A <sup>a</sup>	Directly below an opening, air brick, opening windows, etc.	300
B <sup>a</sup>	Above an opening, air brick, opening window etc.	300
C <sup>a</sup>	Horizontally to an opening, air brick, opening window etc.	300
D	Below gutters, soil pipes or drain pipes.	25
E	Below eaves.	25
F	Below balconies or car port roof.	25
G	From a vertical drain pipe or soil pipe.	25
H	From an internal (i) or external (ii) corner.	(i) 25 (ii) 115
I	Above ground, roof or balcony level.	300
J	From a surface or boundary line facing a terminal.	600
K	From a terminal facing a terminal (Horizontal flue).	1200
	From a terminal facing a terminal (Vertical flue).	600
L	From an opening in carport (e.g. door, window) into the dwelling.	1200
M	Vertically from a terminal on the same wall.	1500
N	Horizontally from a terminal on the same wall.	300
R	From adjacent wall to flue (vertical only).	300
S	From an adjacent opening window (vertical only).	1000

Table. 2

<sup>a</sup> In addition, the terminal should be no nearer than 150 mm to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a window frame. See BS 5440 Pt. 1.

**NOTE:** The distance from a fanned draught appliance terminal installed parallel to a boundary may not be less than 300mm in accordance with the diagram below

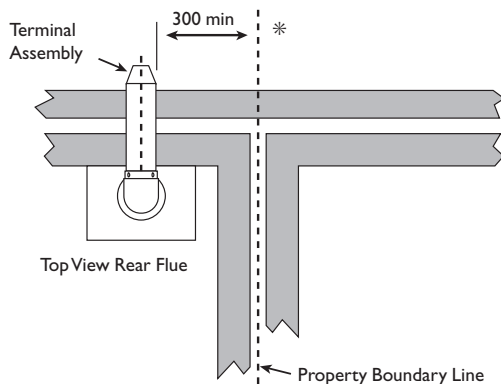


Fig. 15

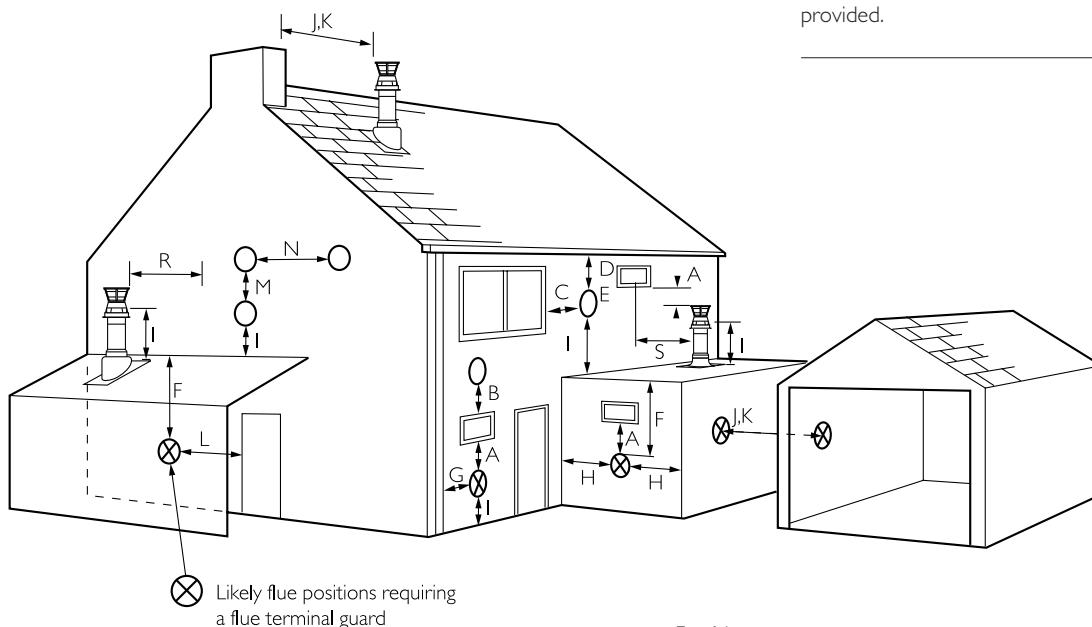


Fig. 16

## 7.0 Site Requirements

### 7.8 Flue Dimensions

See Section 2.2. The standard horizontal flue kit allows for flue lengths between 270mm (10<sup>5</sup>/<sub>8</sub>"") and 800mm (32"") from elbow to terminal (Fig. 17).

The maximum permissible equivalent flue length is: 4 metres (Fig. 18).

**NOTE:** Each additional 45° of flue bend will account for an equivalent flue length of 0.5m.  
eg. 45° = 0.5m, 90° = 2 x 45° = 1m etc.

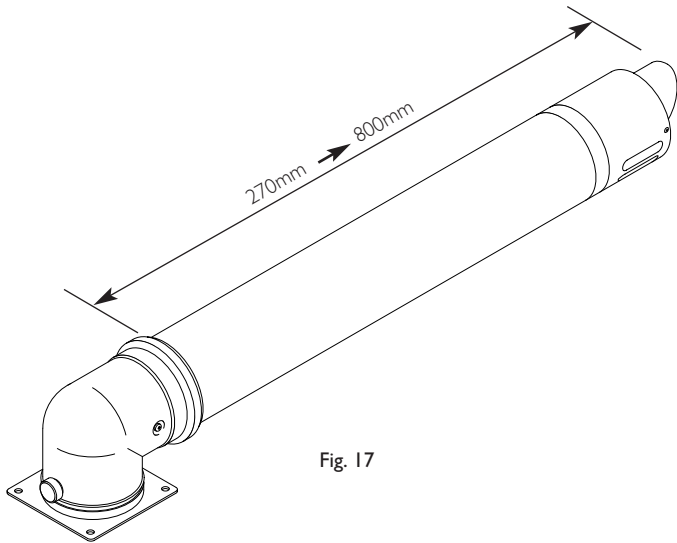


Fig. 17

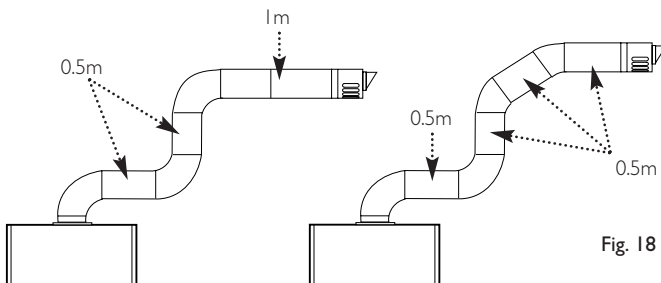


Fig. 18

Pictorial examples of flue runs where EQUIVALENT flue length equals 4m

### 7.9 Terminal Guard (Fig. 19)

1. When codes of practice dictate the use of terminal guards, they can be obtained from most Plumbers' and Builders' Merchants.
2. There must be a clearance of at least 50mm between any part of the terminal and the guard.
3. When ordering a terminal guard, quote the appliance model number.
4. The flue terminal guard should be positioned centrally over the terminal and fixed as illustrated.

### 7.10 Vertical Flue

1. Only a flue approved with the Baxi System 100 HE Plus can be used.
2. For information on vertical flues consult the Baxi Flue Guide Brochure or Notes for Guidance supplied with the vertical flue pack.

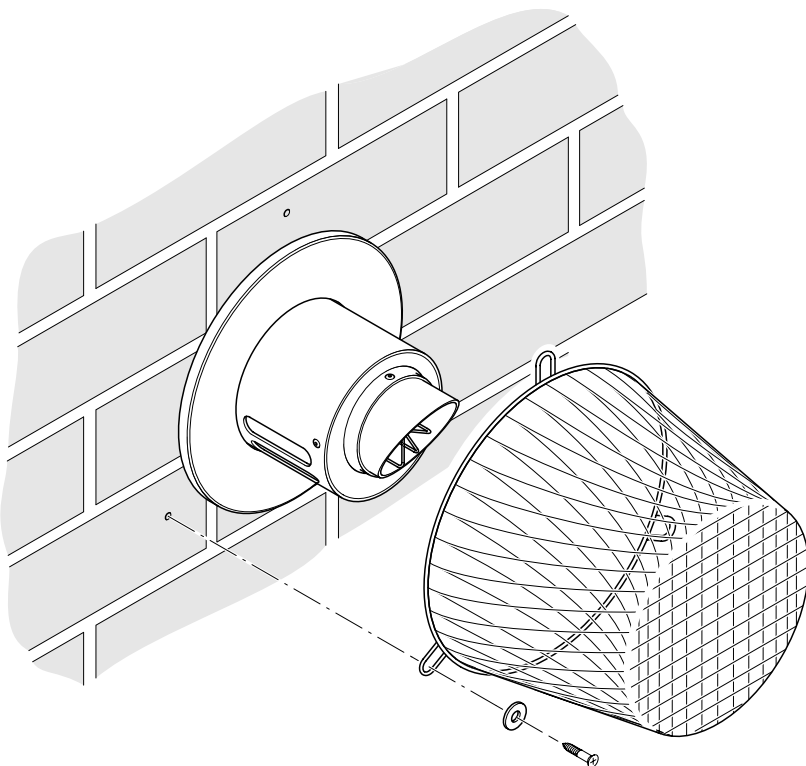
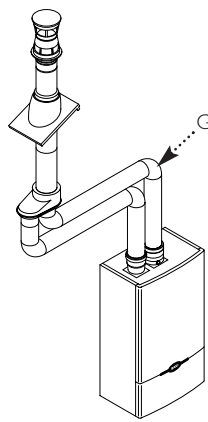
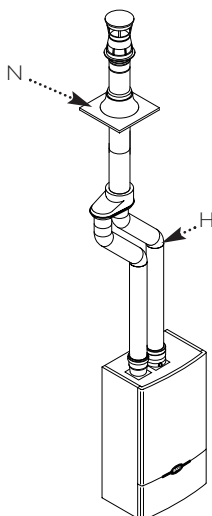
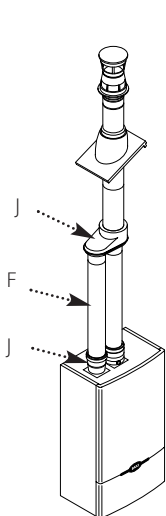
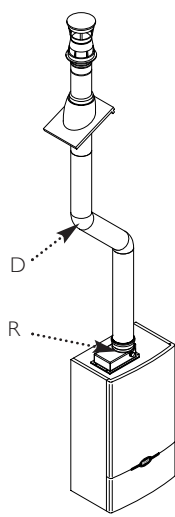
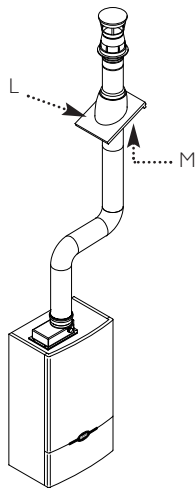
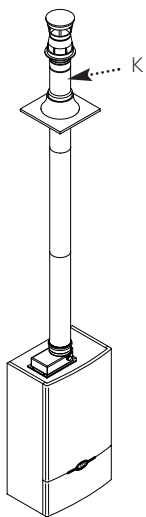
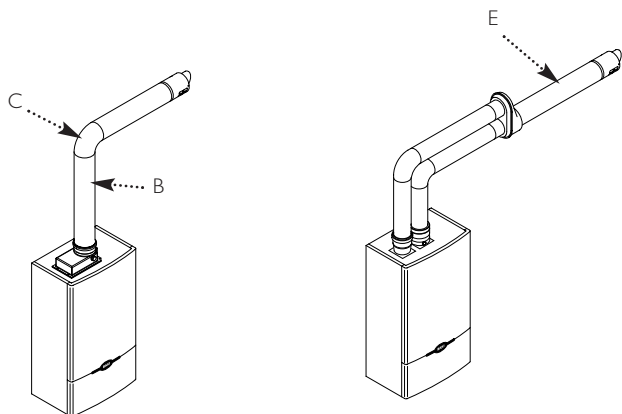
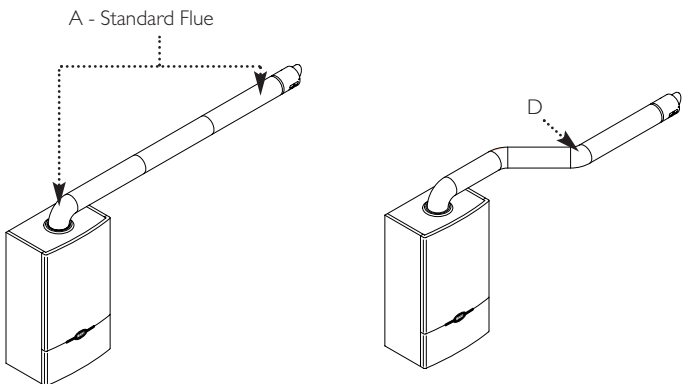


Fig. 19



## 7.0 Site Requirements

### 7.1.1 Flue options

#### Concentric

The maximum equivalent lengths are 4m (horizontal) or (vertical). These lengths exclude the standard elbow and flue/terminal assembly (horizontal) and terminal assembly (vertical).

#### Twin Flue

The total maximum equivalent flue length is 150m.

**NOTE:** Each 1m of flue duct should be calculated as 2m.

Any additional "in line" bends in the flue system must be taken into consideration. Their equivalent lengths are:

Concentric Pipes:	45° bend	0.5 m
	93° bend	1.0 m

Twin Flue Pipe:	45° bend (air duct)	1.3 m
	45° bend (flue duct)	2.6 m
	90° bend (air duct)	4.8 m
	90° bend (flue duct)	9.6 m

Detailed examples of equivalent flue length calculation are given in the Installation Guidance Notes for each flue system type.

(Documents 243501 and 243502 for concentric and twin pipe respectively).

Key	Accessory	Size	Baxi Code Number
<b>Concentric Flue System 110mm diameter</b>			
A	Horizontal flue kit	850mm	236921
B	Straight extension kit	1000mm	241695
		500mm	241694
		250mm	241692
C	Bend kit	93°	241687
D	Bend kit (pair)	45°	241689
E	Horizontal flue terminal		243013BAX
	Clamp	110mm	243014BAX
<b>Twin Flue System 80mm diameter</b>			
F	Straight extension kit	1000mm	238690
		500mm	238692
		250mm	238694
G	Bend kit	90°	246139
H	Bend kit (pair)	45°	246138
<b>Universal Vertical Flue Kits</b>			
J	Twin flue adaptor kit		242757
K	Vertical flue terminal		242802
L	Universal roof tile	25°/50°	243015
M	Roof cover plate kit		243131
N	Flat roof flashing		243016BAX
R	Vertical flue adaptor		5106888
	Clamp	80mm	238684

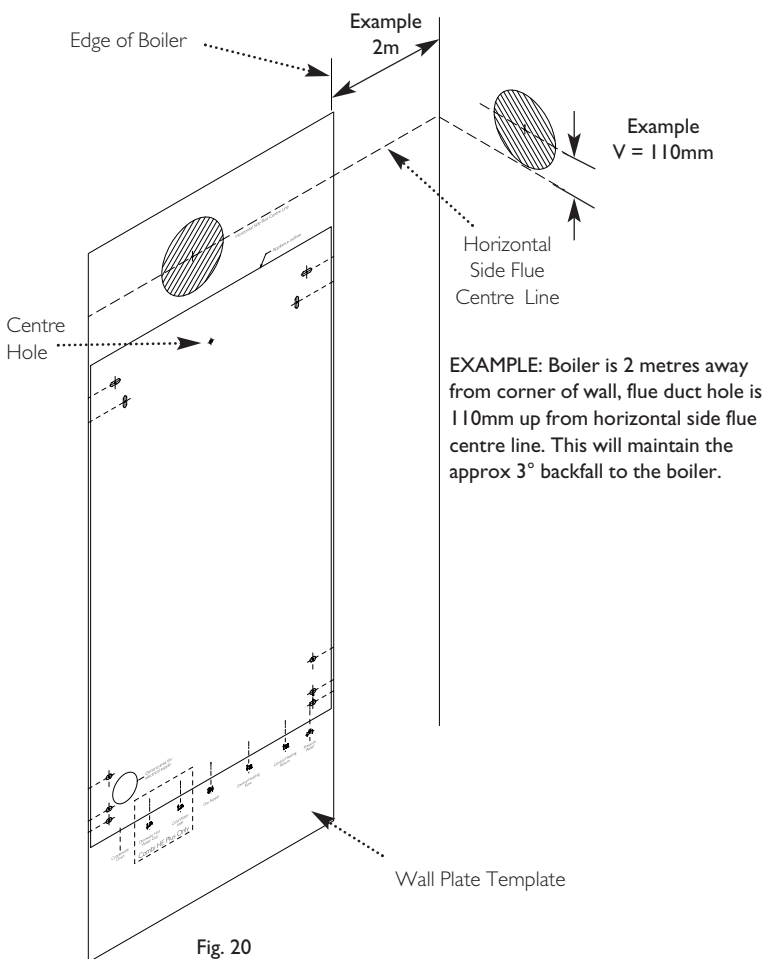


Fig. 20

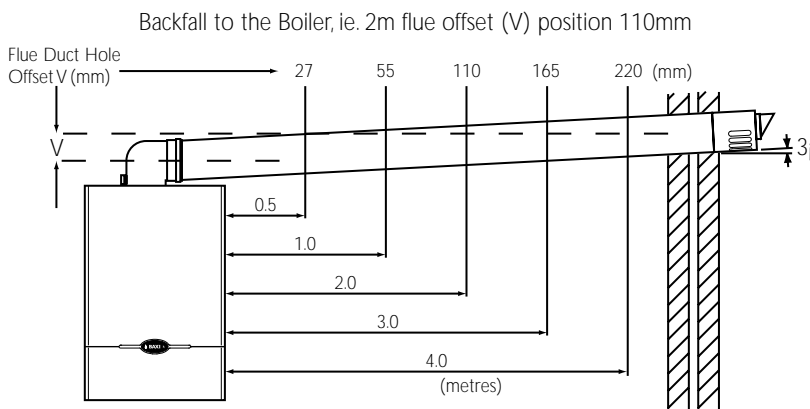


Fig. 20a

Distance in metres from boiler to the wall.  
For pipe lengths greater than 4m increase the off-set by 52mm for every additional metre to maintain approx 3° inclination.

