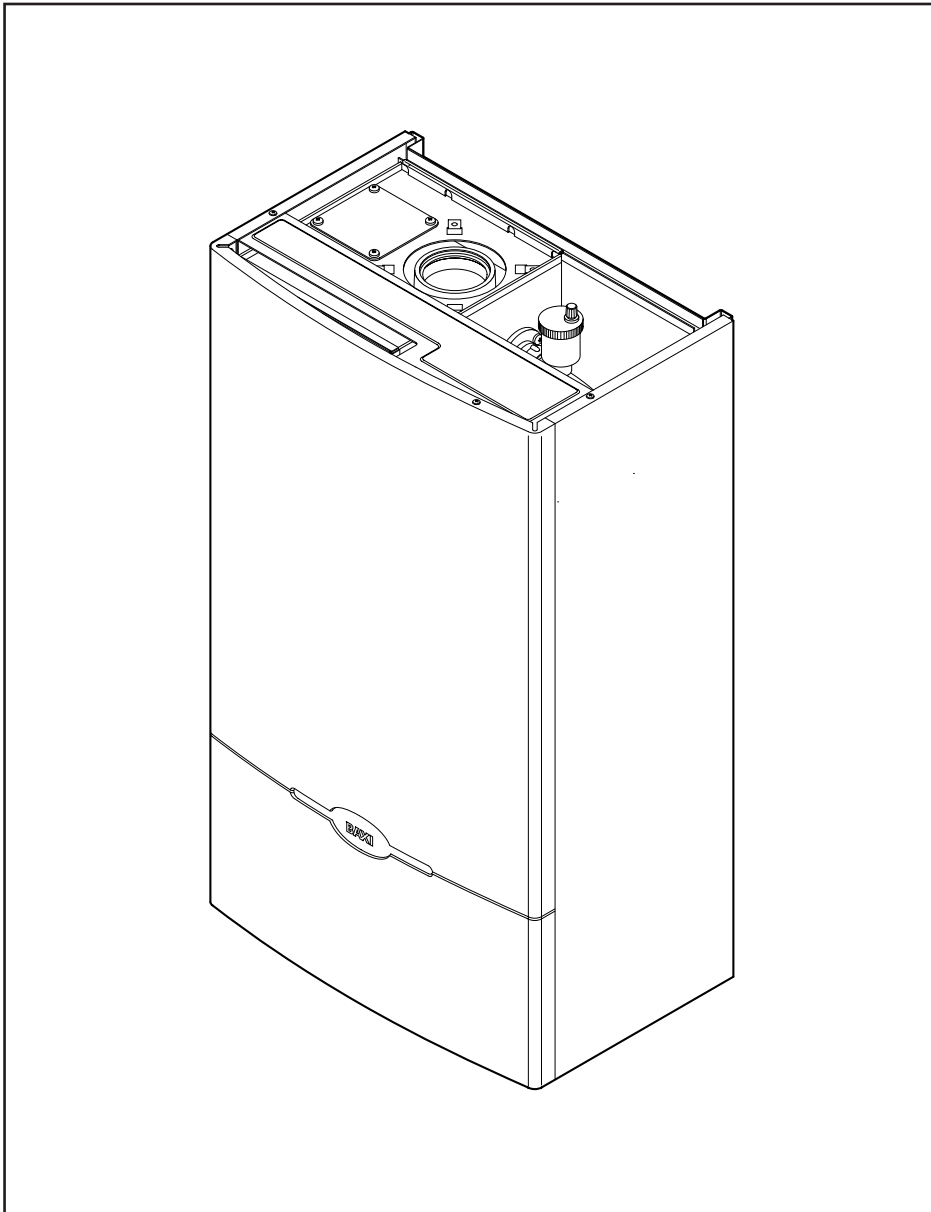


Baxi Combi 130 HE

Gas Fired Wall Mounted Condensing
Combination Boiler

Installation and Servicing Instructions



BAXI

Natural Gas

Baxi Combi 130 HE
G.C.N° 47 075 04

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, or valid ACoP equivalents, is deemed competent.

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

WARNING - 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.

Baxi is one of the leading manufacturers of domestic heating products in the UK.

Our first priority is to give a high quality service to our customers. Quality is designed into every Baxi product - products which fulfil the demands and needs of customers, offering choice, efficiency and reliability.

To keep ahead of changing trends, we have made a commitment to develop new ideas using the latest technology - with the aim of continuing to make the products that customers want to buy.

Everyone who works at Baxi has a commitment to quality because we know that satisfied customers mean continued success.

We hope you get a satisfactory service from Baxi. If not, please let us know.

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:-

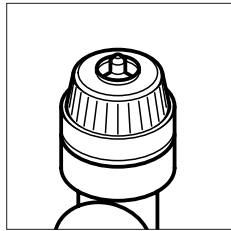
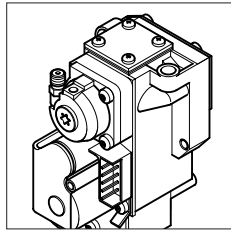
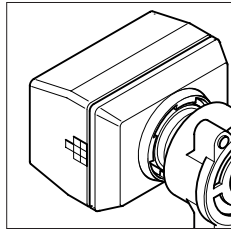
Type test for purpose of Regulation 5 certified by:
Notified Body 0086.

Product/Production certified by:
Notified Body 0086.
Ref: 86-BL-647

For GB/IE only.



Baxi is a BS-EN ISO 9001
Accredited Company



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1.0 Introduction

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

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

This boiler is fitted with a flow switch interlock that prevents it from firing when the heating demand is satisfied.

1.1 Description

1. The Baxi Combi 130 HE is a fully automatic gas fired wall mounted condensing combination boiler. It is room sealed and fan assisted, and will serve central heating and mains fed domestic hot water.
2. The boiler is preset to give a maximum output of 23.9 kW (81,500 Btu/h) for central heating and 39.0 kW (133,000 Btu/h) for hot water. In central heating mode the boiler will automatically adjust down to 10.6 kW (36,000 Btu/h) according to system load.
3. It is designed for use on Natural Gas (G20) only.
4. Check the local supply conditions before installation.
5. The boiler is suitable for use only on fully pumped sealed heating systems. Priority is given to domestic hot water.
6. 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).
7. The boiler data badge is positioned on the air box door (Fig. 2).
8. The boiler is intended to be installed in residential / commercial / light industrial E.M.C. environments on a governed meter supply only.
9. 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.

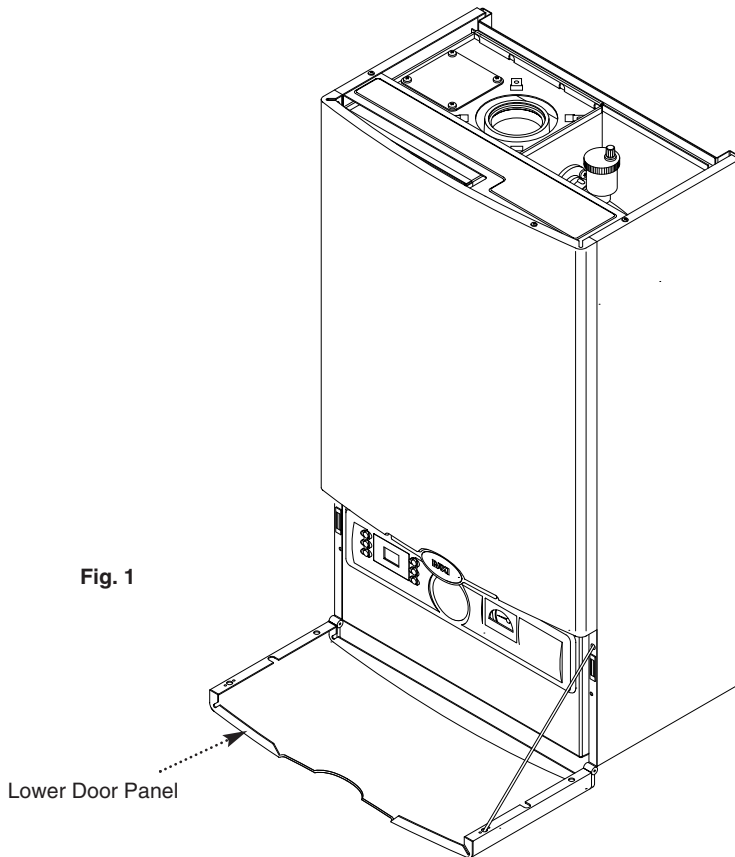


Fig. 1

Lower Door Panel

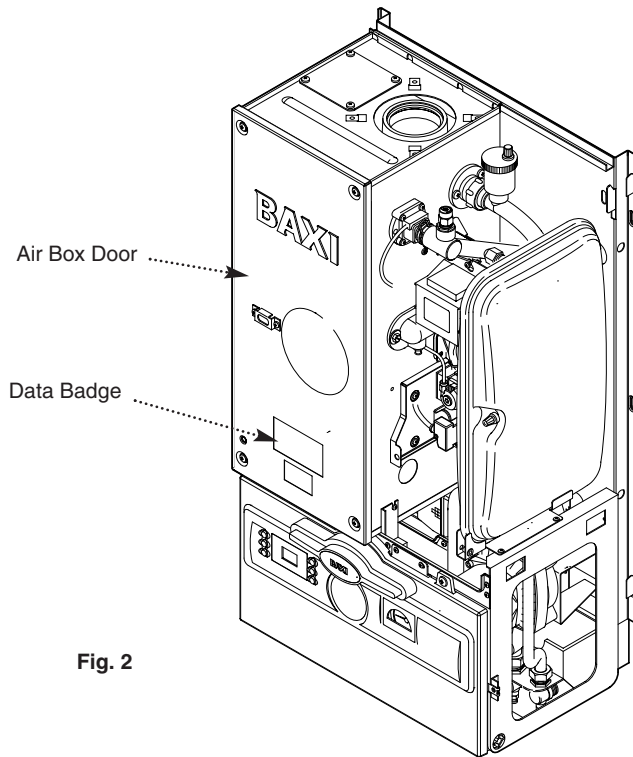


Fig. 2

Air Box Door

Data Badge

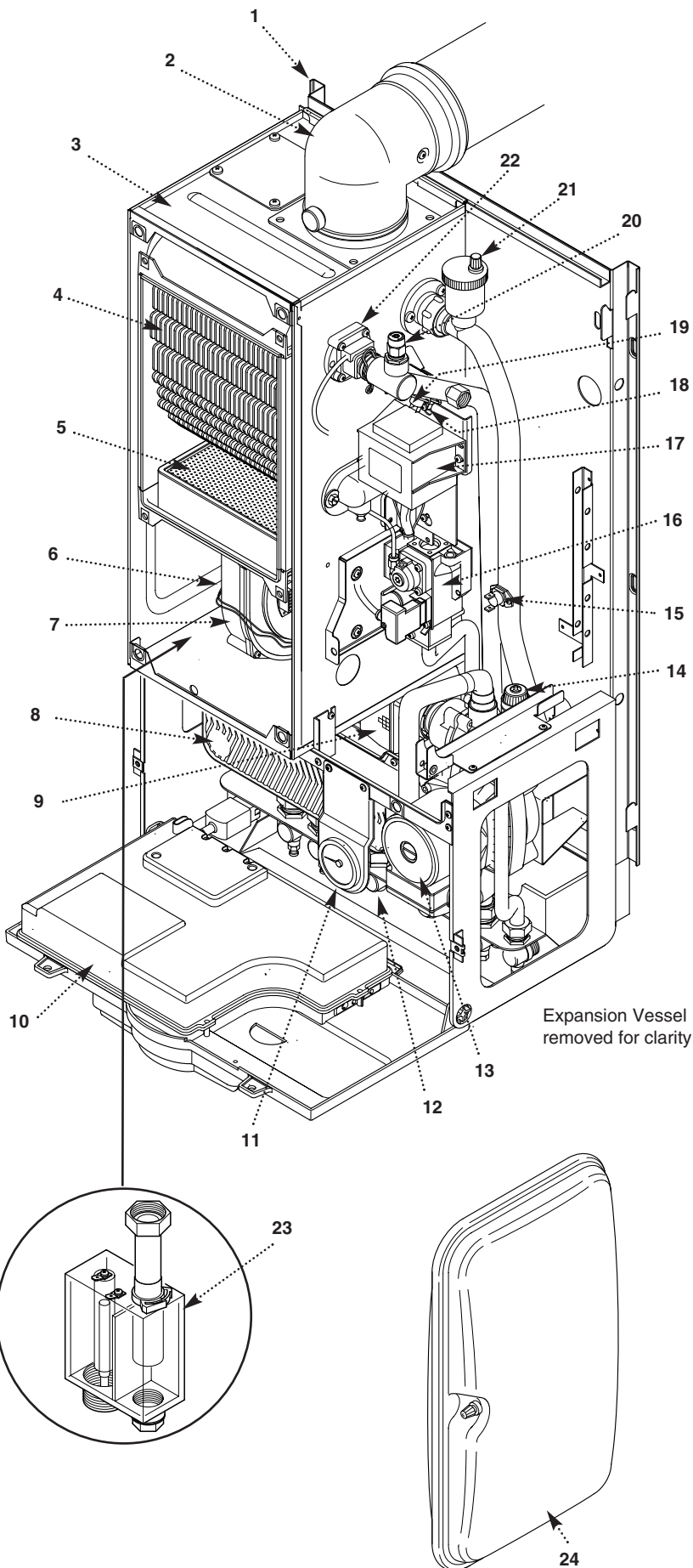
“Benchmark” Log Book

As part of the industry-wide “Benchmark” initiative all Baxi boilers now include an Installation, Commissioning and Service Record Log Book. Please read the Log Book carefully and complete all sections relevant to the appliance and installation. These include sections on the type of controls employed, flushing the system, burner operating pressure etc. The details of the Log Book will be required in the event of any warranty work. Also, there is a section to be completed at each subsequent regular service visit.

2.0 General Layout

2.1 Layout

1. Wallplate
2. Flue Elbow
3. Air Box
4. Heat Exchanger
5. Burner
6. Fan Protection Thermostat
7. Fan Assembly
8. DHW Plate Heat Exchanger
9. Three Way Valve
10. Facia Box
11. Water Pressure Gauge
12. Gas Tap
13. Circulation Pump
14. Pressure Relief Valve
15. Return Thermistor
16. Gas/Air Ratio Valve
17. Transformer
18. Flow Temperature Safety Thermostat
19. Flow Temperature Thermistor
20. Manual Air Vent
21. Automatic Air Vent
22. Flow Switch (Dry Fire Protection)
23. Condensate Trap
24. Expansion Vessel



2.2 Optional Extras

KIT	PART N°
FLUE EXTENSION KITS (110/70)	
Horizontal Flue Kit 4M max	
Flue Extension 0.25M	241692
Flue Extension 0.5M	241694
Flue Extension 1M (Use two kits for 2M etc.)	241695
Flue Bend - 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 this bend)	241687
VERTICAL FLUE KITS (110/70) 5M max	
Vertical Flue Terminal	242802
Vertical Boiler Connection	242886
VERTICAL FLUE (80/80)	
Kit Boiler Connection Twin	242757
CONTROL ACCESSORIES	
Programmable Room Thermostat (Intellistat)	247495
Electro-Mechanical Timer	247498
Filling Loop Kit	247500

3.0 Appliance Operation

NOTE: All delay timers mentioned in 3.1 and 3.2 are overridden by domestic hot water demand.

3.1 Central Heating Mode

1. With a demand for heating, the pump circulates water through the primary circuit. At a flow rate of approximately 4.5 l/hr the central heating flow switch operates, initiating the ignition sequence.
2. The main burner ignites at a low rate, then the fan/gas valve and proportionator control the gas rate to maintain the heating temperature measured by the thermistor sensor.
3. When the flow temperature exceeds the set temperature, a 1 minute pump overrun occurs followed by 3 minutes anticycle. If the flow temperature is low enough the burner will then relight automatically otherwise pump overrun and anticycle will occur again.
4. When the demand is satisfied the burner is extinguished and the pump continues to run for a period of 1 minute (Pump Overrun).

3.2 Domestic Hot Water Mode

1. Priority is given to the domestic hot water supply. A demand at a tap or shower will override any central heating requirement.
2. The flow of water will operate the DHW flow switch and the 3-way valve will change position. This will allow the pump to circulate the primary water through the DHW plate heat exchanger.
3. The burner will light automatically and the temperature of the domestic hot water is controlled by the return thermistor.
4. When the domestic hot water demand ceases the burner will extinguish and the diverter valve will remain in the domestic hot water mode, unless there is a demand for central heating.

3.3 Boiler Frost Protection

1. The boiler incorporates an integral frost protection feature. It will operate in both summer and winter modes. If the boiler temperature falls below 8°C ($\pm 5^\circ$) then the boiler will fire until a temperature of 15°C ($\pm 5^\circ$) is reached.

3.4 System Frost Protection Mode

1. The boiler incorporates an integral system frost protection feature. This can be activated (see section 10.4) if required. To monitor system temperature the boiler will switch on the pump every four hours in both summer and winter modes. If water returned to the boiler is below 8°C ($\pm 5^\circ$) the boiler frost protection mode is automatically activated. Due consideration should be taken to the siting of the appliance when using this option. It may be preferable to fit an external frost thermostat to the system. In this instance the integral system frost protection feature need not be activated.

3.5 Pump Protection

1. The control system continually monitors the time since the pump last operated. This will result in the pump being run for 1 minute if it has not run in the last 24 hours to prevent seizure.

4.0 Technical Data

Appliance Type	C ₁₃	C ₃₃
Appliance Category	CAT I _{2H}	
Heat Input Gross DHW	Max	
	kW	45.45
	Btu/h	155,000
Heat Input Gross CH	Max	
	kW	33.7
	Btu/h	115,000
Heat Output CH	Max	
	kW	30.0
	Btu/h	102,000
Non Condensing (70°C Mean Water temp)		
	kW	30.0
	Btu/h	102,000
Condensing (40°C Mean Water temp)		
	kW	31.4
	Btu/h	107,000
Max Gas Rate (Natural Gas) (After 10 Mins)	m ³ /h	4.2
	ft ³ /h	148.3
Inlet Pressure (Natural Gas)	mbar	20
	in wg	8
Electrical Supply	230V~ 50Hz (Appliance must be connected to an earthed supply)	
Power Consumption	200W	
External Fuse Rating	3A	
Internal Fuse Rating	2AH	

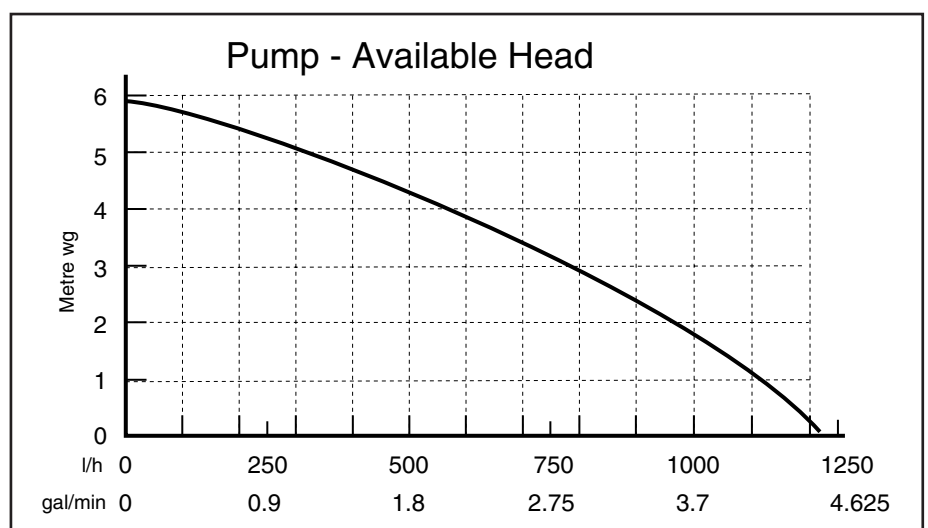
Flue Terminal Dimensions	Diameter	110mm
	Projection	150mm
Connections	copper tails	
Gas Supply	-	22mm
Central Heating Flow	-	22mm
Central Heating Return	-	22mm
Cold Water Mains Inlet	-	15mm
DHW Flow	-	22mm
Pressure Relief Discharge	-	15mm
Condensate Drain	-	1" BSP
Outercase Dimensions		
Casing Height	-	850mm
Overall Height Inc Flue	-	
Elbow	-	1000mm
Casing Width	-	490mm
Casing Depth	-	320mm
Clearances		
Both Sides	5mm Min	
Above Casing	200mm Min	
Below Casing	200mm Min	
Front	500mm Min (For Servicing)	
Front	5mm Min (In Operation)	
Weights	kg	lb
Packaged Boiler Carton	62.5	137.8
Packaged Flue Kit	3.8	8.4
Weight Empty	55.7	122.8
Installation Lift Weight	45.9	101.2
Central Heating Primary Circuit Pressures	bar	lb/in ²
Safety Discharge	3	43.5
Max Operating	2.5	36.3
Min Operating	0.7	10.2
Recommend Operating	1-2	14.5-29
Recommended System Temperature Drop		
Normal	11°C	
Condensing	20°C	

DHW Circuit Pressures	bar	lb/in ²
Max Operating	10	145
Min Operating	0.1	1.45
Min Operating Pressure at 16 l/min	1.6	23.2
Flow Rates	l/min	gal/min
DHW Flow Rate @ 30°C Rise	18.7	4.11
DHW Flow Rate @ 35°C Rise	16	3.52
Min Working DHW Flow Rate	3.5	0.77
Pump	Available Head See graph below	
Expansion Vessel - (For Central Heating only. Integral with appliance)	bar	lb/in ²
Min Pre-charge Pressure	0.95	13.8
Nominal Pre-charge Pressure	1	14.5
	litre	gal
Max Capacity of CH System	125	27.5
Primary Water Content of Boiler (unpressurised)	1.5	0.33
DHW Expansion Vessel	See Section 6.7 for information	
Temperatures		
C.H. Flow Temp (adjustable)	45° C to 82° C max (± 0.5° C)	
D.H.W. Flow Temp (adjustable)	35° C to 55° C max (± 0.5° C) dependent upon flow rate	
NO_x Class	5	
Electrical Protection	IP 44	

SEDBUK Declaration For Combi 130 HE

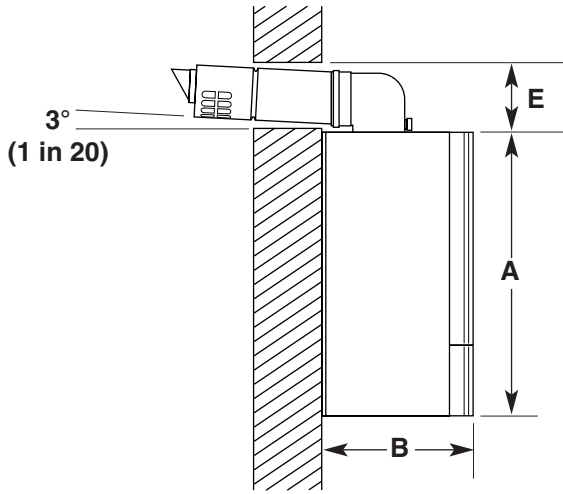
The efficiency is 90.7%

This value is used in the UK Government's Standard Assessment Procedure (SAP) for energy rating of dwellings. The test data from which it has been calculated has been certified by 0086.



Where flow rates are required in excess of 840 l/h please contact the Baxi Technical Department for advice (Telephone number on the back cover).

5.0 Dimensions and Fixings

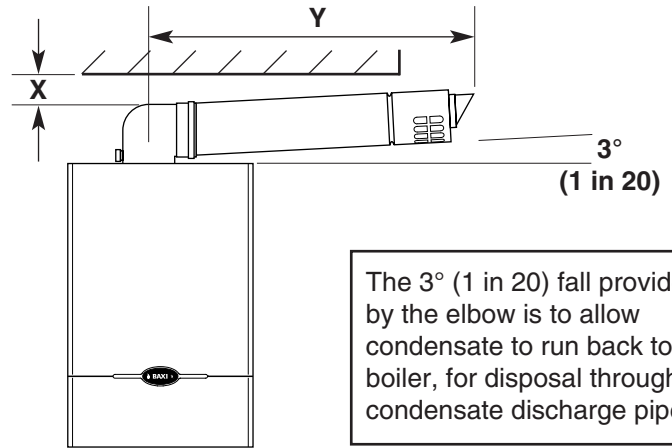
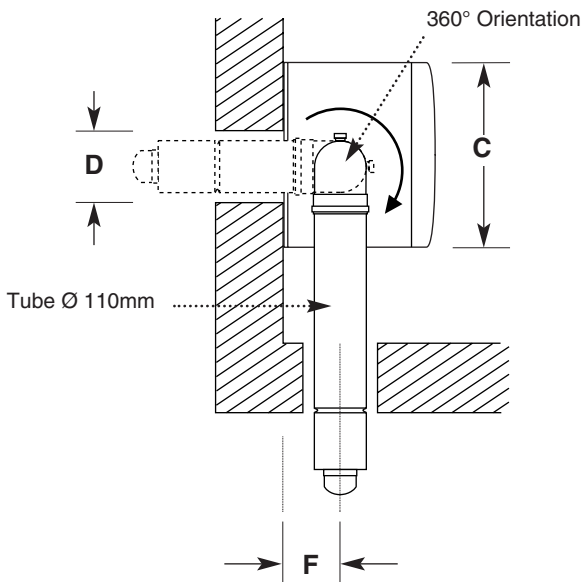


DIMENSIONS	
A	850mm
B	320mm
C	490mm
D	125mm Ø Min.
E	150mm
F	136mm

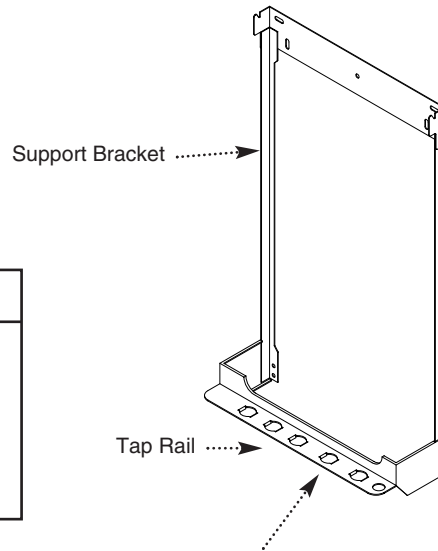
SIDE FLUE (left and right)

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.

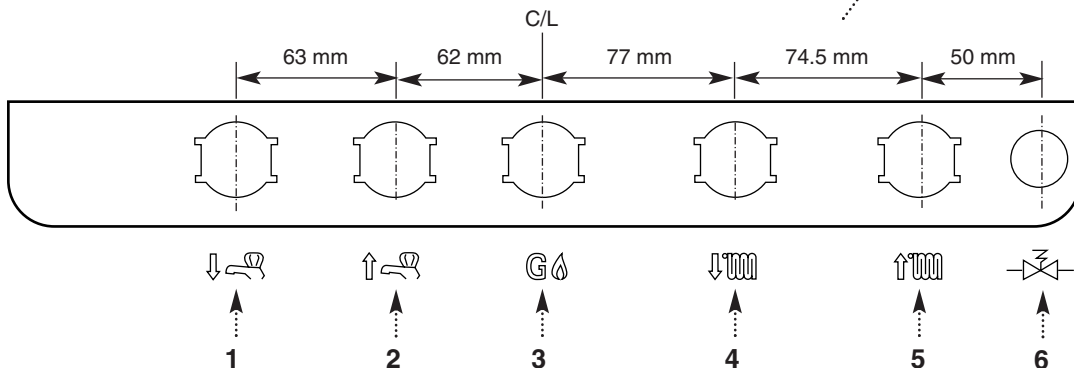
Flue length (Y)	Clearance (X)
up to 1m	55mm
1m - 2m	110mm
2m - 3m	165mm



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.



Key To Support Bracket	
1 Domestic Hot Water Outlet	4 Central Heating Flow
2 Cold Water Inlet	5 Central Heating Return
3 Gas Supply	6 Pressure Relief



6.0 System Details

6.1 Information

In GB it is necessary to comply with the Water Supply (Water Fittings) Regulations 1999 (or for Scotland, The Water Byelaws 2000, Scotland). The Baxi Combi 130 HE Combination Boiler is an Approved Product under the Water Regulations.

To comply with the Water Regulations your attention is drawn to The Water Regulations Advisory Service (WRAS) which gives full details of the requirements.

In IE the requirements given in the current edition of I.S. 813 "Domestic Gas Installations" and the current Building Regulations must be followed.

6.2 Central Heating Circuit

1. The appliance is suitable for fully pumped SEALED SYSTEMS ONLY.

This boiler is fitted with a flow switch interlock that prevents it from firing when the heating demand is satisfied.

The boiler is designed so that it will heat the house to the desired room temperature as quickly as possible by running at the maximum radiator temperature of 82°C.

Once this room temperature is achieved the boiler will then reduce the radiator temperature to as low a level as possible, while still achieving the desired room temperature, thereby giving the most efficient use of gas and the most comfortable room temperature possible.

The boiler will be able to achieve this performance if a room thermostat is fitted **or with a fully TRV'd system without a bypass**. If the system is fully TRV'd *with* a bypass then this feature will not be available, in this case the radiator temperature can be reduced to provide more efficient operation. (see User instructions).

- If the hot water delivery is greater than 18 litres/minute the flow regulator must be fitted to the Domestic Hot Water inlet (A pint milk bottle will fill in under 2 seconds).
- If the boiler is to be uprated to 100,000 Btu/hr CH output, an extra standard pump will be required and the commissioning procedure will take approximately 30 minutes longer.
- The condensate drain and pipes must be free from leaks.
- Any timer and thermostat should be removed before installing optional Intellistat as it will override their operation.

• Treatment of Water Circulating Systems

All water circulating systems will be subject to corrosion unless an appropriate water treatment is applied. Without treatment 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.

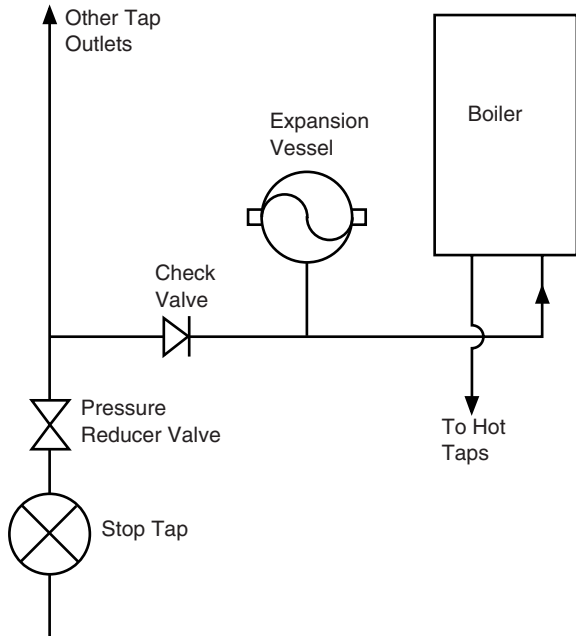
For optimum performance after installation this boiler and its associated central heating system must be flushed in accordance with the guidelines given in BS 7593:1992. "Treatment of water in domestic hot water central heating systems".

This must involve the use of a proprietary cleanser, such as BetzDearborn Sentinel X300 or X400, Fernox Superfloc or Salamander System Cleanser. Full instructions are supplied with the products, but for immediate information please contact BetzDearborn (0044 (0)151 420 9563), Fernox (0044 (0)1799 550 811) or Salamander (0044 (0)121 378 0952) directly.

For long term protection against corrosion and scale, after flushing it is necessary that an inhibitor such as BetzDearborn Sentinel X100, Fernox MB-1 or Copal or Salamander System Inhibitor is dosed in accordance with the guidelines given in BS 7593:1992.

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

6.0 System Details



6.7 Domestic Hot Water Circuit

1. All DHW circuits, connections, fittings, etc. should be fully in accordance with relevant standards and water supply regulations.

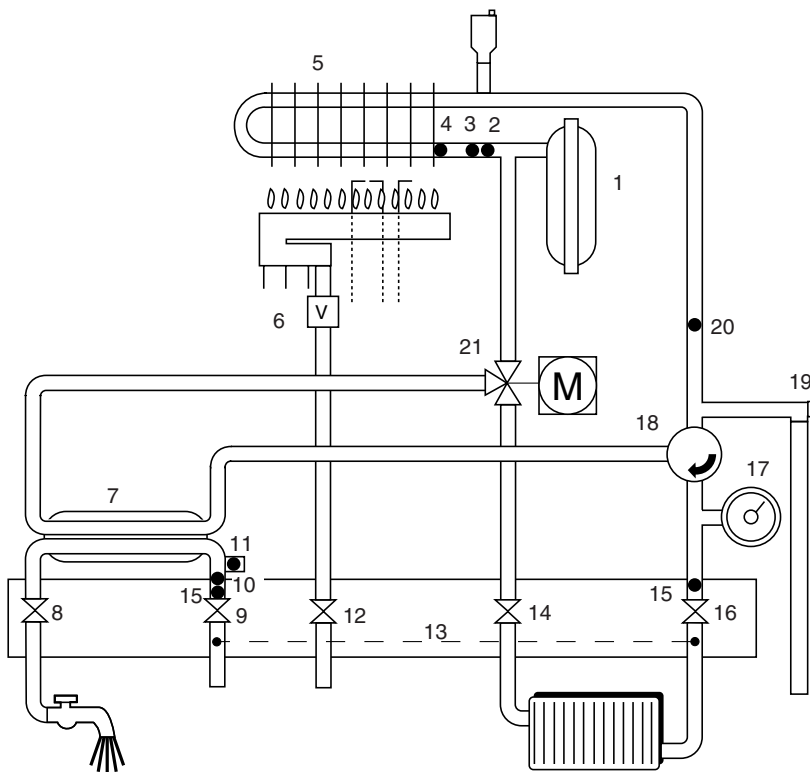
2. Your attention is drawn to:
for GB: Guidance G17 to G24 and recommendation R17 to R24 of the Water Regulations Guide.
for IE: the current edition of I.S. 813. "Domestic Gas Installations".

Sealed primary circuits and/or secondary hot water systems shall incorporate a means for accommodating the thermal expansion of water to prevent any discharge from the circuit and/or system, except in an emergency situation.

3. When the system includes any device which prevents water expanding back towards the supply (check valve, loose jumpered stopcock, water meter, water treatment device), then an expansion vessel must be fitted (e.g. Zilmet I6Oml, R1/2 I5 bar). A check valve must also be fitted on the supply as shown, to ensure efficient operation and also to prevent the reverse flow of hot water into the supply pipe.

4. If the hot water expansion is not provided for, then high pressures can develop which may result in damage to fittings and devices on the system.

5. The boiler's maximum working mains pressure is 10 bar (150 lb/in²), therefore all pipework, connections, fittings, etc. should be suitable for pressures in excess of 10 bar. A pressure reducing valve must be fitted for pressures in excess of 10 bar. The manufacturer of any outlet fittings, such as a shower valve, may require a lower maximum pressure. The pressure reduction must take account of all fittings connected to the DHW system.



6.8 Showers

1. If a shower control is supplied from the appliance it should be of the thermostatic or pressure balanced type. Thermostatic type shower valves provide the best comfort and guard against water at too high a temperature. Existing controls may not be suitable - refer to the shower valve manufacturer.

6.9 Hard Water Areas

1. If the area of the installation is recognised as a HARD WATER AREA then a suitable device should be fitted to treat the mains water supply to the boiler.

Key

1 Expansion Vessel	12 Gas Inlet
2 Flow Thermostat	13 Filling Loop
3 Flow Thermistor	14 CH Flow Valve
4 Flow Switch	15 Filter
5 Primary Heat Exchanger	16 CH Return Valve
6 Gas Valve	17 Pressure Gauge
7 DHW Plate Heat Exchanger	18 Pump
8 DHW Flow	19 Pressure Relief Valve
9 DHW Mains Inlet	20 Return Thermistor
10 Flow Regulator	21 3 Way Valve
11 DHW Flow Switch	

7.0 Site Requirements

7.1 Information

1. 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 and 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 and the Current I.E.E. Wiring Regulations.

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

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

7.2 Codes of Practice

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 Pt. 1	Flues.
BS 5440 Pt. 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

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.

7.3 Clearances (Fig. 6 & 7)

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.

7.4 Location

1. The boiler may be fitted to any suitable non-flammable 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 7.5).

2. If the boiler is sited in an unheated enclosure then it is recommended to leave the boiler in either the summer or winter mode to give frost protection.

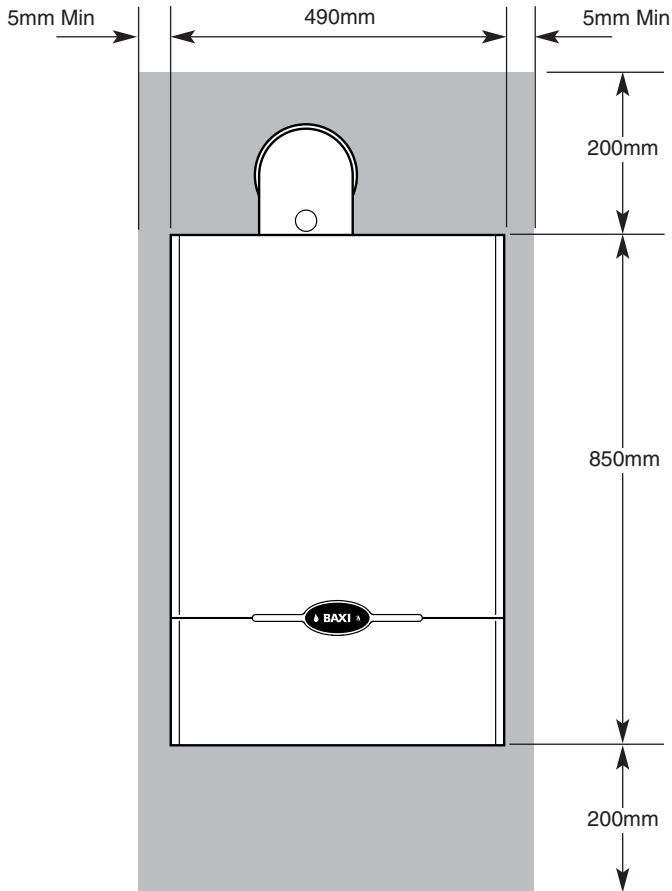


Fig. 6

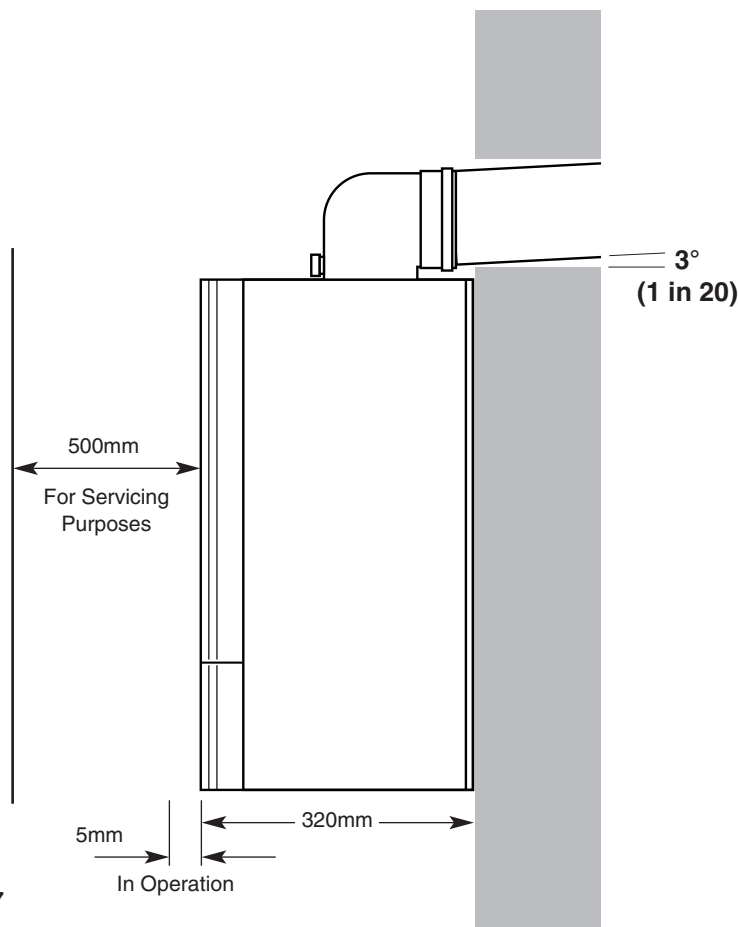


Fig. 7

7.0 Site Requirements

3. If the boiler is fitted in a room containing a bath or shower 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 IS 813 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 Institution of Gas Engineers document IGE/UP/7.

7.5 Ventilation of Compartments

1. Where the appliance is installed in a cupboard or compartment, **no air vents are required. The appliance will run sufficiently cool without extra ventilation.**

Minimum Cupboard Size (inside dimensions)
Height - 1250mm Width - 590mm Depth - 400mm

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.

2. BS 5440: Part 2 Clause 4.2 refers to room sealed appliances installed in compartments.

7.6 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 a 22mm copper tail located at the rear of the gas service cock (Fig. 8).

3. Ensure that the pipework from the meter to the appliance is of adequate size. Do not use pipes of a smaller diameter than the boiler gas connection (22mm).

7.7 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.

NOTE: The method of connection to the electricity supply must facilitate complete electrical isolation of the appliance. Connection must 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.

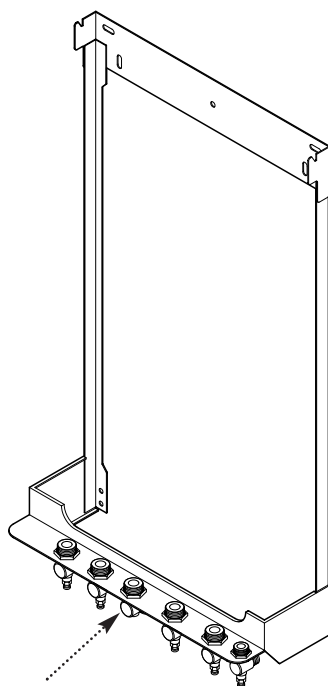


Fig. 8

Gas Service
Cock

7.0 Site Requirements

7.8 Flue

NOTE: Due to the nature 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. For fitting under low soffits and eaves it is acceptable for the flue to project upto 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.

8. If a terminal is less than 2 metres (78³/₄ 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. 10) (mm)

A ^a	Directly below an opening, air brick, opening windows, etc.	300
B ^a	Above an opening, air brick, opening window etc.	300
C ^a	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 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

^a 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

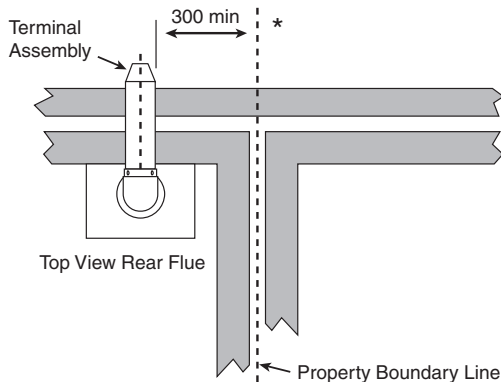


Fig. 9

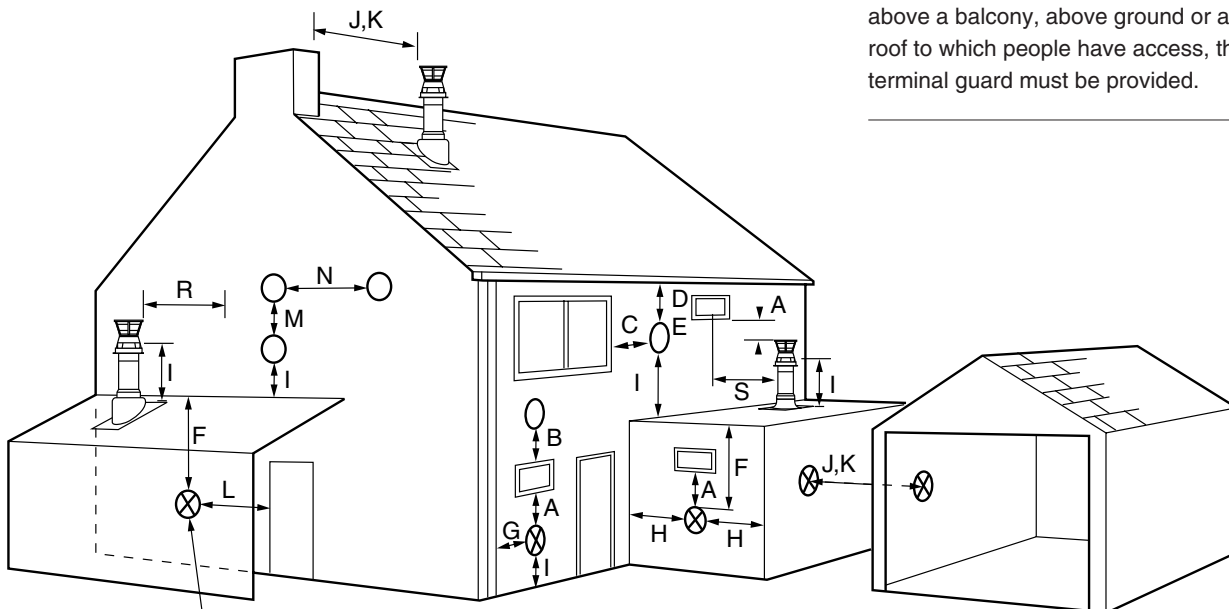


Fig. 10

7.0 Site Requirements

7.9 Flue Dimensions

See Section 1.2. The standard horizontal flue kit allows for flue lengths between 270mm and 800mm from elbow to terminal (Fig. 11).

The maximum permissible equivalent flue length is: 4 metres horizontal (Fig. 12).

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.

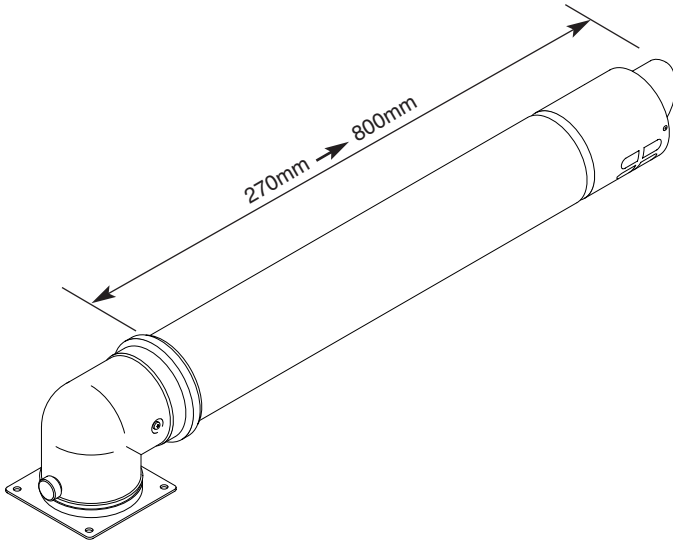


Fig. 11

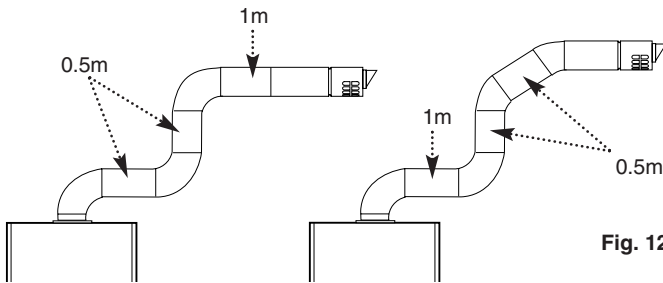


Fig. 12

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

7.10 Terminal Guard (Fig. 13)

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 name and model number.

4. The flue terminal guard should be positioned centrally over the terminal and fixed as illustrated.

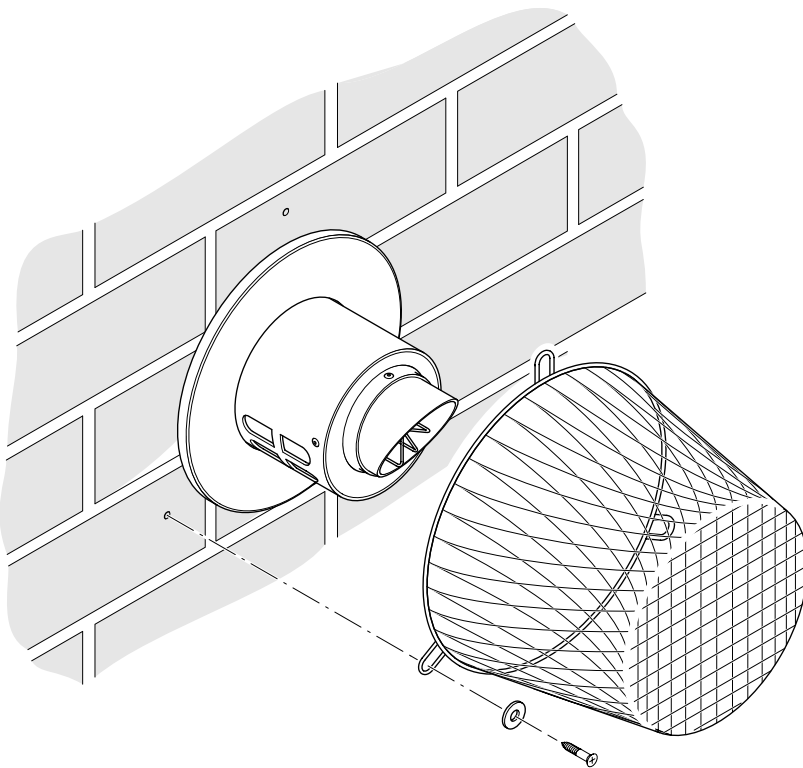


Fig. 13

7.0 Site Requirement

7.11 Flue options

Concentric

The maximum equivalent lengths are 4m (horizontal) or 5m (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 40m.

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

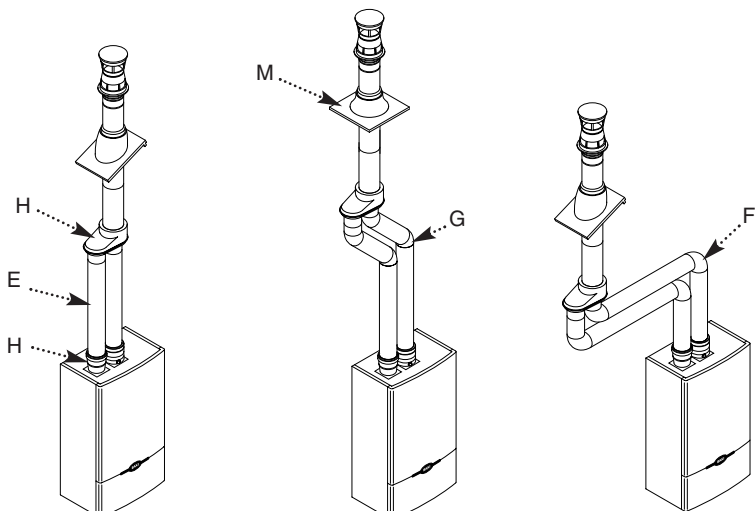
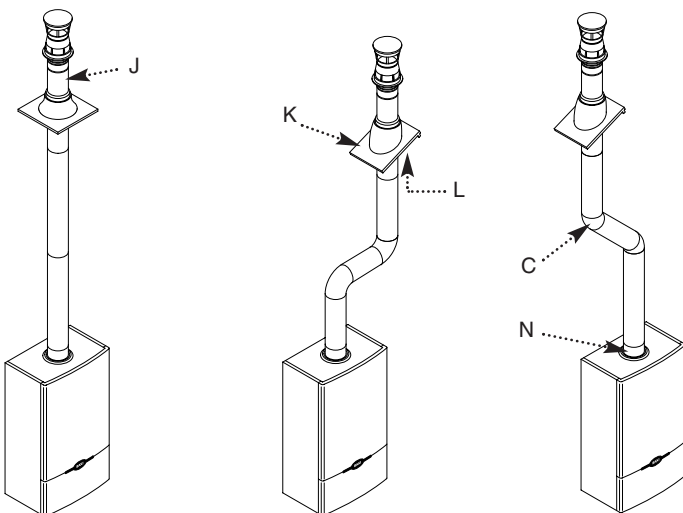
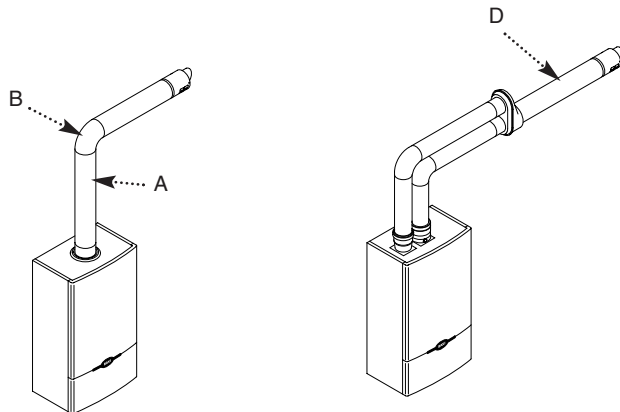
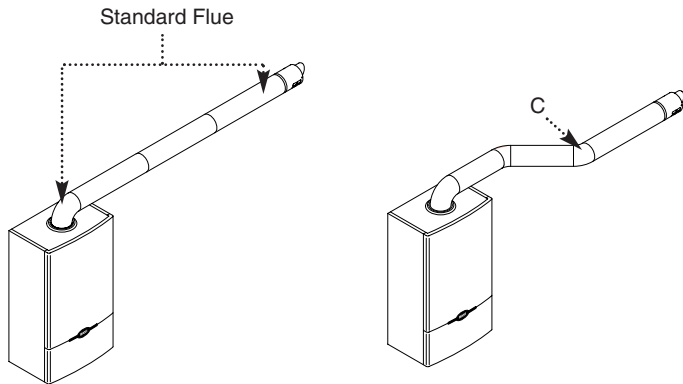
Any additional "in line" bends in the flue system must be taken into consideration. Their equivalent lengths are:

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
Concentric Flue System 110mm diameter			
A	Straight extension kit	1000mm	241695
		500mm	241694
		250mm	241692
B	Bend kit	93°	241687
C	Bend kit (pair)	45°	241689
D	Horizontal flue terminal		243013BAX
	Clamp	110mm	243014BAX
Twin Flue System 80mm diameter			
E	Straight extension kit	1000mm	238690
		500mm	238692
		250mm	238694
F	Bend kit	90°	246139
G	Bend kit (pair)	45°	246138
Universal Vertical Flue Kits			
H	Twin flue adaptor kit		242757
J	Vertical flue terminal		242802
K	Universal roof tile	25°/50°	243015
L	Roof cover plate kit		243131
M	Flat roof flashing		243016BAX
N	Boiler connection vertical concentric		242886
	Clamp	80mm	238684

8.0 Installation

Check Site Requirements (section 7.0) before commencing.

Fitting an Extra Pump

To extract 100,000 Btu/hr from the boiler in central heating mode an extra pump will need to be fitted to increase flow. It must be fitted in parallel to the existing pump and in the return pipe. See Pages 22 & 23 for wiring details.

8.1 Initial Preparation

The gas supply, gas type and pressure must be checked for suitability before connection (see Section 7.6).

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. 14) from the fixing carton.
2. 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, mark as shown. If required, mark the position of the gas and water pipes. Remove the template.

6. Cut the hole for the flue (minimum diameter 125mm) (see table opposite for wall thickness flue diameters).

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 copper tails supplied. Ensure the sealing washers are fitted correctly to the water connections.

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. 15).

2. Flush thoroughly (see System Details, Section 6.0).



Fig. 14

Wall Thickness	Flue Hole \varnothing
up to 227mm	125mm core drill
up to 750mm	150mm core drill
up to 1200mm	175mm core drill

Plastic Flushing Tube

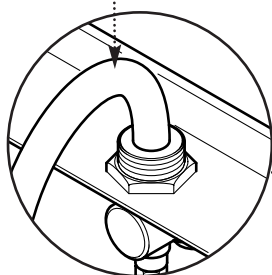
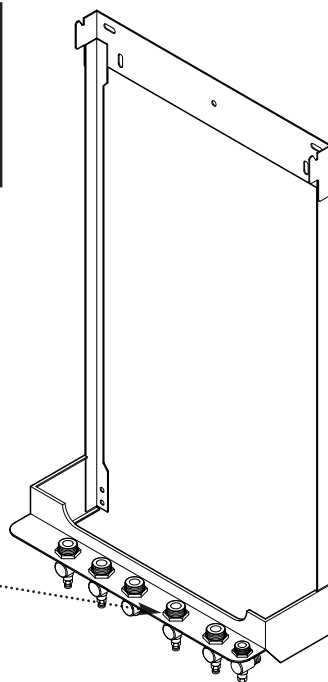


Fig. 15



The symbols for each connection are on the support bracket.

8.0 Installation

8.3 Preparing The Boiler

1. Remove the outer carton.
2. Hinge up the lower door panel (Fig. 16).
3. Remove the outer case fixing screws (Fig. 16). Slide the outercase upwards to disengage the hooks on the backplate and remove (Fig. 17).

NOTE: Service Guidance Note Label is fitted to the inside of the outercase (Fig. 17).