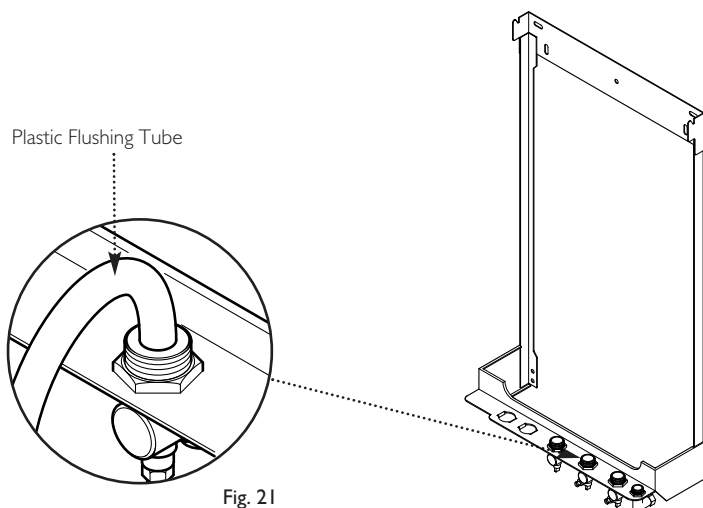


Fig. 21

## 8.0 Installation

Check Site Requirements (section 7.0) before commencing.

### 8.1 Initial Preparation

The gas supply, gas type and pressure must be checked for suitability before connection (see Section 7.4).

**NOTE:** If the boiler is to be pre-plumbed, follow both these instructions and those on the boiler pack.

1. Remove the fixing template (Fig. 20) from the fixing carton.
2. After considering the site requirements (see Section 7.0) position the template on the wall ensuring it is level both horizontally and vertically.
3. Mark the position of the top centre hole for the wallplate.
4. Mark the condensate discharge pipe area.
5. Mark the centre of the flue hole (rear exit).  
**For side exit:** project the horizontal side flue centre line into the corner of the room and along the wall to where the flue hole will be drilled (Fig. 20).  
The diagram (Fig. 20a) shows the dimensions required to ensure any horizontal flue is installed with the correct fall to the boiler. Mark the offset (V) dimension and if required, mark the position of the gas and water pipes. Remove the template.
6. Cut the hole for the flue (preferably with a 125mm/5" diameter core boring tool), ensuring that the hole is drill at approx 3° up from the horizontal. Both wall faces immediately around the cut hole should be flat.
7. Drill and plug the wall as previously marked. Secure the wallplate to the wall by the top centre hole.
8. Ensuring the wallplate is level both horizontally and vertically, drill and plug the remaining 4 securing positions at the top and bottom through the wallplate. Utilising the slots available ensure the wallplate is square and secure to the wall.
9. Connect the gas, water and the pressure relief discharge pipes to the valves on the support bracket using the compression fittings supplied.
10. Loosely route the condensate discharge pipe to the area previously marked.

### 8.2 Flushing

1. Insert a tube into the valve outlet furthest from the filling loop (Fig. 21).
2. Flush thoroughly (see System Details, Section 6.0).

## 8.0 Installation

### 8.3 Preparing The Boiler

1. Remove the outer carton.
2. Hinge up the lower door panel (Fig. 22).
3. Remove the outer case fixing screws (Fig. 22). Slide the outercase upwards to disengage the hooks on the backplate and remove (Fig. 23).

**NOTE:** Service Guidance Note Label is fitted to the inside of the outercase (Fig. 23).

4. Remove the sealing plugs from the copper bends.
5. Remove cardboard transit packaging at the left hand rear of the boiler before lifting the boiler onto the support bracket.
6. Stand the boiler on its base by using the rear lower edge as a pivot.

**NOTE:** A small amount of water may drain from the boiler in the upright position.

**Baxi declare that no substances harmful to health are contained in the appliance or used during construction of the appliance.**

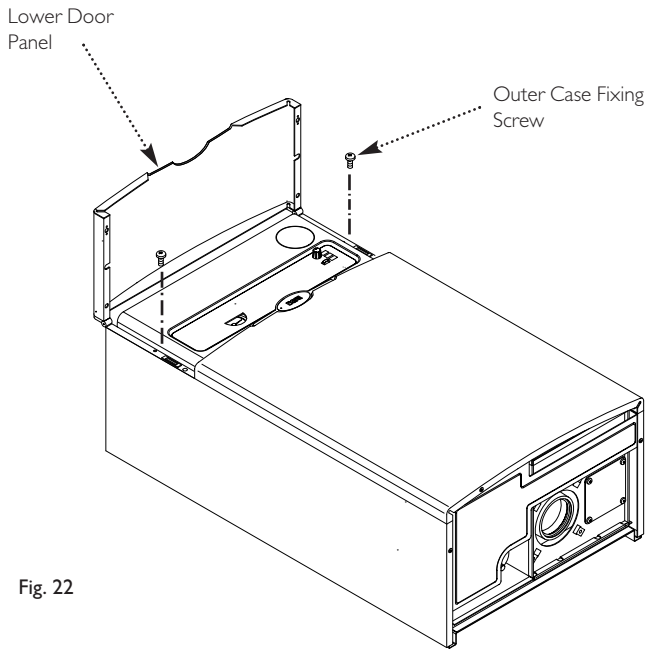


Fig. 22

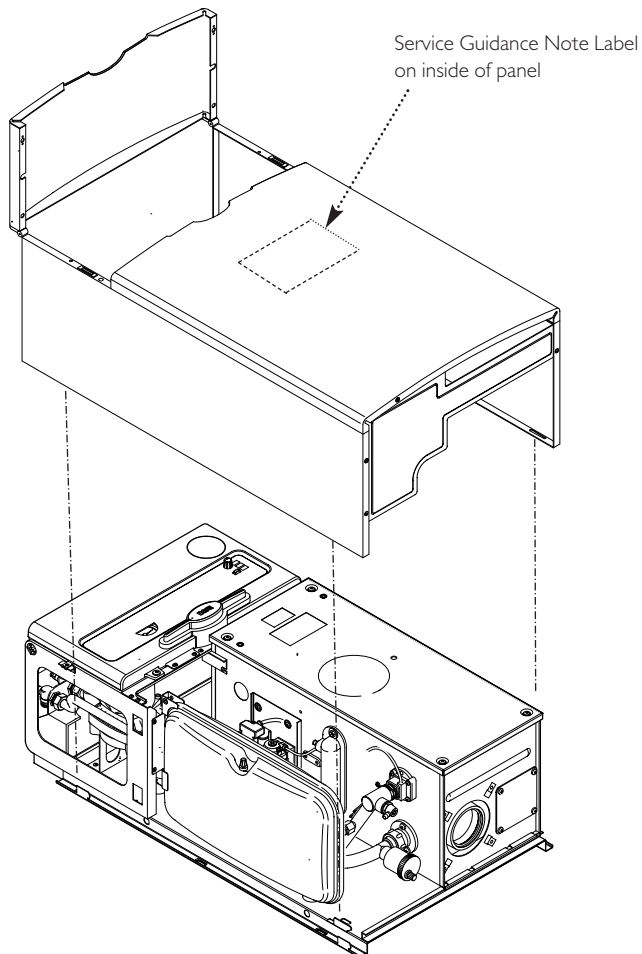


Fig. 23

## 8.0 Installation

### 8.4 Fitting The Boiler (Fig. 24)

1. Remove the tape from the tap rail on the support bracket and fit the central heating return filter (Fig. 26).
2. Lift the boiler over the support bracket using the lifting points shown in Fig. 24 and engage onto the top hooks (see Lifting paragraph page 4).

**NOTE:** When installing in Loft/Small Compartment access for lifting the boiler from the front can be gained for two people using the lifting points (Fig. 24).

3. To gain access to the connections between boiler and valves, release the fascia securing screws ( $\frac{1}{4}$  turn) and hinge down the fascia panel.
4. Make the gas connection first. This will centralise the boiler. The gas sealing washer is an integral part of the gas tap.
5. Insert the fibre sealing washers between the valve outlet face and the flange on the copper bends of the water circuit connections.
6. Tighten the connections.

### 8.5 Making the Condensate Drain Connection (see section 7.6)

1. Connect the condensate drain using the 1" BSP nut and seal supplied.

Ensure the discharge of condensate complies with any national or local regulations in force (see British Gas "Guidance Notes for the Installation of Domestic Gas Condensing Boilers").

2. The condensate outlet terminates in a 1" BSP nut and seal for the connection of 21.5mm ( $\frac{7}{8}$ in) plastic overflow pipe which should generally discharge internally into the household drainage system. If this is not possible, discharge into an outside drain is acceptable.

**NOTE:** To ensure the correct operation and integrity of the condensate drainage system - Carefully pour approximately 1 cupful (250ml) of water into the flue products exhaust, at the top of the heat exchanger (Fig. 25) to ensure a seal is made in the trap.

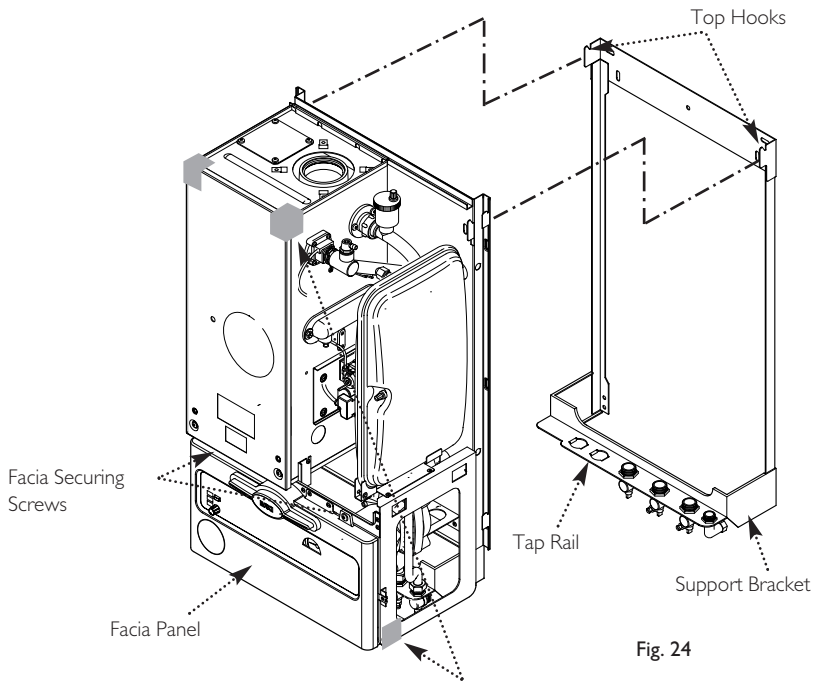


Fig. 24

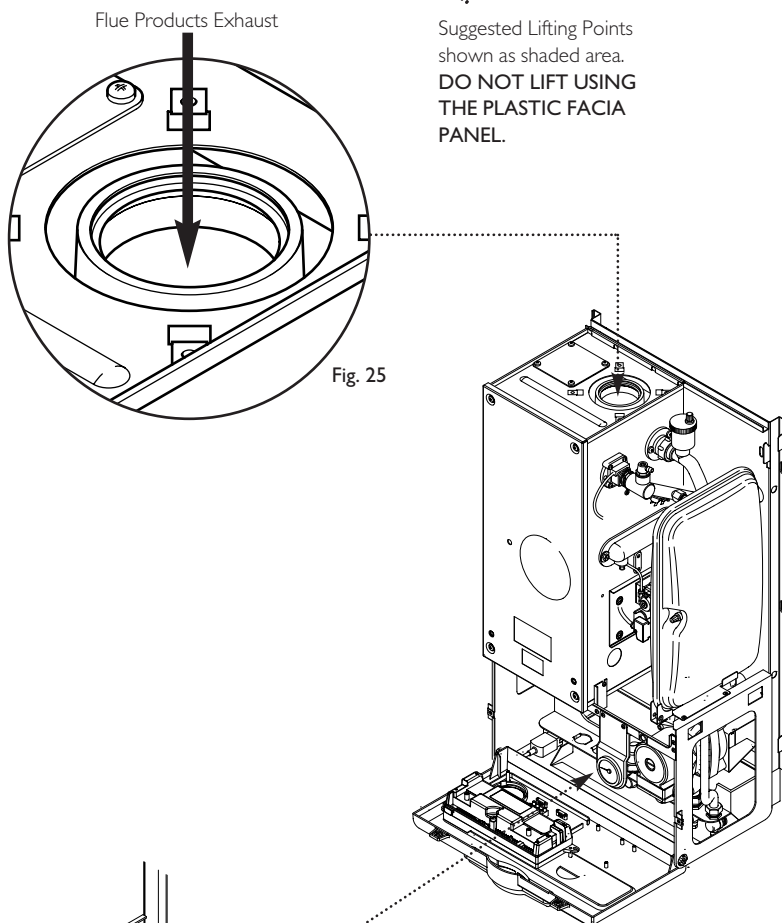


Fig. 25

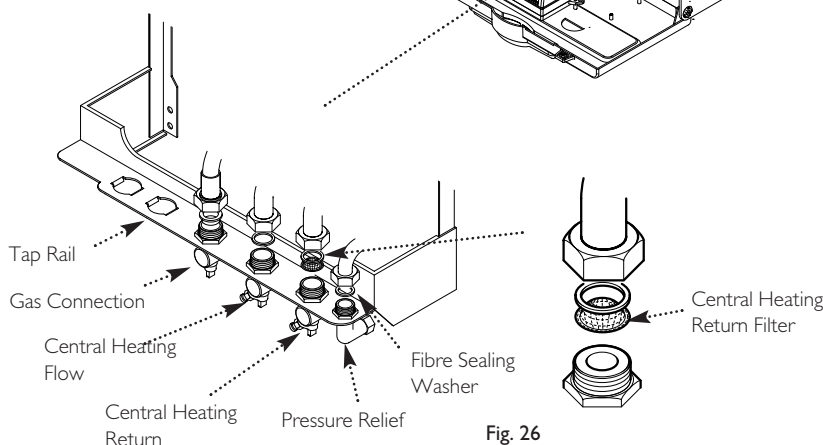


Fig. 26



## 8.0 Installation

### 8.6 Fitting The Flue

Before fitting the flue, check the condensate drain integrity (see section 8.5).

**IMPORTANT:** The flue should always be installed with a 3° (1 in 20) fall from terminal to elbow, to allow condensate to run back to the boiler.

#### HORIZONTAL FLUE

1. The standard flue is suitable for lengths 270mm minimum to 800mm maximum (measured from the edge of the flue elbow outlet).

**Rear Flue:** maximum wall thickness - 614mm  
**Side Flue:** maximum wall thickness - Right Hand 462mm, Left Hand 537mm when installed with minimum side clearances of 5mm.

2. **For rear exit** - measure the wall thickness (Fig. 27) and to this dimension add 201mm. This dimension to be known as (X).

i.e.  $(X) = \text{wall thickness} + 201\text{mm}$

3. Take the flue and mark off (X) from the terminal end as indicated in the diagram (Fig. 28).

#### Check your dimensions.

The flue tubes are fixed together. Cut through both tubes whilst resting the flue on the semi-circular packing pieces. Deburr both tube ends.

4. **For left hand exit** - measure the distance from the edge of the support bracket to the inner face of the wall (Fig. 27) and to this dimension add the wall thickness + 268mm. This dimension to be known as (Y).

i.e.

$(Y) = \text{support bracket to wall} + \text{wall thickness} + 268\text{mm}$

5. Take the flue and mark off (Y) from the terminal end as indicated (Fig. 28).

6. **For right hand exit** - measure the distance from the edge of the support bracket to the inner face of the wall and to this dimension add the wall thickness + 343mm. This dimension to be known as (Z).

i.e.

$(Z) = \text{support bracket to wall} + \text{wall thickness} + 343\text{mm}$

7. Take the flue and mark off (Z) from the terminal end as indicated (Fig. 28).

#### Check your dimensions.

The flue tubes are fixed together. Cut through both tubes whilst resting the flue on the semi-circular packing pieces. Deburr both tube ends.

**IMPORTANT:** Check all measurements before cutting. When cutting ensure the cut does not interfere with the inner flue support bracket (Fig. 29).

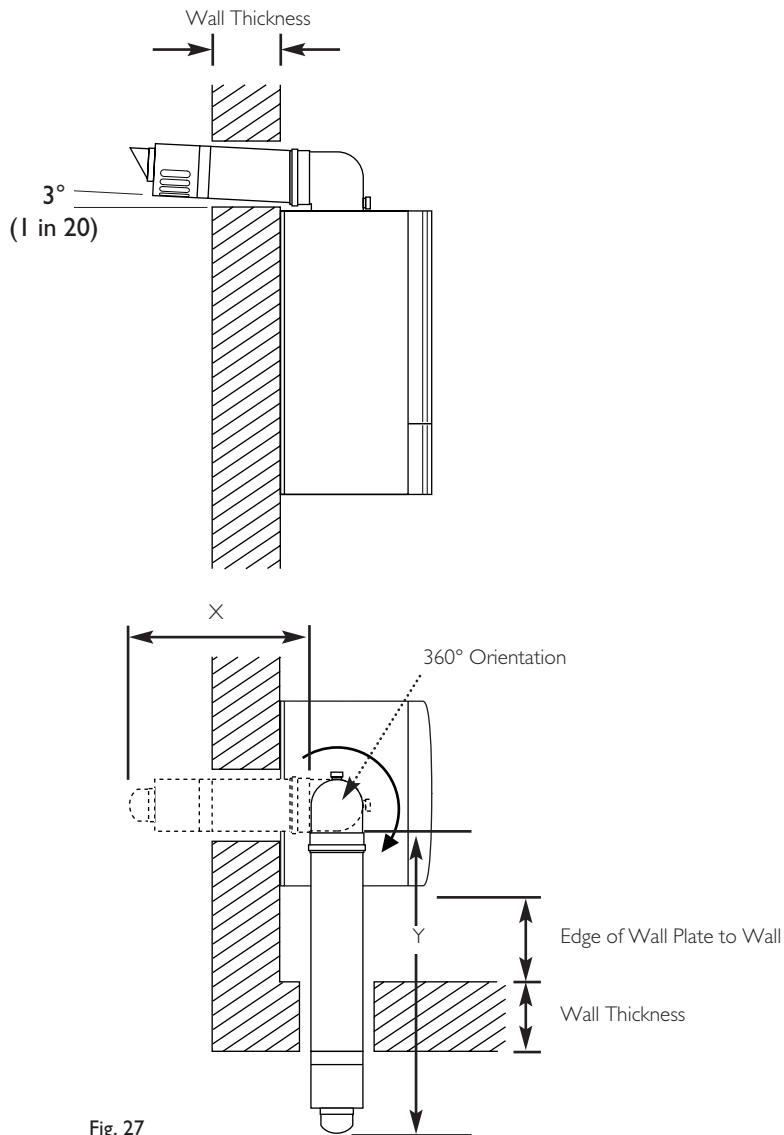


Fig. 27

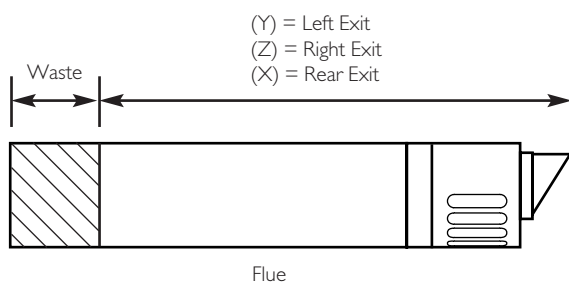


Fig. 28

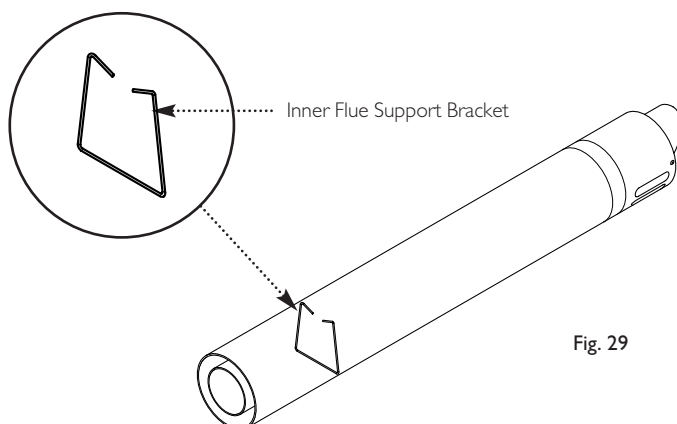


Fig. 29



## 8.0 Installation

### 8.6 Fitting the Flue (Cont)

6. Ensure the inner flue support bracket is positioned in the flue (Fig. 30).

7. Engage the flue into the flue elbow using soap solution to ease the engagement ensuring the flue is assembled as shown (Fig. 31).