4. Remove the sealing plugs from the copper bends.
5. 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.

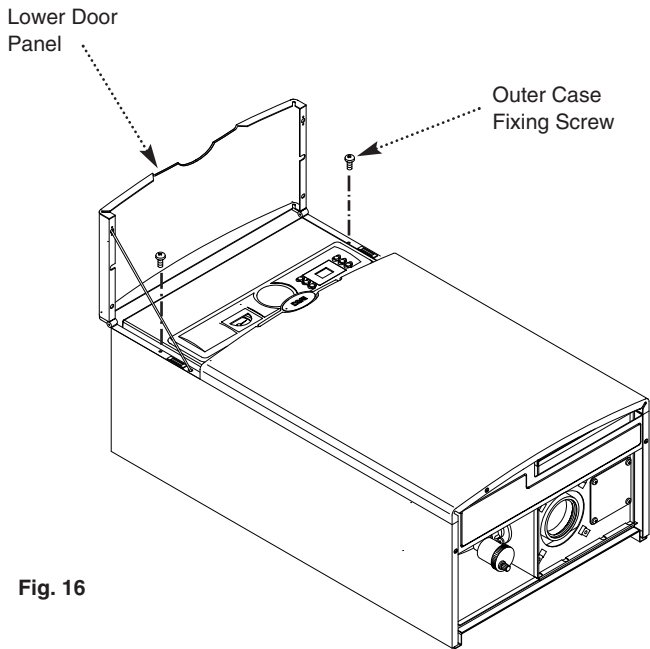


Fig. 16

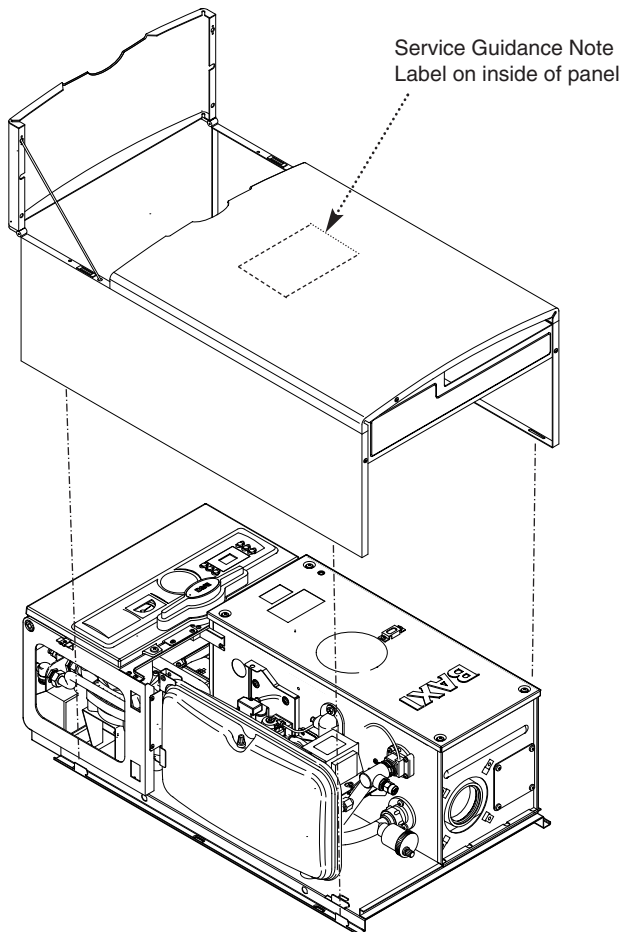


Fig. 17

8.0 Installation

8.4 Fitting The Boiler (Fig. 18)

1. Remove the tape from the tap rail on the support bracket.
2. Lift the boiler using the lower edges of the combustion box.
3. Lift the boiler over the support bracket and engage onto the top hooks.
4. To gain access to the connections between boiler and valves, release the fascia securing screws ($\frac{1}{4}$ turn) and hinge down the fascia box.

5. Make the connections in the following sequence:

- a) Gas connection first to centralise the boiler. **The gas sealing washer is an integral part of the gas tap.**

The Combi 130 HE is designed to operate under nominal water supply conditions. If the hot water delivery is greater than 18 litres/minute the flow regulator must be fitted to the Domestic Hot Water inlet (A pint milk bottle must fill in under 2 seconds).

- b) Domestic hot water cold feed, if necessary fit the water flow regulator ensuring that it is fitted the correct way round (Fig. 20). **NOTE:** Ensure water inlet filter is fitted.

- c) The remaining connections ensuring the fibre sealing washers are inserted between the valve outlet face and the flange on the copper pipes of the water circuit and pressure relief connections (Fig. 20).

6. Tighten the connections in the sequence listed above.

8.5 Condensate Drain

1. Connect the condensate drain using the 1" BSP nut and seal supplied. (see section 7.8.)

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.

3. The pipe should run internally as much as possible and with a 10° (1 in 6) fall to dispose of condensate quickly to avoid freezing.

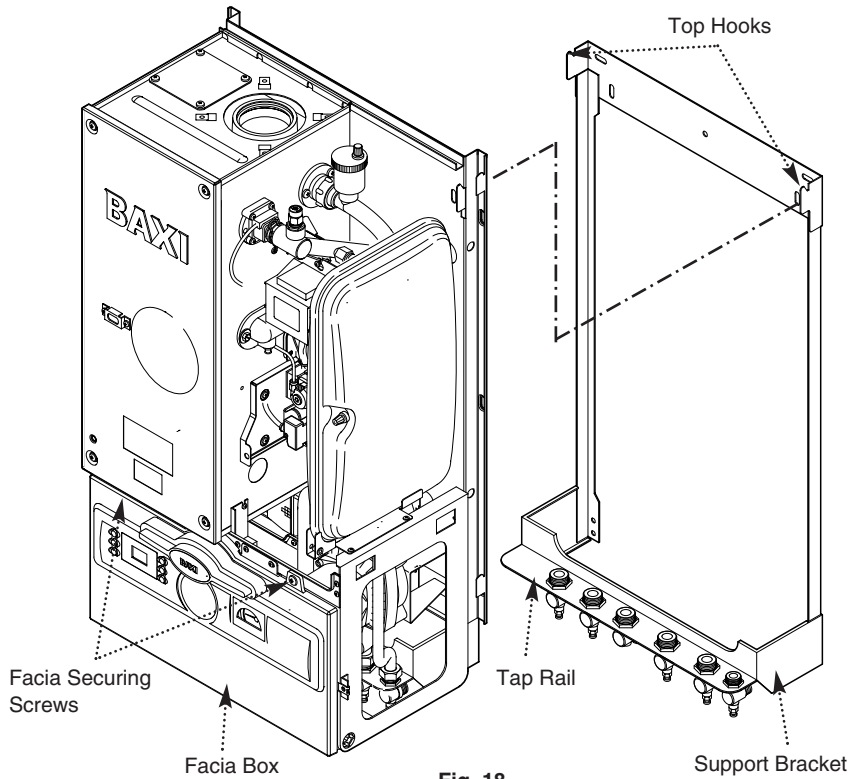


Fig. 18

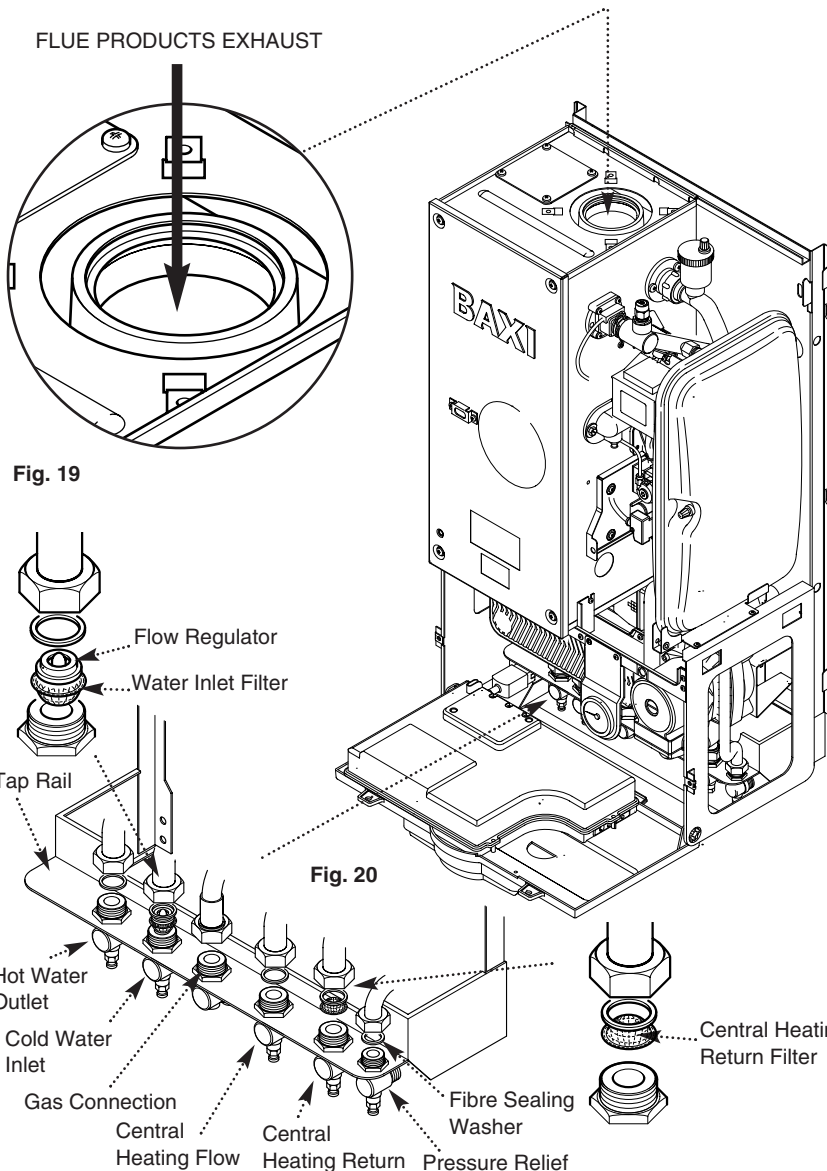


Fig. 19

Fig. 20

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. 21) and to this dimension add 226mm. This dimension to be known as (X).
 i.e. (X) = wall thickness + 226mm

3. Take the flue and mark off (X) from the terminal end as indicated in the diagram (Fig. 22).

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. 21) and to this dimension add the wall thickness + 293mm. This dimension to be known as (Y).

i.e. (Y) = support bracket to wall + wall thickness + 293mm

5. Take the flue and mark off (Y) from the terminal end as indicated (Fig. 22).

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 + 368mm. This dimension to be known as (Z).

i.e. (Z) = support bracket to wall + wall thickness + 368mm

7. Take the flue and mark off (Z) from the terminal end as indicated (Fig. 22).

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. 23).

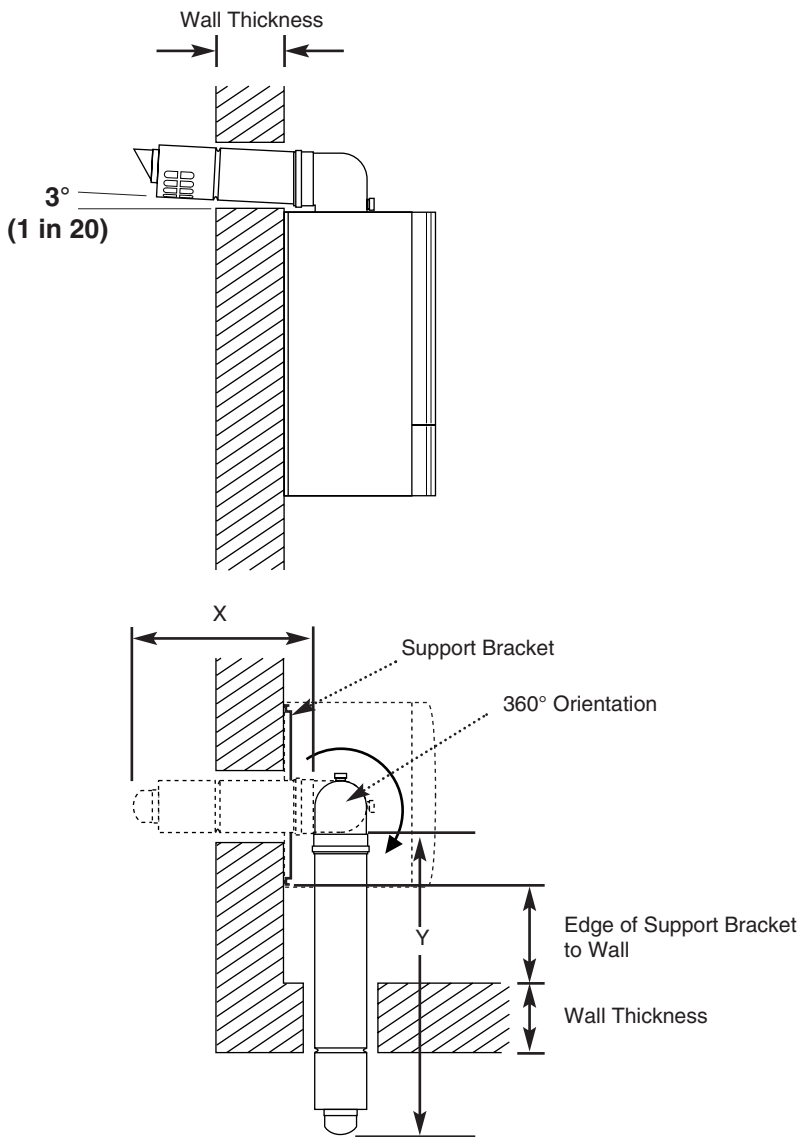


Fig. 21

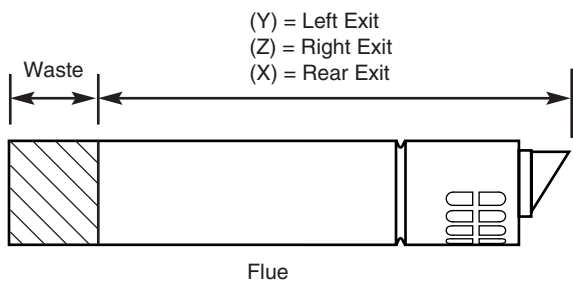


Fig. 22

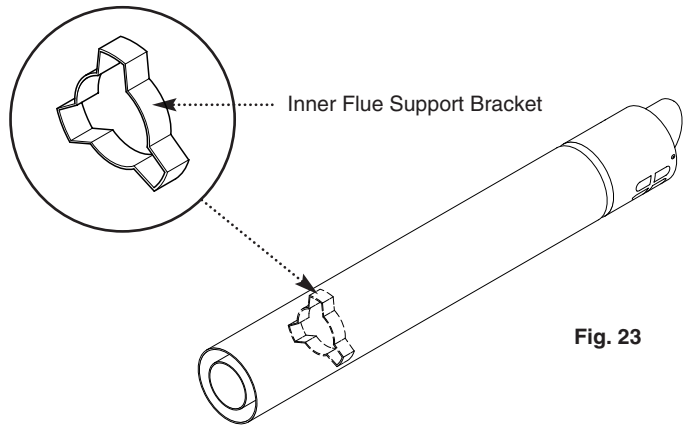
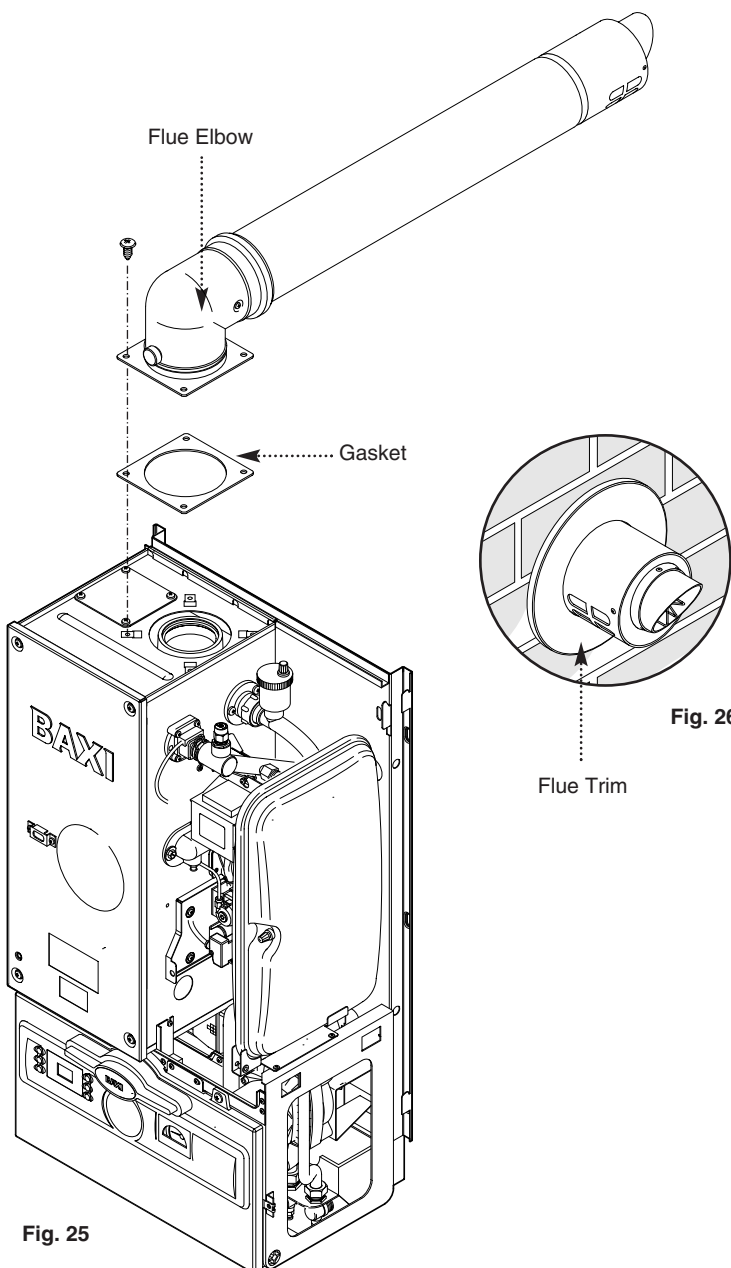
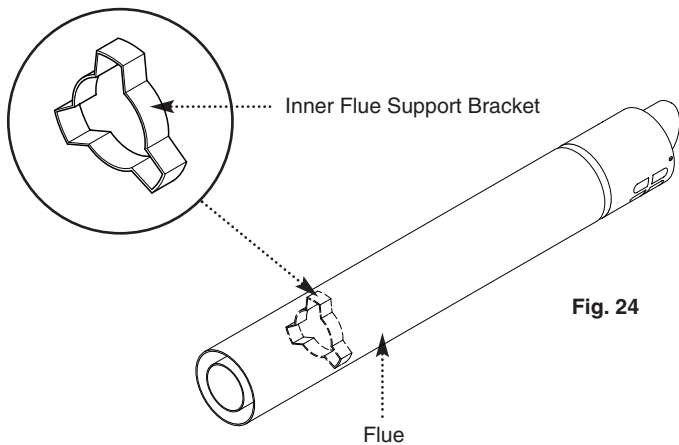


Fig. 23

8.0 Installation

8.6 Fitting the Flue (Cont)



8. Ensure the inner flue support bracket is positioned in the flue (Fig. 24).

9. Engage the flue into the flue elbow using soap solution to ease the engagement ensuring the flue is assembled as shown (Fig. 25).

10. Place the gasket over the flue exit on the boiler (Fig. 25).

11. Slide the flue assembly through the hole in the wall. Ensure angled inner end slopes downwards (Fig. 26).

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

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

14. The flue trim should be fitted once the installation is complete and the flue secure (Fig. 26). 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.

15. If necessary fit a terminal guard (see Section 7.11).

VERTICAL FLUEING

Only a flue approved with the Baxi Combi 130 HE Boiler can be used.

For information on vertical flues consult the Baxi Combination Boilers Brochure or Notes for Guidance supplied with the vertical flue pack.

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.
2. Remove the electrical plug from the hardware pack.
3. Connect 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. If fitting an integral timer please refer to the instructions supplied with the kit.
8. Remove the electrical box cover and check the electrical installation for; earth continuity, short circuits, resistance to earth, correct polarity and fuse failure (see Section 8.13 Electrical System Checks).
9. Replace the electrical box cover and secure.

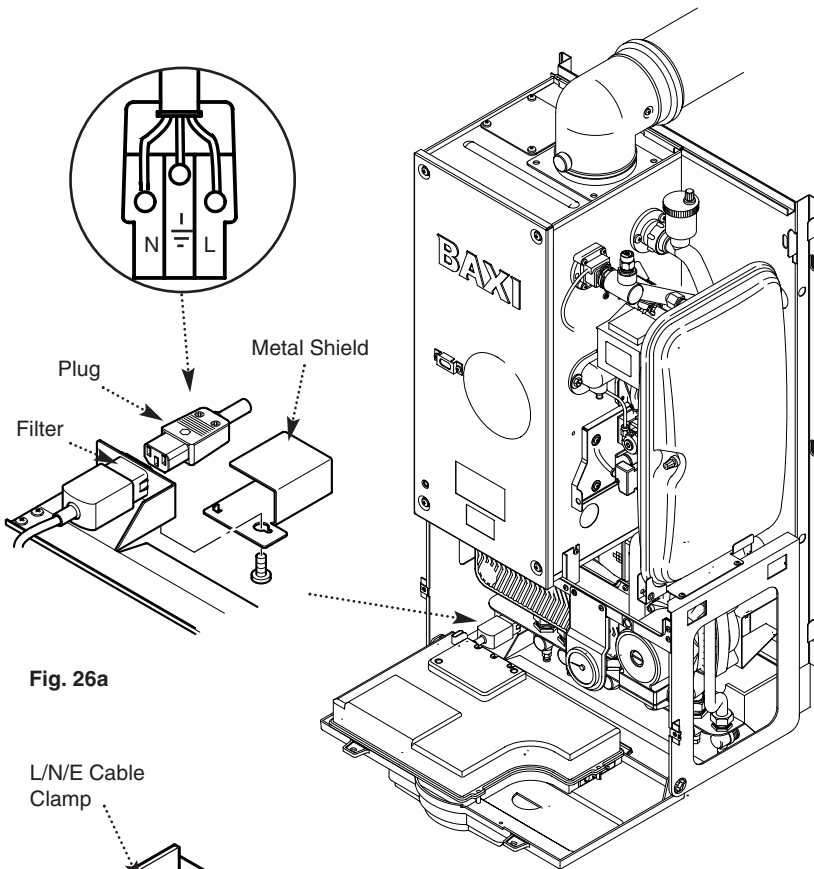


Fig. 26a

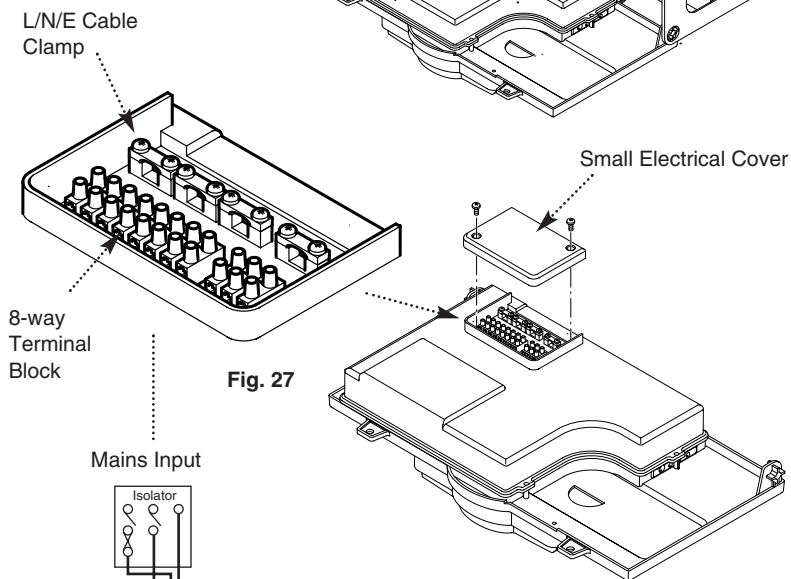


Fig. 27

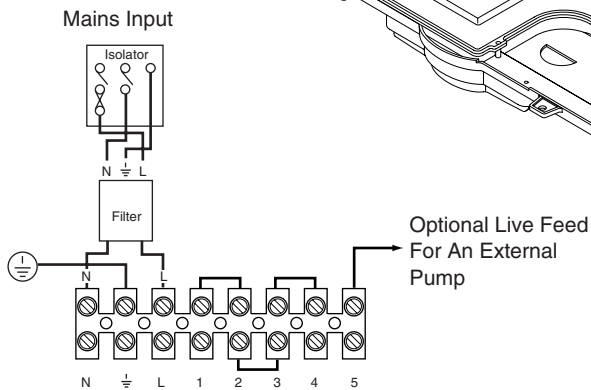


Fig. 28

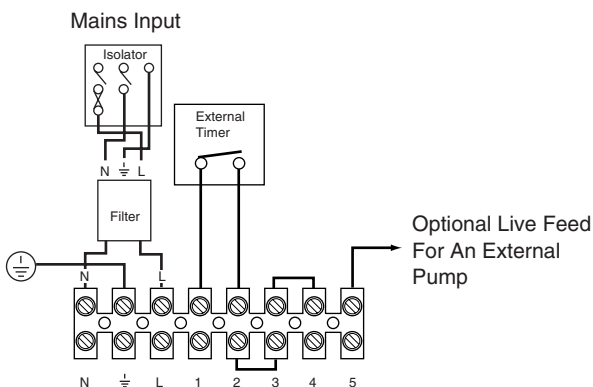


Fig. 29

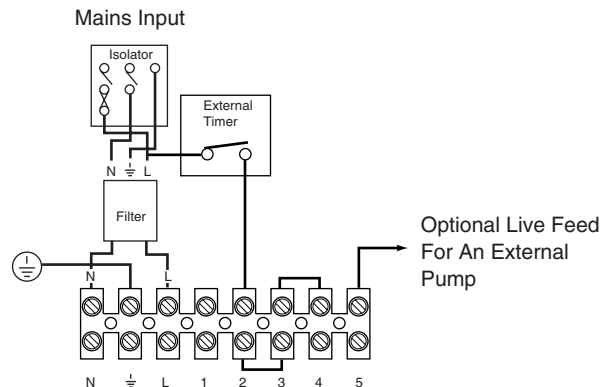


Fig. 29a

8.0 Installation

8.9 Fitting a Room Thermostat

1. To fit a 2-wire thermostat, remove link and wire the thermostat switch between positions 3 & 4 (Figs. 30 or 31a). A cable clamp is provided for incoming cables.

8.10 Fitting a Baxi Intellistat

1. Refer to the Baxi Intellistat instructions.
2. The boiler installation parameters must be set up to recognise that the Intellistat will operate in conjunction with the boiler (see section 10.6).

8.11 Fitting a Frost Thermostat

1. The frost thermostat is connected between positions 1 and 4 (Figs. 31 or 31a). Secure the incoming cable/s with the cable clamp and replace the cover.

8.12 Fitting an Extra Pump

1. To extract 100,000 Btu/hr from the boiler in central heating mode an extra pump will need to be fitted to the system. Connect pump Live to terminal 5 and use any available neutral.

8.13 Electrical System Checks

1. **Earth Continuity Check:** Isolate the appliance at mains supply. Using a multimeter set to ohm's scale, test between any appliance earth point and the earth pin on the socket. The resistance should be less than 1ohm. If the resistance is greater than 1 then check all earth wires for continuity and ensure that all connections are clean and tight.

WARNING: If the resistance is still greater than 1ohm the fault still exists and it could be dangerous to work with the appliance live.

2. **Short Circuit Check:** Isolate the control system, set all switches and thermostats to calling for heat. Set the meter on ohm's scale. Test from L to N on control system terminal block - if the resistance reads zero there is a short circuit.

3. **Resistance to Earth Check:** Isolate the control system, set all switches and thermostats to calling for heat. Set the meter on ohm's scale. Test between L and E - the resistance should be greater than 1 mega ohm.

4. **Polarity Check:** If all the tests you have carried out so far are OK, then reconnect the system to the mains supply. Set the meter on Volts AC scale (starting at the highest voltage). Test at terminals:

L and N - meter should read approx 240 Vac
L and E - meter should read approx 240 Vac
N and E - meter should read from 0 to 15 Vac

5. **Fuse Check:** Remove the fuse, check fuse on ohm's scale there should be no resistance (infinity) or maximum reading. If no reading is obtained change the fuse. Check fuse is 3A.

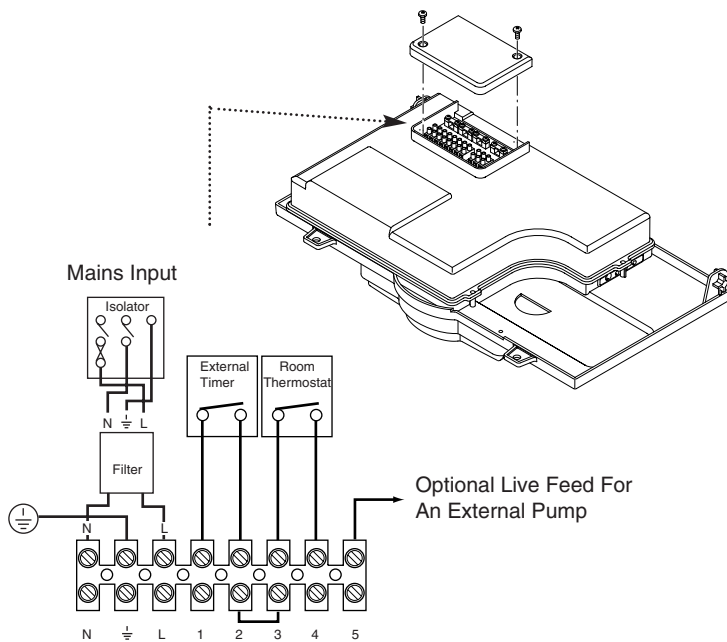


Fig. 30

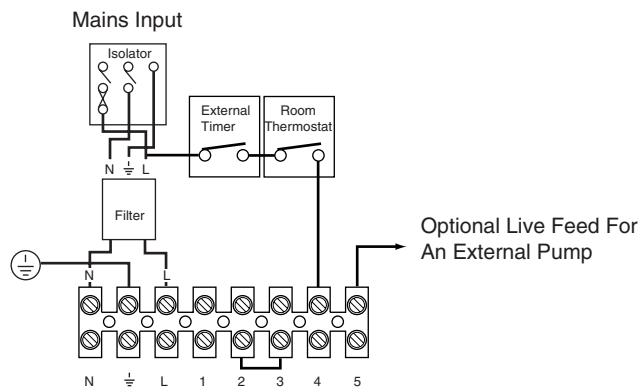


Fig. 30a

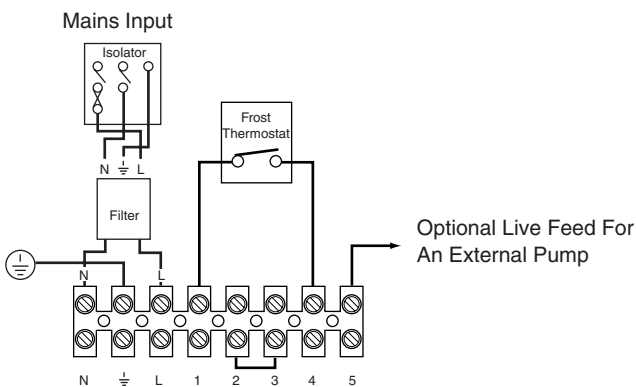


Fig. 31

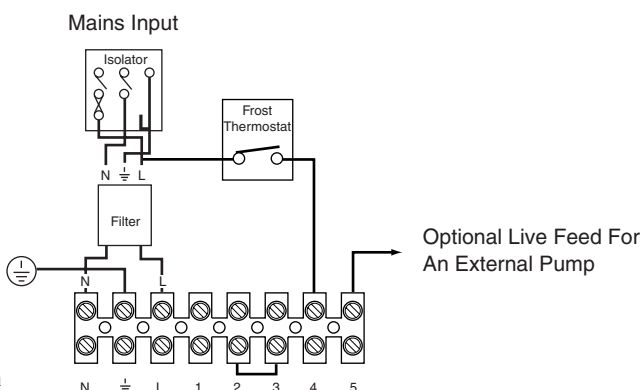
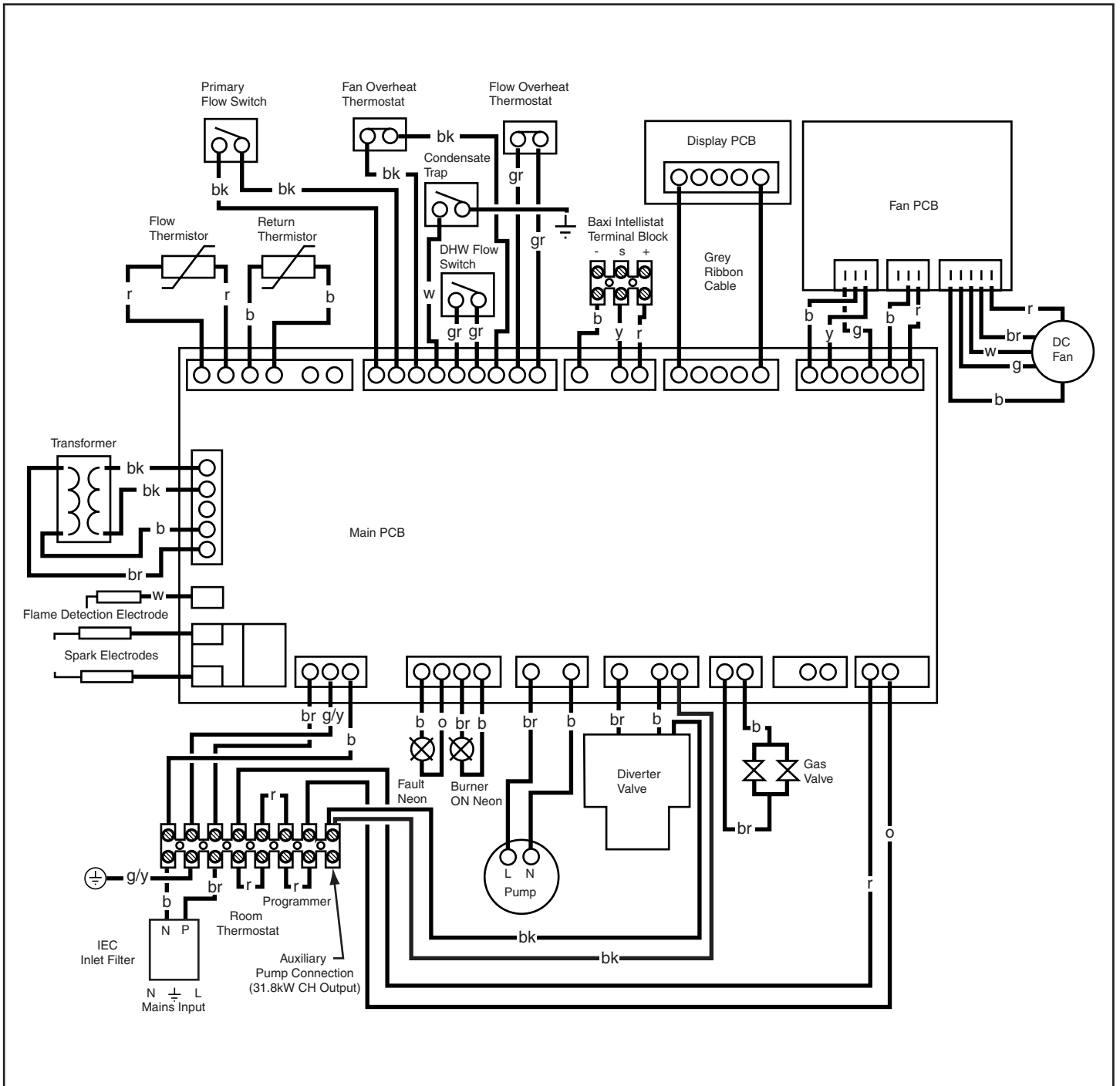


Fig. 31a

9.0 Electrical

9.1 Schematic Wiring Diagram

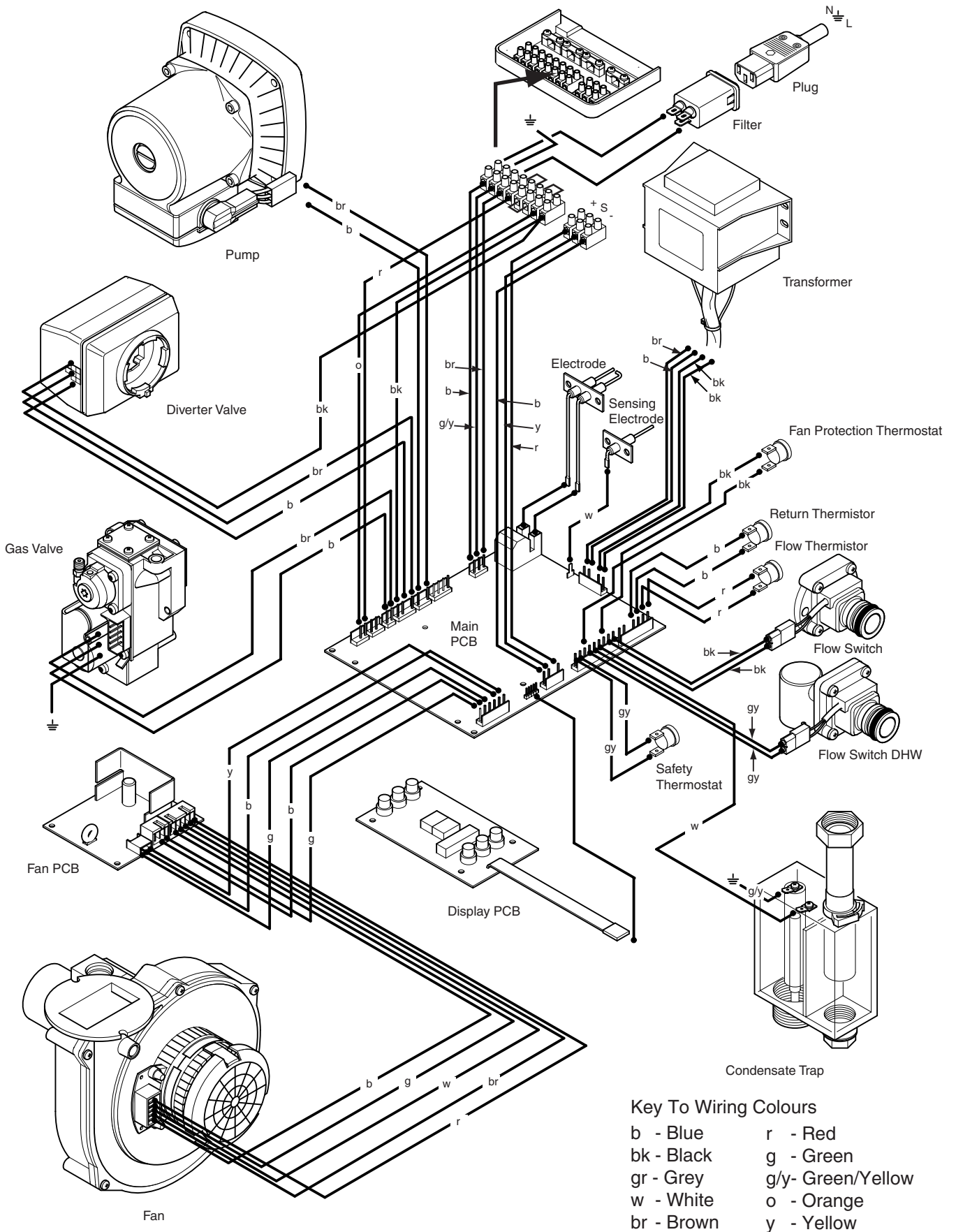


Key To Wiring Colours

- | | |
|------------|--------------------|
| b - Blue | r - Red |
| bk - Black | g - Green |
| gr - Grey | g/y - Green/Yellow |
| w - White | o - Orange |
| br - Brown | y - Yellow |

9.0 Electrical

9.2 Illustrated Wiring Diagram



10.0 Commissioning the Boiler

10.1 Commissioning the Boiler

NOTE: The information shown on the display is explained on the label on the inside of the lower door panel (see Fig. 48).

1. Open the cold feed to the boiler.
2. Open all hot water taps to purge the Domestic Hot Water Circuit.
3. Ensure that the filling loop is connected and open, then open the heating flow and return valves on the boiler (see Section 10.5 Filling the System).
4. Open the manual and automatic air vents (Fig. 32). To help purge the primary circuit turn the pump on & off several times by using the Summer/Winter button (Fig. 33) (ensure all external controls are turned on and calling for heat).
5. The system must be flushed in accordance with BS 7593 (see Section 6.2) 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. 34) is $20\text{mb} \pm 0.5\text{mb}$ and the gas rate is no greater than $4.1\text{m}^3/\text{h}$.

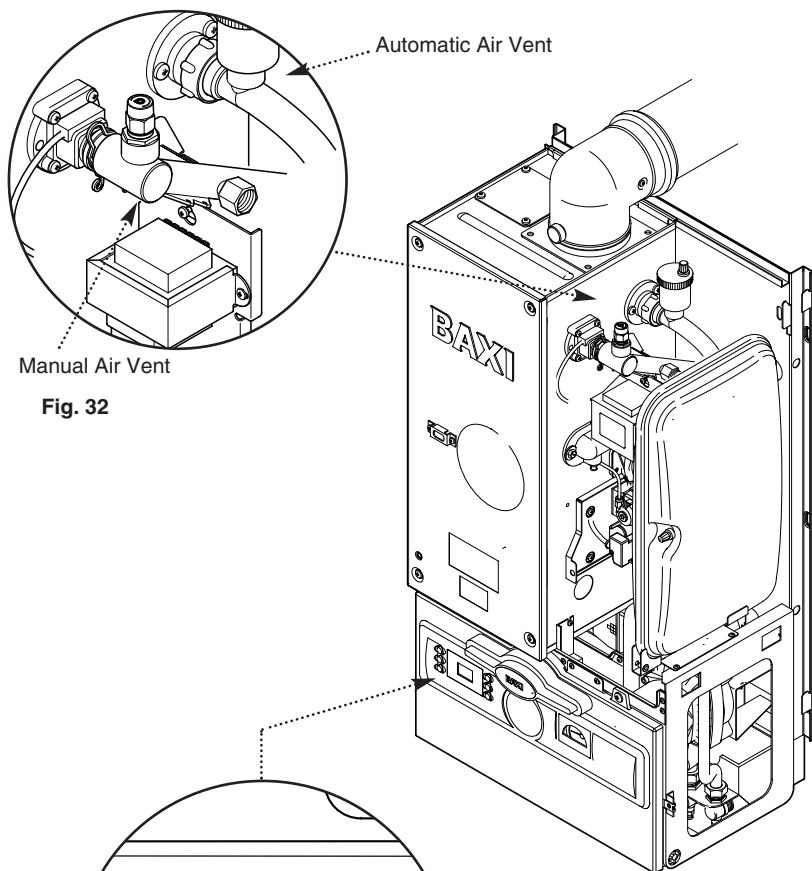
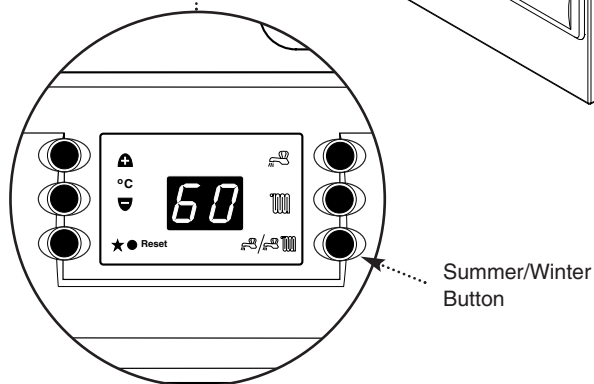


Fig. 32



Control Panel

Fig. 33

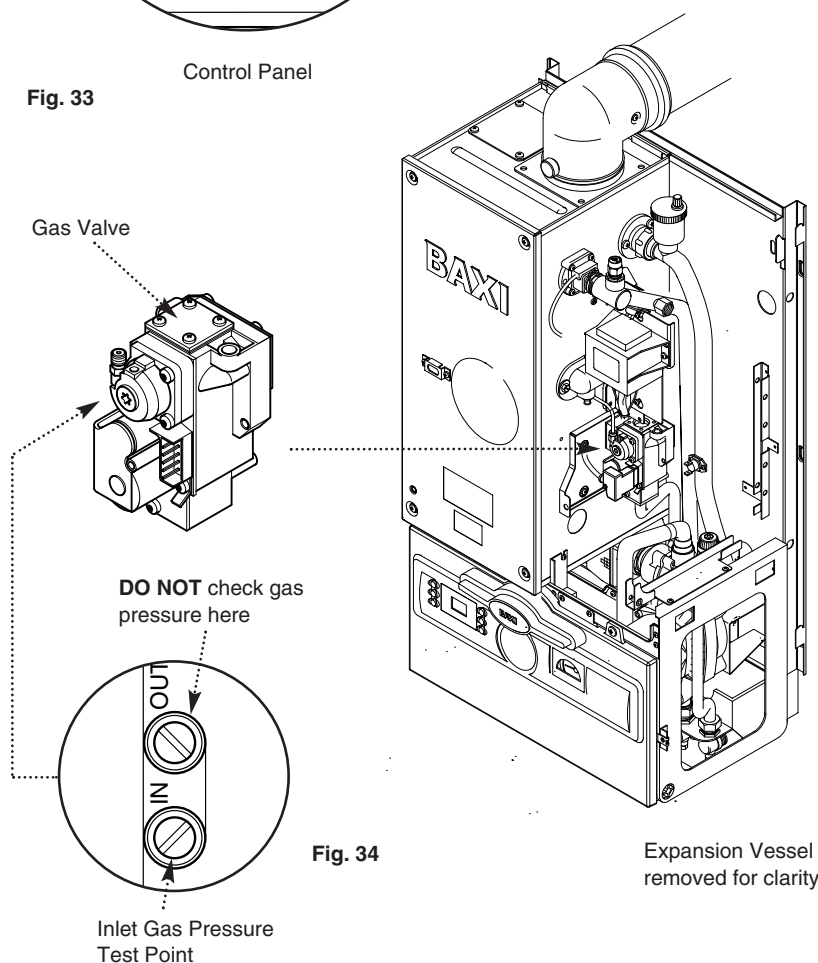


Fig. 34

Expansion Vessel removed for clarity

10.0 Commissioning the Boiler

10.2 Increasing Central Heating Output To 100,000 Btu/hr

1. The boiler is factory set for a maximum output of 80,000 Btu/hr. The boiler will automatically vary its output to match the system load giving the most efficient use of gas and the most comfortable room temperature possible.

2. If the CH system is greater than 80,000 Btu/hr then to increase the maximum output of the boiler to 100,000 Btu/hr proceed as follows:

a) While On or OF is shown on the display ie: no CH or DHW demand ongoing. Depress the "+" and "-" Temperature Control Buttons at the same time for 5 seconds. The display will show "18" (Fig. 35) where the "1" indicates that the installer parameter for range rating has been accessed and the "8" indicates that the boiler is presently set for a maximum Central Heating output of 80,000 Btu/hr.

b) Press the "-" Temperature Control Button so that the display shows "10" (Fig. 36) with the "0" indicating that the boiler is set for a maximum Central Heating output of 100,000 Btu/hr. 1 minute after the parameter has been set the display will revert to normal operation.

NOTE: The boiler will need to run in CH for 30 minutes after this is done to change to 100,000 Btu/hr. i.e. Turn all CH controls to max and ensure no DHW demand is activated, during this setting period.

To extract 100,000 Btu/hr from the boiler an extra pump will need to be fitted to the system (see the electrical installation section of these instructions).

10.3 Switching Off The Intelligent Pre-heat

1. The boiler includes an intelligent pre-heat feature. This feature ensures that the domestic hot water to the tap is pre-heated when, and only when, the user required domestic hot water the previous week. For example, if the user only requires hot water between 7.00am and 8.00am on Monday then the boiler will log this demand and then the next week will only pre-heat between 7.00am and 8.00am on Monday. During the first week of operation from power on no pre-heating will occur.

2. The pre-heat switches the boiler on for approximately 1 minute every 40 minutes whenever it is required.

3. **The boiler is factory set with the pre-heat feature on.** If the user wishes to disable this feature then depress the "+" and "-" Temperature Control Buttons at the same time for 5 seconds. The display will show "18 or 10" (Fig. 35 or 36). Press the Summer/Winter Mode Button marked (☀/❄) and the display will show "21" (Fig. 37). The "2" indicates that the installer parameter for pre-heat has been selected. The "1" indicates that the pre-heat is switched on.

4. Press the "-" Temperature Control Button to change this to "20" (Fig. 38), with the "0" indicating that the pre-heat is switched off. One minute after the parameter has been set the display will revert to normal operation.

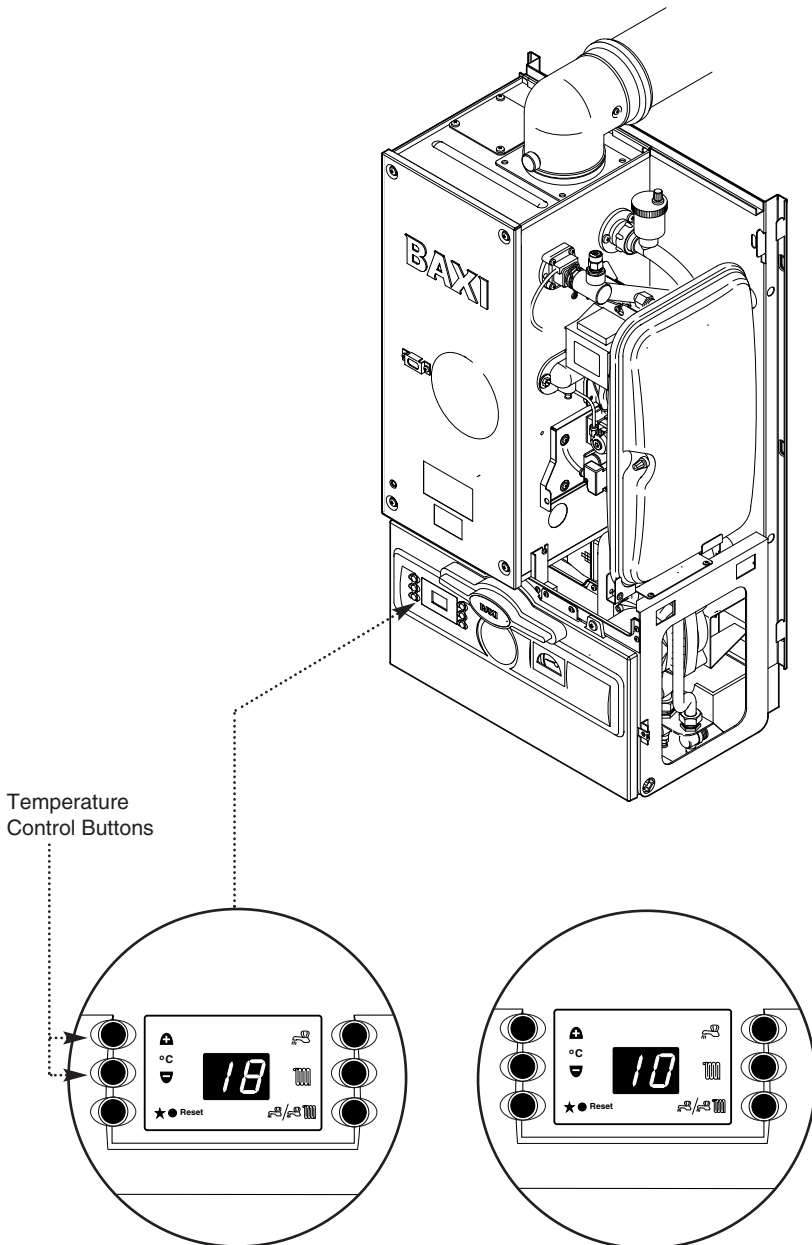


Fig. 35

Fig. 36

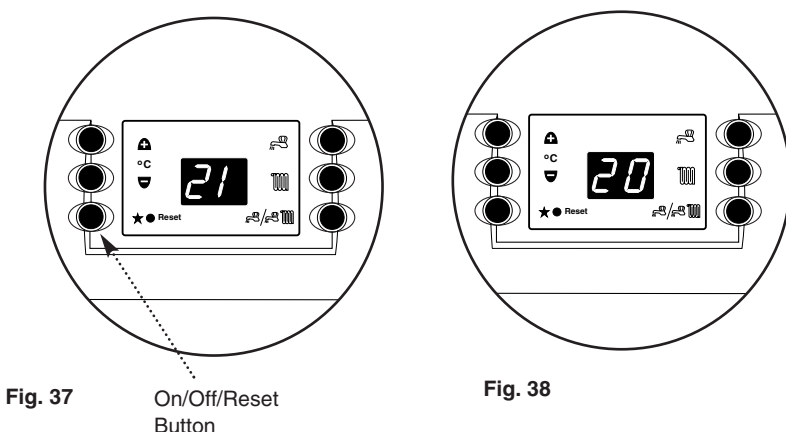



Fig. 37

Fig. 38

10.3 Switching Off Intelligent Pre-heat (cont)

5. To switch the pre-heat feature back on depress the “+” and “-” Temperature Control Buttons at the same time for 5 seconds. The display will show “18 or 10” (Fig. 39).


6. Press the Summer/Winter Mode Button marked () and the display will show “20” (Fig. 40). The “2” indicates that the installer parameter for pre-heat has been selected. The “0” indicates that the pre-heat is switched off. Press the “+” Temperature Control Button to change this to “21” (Fig. 41), with the “1” indicating that the pre-heat is switched on. 1 minute after the parameter has been set the display will revert to normal operation.

10.4 Switching On System Frost Protection


1. The boiler has an automatic boiler frost protection feature which will bring the boiler on in Central Heating mode if the flow thermistor senses a temperature of less than $8^{\circ} \pm 5^{\circ}\text{C}$ and remain on until the temperature reaches $15^{\circ} \pm 5^{\circ}\text{C}$. This feature is not adjustable.

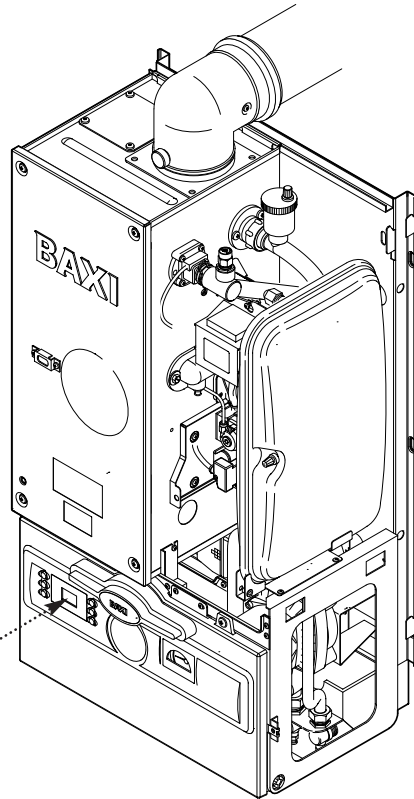
2. The boiler also has a system frost protection feature. As supplied this feature is not activated. The system frost protection will switch the diverter valve to the Central Heating position and operate the pump every 4 hours. In conjunction with the boiler frost protection feature (which operates the burner) this will prevent frost damage to the system.

3. To switch the system frost protection on: depress the “+” and “-” Temperature Control Buttons at the same time for 5 seconds. The display will show “18 or 10” (Fig. 39).

4. Press the Summer/Winter Mode Button marked () until the display shows “30” (Fig. 42). The “3” indicates that the installer parameter for system frost protection has been selected. The “0” indicates that the system frost protection is switched off. Press the “+” Temperature Control Button until the display shows “31” (Fig. 43). The “1” indicates that the system frost protection is switched on. 1 minute after the parameter has been set the display will revert to normal operation.

5. To switch the system frost protection off depress the “+” and “-” Temperature Control Buttons at the same time for 5 seconds. The display will show “18 or 10” (Fig. 39).

6. Press the Summer/Winter Mode Button marked () until the display shows “31” (Fig. 43). The “3” indicates that the installer parameter for system frost protection has been selected. The “1” indicates that the system frost protection is switched on. Press the “-” Temperature Control Button until the display shows “30” (Fig. 42). The “0” indicates that the system frost protection is switched off. 1 minute after the parameter has been set the display will revert to normal operation.



Temperature Control Buttons

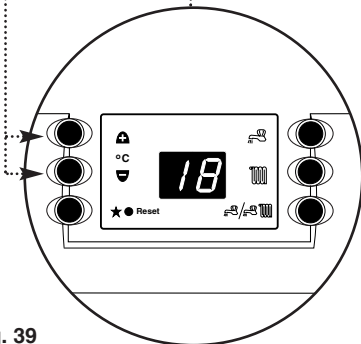


Fig. 39

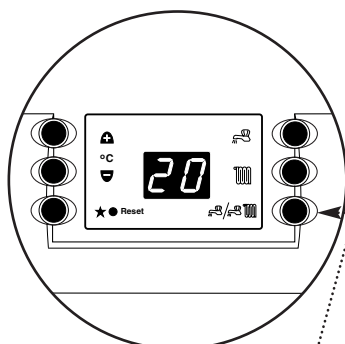


Fig. 40

Summer/Winter Mode Button

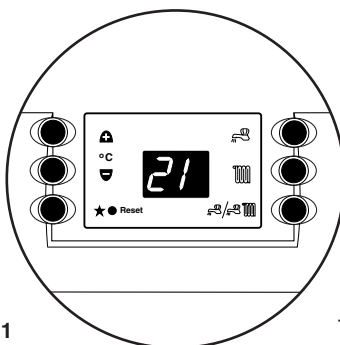


Fig. 41

Temperature Control Buttons

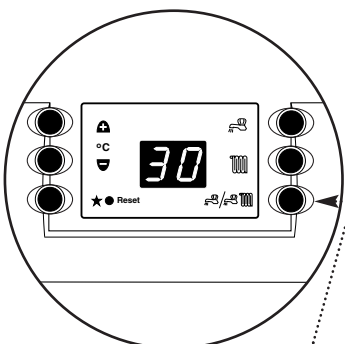


Fig. 42

Summer/Winter Mode Button

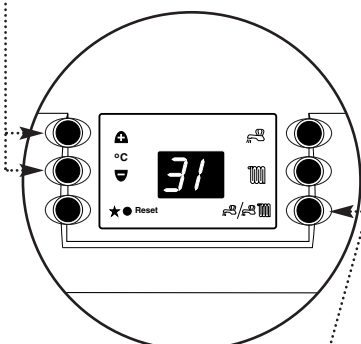


Fig. 43


Summer/Winter Mode Button

10.0 Commissioning the Boiler


10.5 Filling the System

1. When filling the system move the diverter valve to the central heating position as follows (to ensure air is removed from manifold, wait until display shows 'Of'):-

2. With mains switched on to the boiler press the "+" and "-" Temperature Control Buttons at the same time for 5 seconds. The display will show "18 or 10" (Fig. 44).

3. Repeatedly press the Summer/Winter Mode Button marked () until the display shows "40" (Fig. 45). The "4" indicates that the installer parameter for filling the system has been selected. The "0" indicates that the installer parameter for filling the system is switched off. Press the "+" Temperature Control Button so that the display shows "41" (Fig. 46). The "1" indicates that the installer parameter for filling the system is switched on. The diverter valve will now move to the central heating position and stay there until reset as below. Purge through manual air vent on boiler and radiators, ensure auto air vent is open and manually bleed pump before continuing with steps 4 and 5 (**NOTE:** The boiler will not fire until the steps 4 and 5 have been carried out).


4. Press the "+" and "-" Temperature Control Buttons at the same time for 5 seconds. The display will show "18 or 10" (Fig. 47).