8. Place the gasket over the flue exit on the boiler.

9. Slide the flue assembly through the hole in the wall.

10. Engage the elbow on to the flue connection on top of the boiler. Secure with the four screws supplied in the kit.

11. Make good between the wall and air duct outside the building ensuring the 3° drop between the terminal and elbow.

12. The flue trim should be fitted once the installation is complete and the flue secure. Apply a suitable mastic to the inside of the trim and press against the wall finish, making sure the brickwork is dust free and dry (Fig. 32). If necessary fit a terminal guard (see section 7.9).

### VERTICAL FLUEING

1. Only a flue approved with the Baxi System 100 HE Plus Boiler can be used.

2. For information on vertical flues consult the Baxi Flue Guide Brochure or Notes for Guidance with the vertical flue pack.

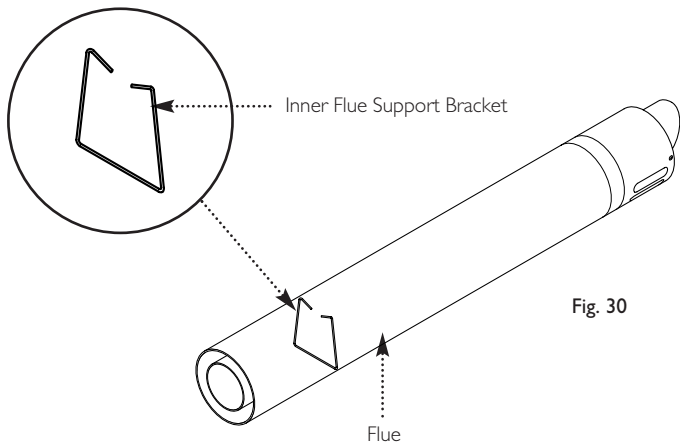


Fig. 30

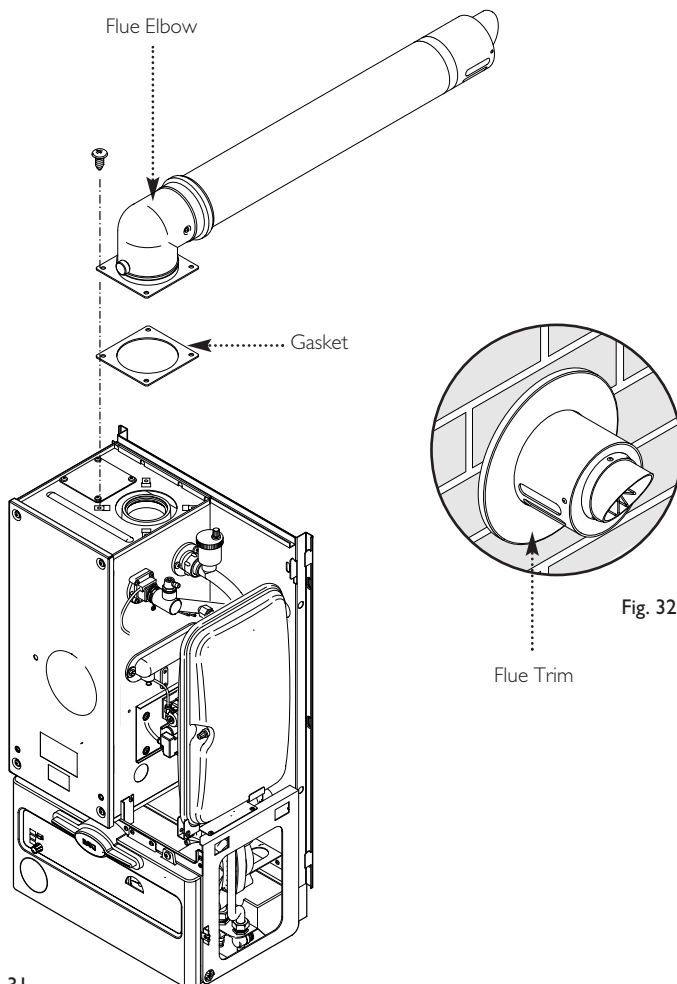


Fig. 31

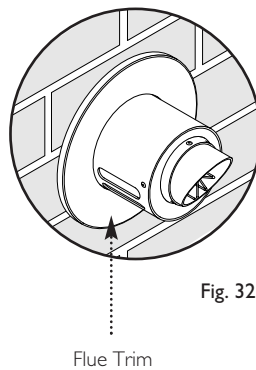


Fig. 32

## 8.0 Installation

### 8.7 Making The Electrical Connections

**WARNING: This appliance must be earthed**

1. The electrical connection is on the rear left hand side of the unit (Fig 33).
2. Remove the electrical plug from the hardware pack.
3. Connect S/L, N & E into the plug and connect it to the socket at the back left at the bottom of the boiler.
4. Remove the metal shield from the hardware pack and connect it over the plug.
5. The boiler is factory set to give a maximum output of 22.0 kW (75,000 Btu/hr). The Control PCB jumper positions are as follows:

CN11 (Blue)

CN12 (Red)

If the installation requires a greater output to achieve the desired room temperature, this can be increased to 31.18 kW (103,000 Btu/hr) and the boiler can be adjusted as follows:

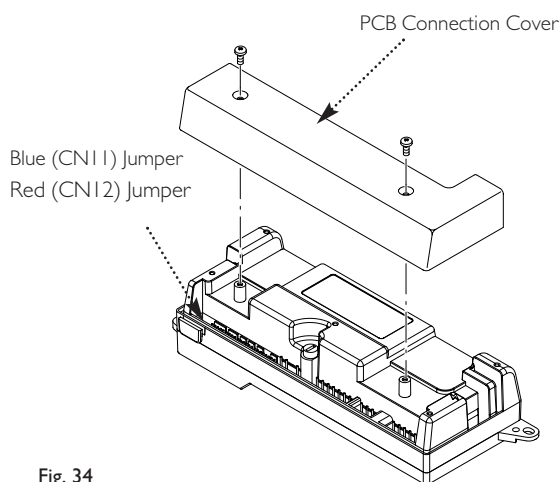
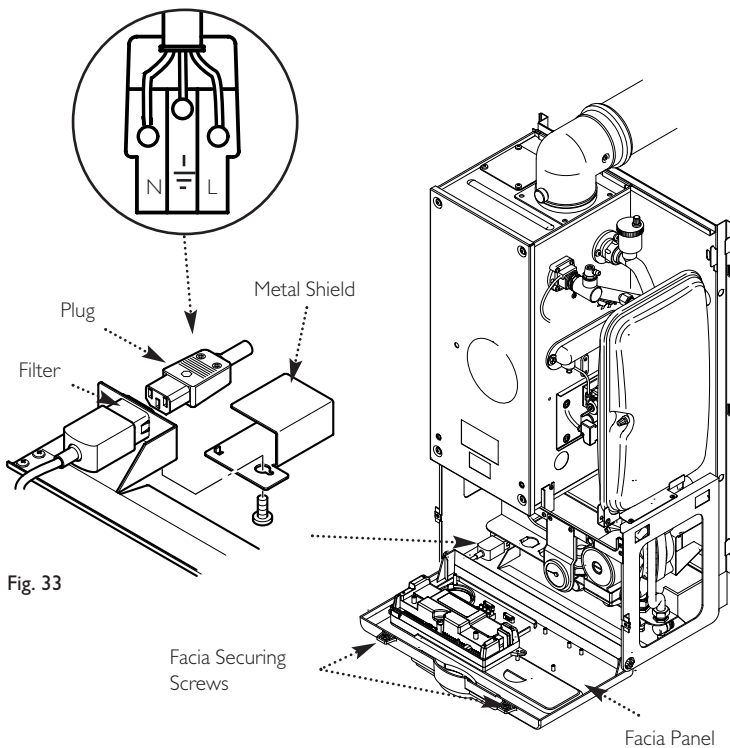
- a) Release the facia securing screws ( $\frac{1}{4}$  turn) and hinge down the facia panel. Remove the PCB connection cover (Fig. 34).
- b) Remove the Red jumper labelled CN12 from the bottom left hand side of the PCB.

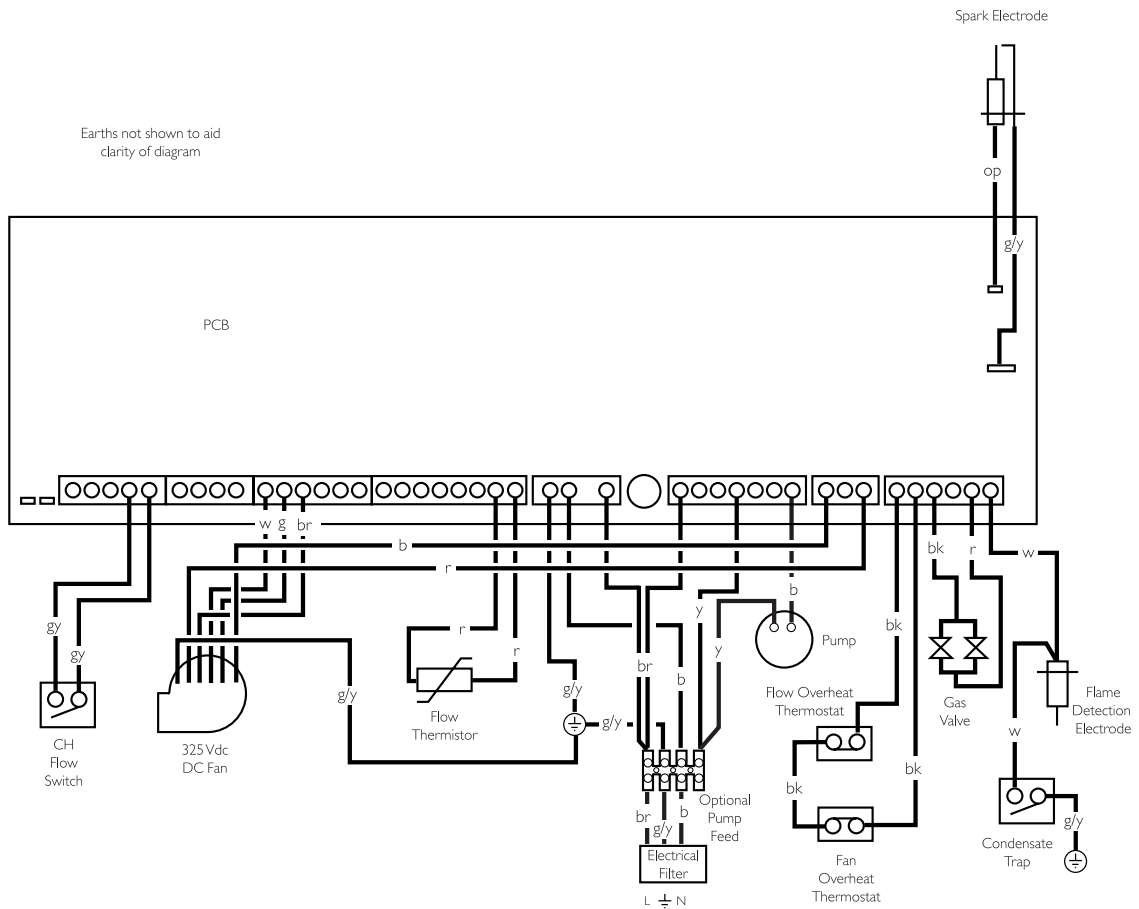
If the boiler is to be used in conjunction with a Thermal Store, the boiler can be adjusted as follows:

- a) Release the facia securing screws ( $\frac{1}{4}$  turn) and hinge down the facia panel. Remove the PCB connection cover (Fig. 34).
- b) Remove the Blue and Red jumpers labelled CN11 and CN12 from the bottom left hand side of the PCB.

6. Replace the PCB connection cover (Fig. 34).

7. Check the electrical installation for; earth continuity, short circuits, resistance to earth, correct polarity and fuse failure.



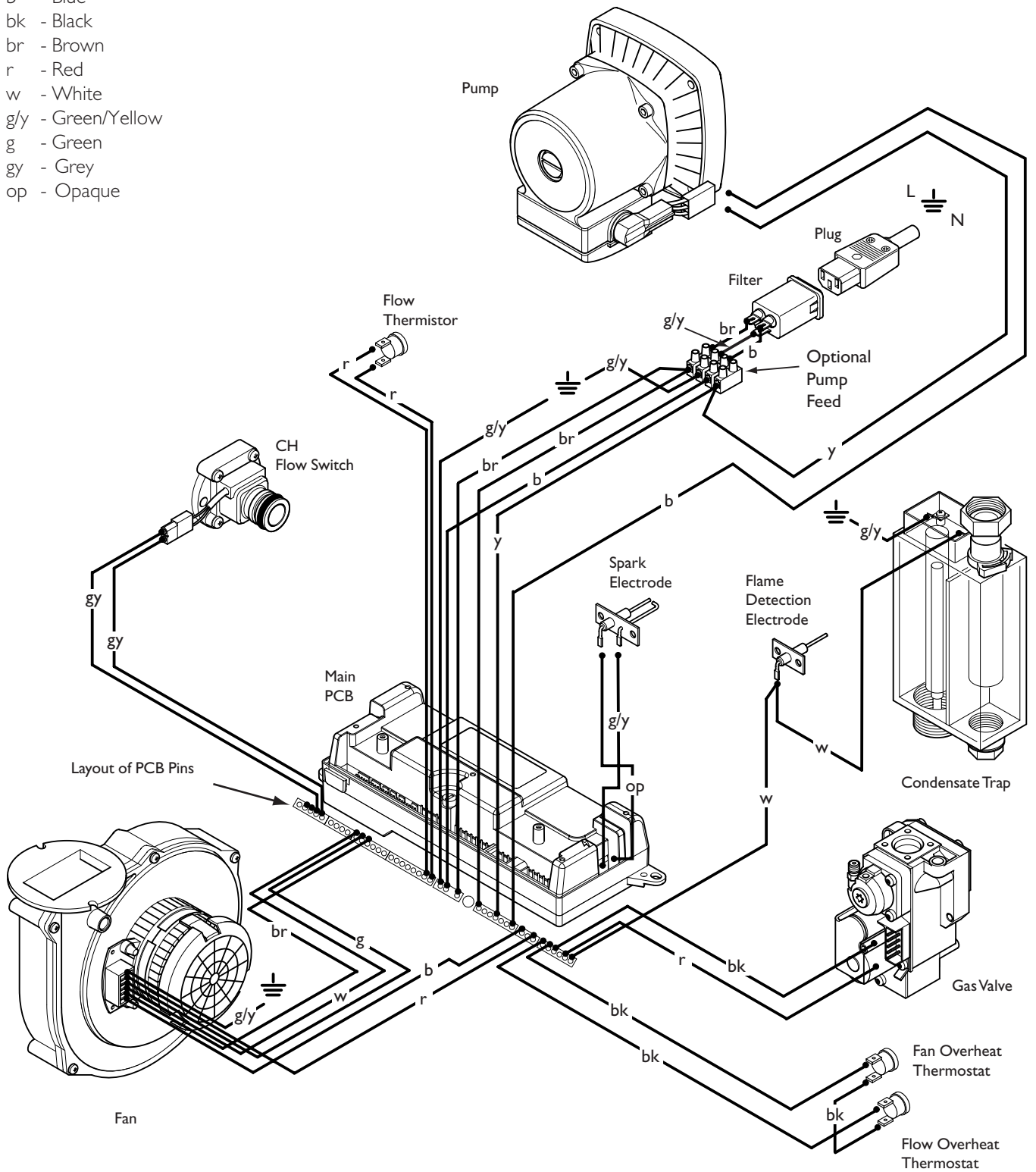


#### Key To Wiring Colours

b - Blue	r - Red
bk - Black	g - Green
w - White	g/y - Green/Yellow
br - Brown	op - Opaque
gy - Grey	y - Yellow

#### Wiring Key

b - Blue  
 bk - Black  
 br - Brown  
 r - Red  
 w - White  
 g/y - Green/Yellow  
 g - Green  
 gy - Grey  
 op - Opaque



## 10.0 Commissioning

### 10.1 Commissioning the Boiler

1. Ensure that the filling loop is connected. Open the cold mains stop valve.
2. Ensure that the heating flow and return valves are open.
3. Open the system side stop valves.
4. Open the manual and automatic air vents (Fig. 35). To help purge the primary circuit turn the pump on & off several times by using the Reset button (Fig. 36) (ensure all external controls are turned on and calling for heat).
5. The system must be flushed in accordance with BS 7593 and the flushing agent manufacturers instructions, further guidance can be obtained from BS 5449 Section 5.
6. Refill the system and add inhibitor following the inhibitor manufacturer's instructions. Vent air as described in Step 4.
7. Complete the label supplied with the inhibitor and attach to the inside of the boiler case. Detail of system treatment should be added for future reference.
8. Pressurise the system to 1.5 bar then close and disconnect the filling loop.
9. Turn the gas supply on and purge according to in GB BS 6891 and in IE IS 813 "Domestic Gas Installations".
10. Turn the gas service cock anticlockwise to the ON position and check for gas soundness up to the gas valve.
11. Run the system and check the boiler for correct operation.
12. After a period of 3 minutes and with all the system controls calling for heat, check the gas pressure at the inlet tapping of the gas valve (Fig. 37) is within the limit given in section 4.0 and the gas rate is no greater than maximum specified.

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

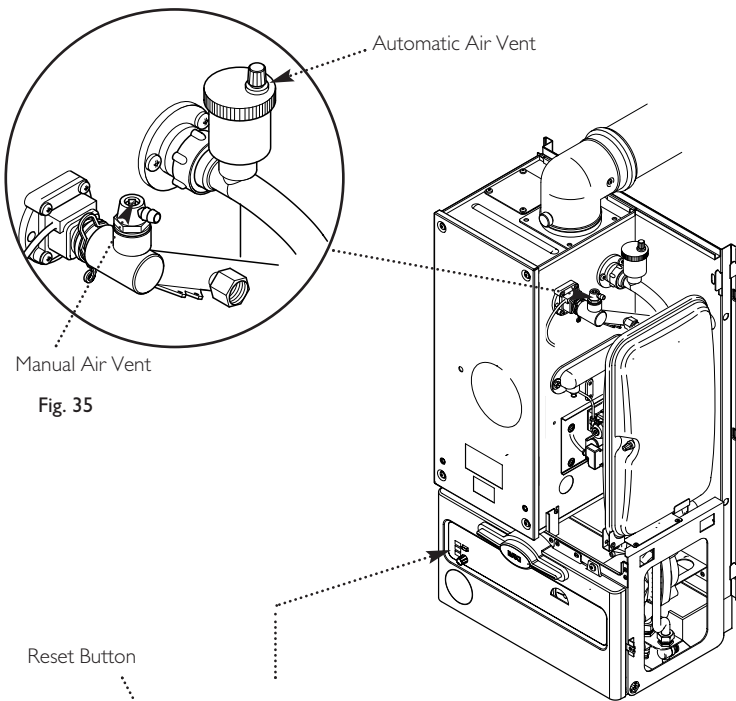


Fig. 35

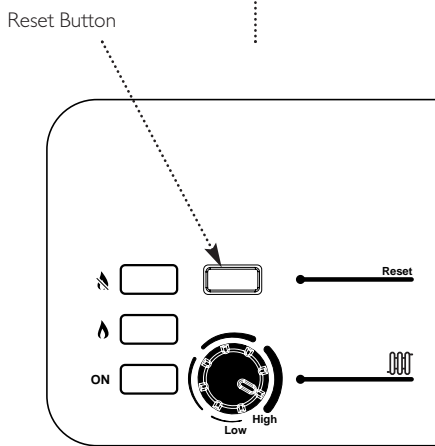


Fig. 36

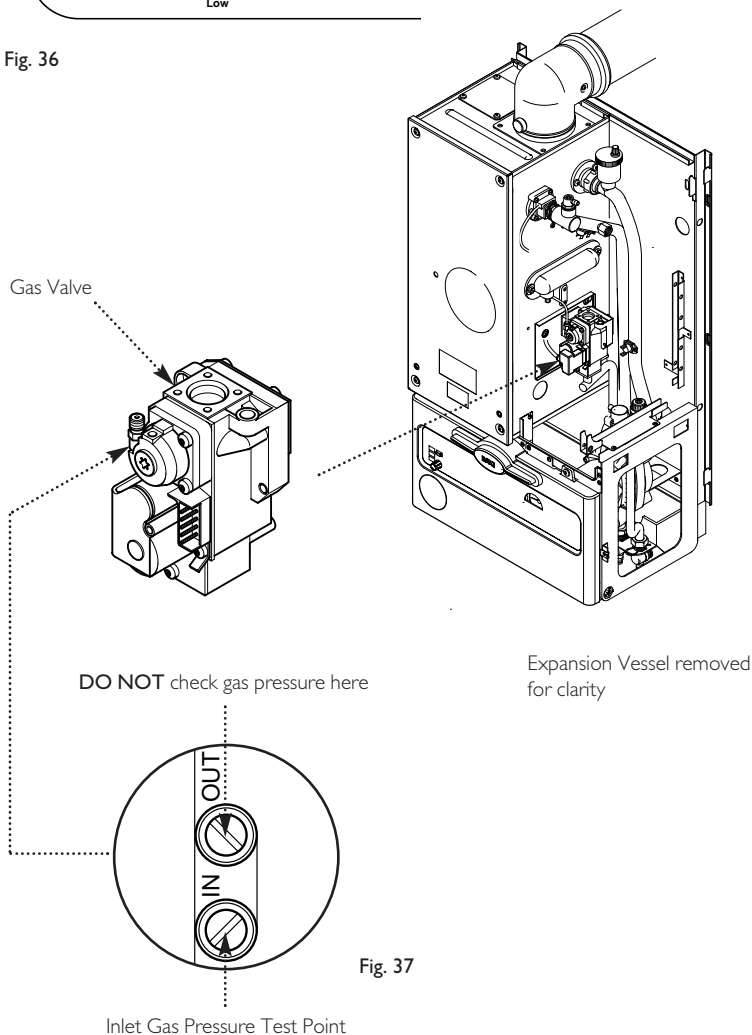


Fig. 37

### 11.1 Fitting The Outer Case

1. Position the outercase on the chassis, ensuring that the four slots in the side flanges align with the hooks on the chassis (Fig. 38).

2. Insert the two fixing screws into the sides of the chassis (Fig. 39).

3. Close the door against the retaining magnets (Fig. 39).

4. Carefully read and complete all sections of the Benchmark Commissioning Checklist at the rear of this publication that are relevant to the appliance 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 to 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.

5. The "Important Ventilation Information" label can be removed unless the appliance is installed in an unventilated compartment.

6. Instruct the user in the operation of the boiler controls. Hand over the Users Operating, Installation and Servicing Instructions, giving advice on the necessity of regular servicing.

7. Advise the user that they may observe a plume of vapour from the flue terminal, and that it is part of the normal operation of the boiler.

8. Complete the label supplied with the inhibitor and stick to the inside of the boiler case. Detail of system treatment must be recorded in the Benchmark Commissioning Checklist.

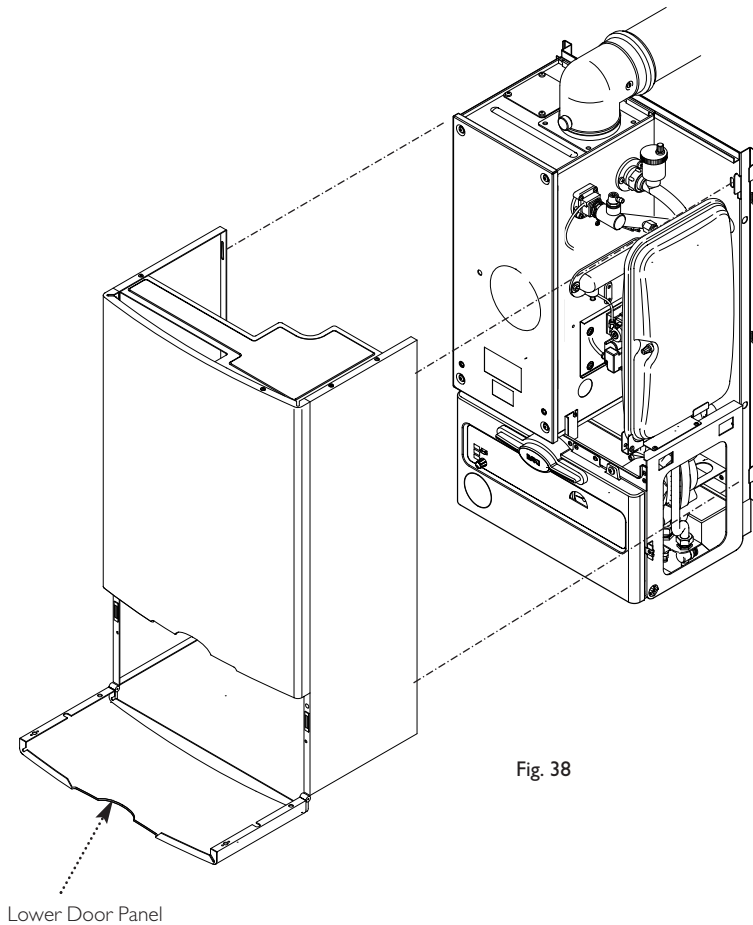


Fig. 38

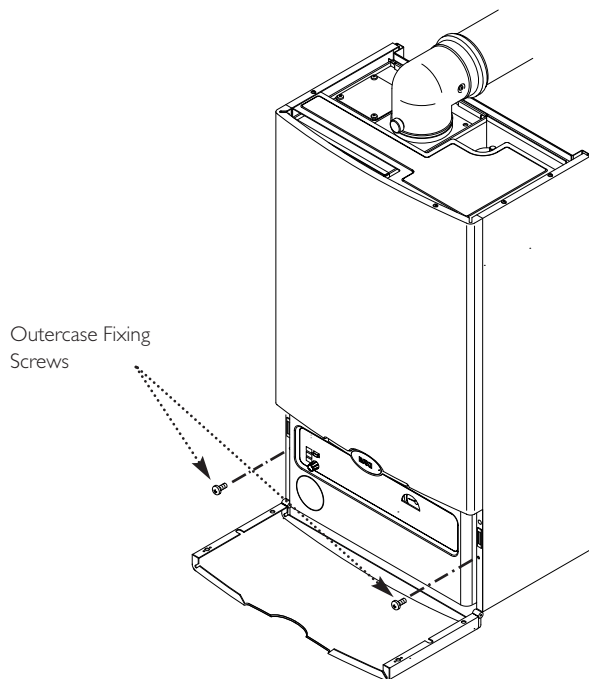


Fig. 39

## 12.0 Servicing

### 12.1 Annual Servicing

**IMPORTANT:** When servicing ensure that both the gas and electrical supplies to the boiler are isolated before any work is started.

Hazardous materials are not used in the construction of Baxi products, however reasonable care during service is recommended.

1. For reasons of safety and economy, it is recommended that the boiler is serviced annually.
2. After servicing, complete the relevant Service Interval Record section of the Benchmark Commissioning Checklist at the rear of this publication.
3. Ensure that the boiler is cool.
4. Ensure that both the gas and electrical supplies to the boiler are isolated.
5. Remove the outcase and lower door panel.

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

6. Release the four  $\frac{1}{4}$  turn screws securing the air box door panel and remove the door (Fig. 40).
7. Disconnect the three lead terminals from the combustion box door taking note of their positions (Fig. 40).
8. Undo the four screws securing the combustion box door and remove the door (Fig. 41).
9. Visually check for debris/damage and clean or replace if necessary the following:
  - a) Burner (**Fragile - handle with care**).
  - b) Heat exchanger fins.
  - c) Fan compartment (Check also for condensate leaks).
  - d) Insulation.
  - e) Door seals - **Important: Pay particular attention to the condition of the combustion box door seals.**
  - f) Electrodes.
  - g) The condensate trap must be thoroughly cleaned at every service (see 13.17 for removal).  
**NOTE: If necessary remove the trap drain plug and place a vessel underneath to catch the condensate (care should be taken as this could be hot). Clean the trap and refit the drain plug. Check for leaks.**
  - h) Top of heat exchanger.

**NOTE:** General cleaning can be undertaken using a vacuum.

10. Check CO/CO<sub>2</sub> ratio at the flue sampling point (Fig. 40). See section 4.0.
11. Check system pressure is between 1 and 2.5 bar.

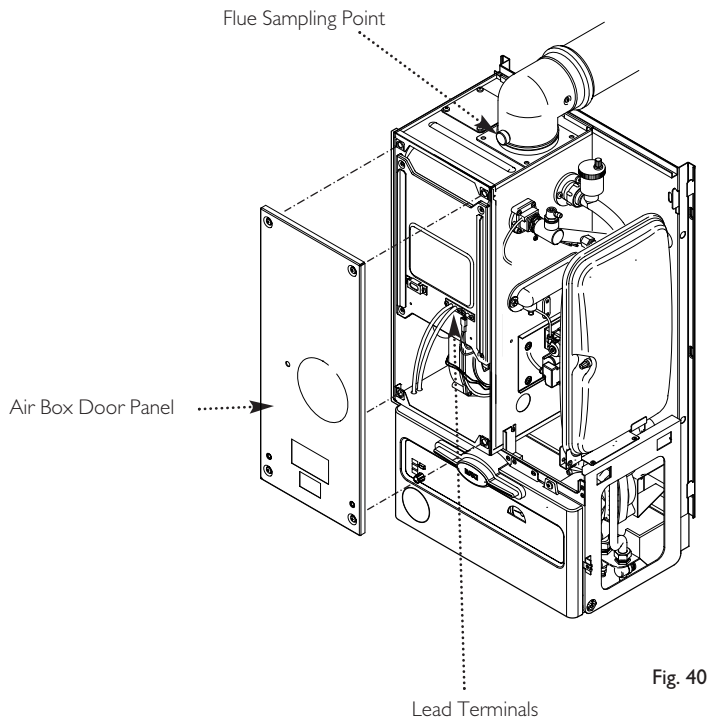


Fig. 40

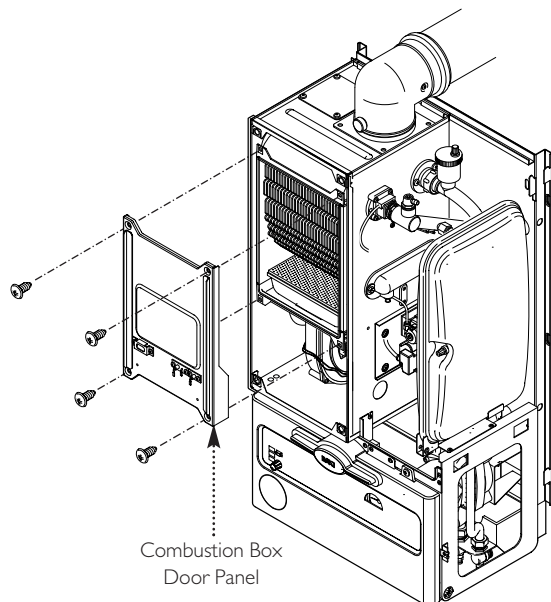


Fig. 41



### 12.1 Annual Servicing (Cont)

12. To clean the heat exchanger and burner proceed as follows:

- a) Disconnect the electrical leads to the fan component protection sensor (Fig. 42).
- b) Loosen the screw retaining the gas injector pipe at the venturi (Fig. 42).
- c) Undo the two wing nuts to disconnect the fan (Fig. 42).
- d) Remove the fan and disconnect the electrical supply to it (Fig. 42).
- e) Remove the gas injector pipe from the gas valve (push-fit) (Fig. 42).
- f) Undo the condensate trap securing nut, lock nut and the condensate drain pipe. Remove the condensate trap and disconnect the sensor leads (Fig. 43).
- g) Remove the two screws securing the burner and remove the burner. Visually inspect the internal burner baffle for obstruction. Clean and if necessary replace the burner (Fig. 44).
- h) Loosen the two screws retaining the heat exchanger support bracket and slide to the left to remove (Fig. 44).
- i) Remove the four screws securing the heat exchanger/combustion box base and withdraw the base.
- j) Lower the central insulation panel and check condition (Fig. 44). Replace the lower insulation pad if necessary.
- k) Ensure the heat exchanger fins are clear of any obstruction.

l) Check condition of all seals. **Important: Pay particular attention to the condition of the combustion box door seals.**

m) Reassemble in reverse order.

13. Complete the relevant Service Interval Record section of the Benchmark Commissioning Checklist at the rear of this publication and then hand it back to the user.