5. Repeatedly press the Summer/Winter Mode Button marked () until the display shows "41" (Fig. 46). The "4" indicates that the installer parameter for filling the system has been selected. The "1" indicates that the installer parameter for filling the system is switched on. Press the "-" Temperature Control Button so that the display shows "40" (Fig. 45). The "0" indicates that the installer parameter for filling the system is switched off. The diverter valve will now return to normal operation. **The display will revert to normal operation 1 minute after the parameter has been set.**

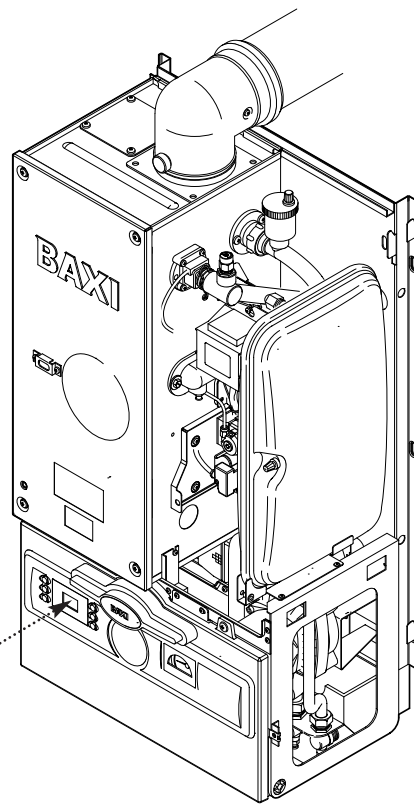
10.6 Switching on the Intellistat

1. For optimum efficiency, this boiler can be controlled by an optional control accessory, the Baxi Intellistat (Part No. 247495). To activate the Intellistat, the boiler installer parameter No 6 requires switching from "60" to "61" (Figs 47a & b).

2. With the Intellistat connected to the 3-way terminal block at the boiler and the mains switched on to the boiler, press the "+" and "-" Temperature Control Buttons at the same time for 5 seconds. The display will show "18" or "10".

3. Press the Summer/Winter Mode Button marked () until the display shows "60" (Fig. 47a). The "6" indicates that the installer parameter for switching on/off the Intellistat has been selected. The "0" indicates that this parameter is switched off. Press the "+" Temperature Control Button so that the display shows "61" (Fig. 47b). The "1" indicates that the installer parameter for activating the Intellistat is switched on. One minute after the parameter has been set, the display will revert to the normal operation.

NOTE: This parameter must only be selected when installed in conjunction with Baxi Intellistat, not when connected to any other room thermostat or programmer, otherwise the boiler will not function.



Temperature Control Buttons

Temperature Control Buttons

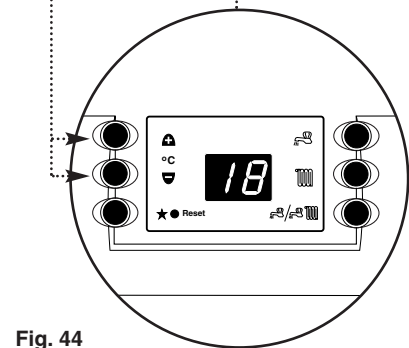


Fig. 44

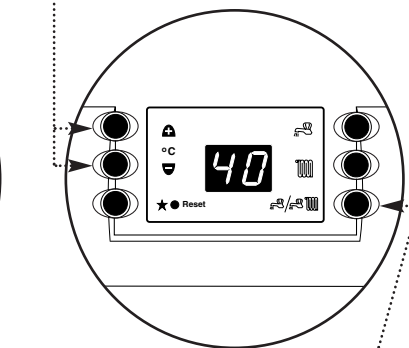


Fig. 45

Summer/Winter Mode Button

Temperature Control Buttons

Temperature Control Buttons

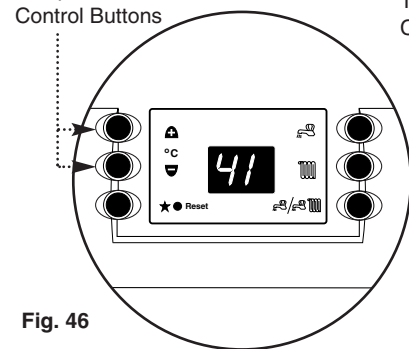


Fig. 46

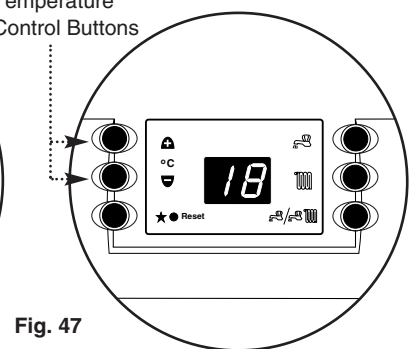


Fig. 47

Temperature Control Buttons

Temperature Control Buttons

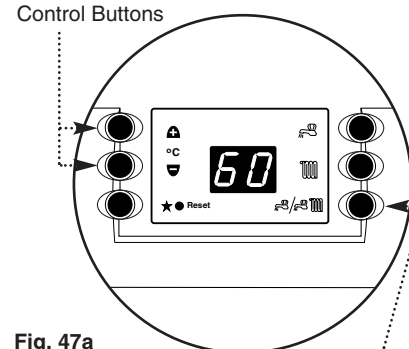


Fig. 47a

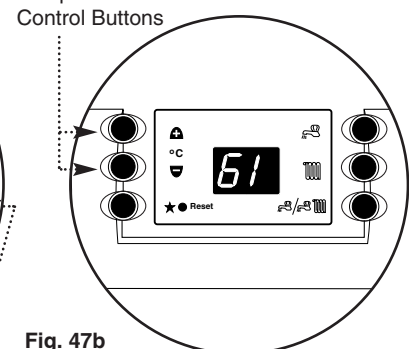


Fig. 47b

Summer/Winter Mode Button

11.0 Fitting the Outer Case

11.1 Fitting The Outer Case

1. Fit the outercase to the appliance ensuring that the four slots in the side flanges align with the hooks on the chassis (Fig. 48).
2. Insert the two fixing screws into the sides of the chassis (Fig. 49).
3. Close the lower door panel against the retaining magnets (Fig. 49).
4. Instruct the user in the operation of the boiler controls. Hand over both the Users Operating and Installation and Servicing Instructions, giving advice on the necessity of regular servicing.
5. Advise the user that a plume of vapour from the flue terminal is normal, and that there is no need for concern.
6. Advise the user that if intelligent pre-heat is on, pre-heating will not occur for the first week of operation.
7. Set the User preferences. See User Label on lower door panel (Fig. 48) or user's operating instructions (set CH/DHW temperatures).
8. Carefully read and complete all sections of the "Benchmark" Installation, Commissioning and Service Record Log Book that are relevant to the appliance and installation. The details of the Log Book will be required in the event of any warranty work. The Log Book must be handed to the User for safe keeping and each subsequent regular service visit recorded.
9. 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" logbook.

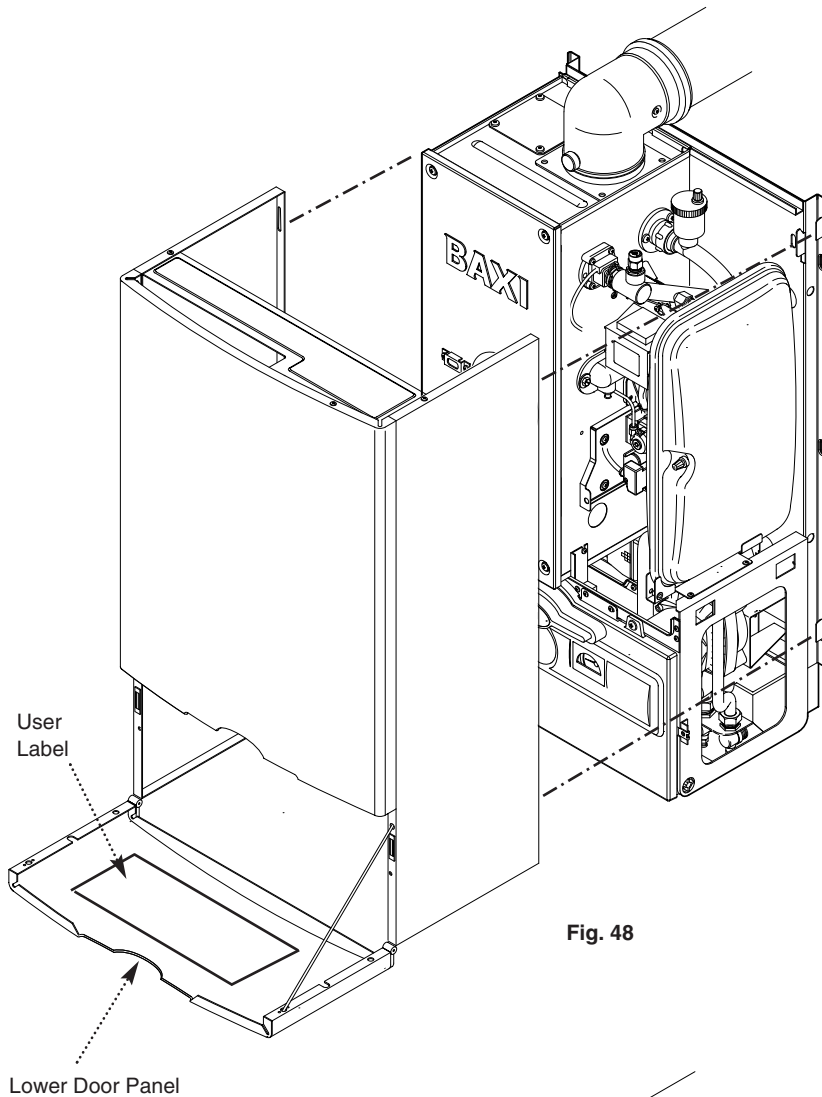


Fig. 48

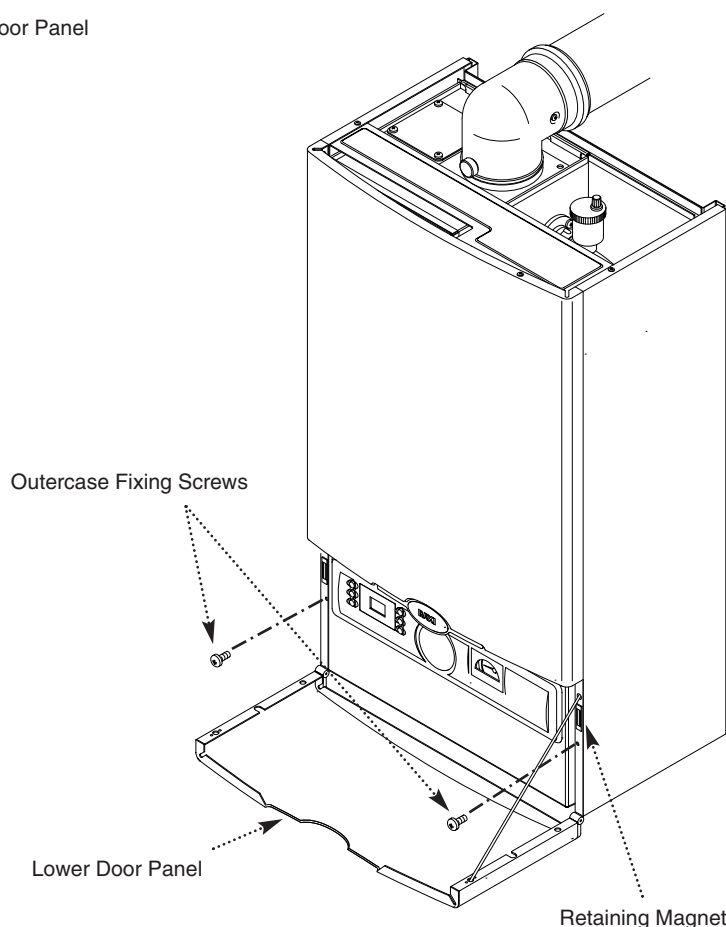


Fig. 49

12.0 Servicing the Boiler

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.

When the boiler on/off switch is switched off the control PCB remains live. Therefore it is important to isolate the electrical supply at the isolation switch. Also for safety, unplug the boiler at the electrical inlet socket.

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 section of the "Benchmark" Installation, Commissioning and Service Record Log Book. This should be in the possession of the user.
3. Ensure that the boiler is cool.
4. **Ensure that both the gas and electrical supplies to the boiler are isolated.**
5. Remove the outercase and lower door panel.
6. Release the four ¼ turn screws securing the air box door panel and remove the door (Fig. 51).
7. Disconnect the three lead terminals from the combustion box door taking note of their positions (Fig. 51).
8. Undo the four screws securing the combustion box door and remove the door (Fig. 52).
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.
 - f) Electrodes.
 - g) Check condensate trap for debris. **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.
 - h) Top of heat exchanger.
10. Check system pressure is between 1 and 2.5 bar.

NOTE: General cleaning can be undertaken using a vacuum. However debris should only be gently blown off the burner skin due to its fragile nature.

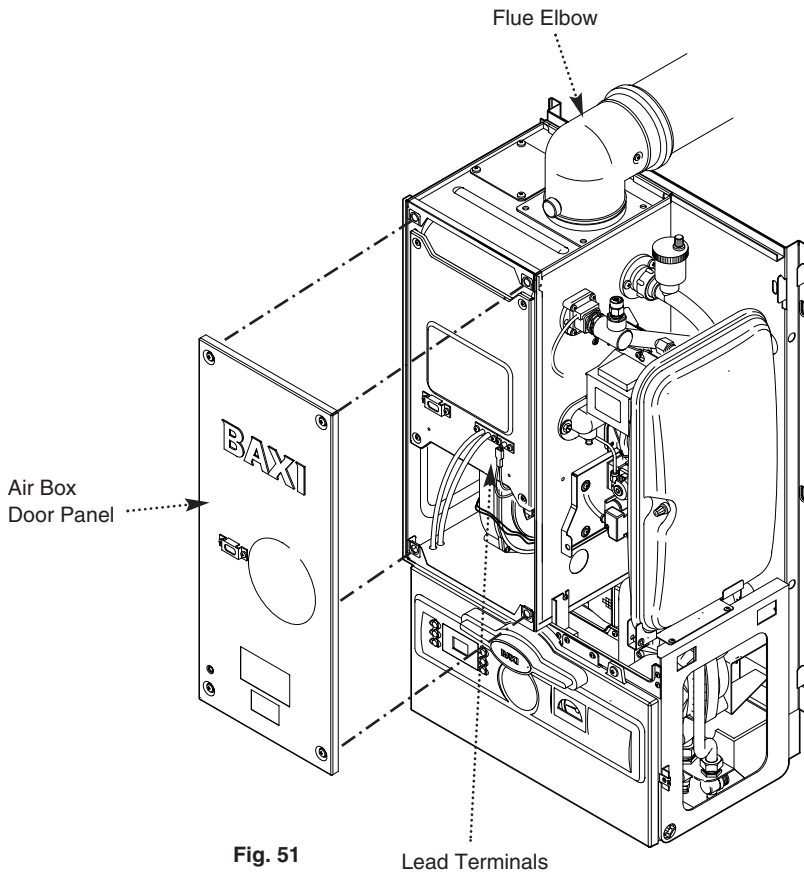


Fig. 51

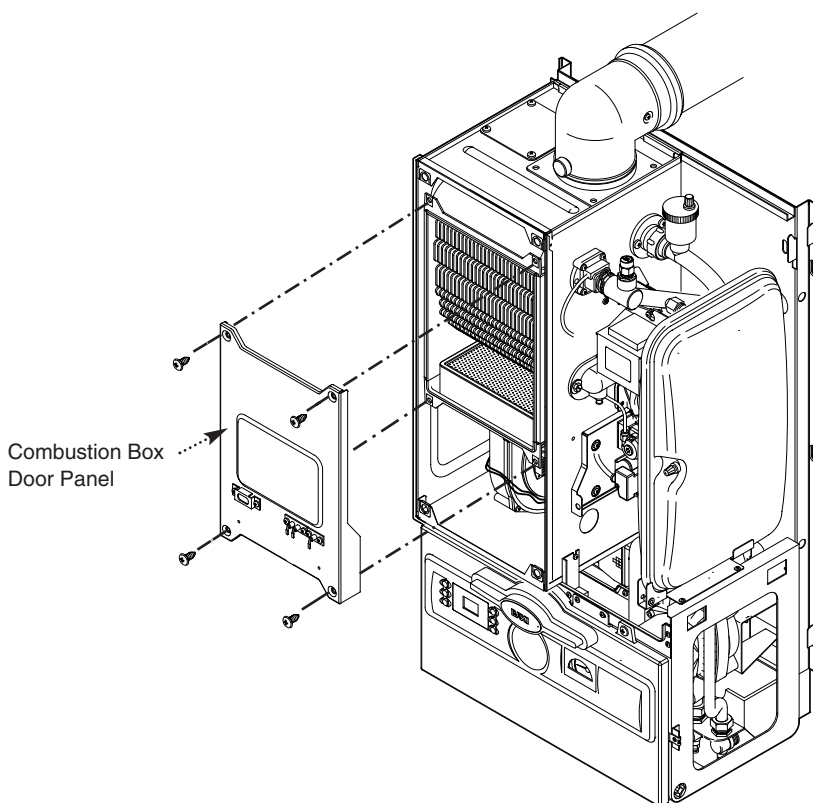


Fig. 52

12.0 Servicing the Boiler

12.1 Annual Servicing (Cont)

NOTE: The information shown on the display is explained on the label on the inside of the lower door panel (see Fig. 48).

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

- a) Disconnect the electrical leads to the fan component protection sensor (Fig. 53).
- b) Undo the two wing nuts to disconnect the fan (Fig. 53).
- c) Remove the fan and disconnect the electrical supply to it (Fig. 53).
- d) Remove the gas injector pipe from the gas valve (push-fit) (Fig. 53).
- e) Undo the condensate trap securing nut, lock nut and the condensate drain pipe. Remove the condensate trap and disconnect the sensor leads (Fig. 54).
- f) Remove the two screws securing the burner and remove the burner. Visually inspect the internal burner baffle for obstruction (Fig. 55).

NOTE: The burner skin is fragile - handle with care. Clean and if necessary replace the burner (Fig. 55).

- g) Loosen the two screws retaining the heat exchanger support bracket and slide to the left to remove (Fig. 55).
- h) Remove the four screws securing the heat exchanger/combustion box base and withdraw the base.
- i) Lower the central insulation panels and check condition (Fig. 55). Replace the insulation pads if necessary.
- j) Ensure the heat exchanger fins are clear of any obstruction, use a thin bladed tool to remove debris. The use of a torch at the heat exchanger top and a mirror held under the heat exchanger will aid observation of the heat exchanger fins.
- k) Check condition of all seals.
- l) Reassemble in reverse order, applying a suitable silicon based grease to "O" rings and seals - Greasil 4000 (Approved Silicone Grease).

12. Complete the relevant section of the "Benchmark" Installation, Commissioning and Service Record Log Book and hand it back to the user.

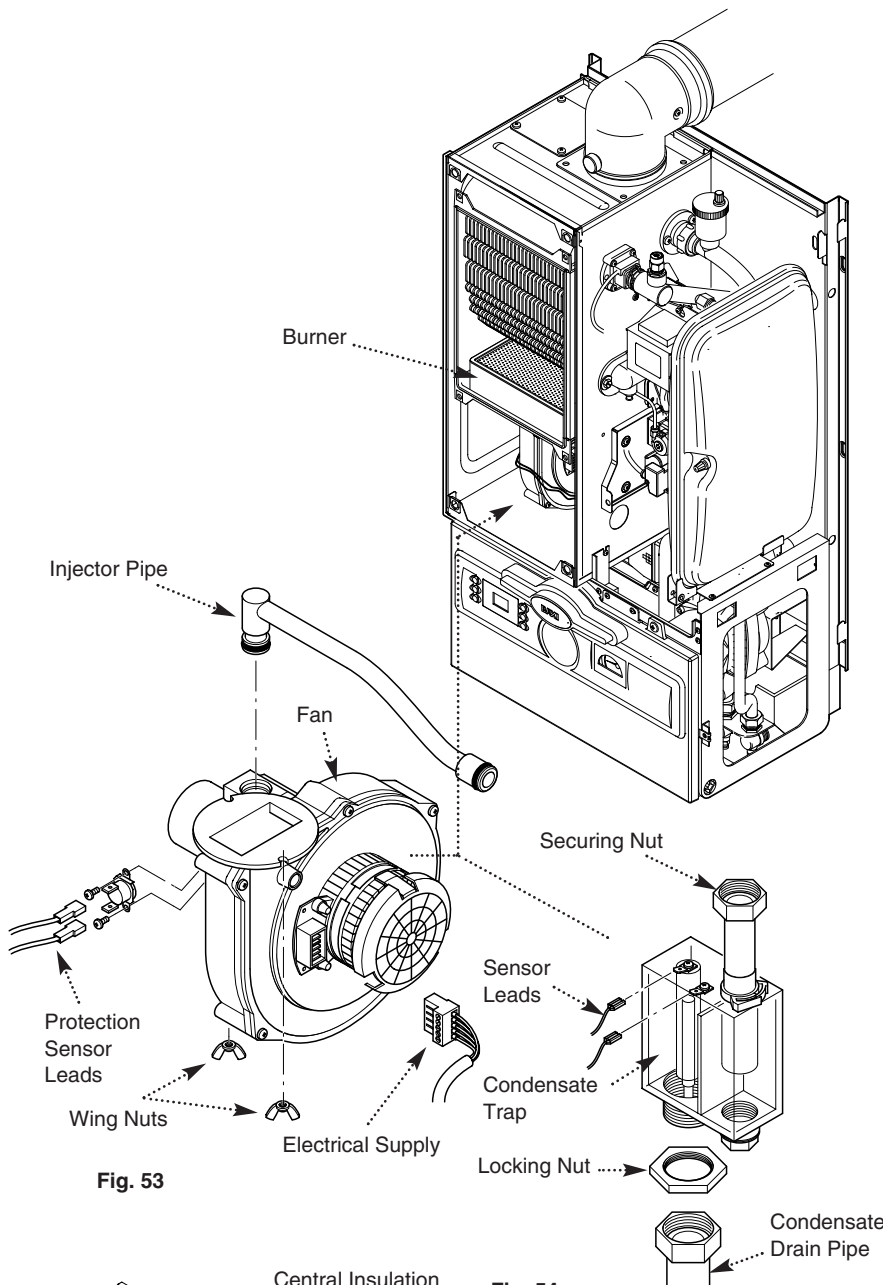


Fig. 53

Fig. 54

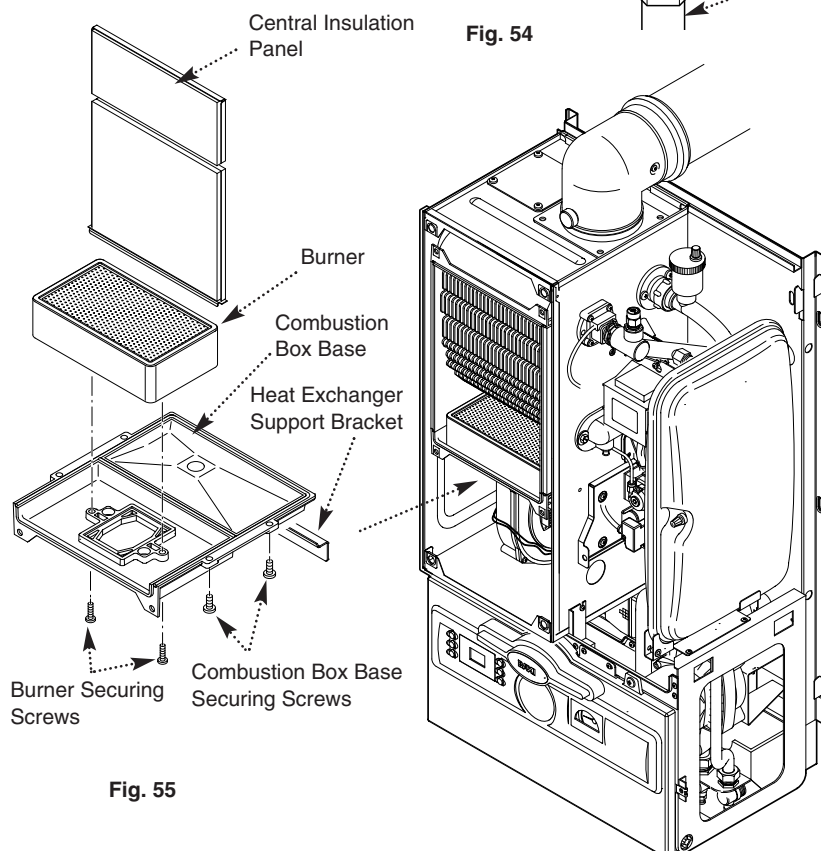


Fig. 55

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.

When the boiler control is switched off the control PCB remains live. Therefore it is important to isolate the electrical supply. Also for safety, unplug the boiler at the electrical inlet socket.

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

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

2. Isolate the water circuit and drain the system as necessary. There are 5 drain points:

- a) Flow Valve
- b) Heat Exchanger Manifold
- c) Return Valve
- d) Cold Water Inlet
- e) Hot Water Outlet

NOTE: Do not use the Pressure Relief Valve to drain the circuit.

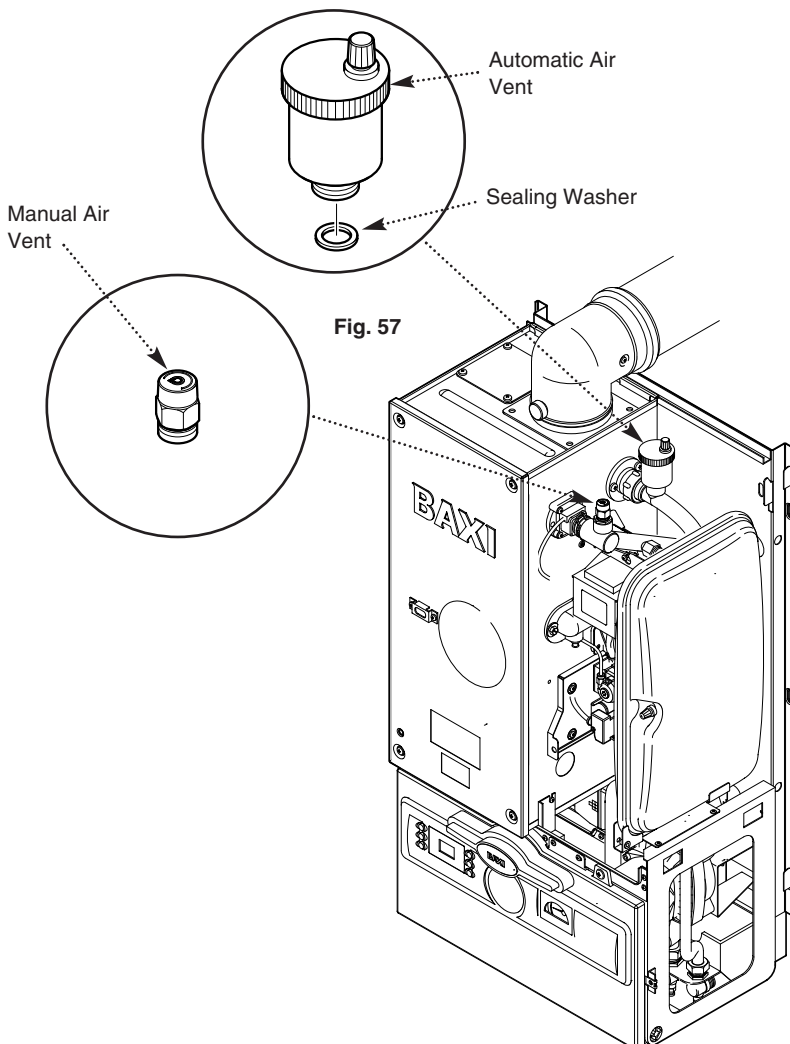
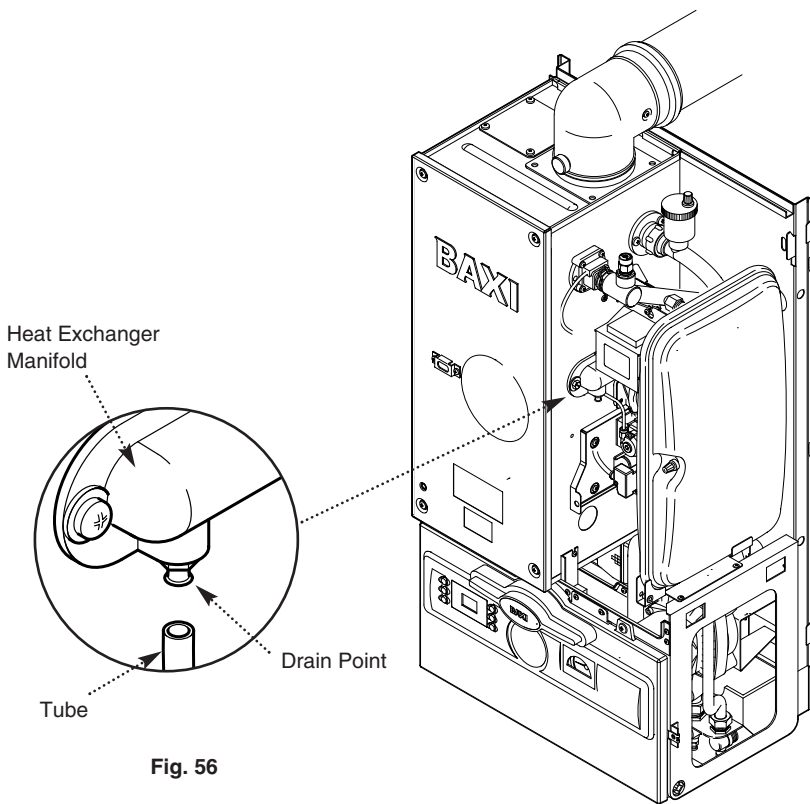
NOTE: When reassembling always fit new 'O' rings, ensuring their correct location on the spigot. Green "O" rings are used for gas joints and Black "O" rings for water joints. Use Greasil 4000 (Approved Silicone Grease).