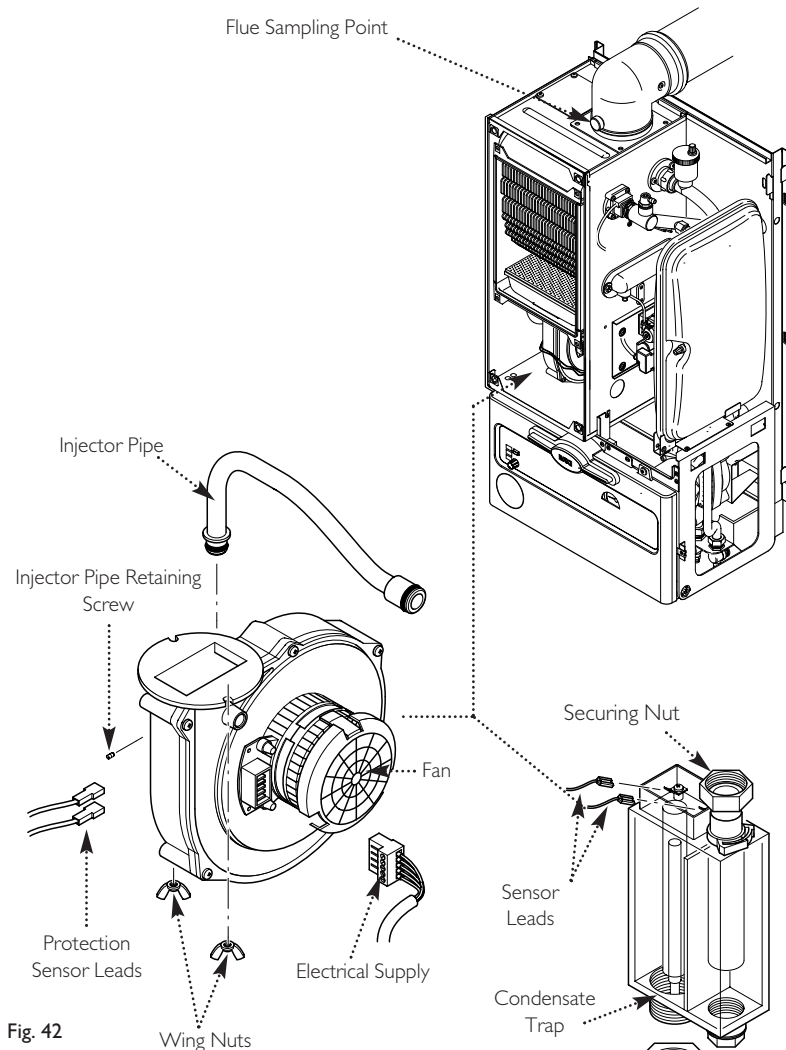


Fig. 42

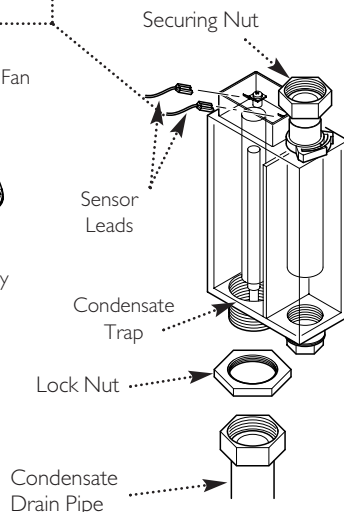


Fig. 43

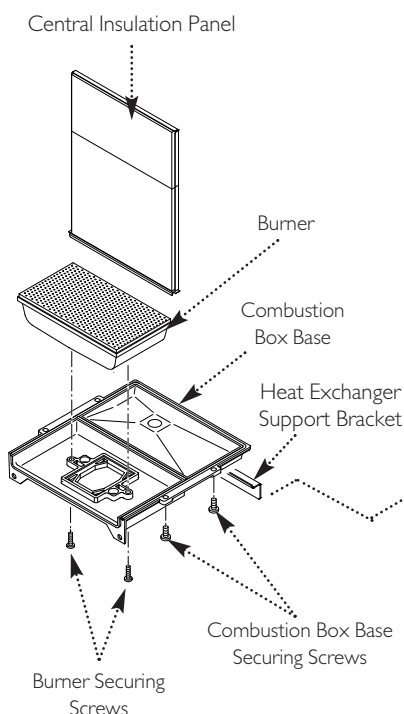


Fig. 44



## 13.0 Changing Components

### 13.1 Changing Components

**IMPORTANT:** When changing components ensure that both the gas and electrical supplies to the boiler are isolated before any work is started.

Hazardous materials are not used in the construction of Baxi products, however reasonable care during service is recommended.

When replacing the combustion box door after changing components it is essential that the retaining screws are tightened fully.

1. Remove the outer case and lower door panel (see "Fitting the Outercase" Section 11.0).

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

2. Isolate the water circuit and drain the boiler as necessary. There are 3 drain points:

- a) Flow Valve
- b) Heat Exchanger Manifold (Fig. 45)
- c) Return Valve

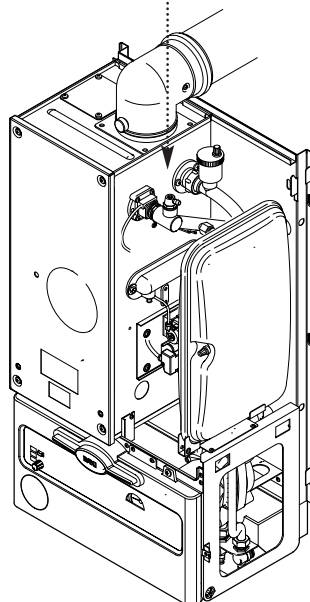
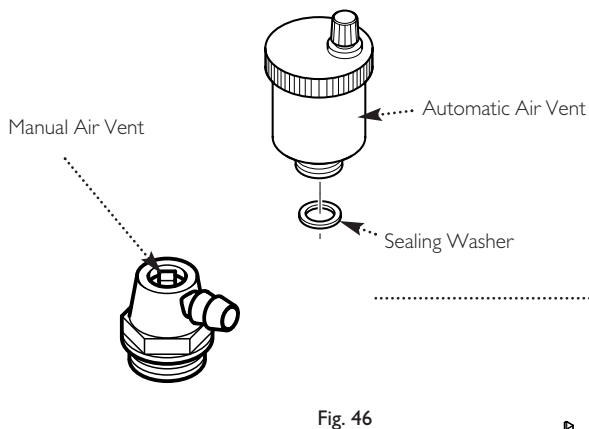
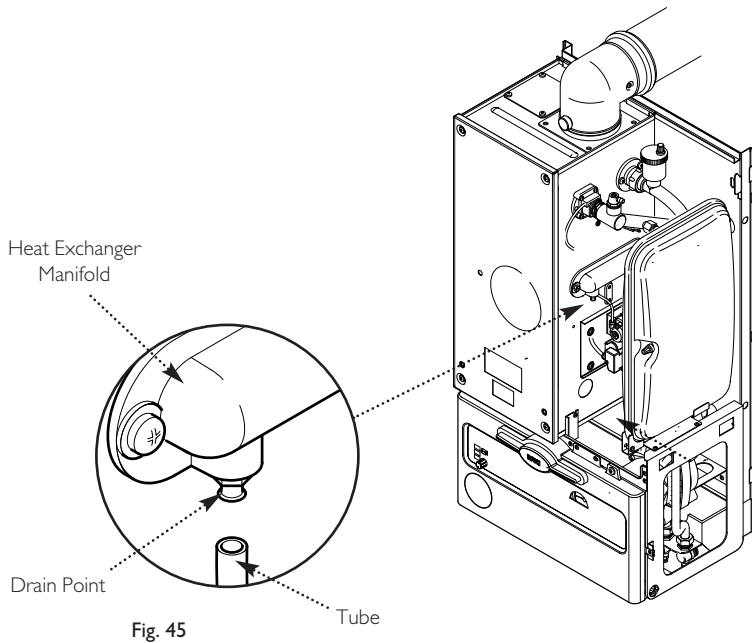
**NOTE:** When reassembling always fit new 'O' rings, ensuring their correct location on the spigot. Green "O" rings are used for gas joints and Black "O" rings for water joints. Use Greasil 4000 (Approved Silicone Grease).

3. After changing a component re-commission the boiler where appropriate and check the inhibitor concentration (see Section 6.2 and 10.1).

The air vents, flowswitch, thermistor, safety thermostat and expansion vessel can be accessed after removal of the outer case.

### 13.2 Manual and Automatic Air Vent (Fig. 46)

1. Drain the boiler.
2. Undo the air vent from the return pipe and retain the sealing washer.
3. Remove the air vent.
4. Fit the new air vent and reassemble in reverse order.



## 13.0 Changing Components

### 13.3 Flowswitch (Fig. 47)

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. It may be necessary to remove the expansion vessel (see Section 13.5).
3. Remove the clip securing the flow pipe to the flowswitch.
4. Remove the two screws securing the flow switch to the boiler.
5. Disconnect the inline electrical connection.
6. Remove the flowswitch.
7. Fit the new flowswitch and reassemble in reverse order.
8. Recommission the boiler and check the inhibitor concentration (see Section 6.2 and 10.1).

### 13.4 Flow Temperature Thermistor and Safety Thermostat (Fig. 48)

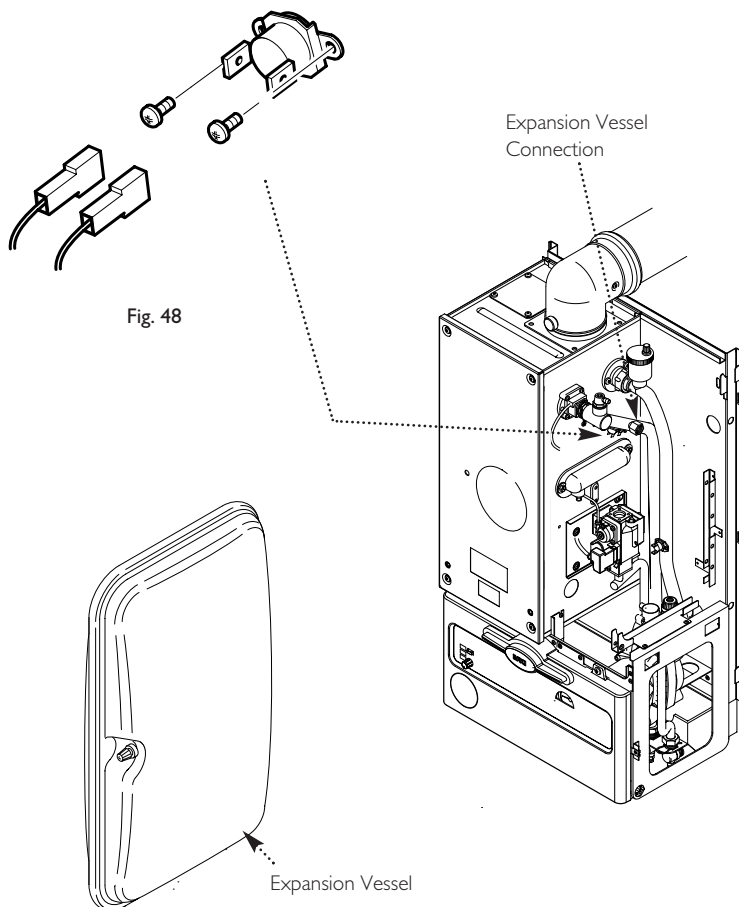
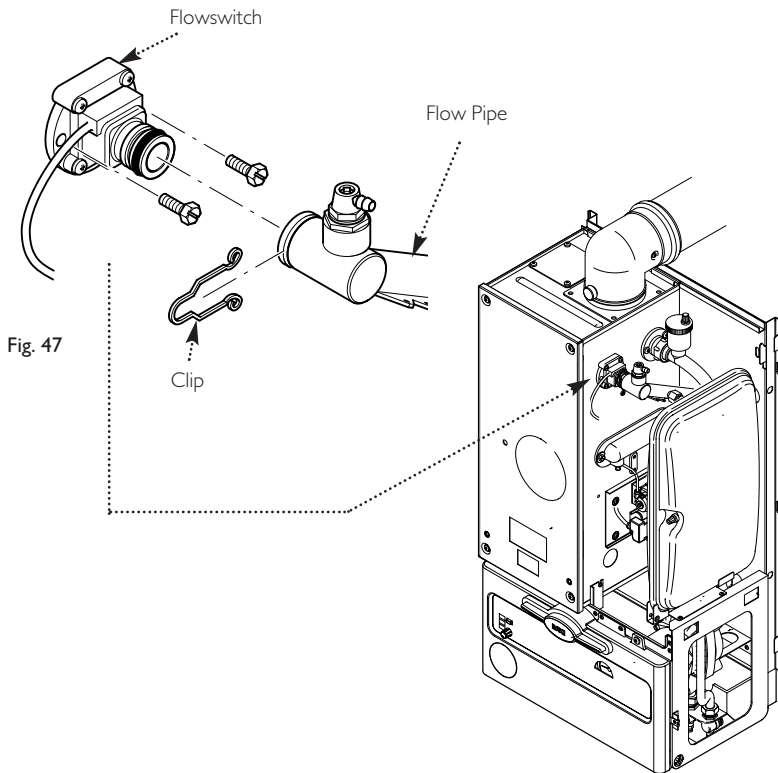
1. The procedure is the same for both the thermistor and the safety thermostat.
2. Remove the electrical connections from the sensor.
3. Unscrew the sensor from the pipe.
4. Fit the new thermistor or safety thermostat and reassemble in reverse order.

### 13.5 Expansion Vessel (Fig. 49)

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Loosen the securing screw at the base of the expansion vessel.
3. Whilst supporting the vessel under the expansion vessel connection and retain the sealing washer.
4. Remove the expansion vessel.
5. Fit the new expansion vessel and reassemble in reverse order.

### 13.6 Re-pressuring Expansion vessel

1. The charge pressure is 1.0 bar.
2. Close the central heating flow and return isolating valves.
3. Drain the boiler (see Section 13.1 paragraph 2 & 3).
4. The "Schraeder" valve is positioned centrally at the side of the appliance. Pressurise to 1.0 bar.
5. Open the isolating valves and recharge the system to between 1.0 bar and 2.5 bar. Vent the system as necessary.



## 13.0 Changing Components

The Pump, interface PCB, pressure gauge and pressure relief valve can be accessed after hinging down the facia panel.

1. Release the facia securing screws ( $\frac{1}{4}$  turn) and hinge down the facia panel.

### 13.7 Pump (Fig. 50)

1. If only the head needs replacing. A standard Grundfos UPS 15-60 pump head is interchangeable (see section 13.13 for details).

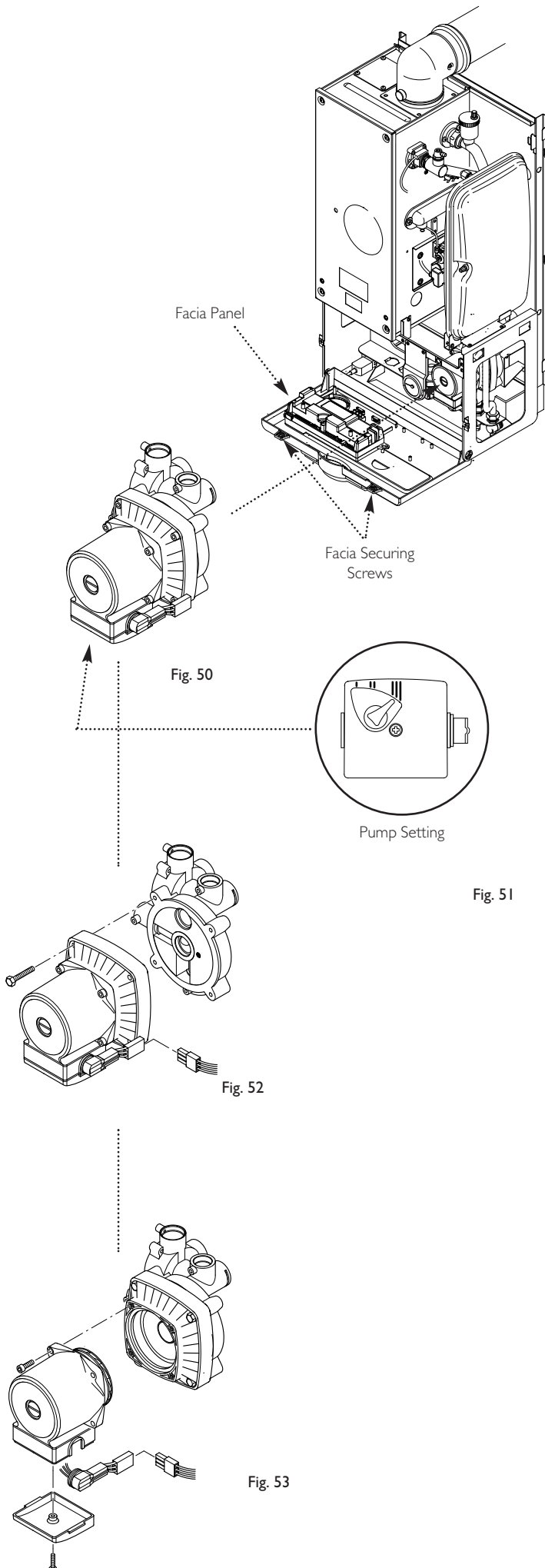
2. This must be switched to setting N° 3 (Fig. 51).

### 13.8 Pump (Complete) (Fig. 52)

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Unplug the wiring harness from the pump.
3. Remove the four screws retaining the pump backplate to the hydraulic manifold.
4. Remove the pump.
5. Fit the new pump and reassemble in reverse order.

### 13.9 Pump (Head Only) (Fig. 53)

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Unplug the wiring harness from the pump.
3. Remove the four socket head screws securing the pump head and separate it from the housing.
4. Remove the screws retaining the pump electrical covers on the original and replacement heads.
5. From the replacement UPS 15-60 pump head remove the strain relief cable gland and discard.
6. Remove the plug connector from the old pump head and wire it into the UPS 15-60 pump head.
7. Replace the electrical cover to the new pump head and assemble with the electrical box at 6 o'clock to the housing.
8. Check that the pump has been switched to setting N° 3 (Fig. 51) and reconnect the wiring harness plug.



## 13.0 Changing Components

### 13.10 Pressure Gauge

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Undo the nut retaining the capillary in the connection at the return pipe (Fig. 55).
3. Depress the two lugs on either side of the pressure gauge and feed through facia (Fig. 54).
4. Fit new pressure gauge and reassemble in reverse order.

### 13.11 Pressure Relief Valve (Fig. 56)

1. The pressure relief valve is positioned on the hydraulic manifold at the back of the pump.
2. Drain the boiler (see Section 13.1 paragraph 2 & 3).
3. Disconnect the union between the valve and the discharge pipe.
4. Slacken the screw retaining the valve.
5. Pull the valve upwards to disengage it.
6. Fit the new pressure relief valve and reassemble in reverse order.