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. 57)

1. Drain the boiler.
2. Undo the manual air vent from the flow pipe or the automatic 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. 58)

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 or Return Temperature Thermistors and Safety Thermostat (Figs. 59 & 59a)

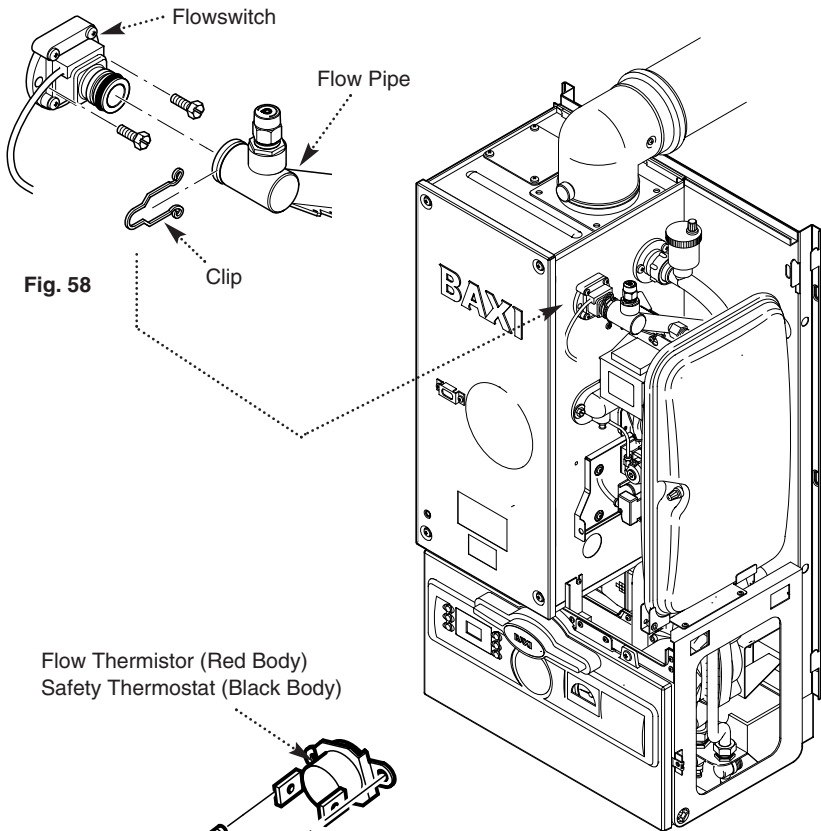
1. The procedure is the same for both the thermistors and the safety thermostat, although the components are not interchangeable.
2. Remove the electrical connections from the component.
3. Unscrew the component from the pipe.
4. Fit the new thermistor or safety thermostat and reassemble in reverse order.

13.5 Expansion Vessel (Fig. 60)

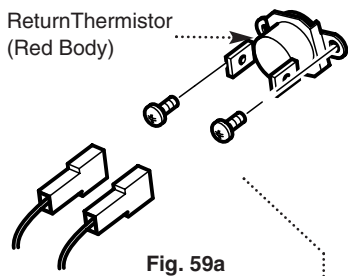
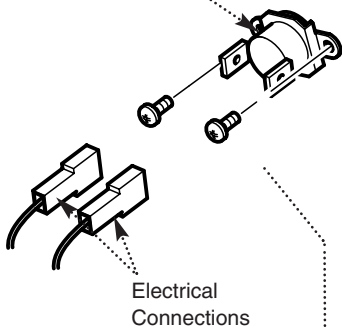
1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Loosen the securing screw at the base of the expansion vessel.
3. Whilst supporting the vessel undo the expansion vessel connection and retain the sealing washer.
4. Remove the expansion vessel.
5. Fit the new expansion vessel and reassemble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

13.6 Re-pressuring Expansion vessel

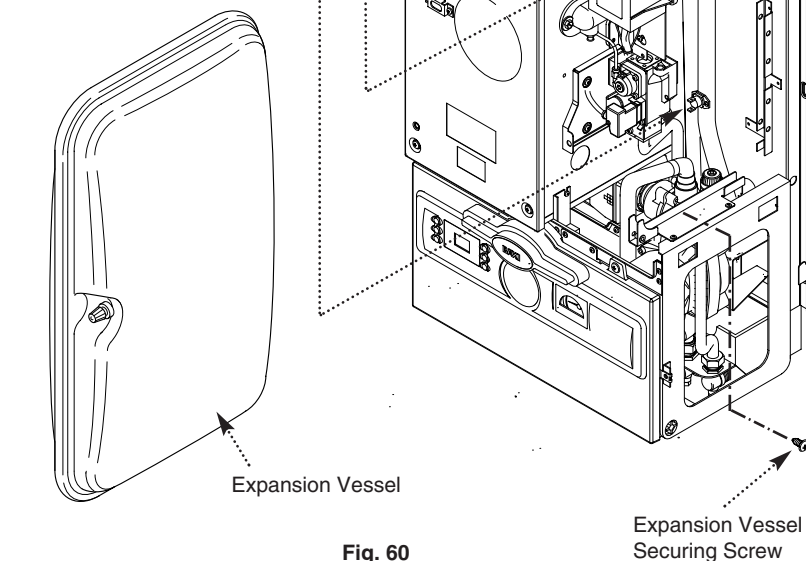
1. The charge pressure is 1.0 bar.
2. Close the central heating flow and return isolating valves.
3. Drain the boiler (see Section 13.1 paragraph 2 & 3).
4. The "Schraeder" valve is positioned centrally at the side of the appliance. Pressurise to 1.0 bar.
5. Open the isolating valves and recharge the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



Flow Thermistor (Red Body)
Safety Thermostat (Black Body)



Expansion Vessel
Connection



13.0 Changing Components

The pump, 3-way diverter valve, pressure gauge, pressure relief valve, plate heat exchanger and DHW flow switch can be accessed after hinging down the facia box.

1. Release the facia securing screws ($\frac{1}{4}$ turn) and hinge down the facia box (Fig. 61).

13.7 Pump (Fig. 61)

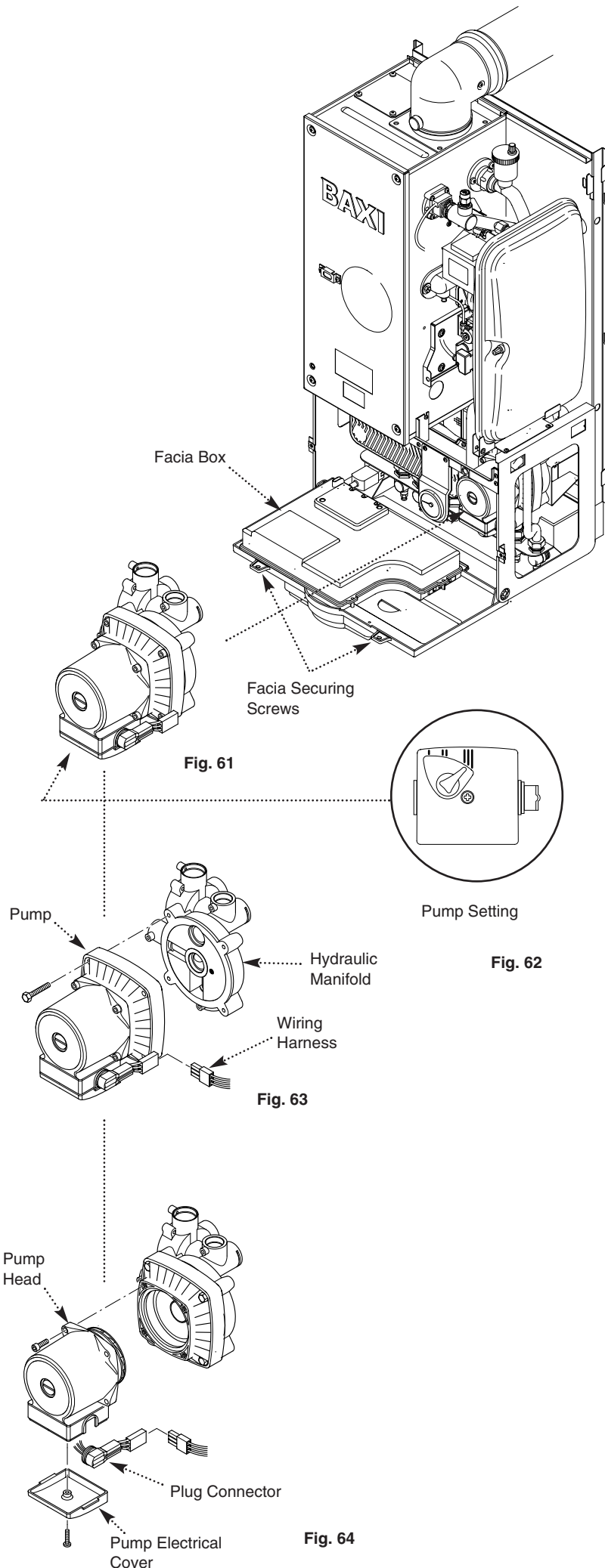
1. If only the head needs replacing, a standard Grundfos UPS 15-60 pump head is interchangeable (see section 13.9 for details).
2. This must be switched to setting N° 3 (Fig. 62).

13.8 Pump (Complete) (Fig. 63)

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.
- NOTE:** Ensure nuts are not dislodged.
4. Remove the pump.
5. Fit the new pump and reassemble in reverse order.

13.9 Pump (Head Only) (Fig. 64)

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. 62) and reconnect the wiring harness plug.



13.0 Changing Components

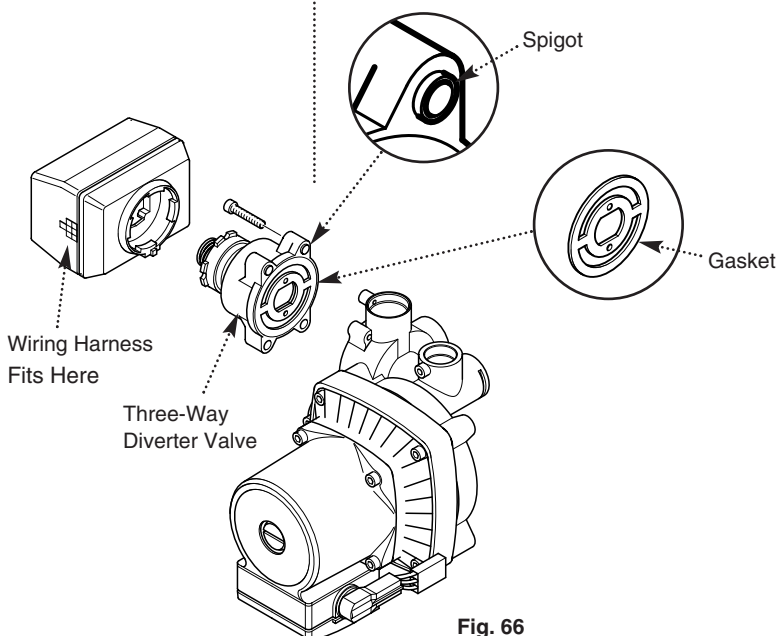
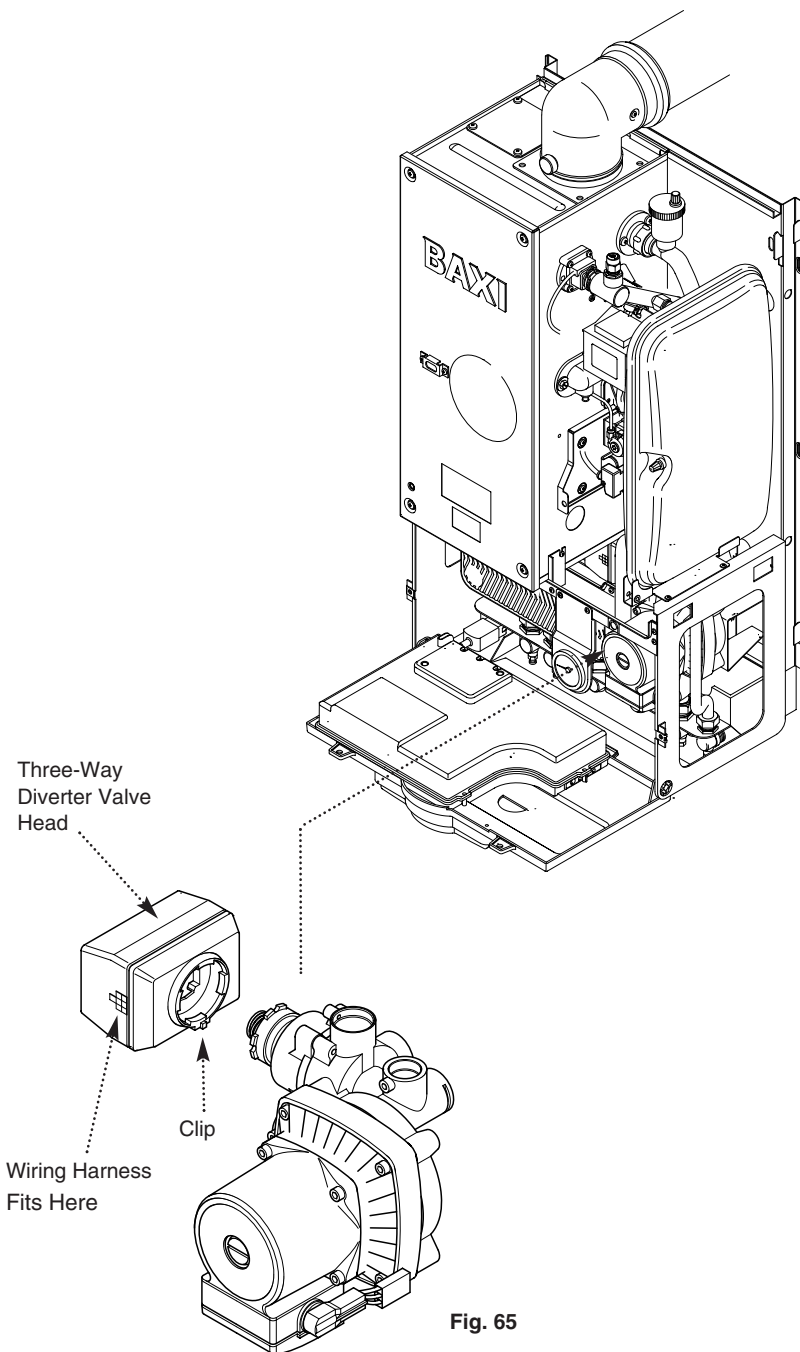
13.10 Three-Way Diverter Valve (Head Only) (Fig. 65)

If only the head needs replacing:

1. Unplug the wiring harness from the 3-way diverter valve.
2. Depress the clip and revolve the head through 30° and remove.
3. Fit replacement head and reassemble in reverse order.

13.11 Three-Way Diverter Valve (Complete) (Fig. 66)

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Unplug the wiring harness from the 3-way diverter valve.
3. Remove the four socket screws retaining the 3-way valve.
4. Remove the 3-way valve.
5. Fit the new 3-way valve ensuring the gasket is in place and that the spigots are at the top to fit into the recesses on the manifold and reassemble in reverse order.



13.0 Changing Components

13.12 Pressure Gauge (Fig. 67)

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. 68).
3. Depress the two lugs on either side of the pressure gauge and feed through the bracket.
4. Fit new pressure gauge and reassemble in reverse order.

13.13 Pressure Relief Valve (Fig. 69)

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.

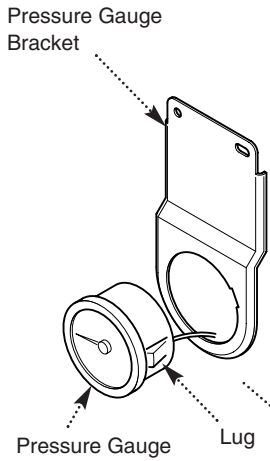


Fig. 67

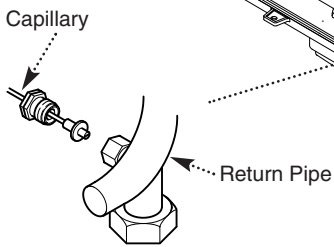


Fig. 68

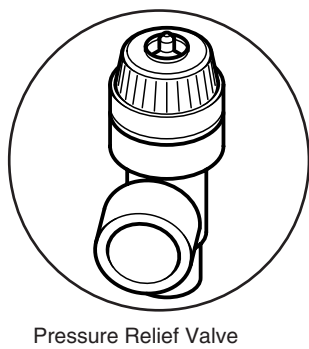
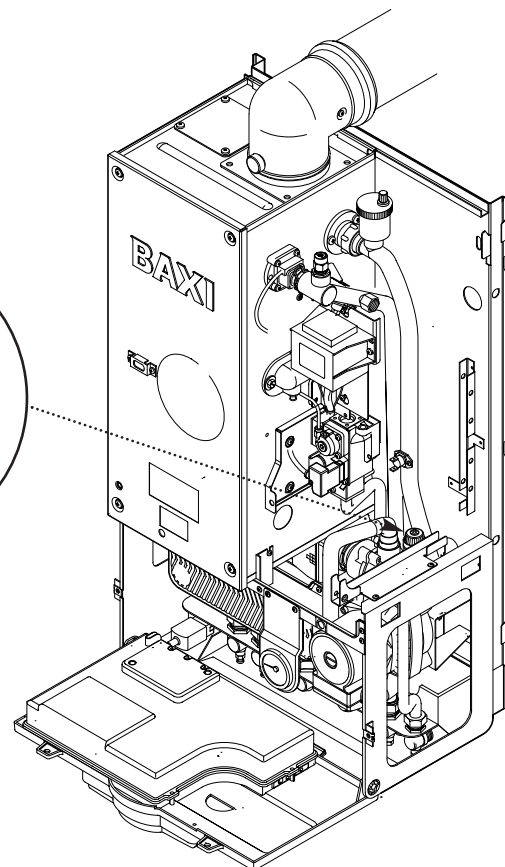
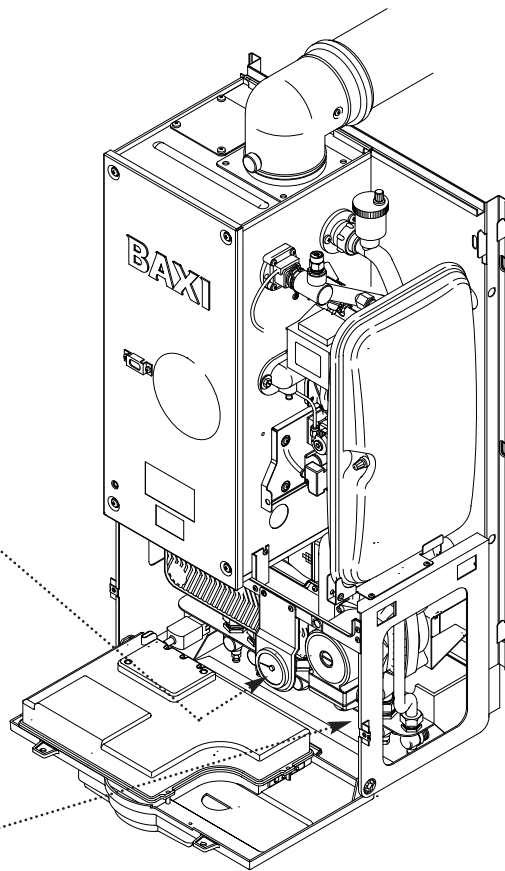


Fig. 69



Expansion Vessel
removed for clarity

13.0 Changing Components

13.14 DHW Plate Heat Exchanger

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Remove the four screws securing the plate heat exchanger to the manifolds (Fig. 70).
NOTE: Ensure nuts are not dislodged from the manifolds.
3. Remove the plate heat exchanger cover (Fig. 71)
4. Remove the 'O' rings from the manifolds and replace with new 'O' rings (Fig. 71).
5. Taking care not to displace the 'O' rings fit the new plate heat exchanger ensuring the nuts are retained in the manifolds.
6. Refit the plate heat exchanger cover.

13.15 DHW Flow Switch (Fig. 72)

1. Drain the boiler (see Section 13.1 paragraph 2 & 3).
2. Remove the DHW plate heat exchanger (see section 13.14).
3. Disconnect the inline electrical connection.
4. Remove the clip at right hand side of the flow switch.
5. Undo the DHW inlet connection.
6. Remove the flow switch assembly and undo the second clip.
7. Fit the new flow switch and reassemble in reverse order.
8. Ensure that both clips are fully inserted from the front.
9. Fit the DHW plate heat exchanger.

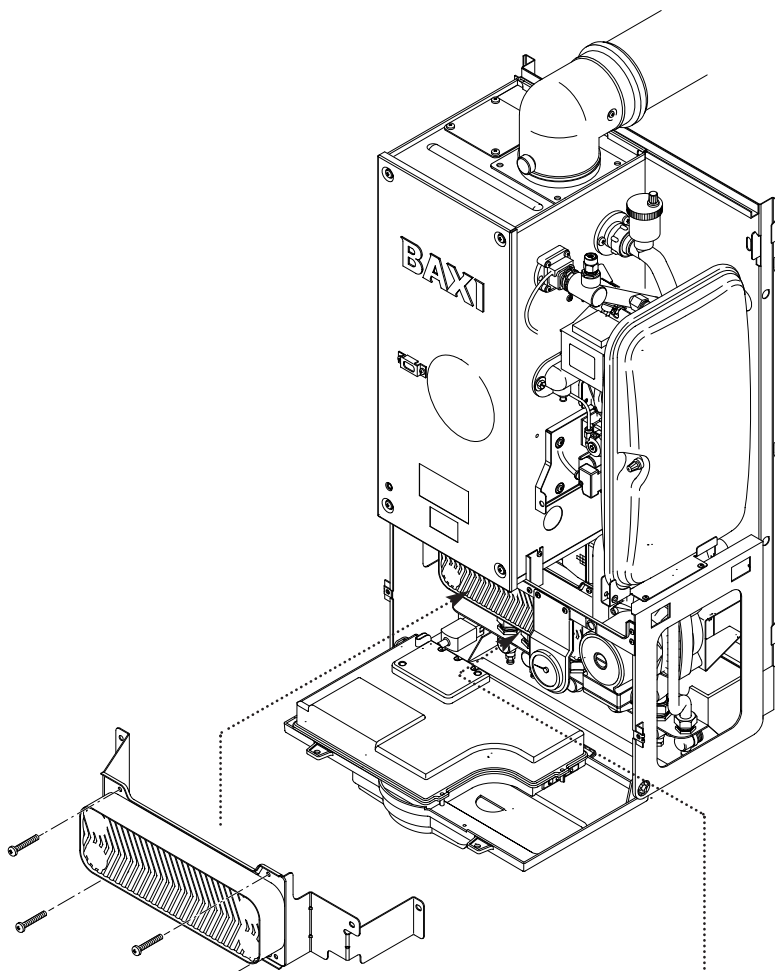


Fig. 70

Plate Heat Exchanger
Securing Screws

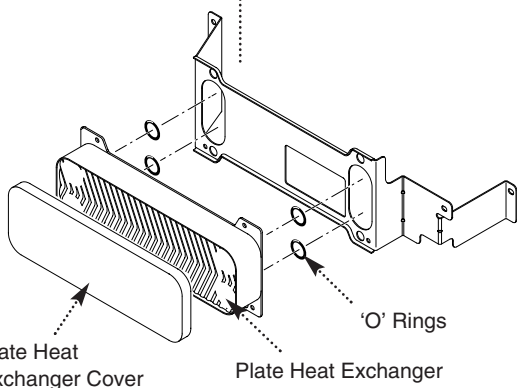


Fig. 71

Plate Heat
Exchanger Cover

Plate Heat Exchanger

'O' Rings

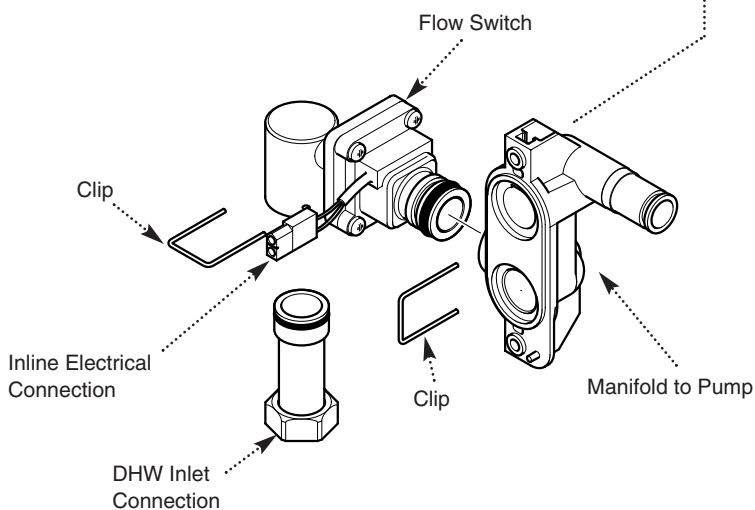


Fig. 72

13.0 Changing Components

The control, display and fan driver boards can be accessed on the removal of the main electrical box cover.

1. Release the facia securing screws ($\frac{1}{4}$ turn) and hinge down the facia box.
2. Remove the screws securing the main electrical box cover (Fig. 73) and rotate the cover upwards to gain access.

13.16 Control Board (Fig. 73)

1. Remove the screws securing the control board and disconnect the electrical connections noting their positions although they are one way fitting.
2. Fit the new control board and reassemble in reverse order.

13.17 Display Board (Fig. 73)

1. Remove control board as in 13.16.
2. Remove the screws securing the display board and disconnect the electrical connection.
3. Fit the new display board and reassemble in reverse order.

13.18 Fan Driver Board (Fig. 73)

1. Remove the screws securing the fan driver board and disconnect the electrical connections noting their positions.
2. Fit the new fan driver board and reassemble in reverse order.

13.19 Transformer (Fig. 74)

1. Remove the transformer connection from the control board (Fig. 73).
2. The transformer is mounted to the right of the combustion box.
3. Remove the two transformer mounting screws and remove the transformer.
4. Fit the new transformer and reassemble in reverse order.

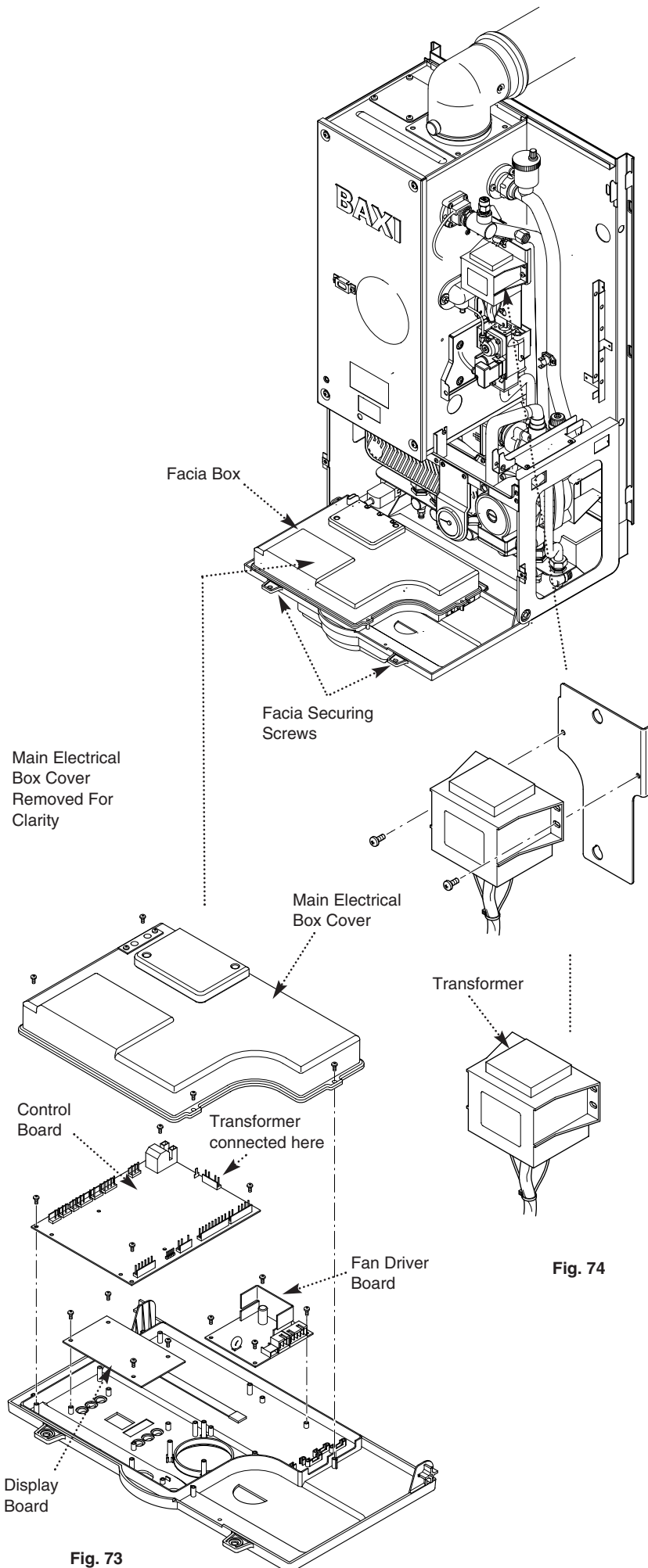


Fig. 73

Fig. 74

13.0 Changing Components

The fan and venturi, gas valve, injector pipe, condensate trap, fan protection thermostat, 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 1/4 turn screws (Fig. 75).

13.20 Spark and Sensing Electrodes (Fig. 76)

1. Disconnect the leads to the electrodes noting their positions (left to right):

Spark	-	Opaque Lead
Spark	-	Opaque Lead
Sensing	-	White Lead

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 gaskets, reassemble in reverse order, ensuring the spark gap of $3.5\text{mm} \pm 0.5\text{mm}$ is maintained.

13.21 Fan and Fan Protection Thermostat (Fig. 77)

1. Remove the electrical connections to the fan protection thermostat on the fan.

2. **Replacing the thermostat:-** Unscrew the thermostat and replace with the new thermostat. Reassemble in reverse order.

3. **Replacing the fan:-** Remove the wing nuts securing the fan to the base of the combustion box.

4. Lower the fan and disconnect the electrical supply from the right hand rear of the fan. Remove the fan/venturi assembly.

5. Remove the two screws securing the venturi to the fan and remove the venturi together with the gasket.

6. Remove the fan protection thermostat and fix it to the new fan, together with the venturi and gasket.

7. 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.

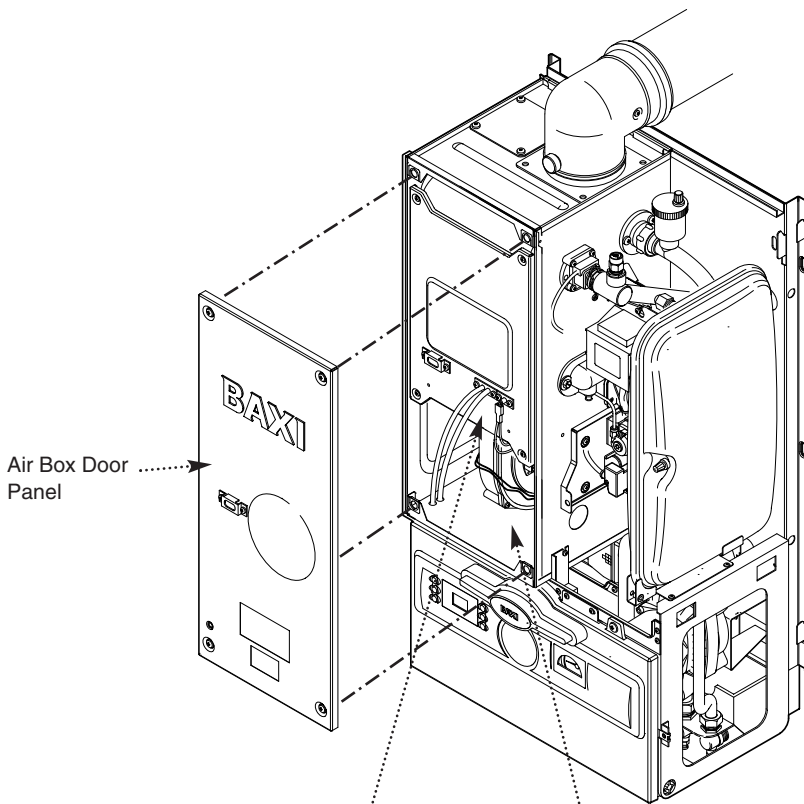


Fig. 75

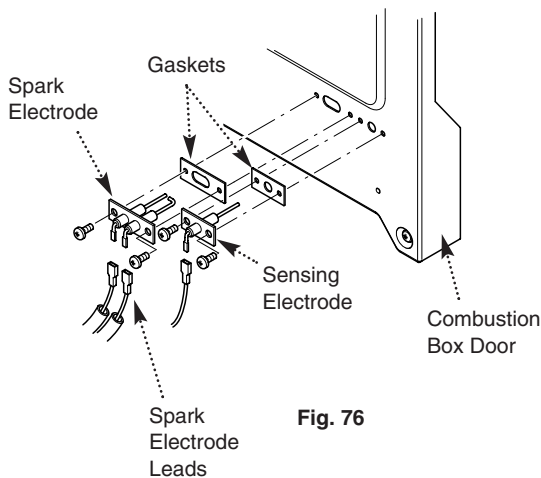


Fig. 76

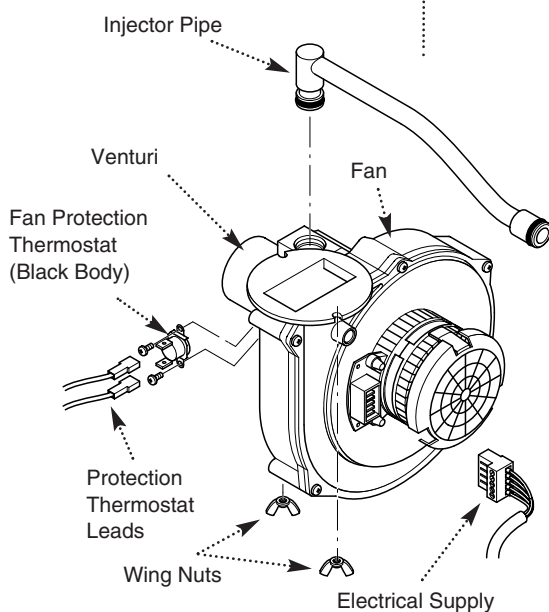


Fig. 77

13.0 Changing Components

It is necessary to remove the fan before changing the injector pipe, condensate trap and gas valve (see section 13. 21).

13.22 Injector Pipe (Fig. 78)

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, applying Greasil 4000 (Approved Silicone Grease) to both "O" rings.

13.23 Gas Valve (Fig. 78)

1. Release the facia securing screws $\frac{1}{4}$ turn and hinge down the facia box.
2. Loosen nut at gas inlet pipe at tap rail.
3. Undo the gas pressure pipe from the gas valve.
4. Undo the screw and disconnect the electrical plug from the gas valve.
5. Remove the two gas valve securing screws from inside the air box holding the gas valve.
6. Remove the gas valve and inlet pipe from the airbox side.
7. Remove the four screws securing the gas inlet pipe to the valve and refit to the new valve.
8. Remove the aluminium spacer and its gasket and "O" ring from the gas valve.
9. Fit the aluminium spacer, "O" ring and its gasket to the new valve.
10. Fit the new gas valve and reassemble in reverse order. Test for gas soundness. Note: It is essential that these ensure gas soundness as they are under negative pressure.

13.24 Condensate Trap (Fig. 79)

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.

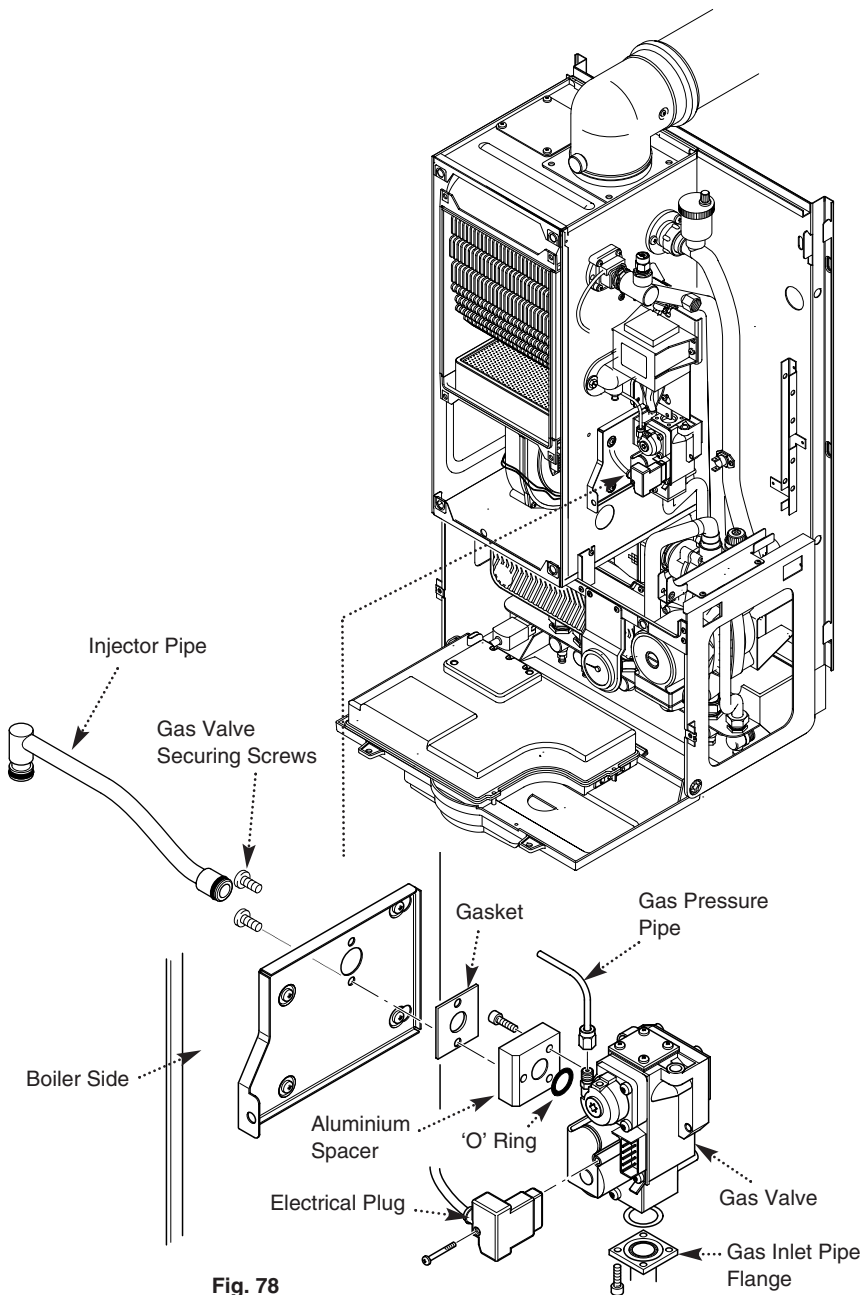


Fig. 78

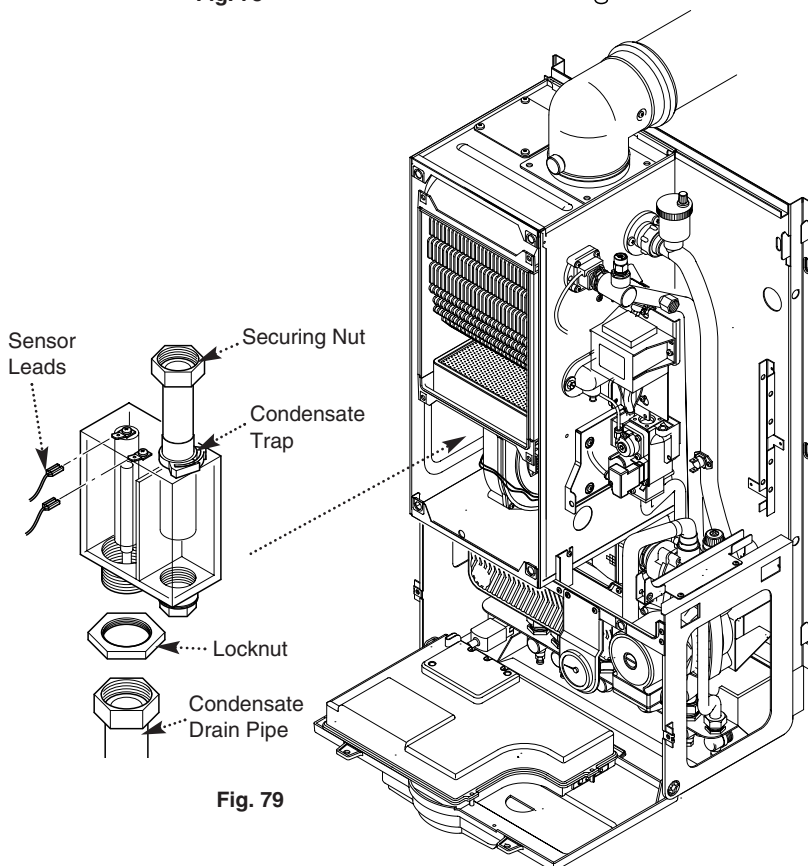


Fig. 79

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 13.21 & 13.25).

1. Remove the combustion box door by undoing the four 1/4 turn securing screws.

13.25 Burner (Fig. 80)

WARNING: The burner skin is fragile: (HANDLE WITH CARE)

1. Remove the two 8mm hex head screws securing the burner to the base of the combustion box.
2. Remove the burner carefully from the combustion box base, inspect gasket for damage, replace if necessary..
3. Fit the new burner and reassemble in reverse order.

13.26 Heat Exchanger

1. Drain the boiler (see section 13.1 paragraph 2 & 3).
2. Remove the fan and condensate trap (see section 13.21 and 13.24).
3. Undo the screws securing the flow switch and return connections. Remove the flow switch and return connection (Fig. 81).
4. Undo the screws securing the heat exchanger manifold and remove the manifold (Fig. 82).
5. Undo the screws on the bracket supporting the heat exchanger and remove bracket.
6. Lift the heat exchanger assembly (Fig. 83) and rotate the bottom upwards whilst pulling it forwards out of the airbox.
7. Fit the new heat exchanger and reassemble in reverse order.
8. Recommission the boiler and check the inhibitor concentration (see Section 6.2 and 10.1).

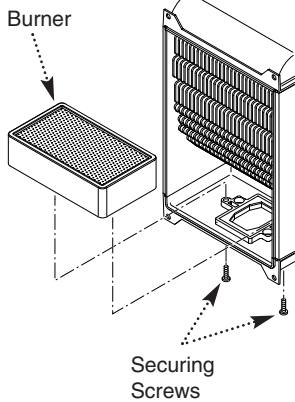


Fig. 80

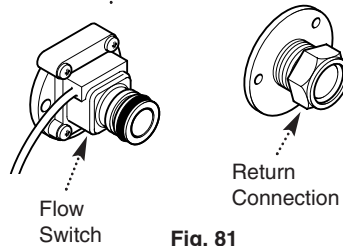
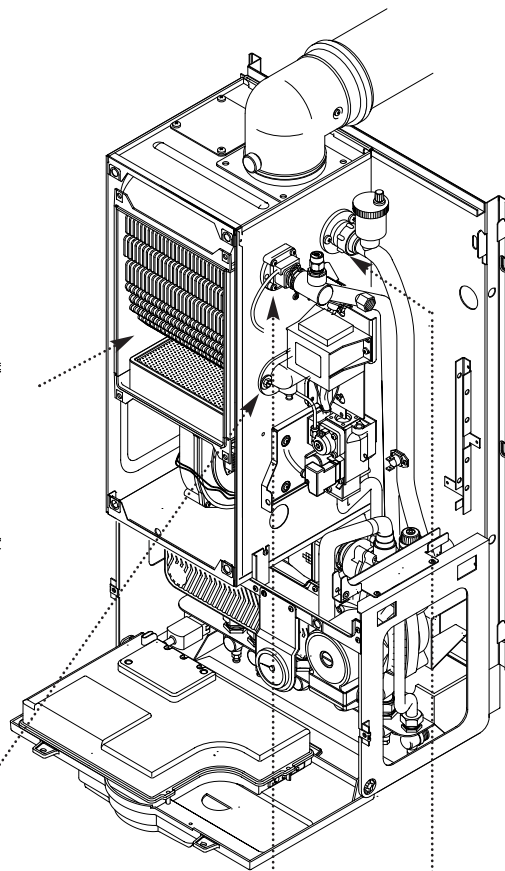


Fig. 81

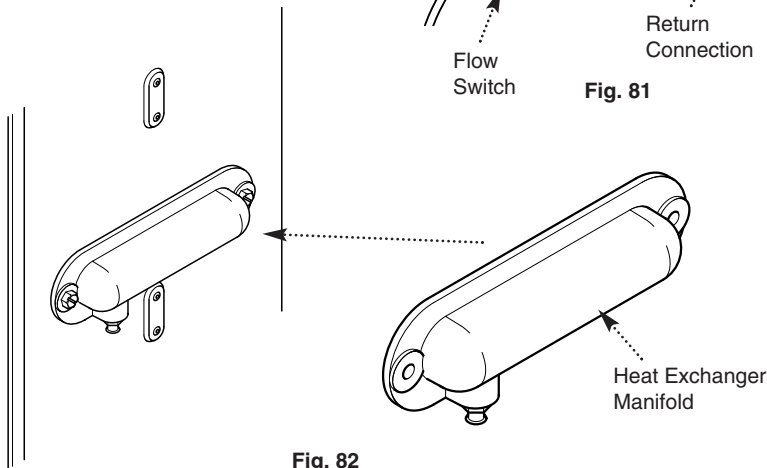


Fig. 82

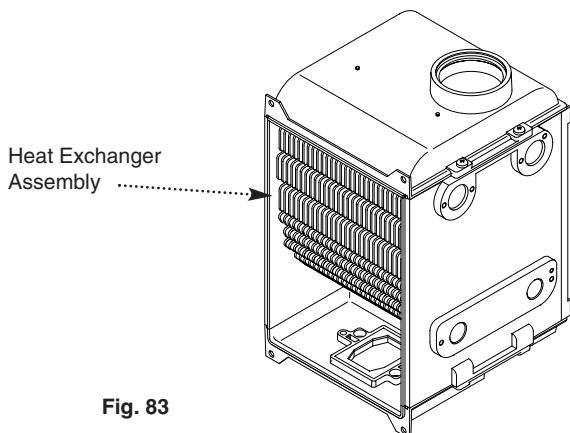


Fig. 83

13.0 Changing Components

13.27 Heat Exchanger Insulation Pads (Fig. 84)

1. Remove the fan and condensate trap (see section 13.21 and 13.24).
2. Remove the burner (see section 13. 25).
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 insulation pads.
6. Check combustion box seal for damage, replace if necessary.
7. Fit the new insulation pads and reassemble in reverse order.

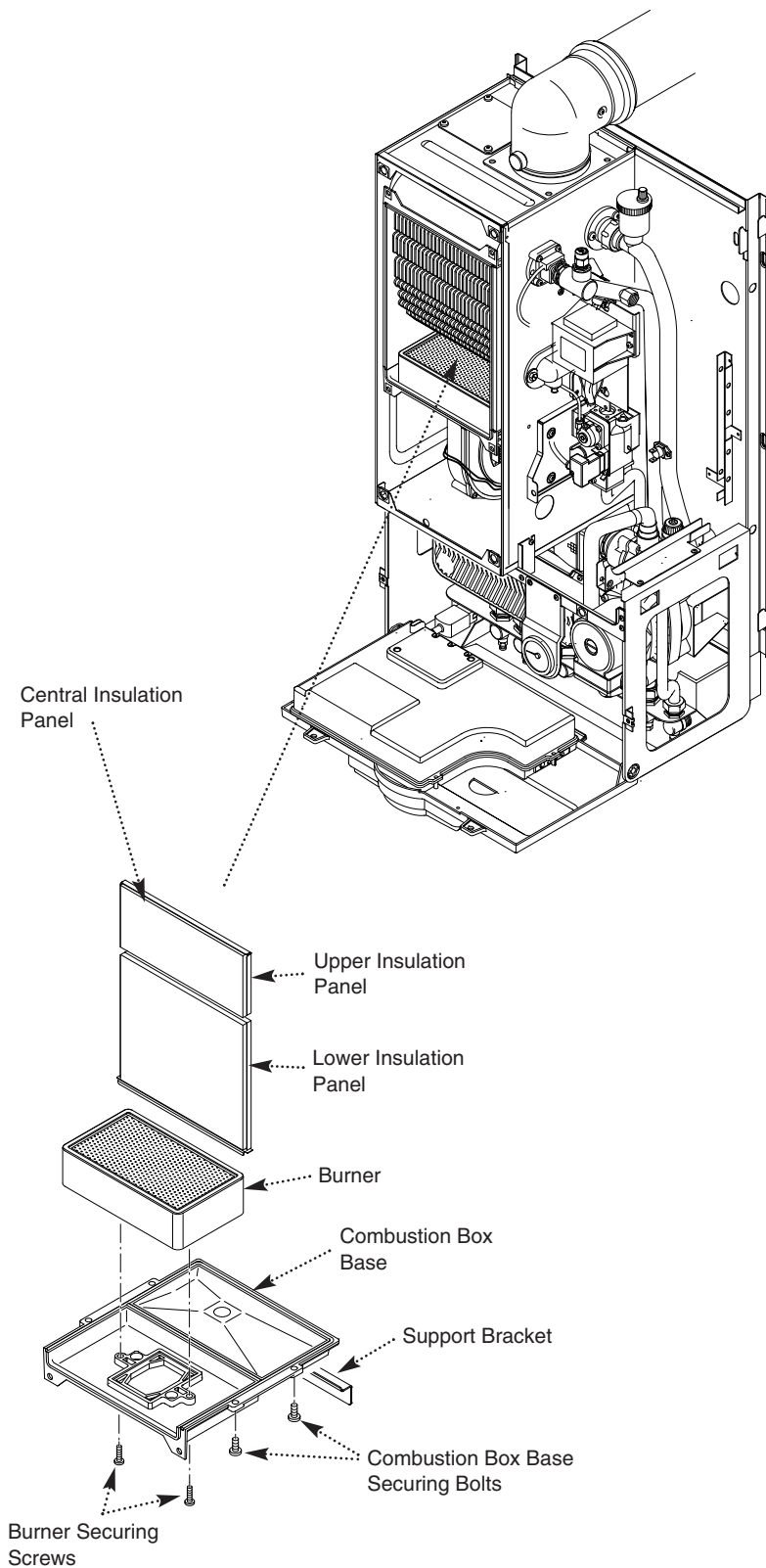
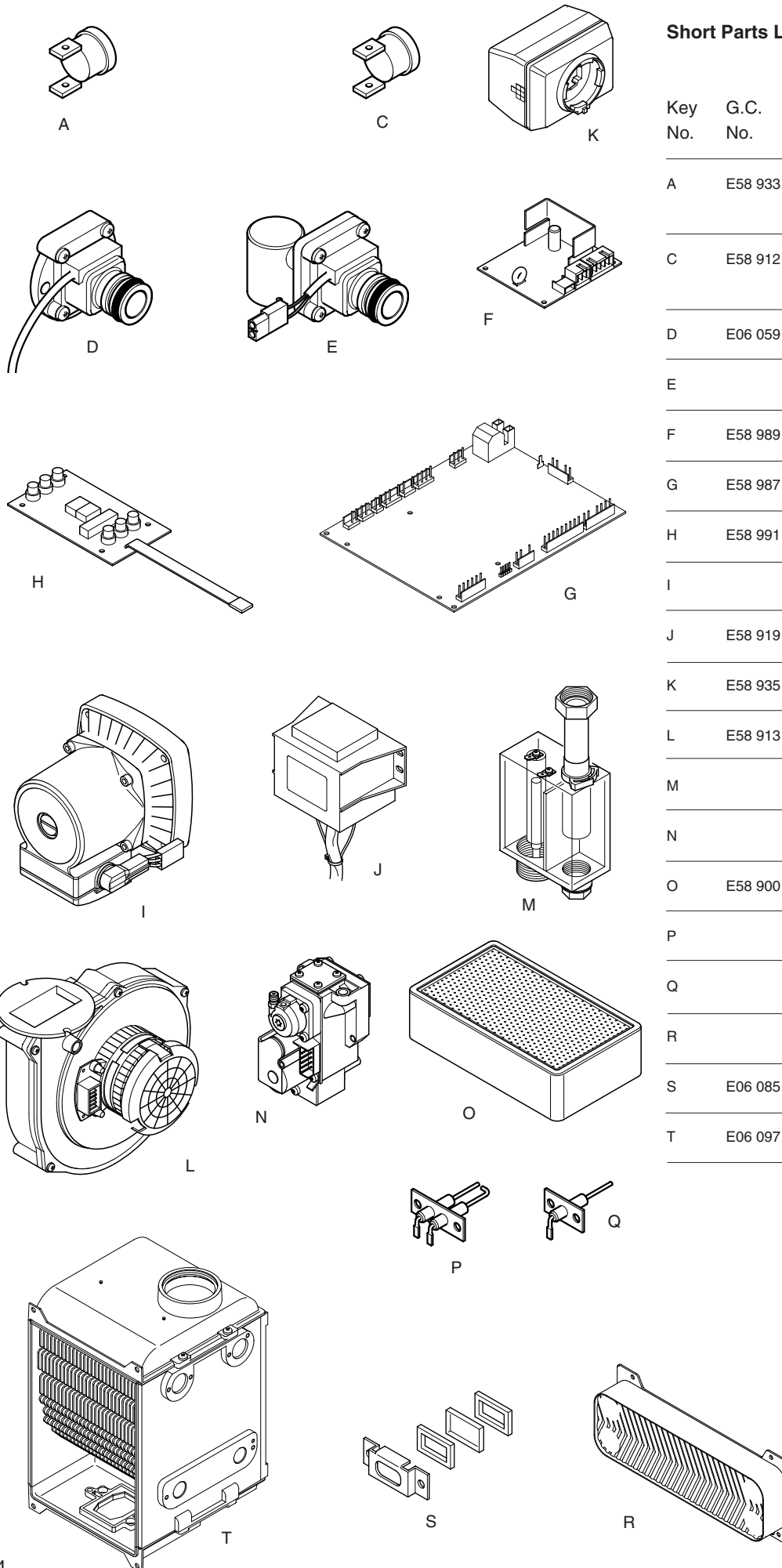


Fig. 84

14.0 Short Parts List

Short Parts List

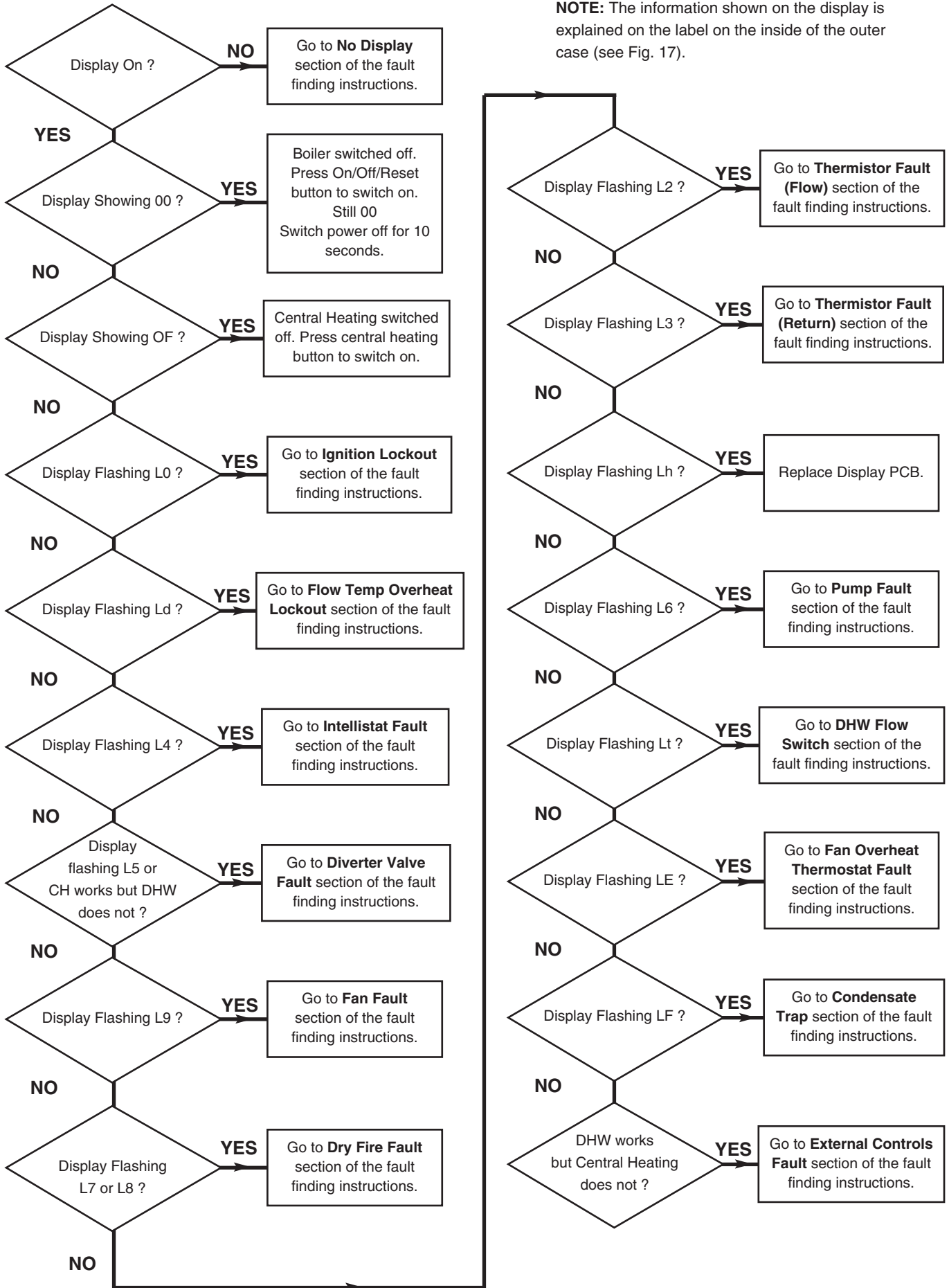
Key No.	G.C. No.	Description	Manufacturers Part No.
A	E58 933	Flow Thermistor (Red) / Return Thermistor	240670
C	E58 912	Safety Thermostat (Black) / Fan Protection	242235
D	E06 059	Flow Switch Kit	242459
E		DHW Flow Switch Kit	247502
F	E58 989	Fan Driver PCB	239230
G	E58 987	Control Board PCB	244878
H	E58 991	Display PCB	244880
I		Pump	240395
J	E58 919	Transformer	247155
K	E58 935	Diverter Valve Head	243341
L	E58 913	Fan	246557
M		Condensate Trap Kit	242485
N		Gas Valve Kit	247222
O	E58 900	Burner	245199
P		Spark Electrode Kit	247215
Q		Sensing Electrode Kit	249099
R		Plate Heat Exch. Kit	247224
S	E06 085	Inspection Window Assy	242484
T	E06 097	Heat Exchanger Assy	242497