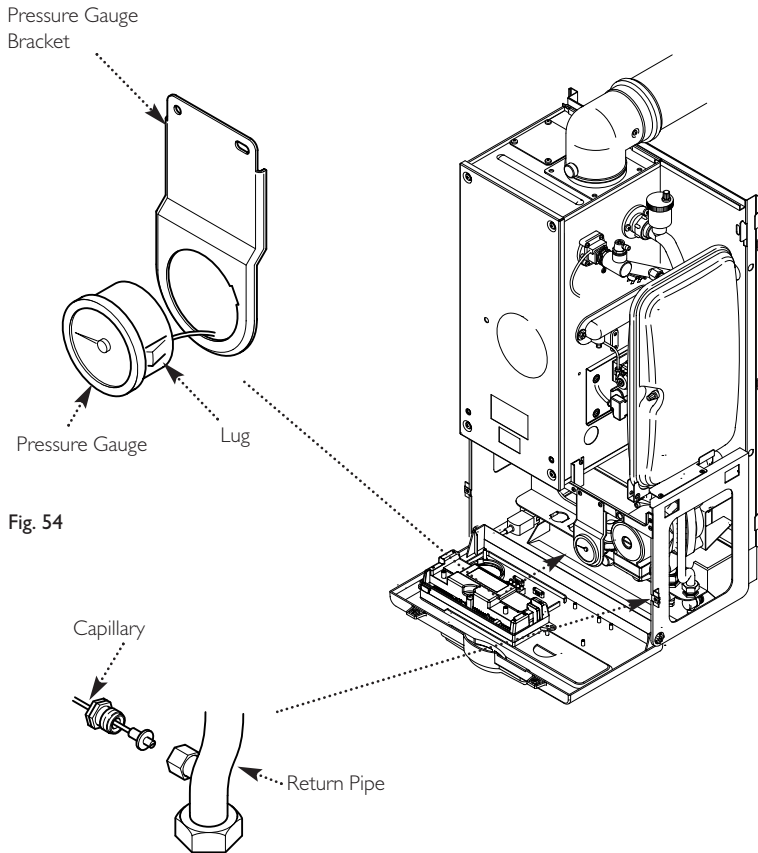


Fig. 54

Fig. 55

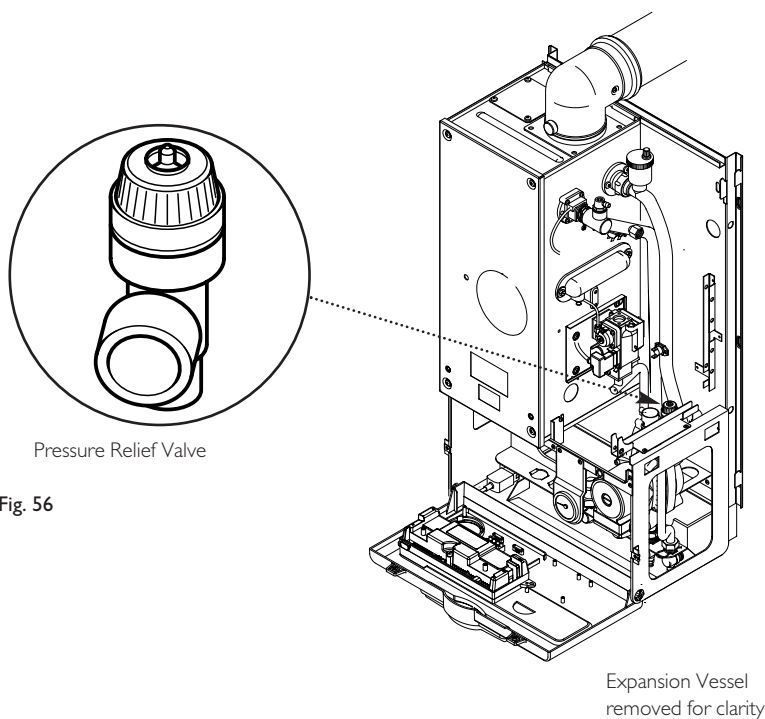


Fig. 56

Expansion Vessel  
removed for clarity

## 13.0 Changing Components

### 13.12 PCB (Fig. 57)

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

1. Pull the control knob off its spindle and remove the plastic button cover. Refit them onto the new PCB (Fig. 57a).
2. Release the fascia securing screws ( $\frac{1}{4}$  turn) and hinge down the fascia panel.
3. Remove the screws securing the PCB connection cover.
4. Remove the screws securing the control board and disconnect the electrical connections noting their positions although they are one way fitting.

**NOTE: Check the PCB for the presence of input jumpers - see section 8.7. Set the new PCB as the original.**

5. Fit the new PCB and reassemble in reverse order.

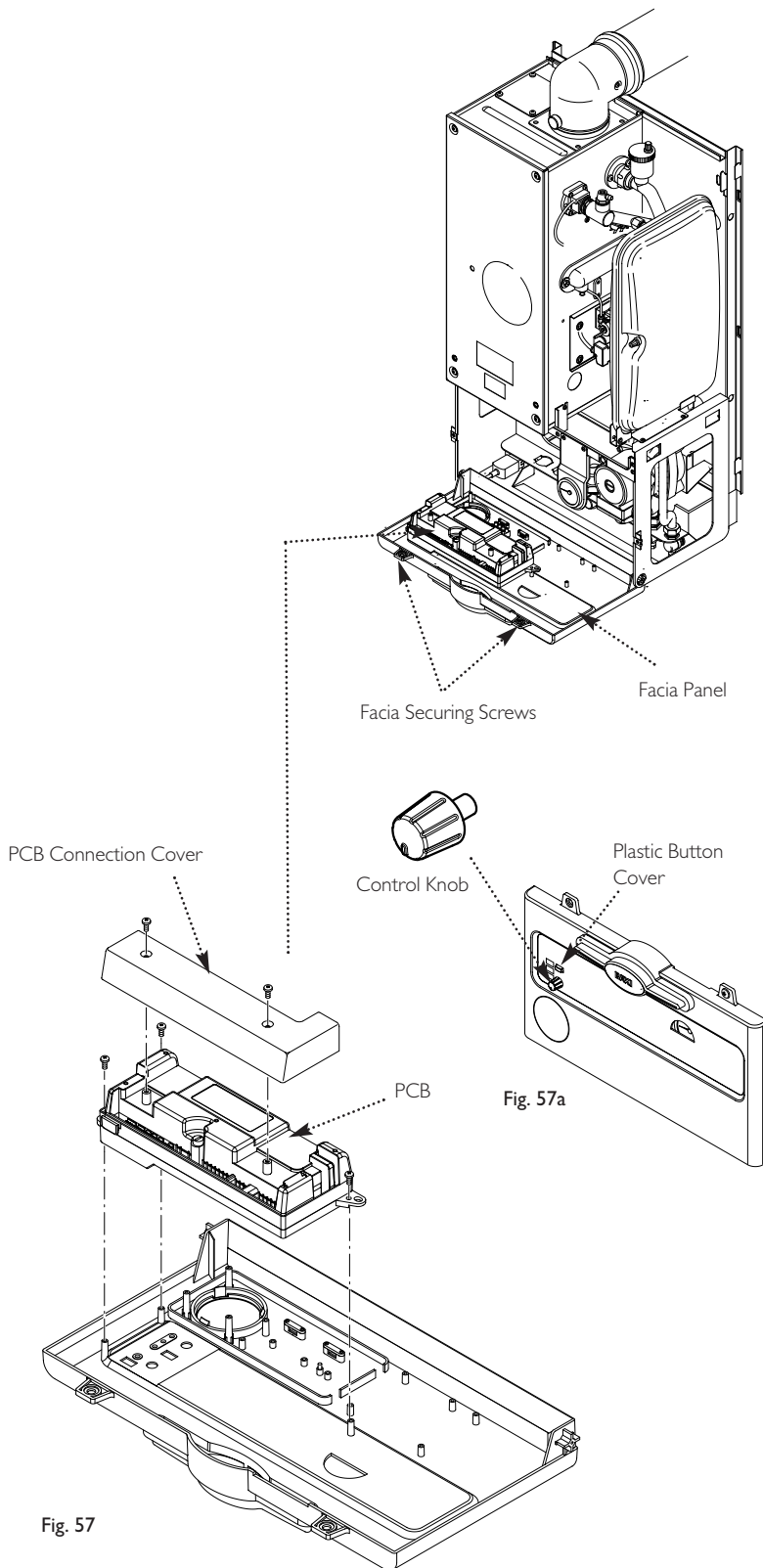


Fig. 57

## 13.0 Changing Components

The fan and venturi, gas valve, injector pipe, condensate trap, fan protection sensor, spark and sensing electrodes can be accessed and changed on the removal of the airbox door panel.

1. Remove the airbox door panel by loosening the four  $\frac{1}{4}$  turn screws.

### 13.13 Spark and Sensing Electrodes (Fig. 58)

1. Disconnect all three leads from tabs.

Spark	-	Opaque cable
Earth	-	Green/Yellow cable
Sensing	-	White cable

2. Remove the two screws securing each of the electrodes to the combustion box door and remove the electrodes.

3. Fit the new electrodes (and new gasket, as required) and reassemble in reverse order.

### 13.14 Fan (Fig. 59)

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

1. Loosen the screw holding the injector pipe into the venturi.
2. Remove the electrical connections to the fan and protection sensor on the fan.
3. Remove the wing nuts securing the fan to the base of the combustion box.
4. Lower the fan and remove.
5. If changing the fan remove the screws securing the venturi and fan protection sensor bracket, noting the positions of the injector opening and sensor bracket, fix them to the new fan.
6. Fit the new fan and reassemble in reverse order.

The injector pipe, condensate trap and gas valve can be changed after the removal of the fan.

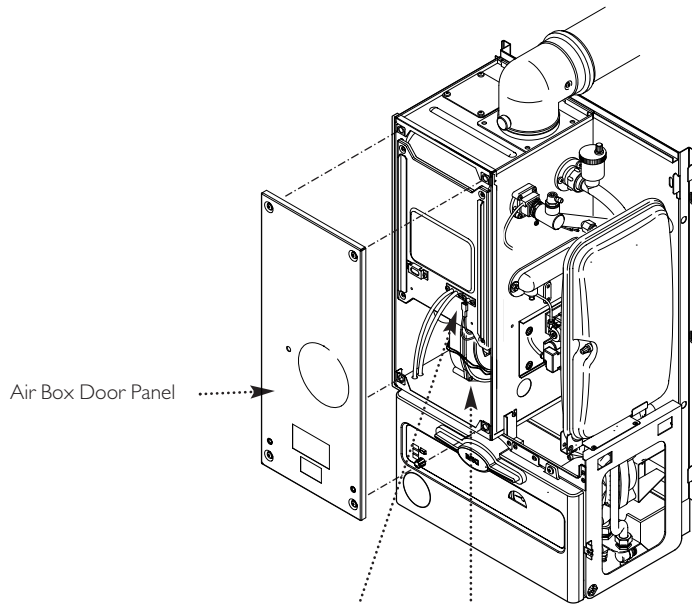


Fig. 58

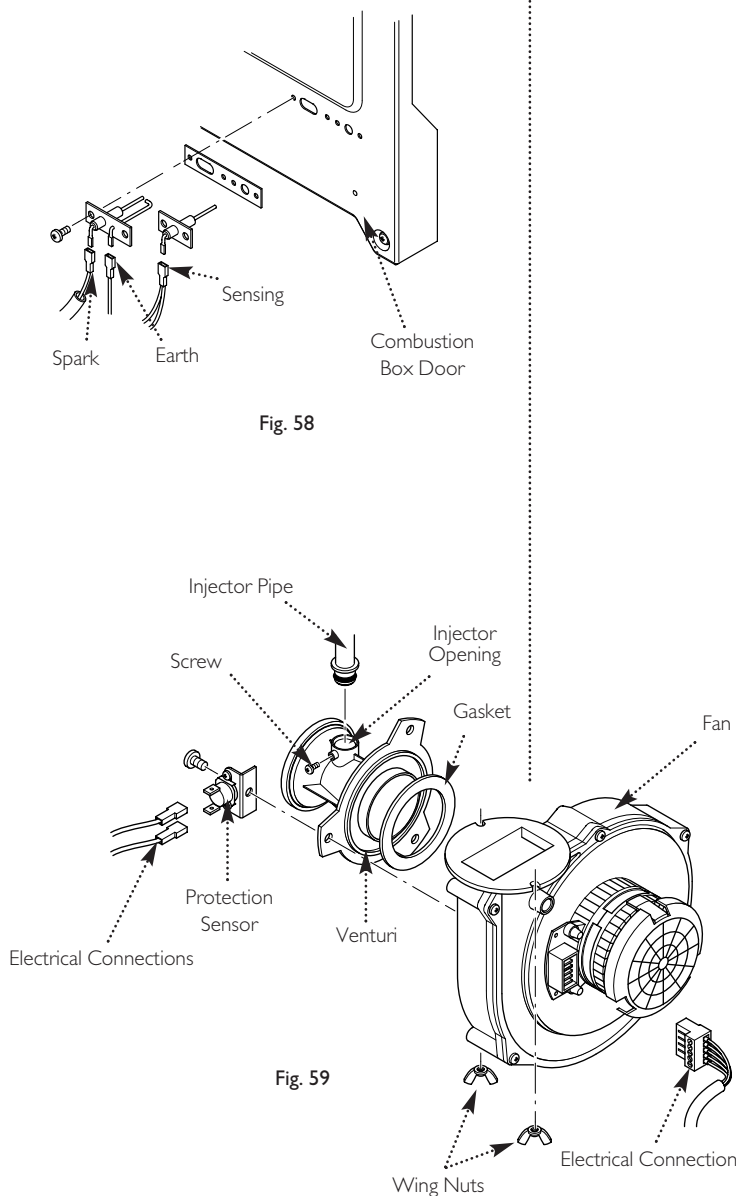


Fig. 59

## 13.0 Changing Components

The removal of the fan is necessary to enable the changing of the injector pipe, condensate trap and gas valve (see section 13.14).

### 13.15 Injector Pipe (Fig. 60)

1. Remove the injector pipe by pulling out from the 'O' ring joint in the gas valve.
2. Fit the new injector pipe and reassemble in reverse order.

### 13.16 Gas Valve (Fig. 60)

1. Remove the four screws securing the gas inlet pipe flange to the gas valve.
2. Undo the case pressure pipe from the gas valve.
3. Undo the screw and disconnect the electrical plug from the gas valve.
4. Remove the two gas valve securing screws from inside the air box holding the gas valve.
5. Remove the gas valve from the airbox side.
6. Remove the nut union, aluminium spacer and its gasket from the gas valve.
7. Fit the nut union, aluminium spacer and its gasket to the new valve.
8. Fit the new gas valve and reassemble in reverse order.

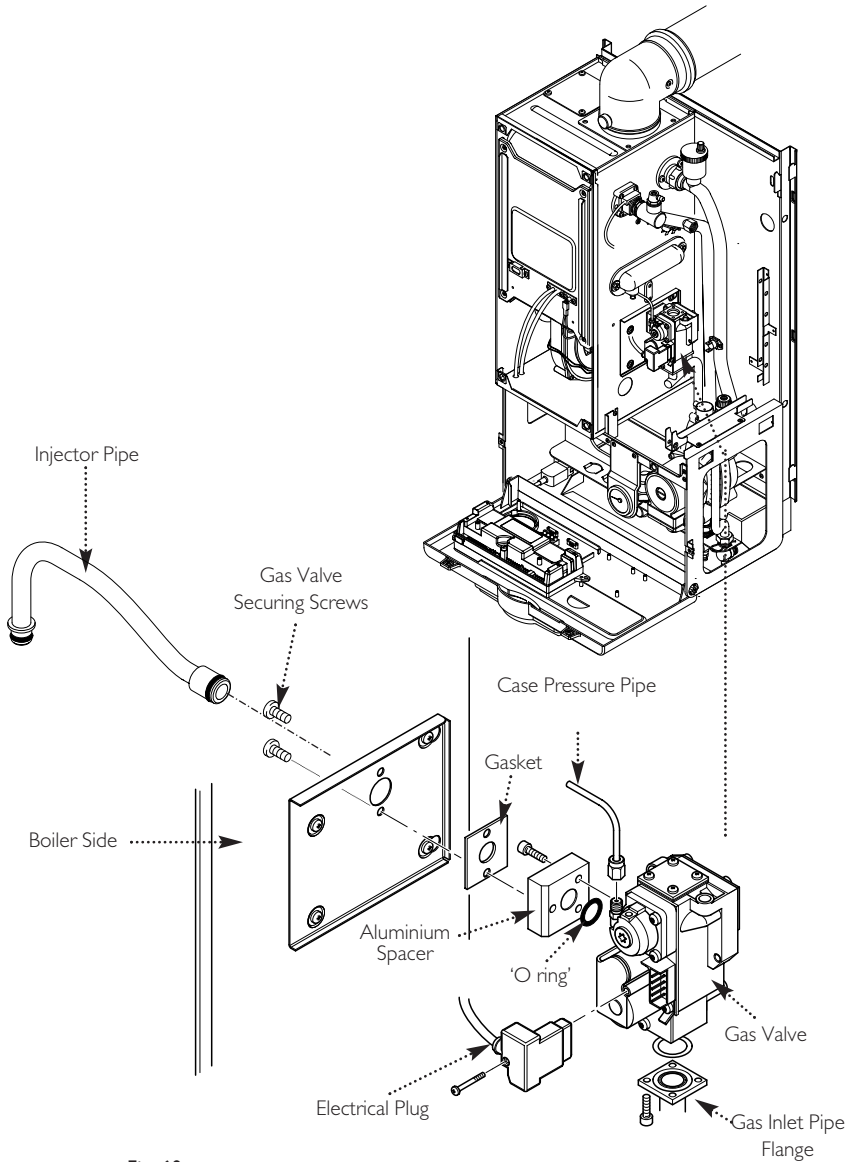


Fig. 60

### 13.17 Condensate Trap (Fig. 61)

1. Disconnect the condensate trap from the base of the heat exchanger.
2. Disconnect the condensate drain (outside the boiler) from the condensate trap.
3. Undo the condensate trap lock nut.
4. Remove the condensate trap from the boiler.
5. Disconnect the sensor leads.

Fit the new condensate trap and reassemble in reverse order.

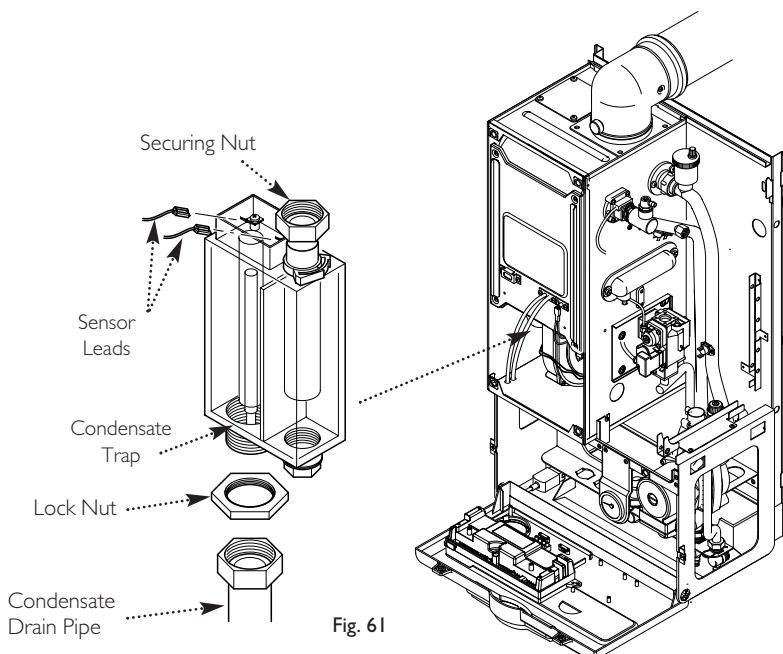


Fig. 61



## 13.0 Changing Components

The burner and heat exchanger can be changed after removal of the combustion box door. To change the heat exchanger, the fan and burner must be removed first (see section 13.14 & 13.18).

1. Remove the combustion box door by removing the four securing screws.

### 13.18 Burner (Fig. 62)

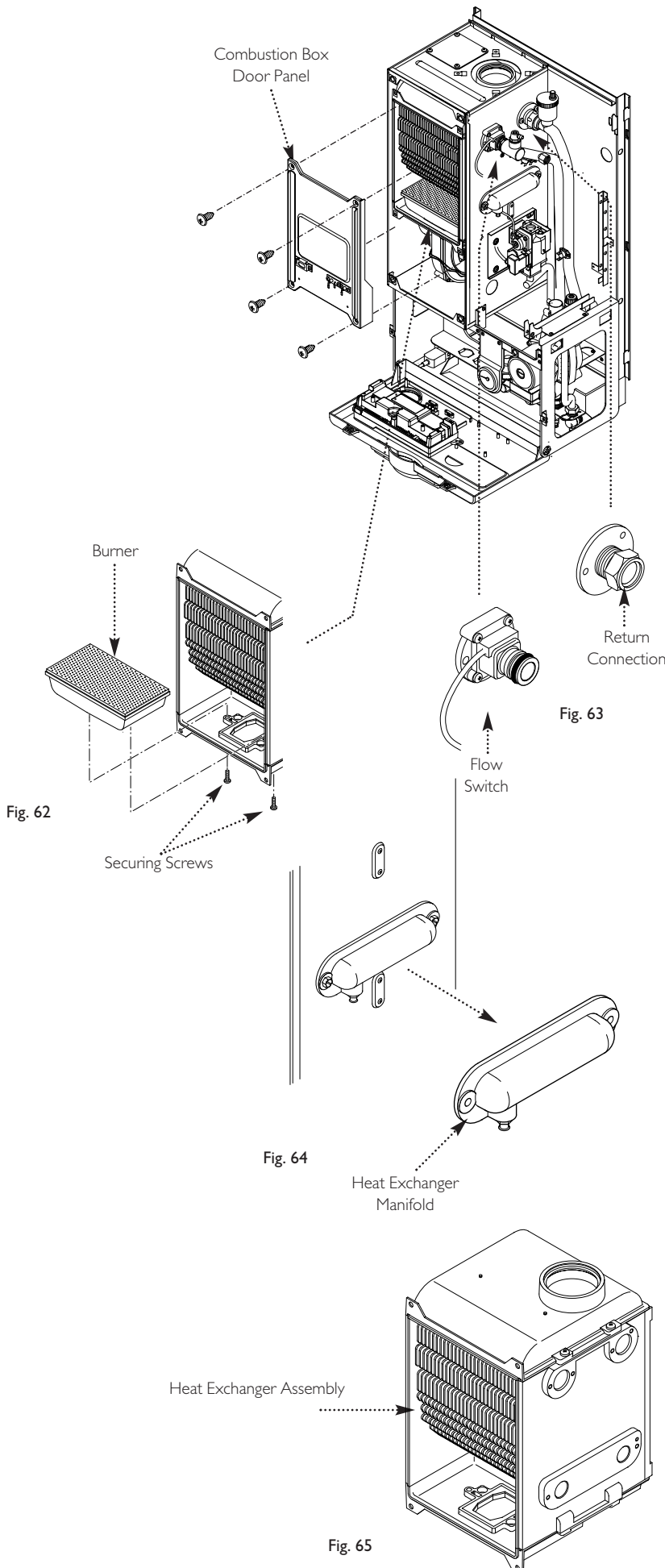
1. Remove the two screws securing the burner to the base of the combustion box.
2. Remove the burner carefully from the combustion box base.
3. Fit the new burner and reassemble in reverse order.

### 13.19 Heat Exchanger

1. Drain the boiler (see section 13.1 paragraph 2 & 3).

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

2. Remove the fan and condensate trap (see section 13.14 and 13.17).
3. Remove the screws securing the flow switch and return connections and remove the connections (Fig. 63).
4. Remove the screws securing the heat exchanger manifold and remove the manifold (Fig. 64).
5. Lift the heat exchanger assembly (Fig. 65) and rotate the bottom upwards whilst pulling it forwards out of the airbox.
6. Fit the new heat exchanger and reassemble in reverse order.
7. Recommission the boiler and check the inhibitor concentration (see Section 6.2 and 10.1).





## 13.0 Changing Components

### 13.20 Heat Exchanger Lower Insulation Pad (Fig. 66)

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

1. Remove the fan and condensate trap (see section 13.14 and 13.17).
2. Remove the burner (see section 13.18).
3. Remove the four bolts securing the combustion box base.
4. Remove the combustion box base.
5. Pull the central insulation panel down from the centre of the heat exchanger and remove the lower insulation pad.
6. Fit the new insulation pad and reassemble in reverse order.

### 13.21 Heat Exchanger Upper Insulation Pad (Fig. 66)

**WARNING: The PCB Control and Fan Assembly is 325 Vdc. Isolate at supply before access.**

1. Remove the fan and condensate trap (see section 13.14 and 13.17).
2. Remove the burner (see section 13.18).
3. Remove the heat exchanger (see section 13.19).
4. Remove the four bolts securing the combustion box base.
5. Remove the combustion box base.
6. Pull the central insulation panel down from the centre of the heat exchanger.
7. Fit the new insulation pad and reassemble in reverse order.

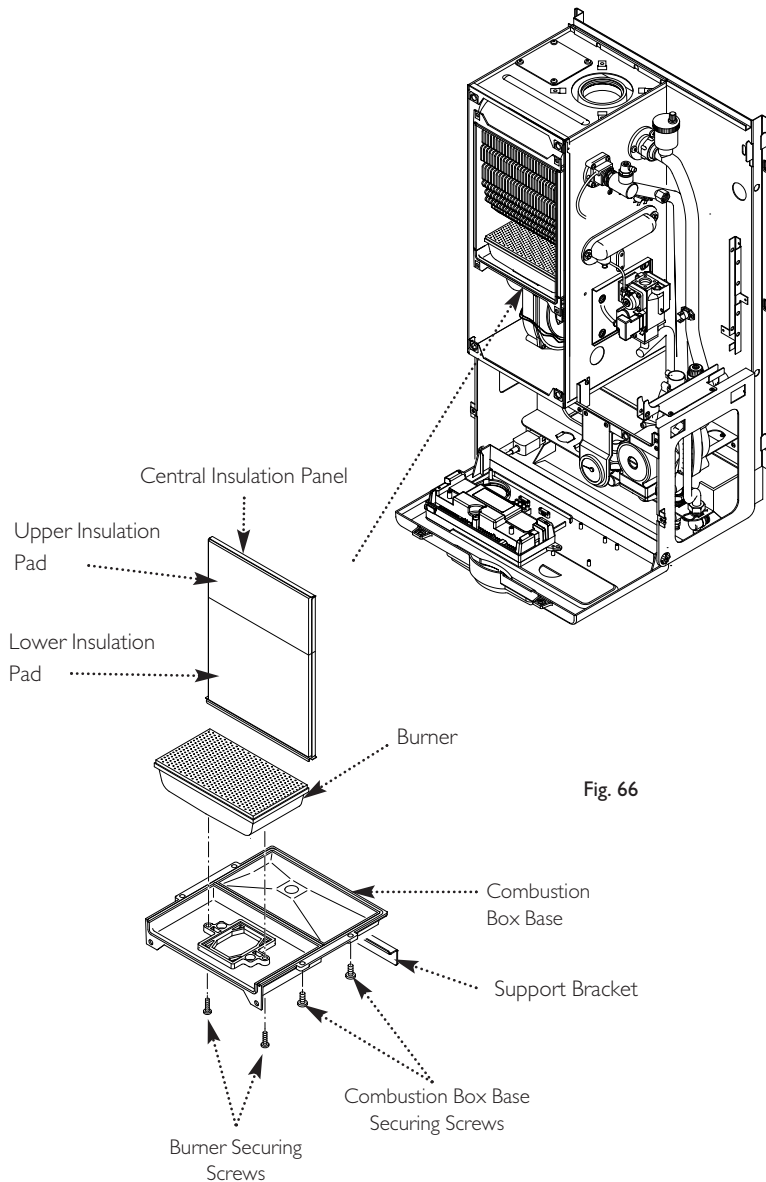
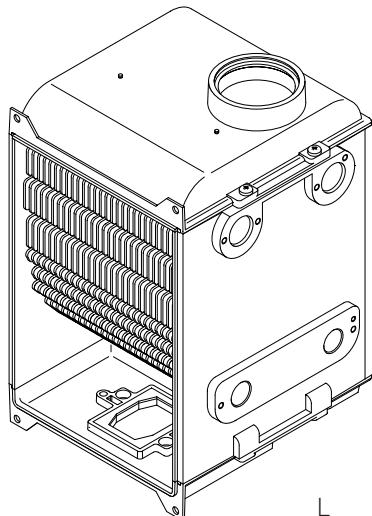
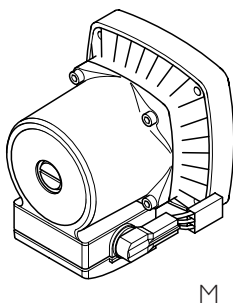
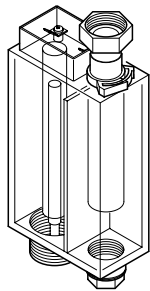
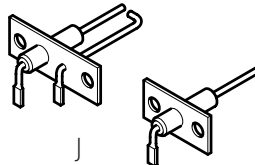
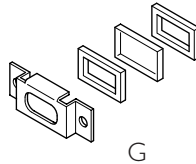
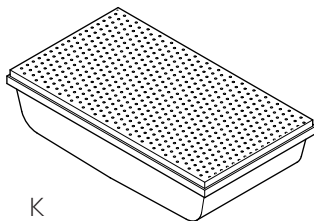
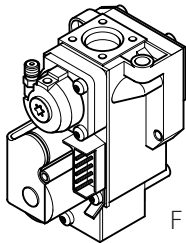
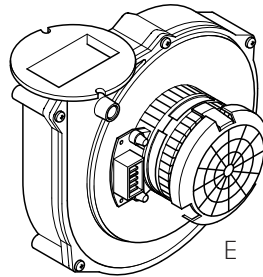
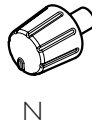
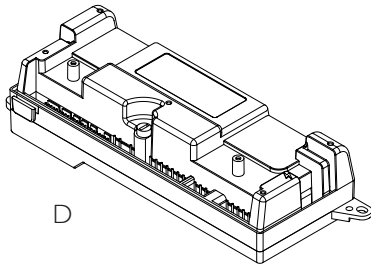
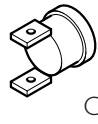
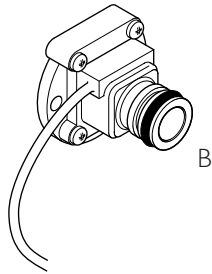
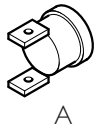


Fig. 66

## 14.0 Short Parts List

### Short Parts List

Key No.	G.C. No.	Description	Manufacturers Part No.
A	E06 058	Flow Temperature Thermistor (Red)	240670
B	E06 059	Flow Switch	242459
C	E06 060	Safety Thermostat (Black)	242235
D		PCB - enclosure	5110991
E		Fan	5109925
F	E78 749	Gas Valve	242473
G	E06 085	Viewing Window	242484
H		Condensate Trap	5111714
J		Electrodes Kit	5110992
K		Burner Assy	5107430
L	E06 097	Heat Exchanger Assy	242497
M		Pump	240395
N		Control Knob	5109996

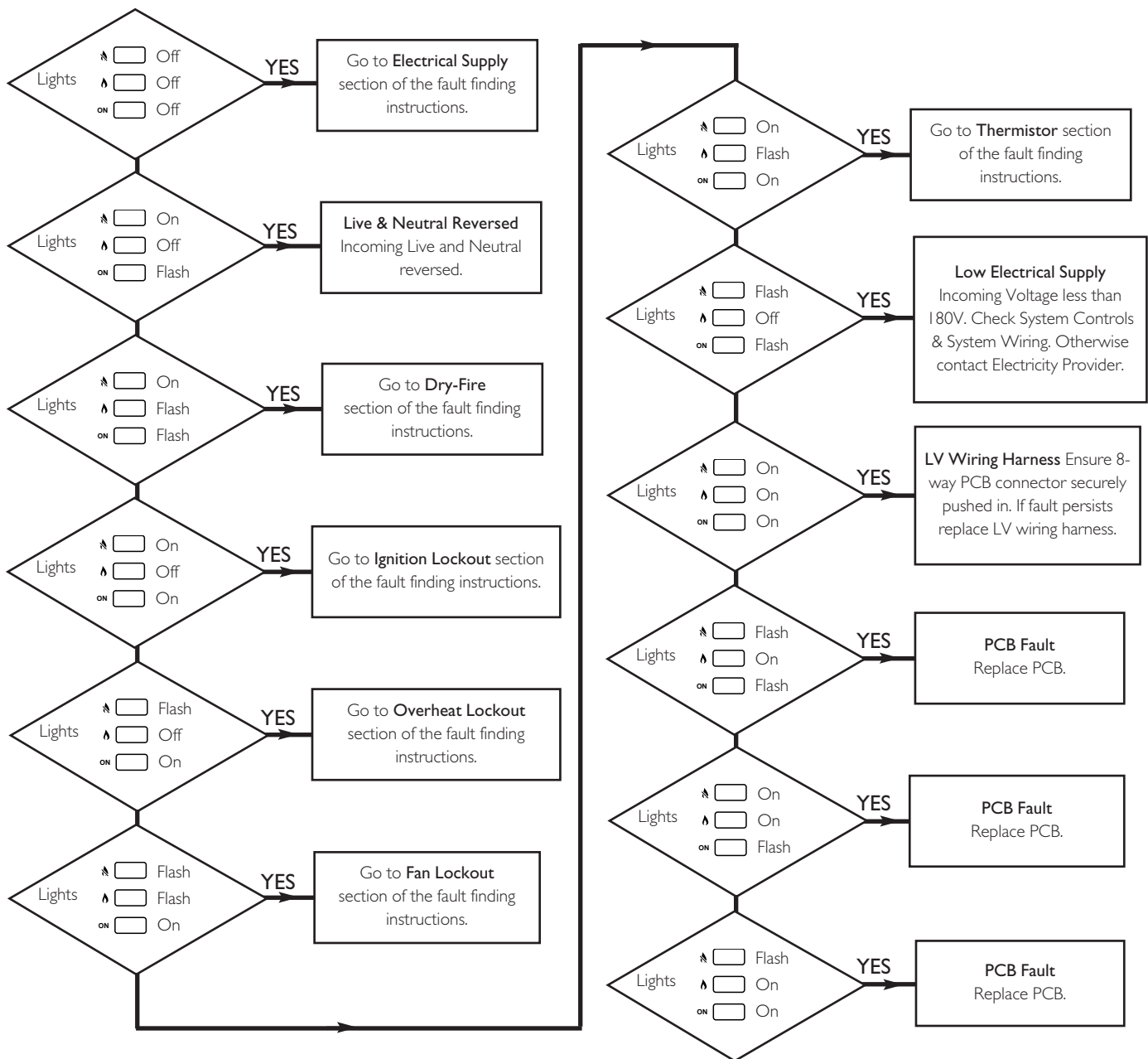
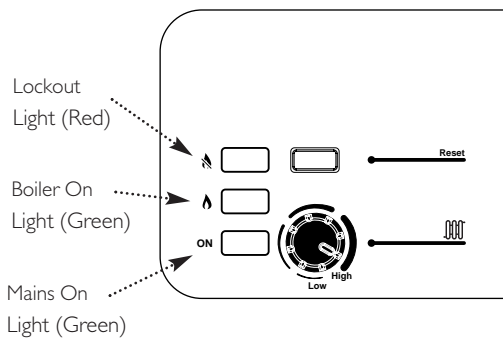


15.0 Fault Finding

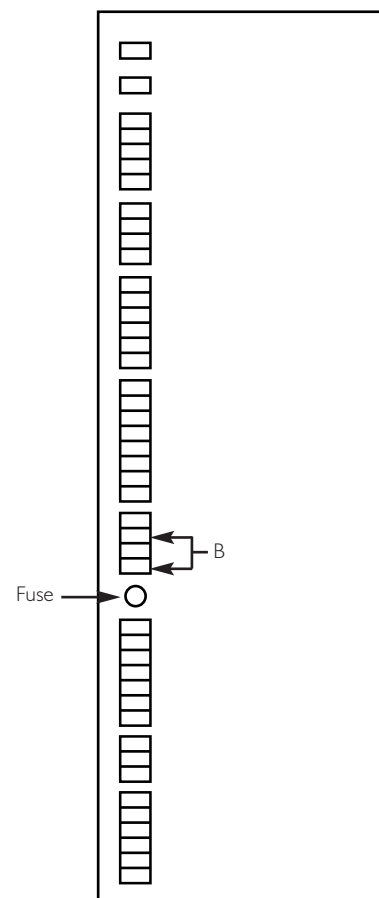
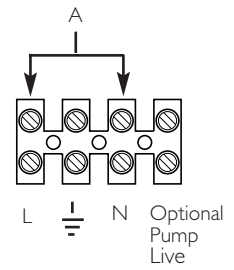
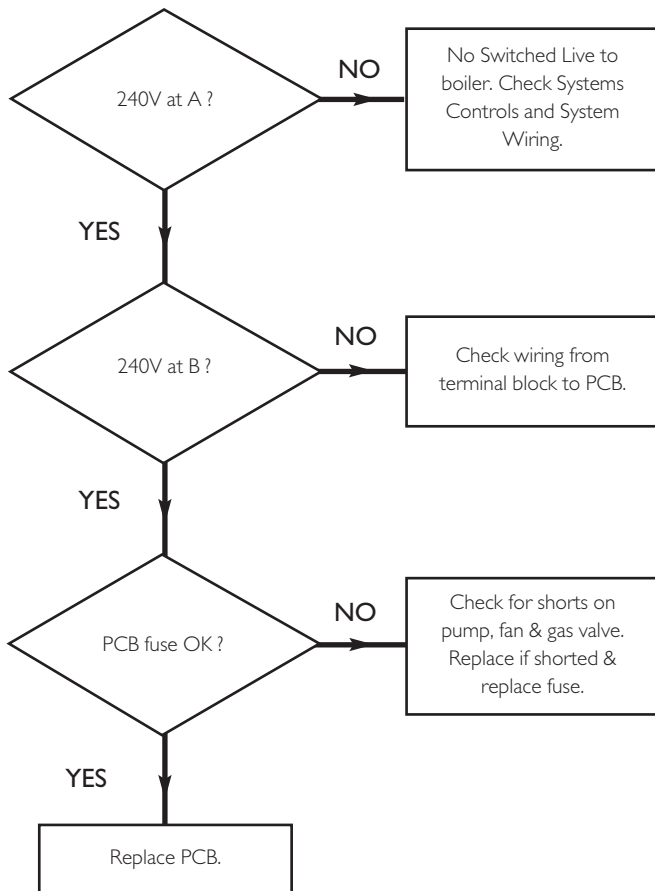
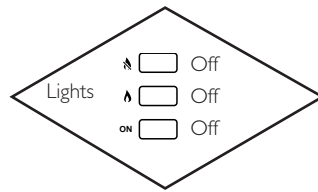
**NOTE:** The fan is supplied with 325 Vdc.

Fan Fault Finding should only be carried out after the boiler has been electrically isolated.

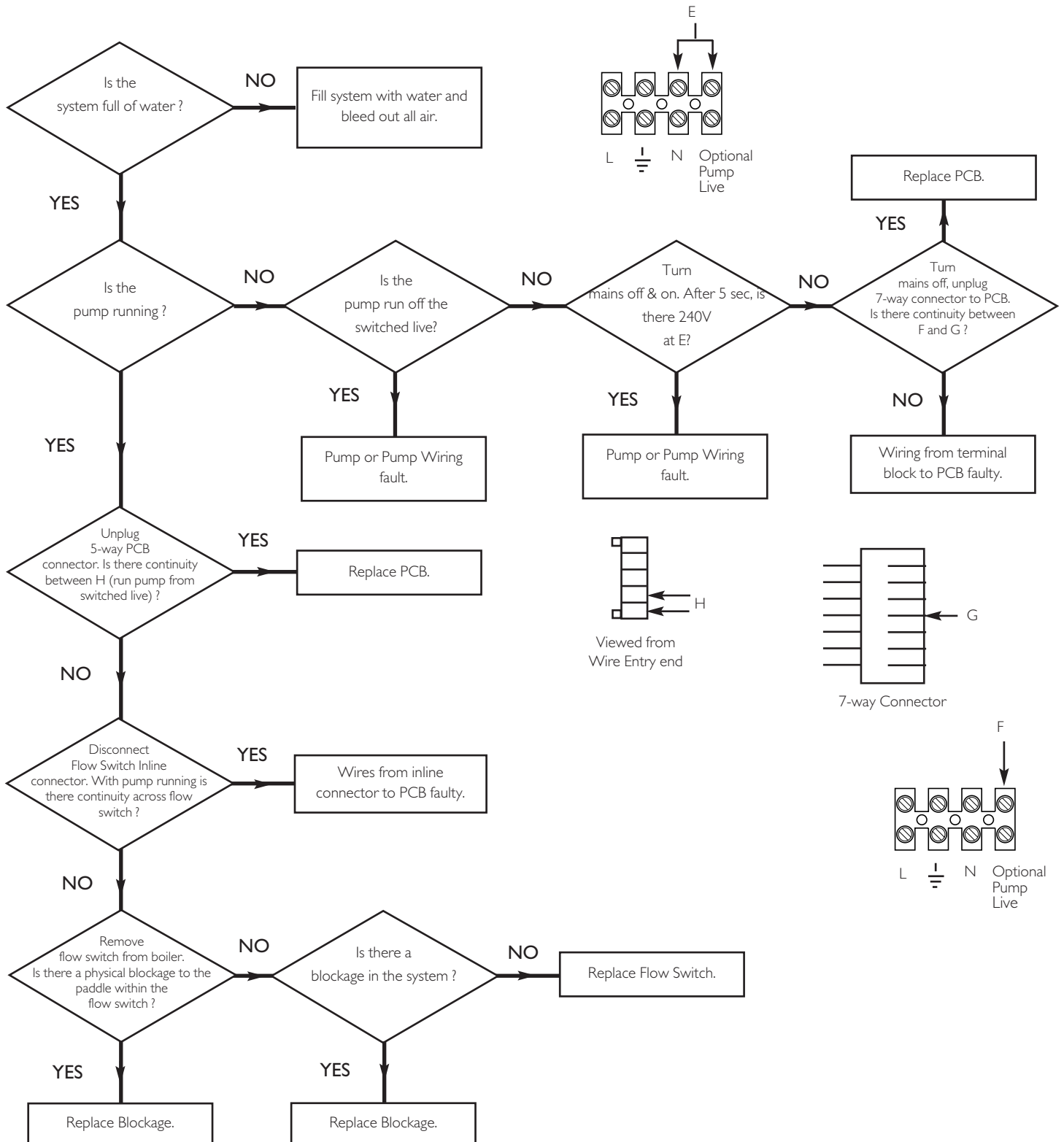
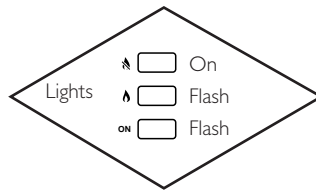
General Fault Finding should only be carried out by someone who is appropriately qualified.



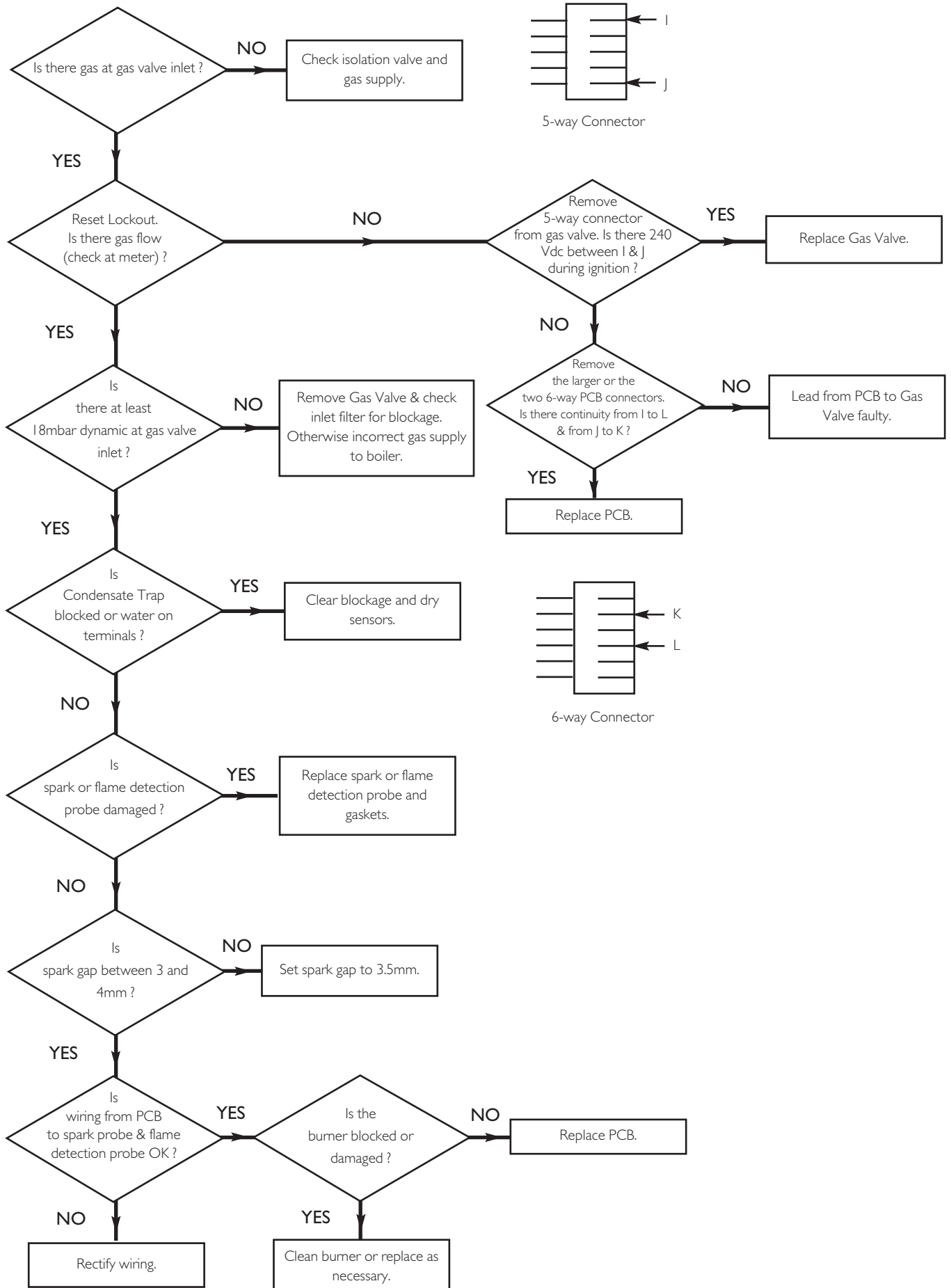
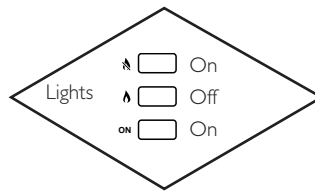
## ELECTRICAL SUPPLY



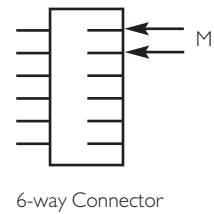
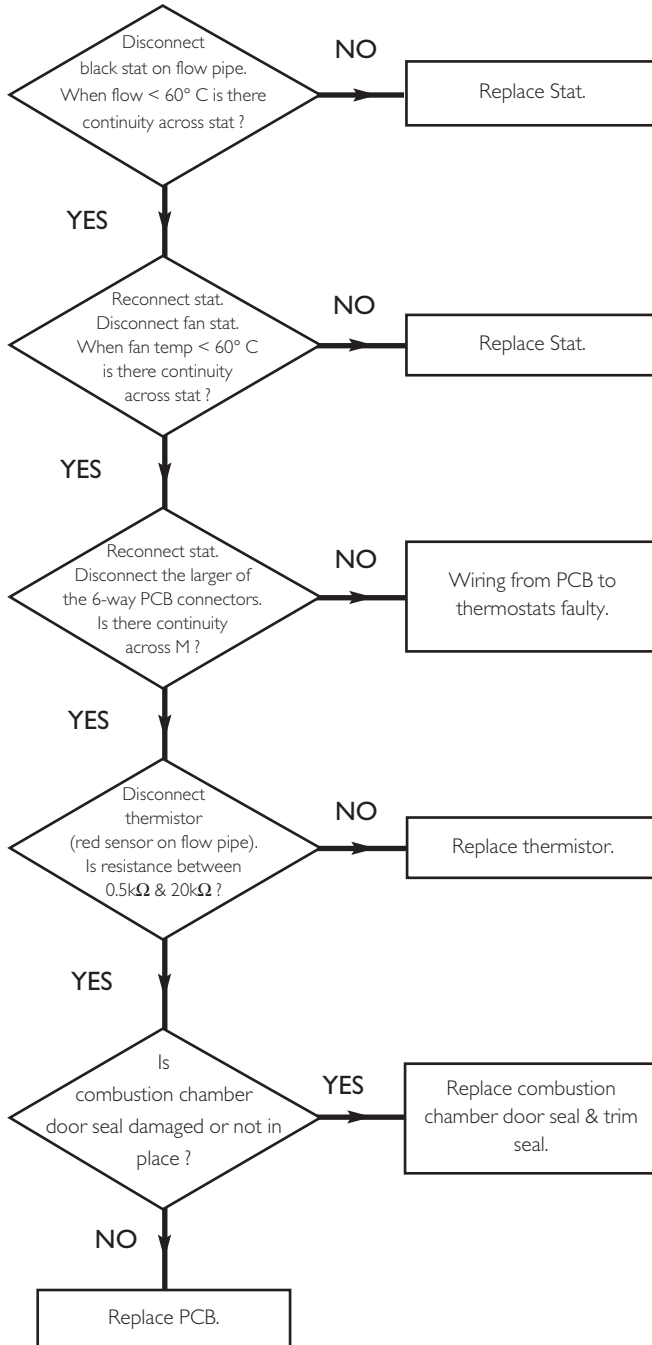
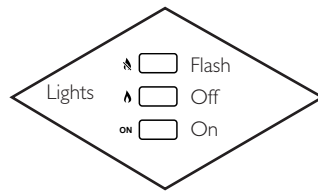
## DRY-FIRE



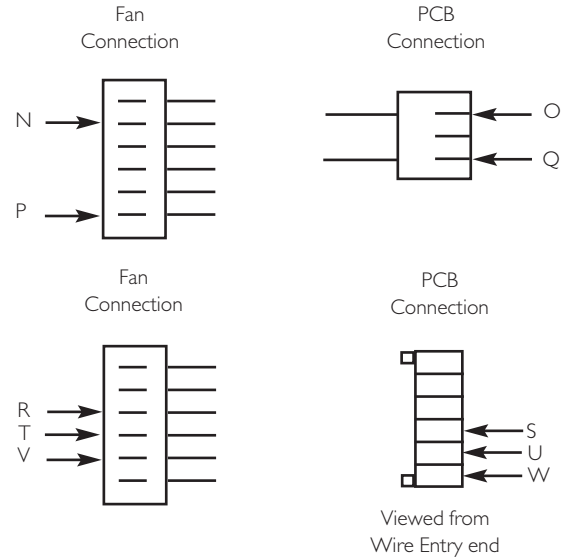
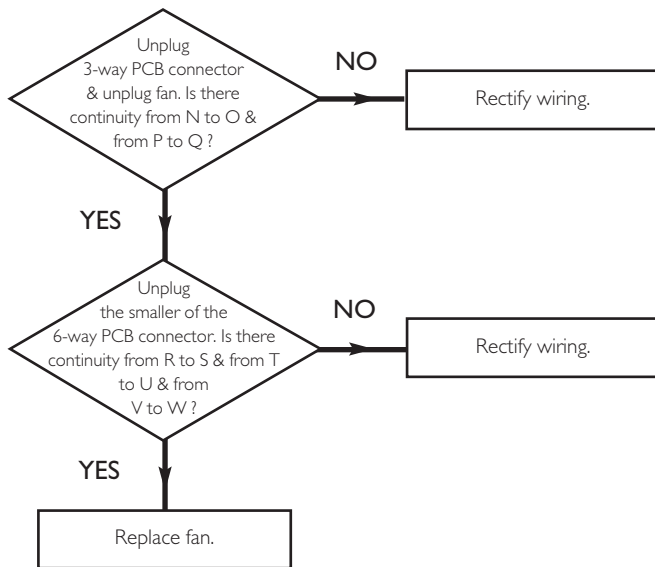
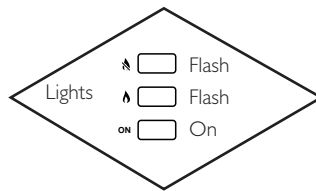
# IGNITION LOCKOUT



## OVERHEAT LOCKOUT



## FAN LOCKOUT

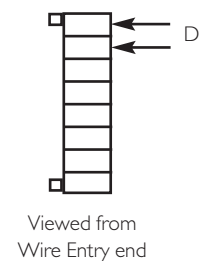
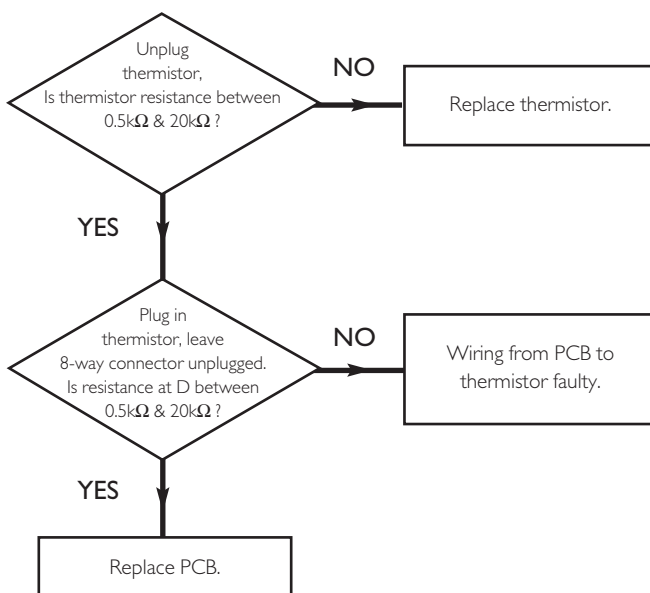
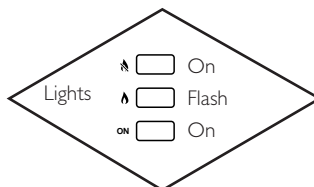


## 15.0 Fault Finding

NOTE: The fan is supplied with 325 Vdc.

Fan Fault Finding should only be carried out after the boiler has been electrically isolated.

## THERMISTOR





[illegible]



## GAS BOILER COMMISSIONING CHECKLIST

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

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

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

**FOR ALL BOILERS CONFIRM THE FOLLOWING**

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

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

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

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

GAS RATE	<input type="text"/>	m <sup>3</sup> /hr	<input type="text"/>	ft <sup>3</sup> /hr
BURNER OPERATING PRESSURE (IF APPLICABLE)	<input type="checkbox"/>	N/A	<input type="text"/>	mbar
CENTRAL HEATING FLOW TEMPERATURE				<input type="text"/> °C
CENTRAL HEATING RETURN TEMPERATURE				<input type="text"/> °C

**FOR COMBINATION BOILERS ONLY**

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

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

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

GAS RATE	<input type="text"/>	m <sup>3</sup> /hr	<input type="text"/>	ft <sup>3</sup> /hr
MAXIMUM BURNER OPERATING PRESSURE (IF APPLICABLE)	<input type="checkbox"/>	N/A	<input type="text"/>	mbar
COLD WATER INLET TEMPERATURE				<input type="text"/> °C
HOT WATER OUTLET TEMPERATURE				<input type="text"/> °C
WATER FLOW RATE				<input type="text"/> lts/min

**FOR CONDENSING BOILERS ONLY CONFIRM THE FOLLOWING**

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

**FOR ALL INSTALLATIONS CONFIRM THE FOLLOWING**

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

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

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

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

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

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

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

# SERVICE INTERVAL RECORD

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

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

## SERVICE 1 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 2 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 3 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 4 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 5 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 6 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 7 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 8 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 9 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

## SERVICE 10 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGID CARD SERIAL No.

COMMENTS

SIGNATURE

**BAXI POTTERTON**

A Trading Division of Baxi Heating UK Ltd

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After Sales Service 08706 096 096 Technical Enquiries 08706 049 049

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