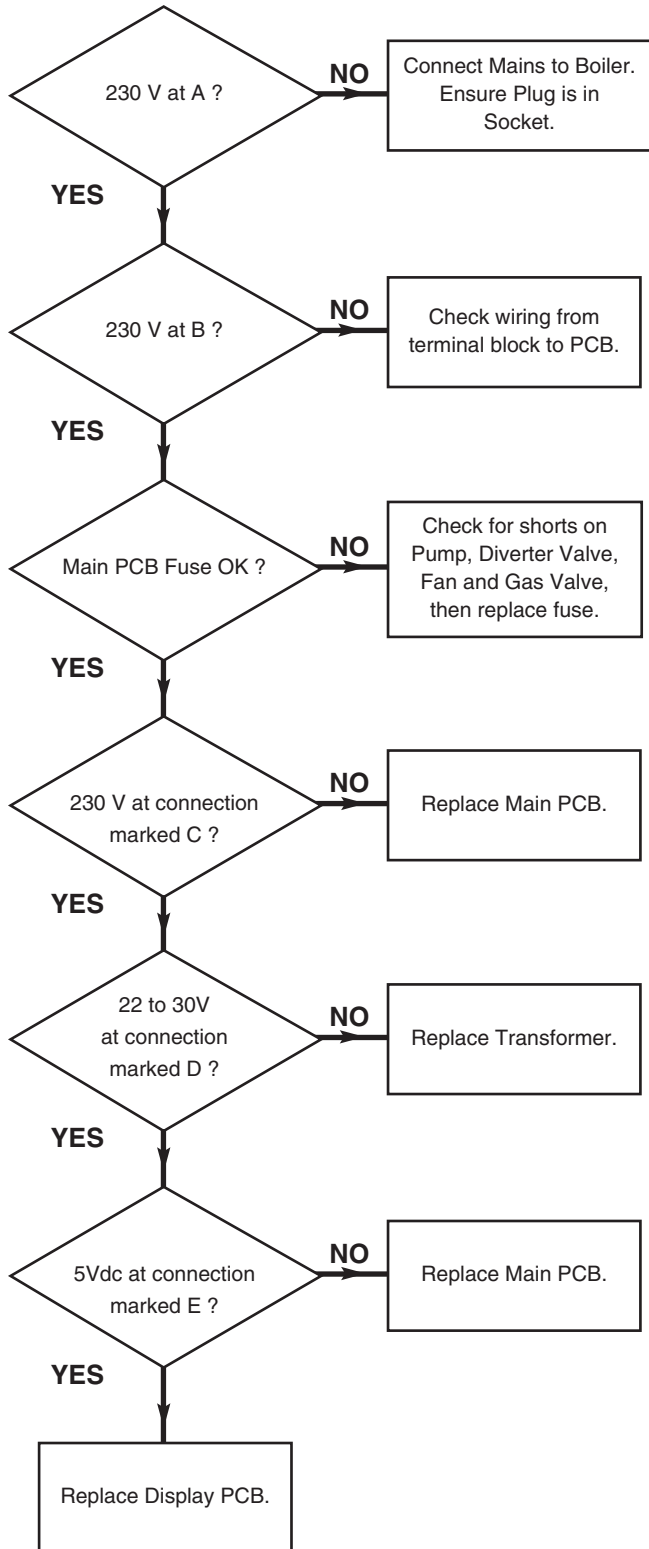
Before performing fault finding carry out preliminary electrical checks for earth, continuity and polarity. See Section 8.13

15.0 Fault Finding

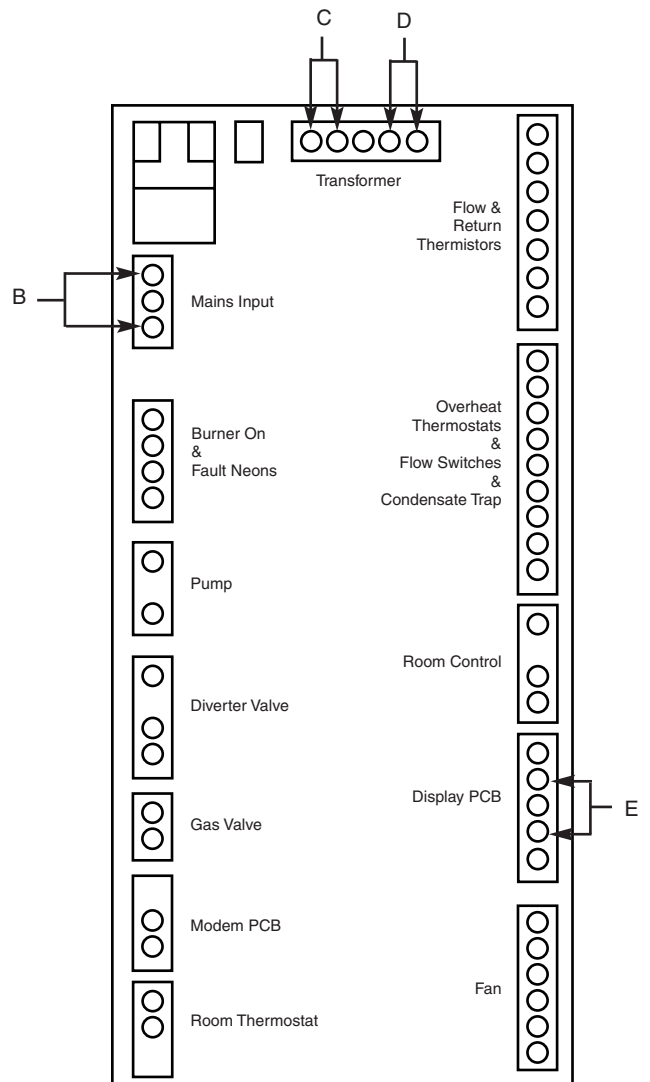
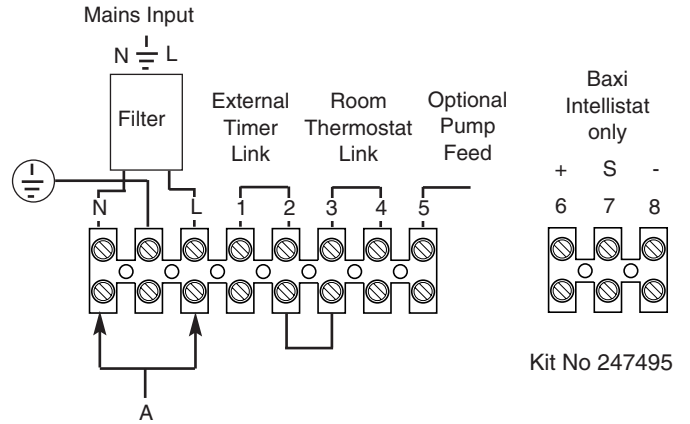
NOTE: The information shown on the display is explained on the label on the inside of the outer case (see Fig. 17).

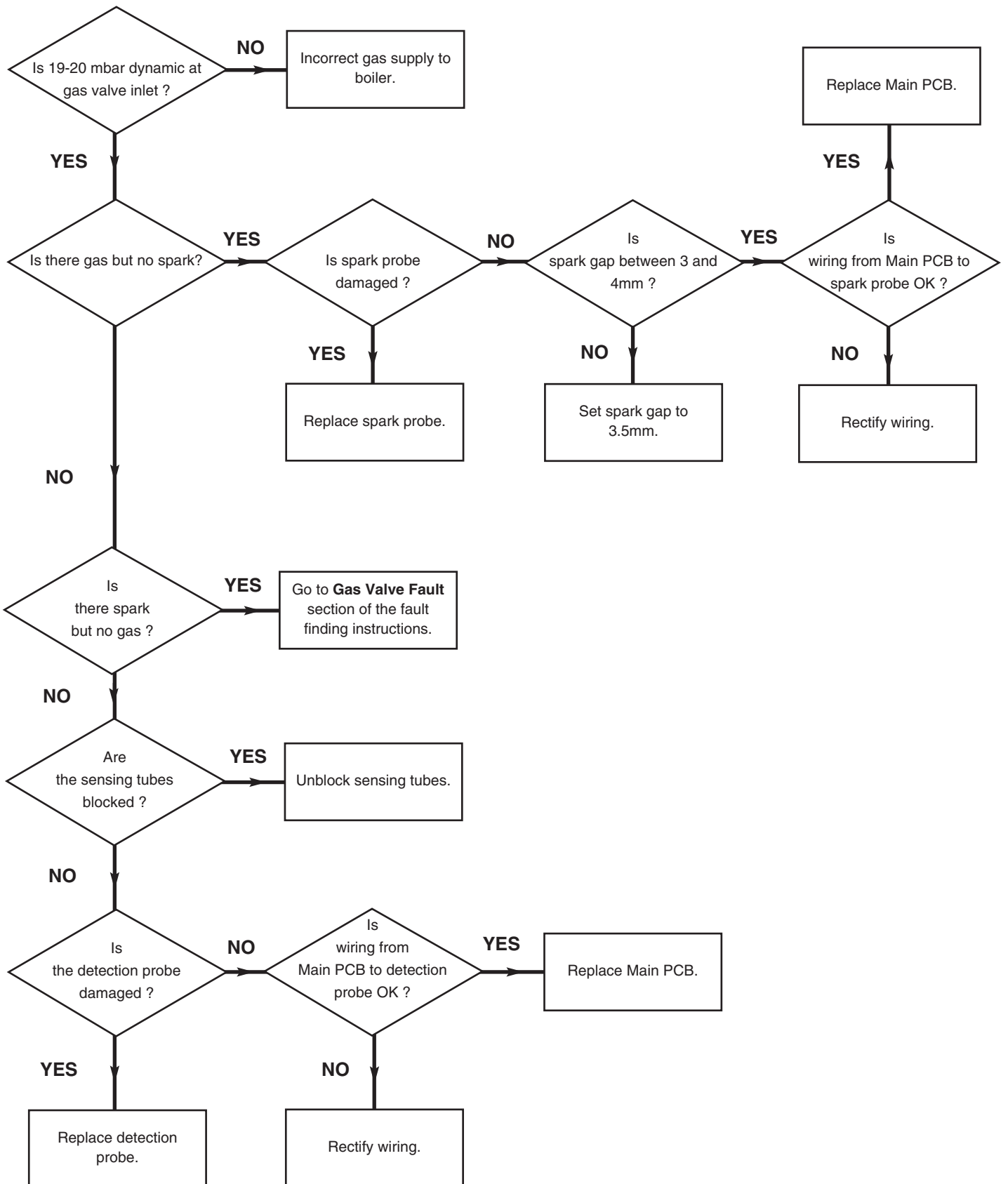


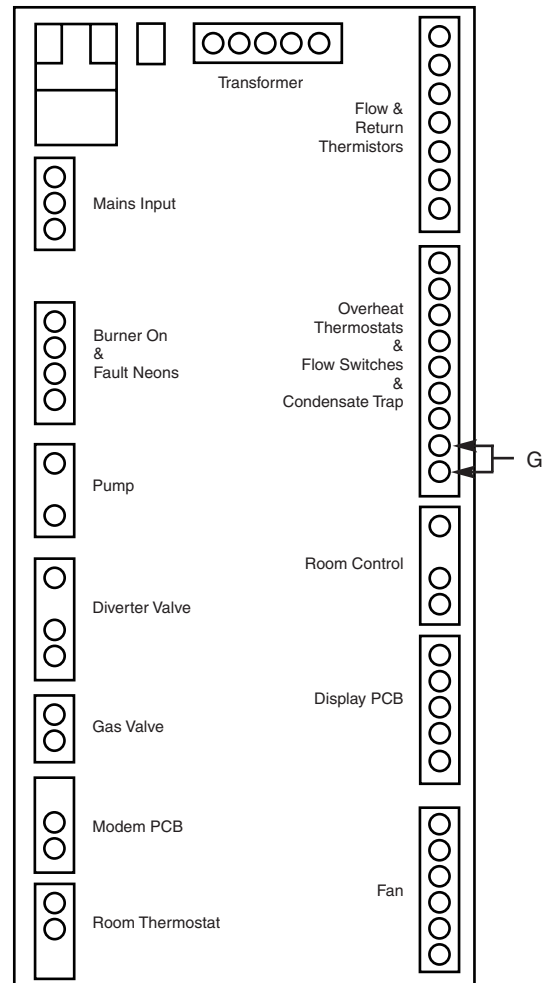
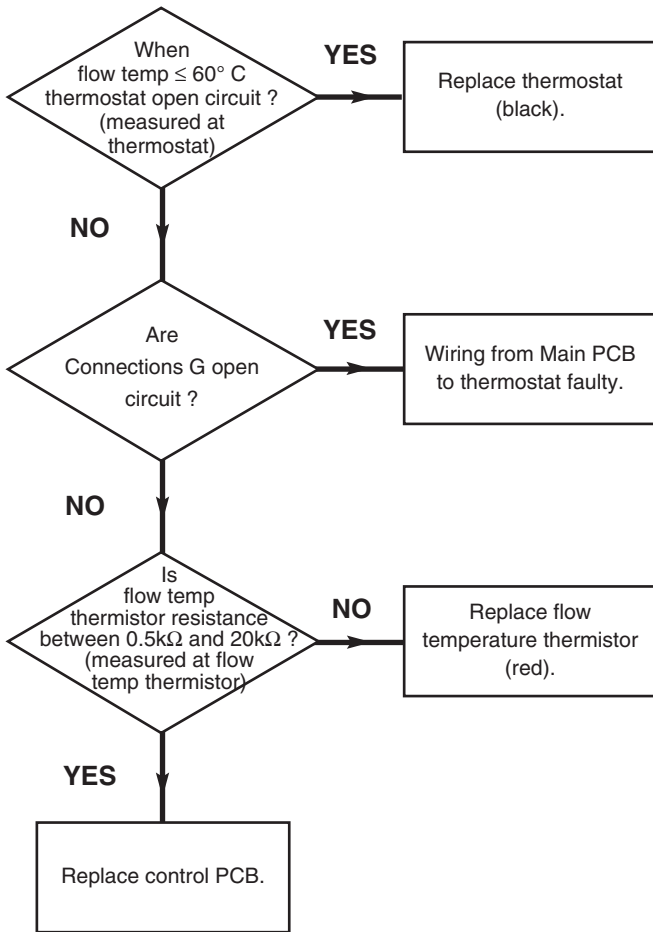
No Display



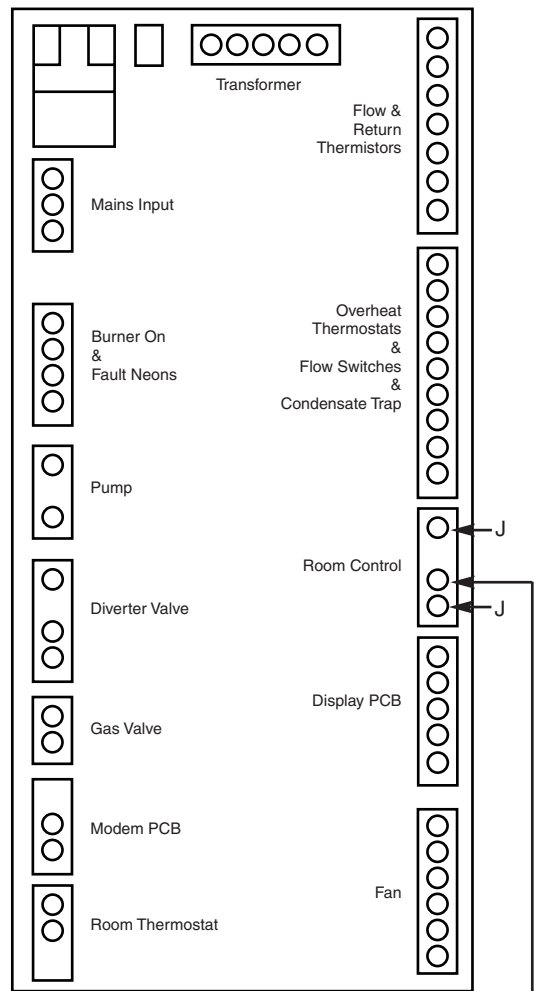
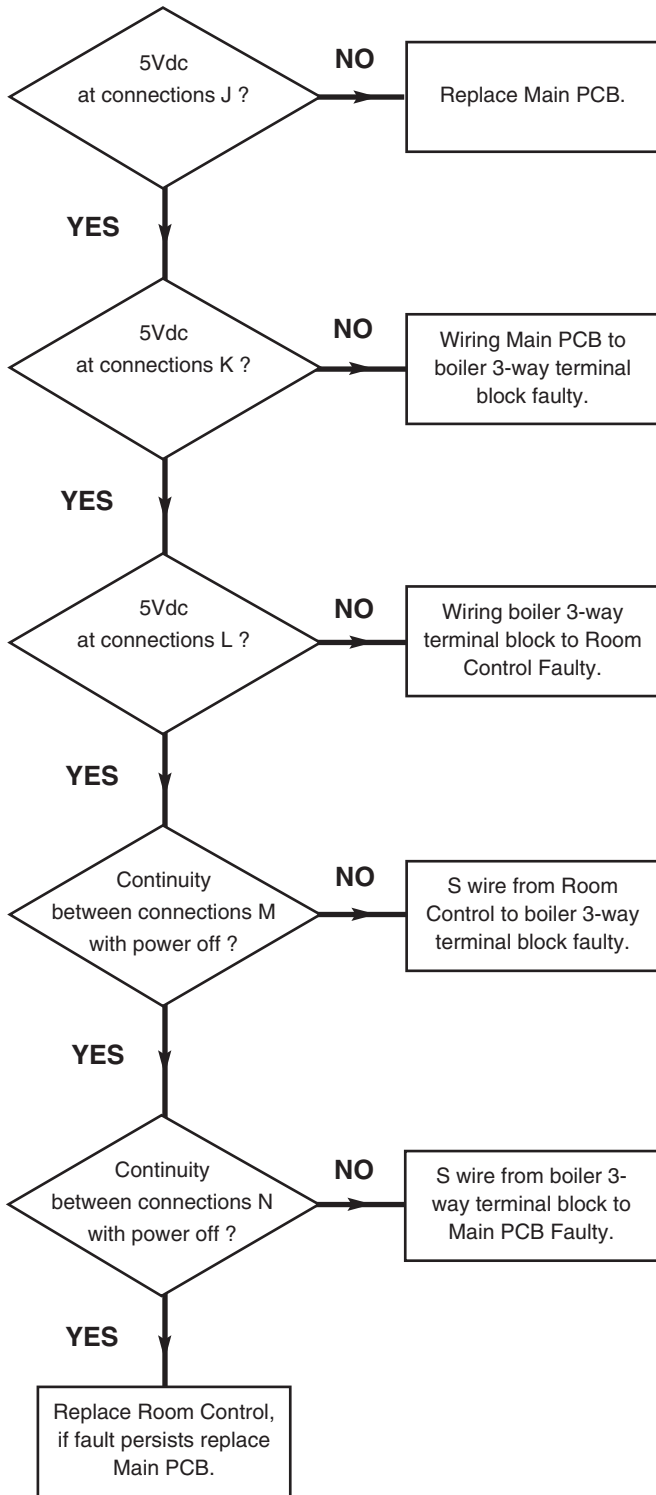
15.0 Fault Finding



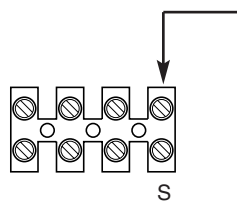
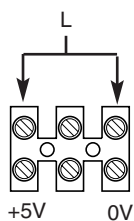




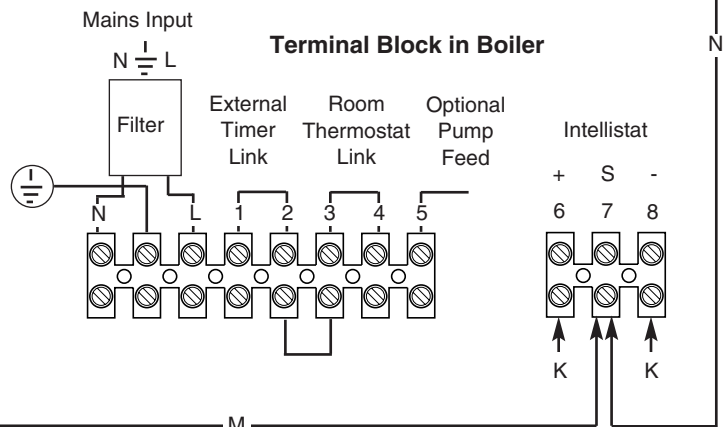
Intellistat Fault



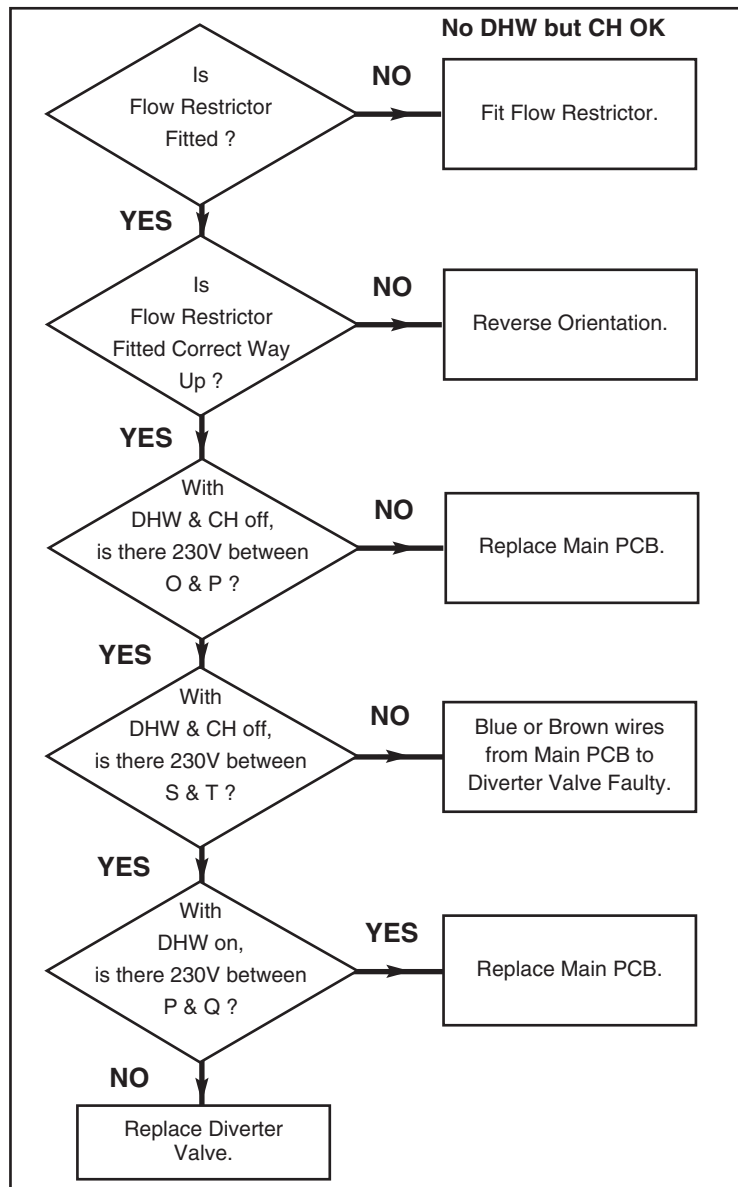
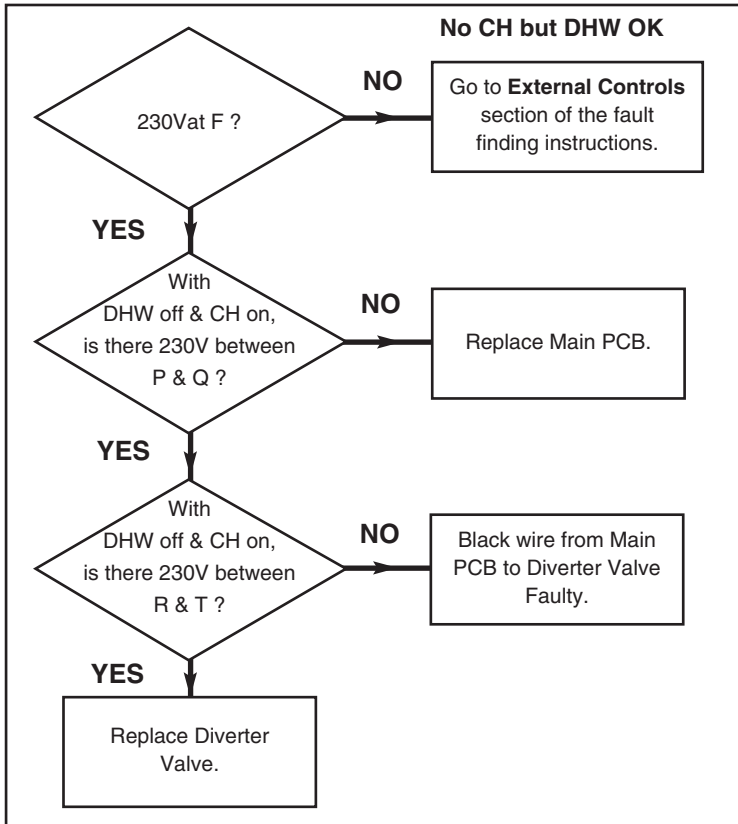
Terminal Block in Room Control



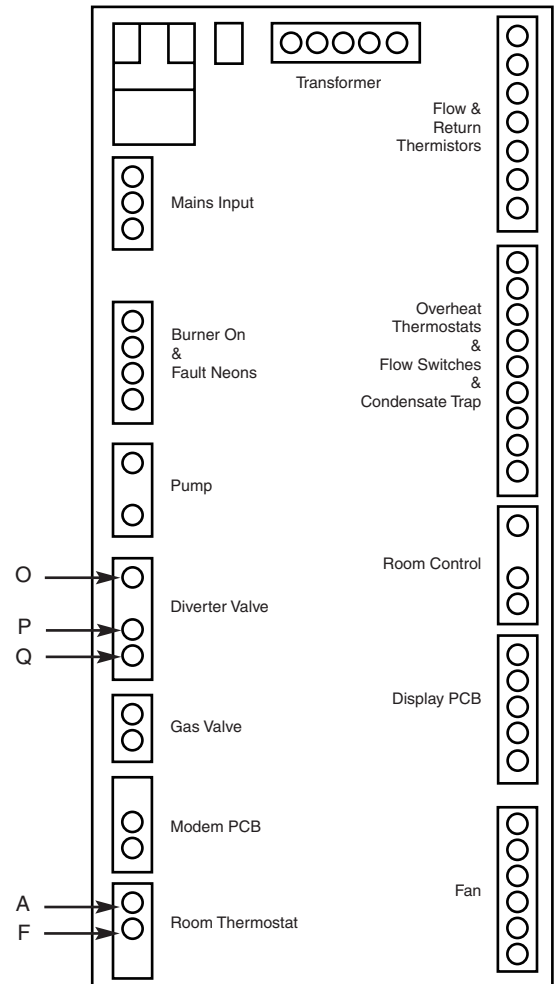
Terminal Block in Boiler



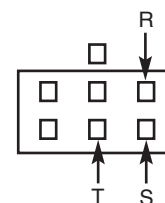
Diverter Valve Fault



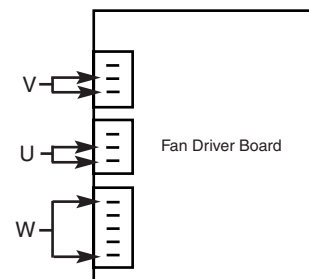
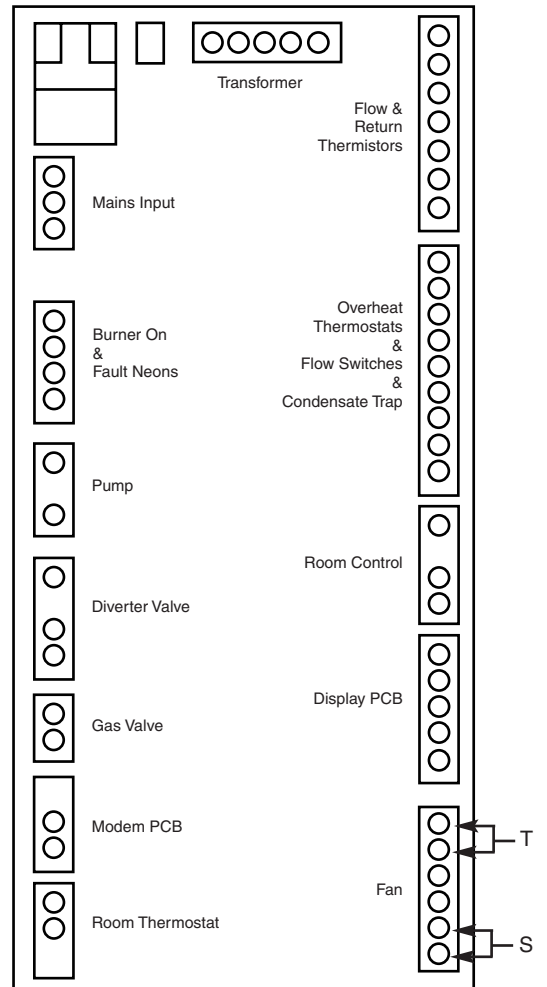
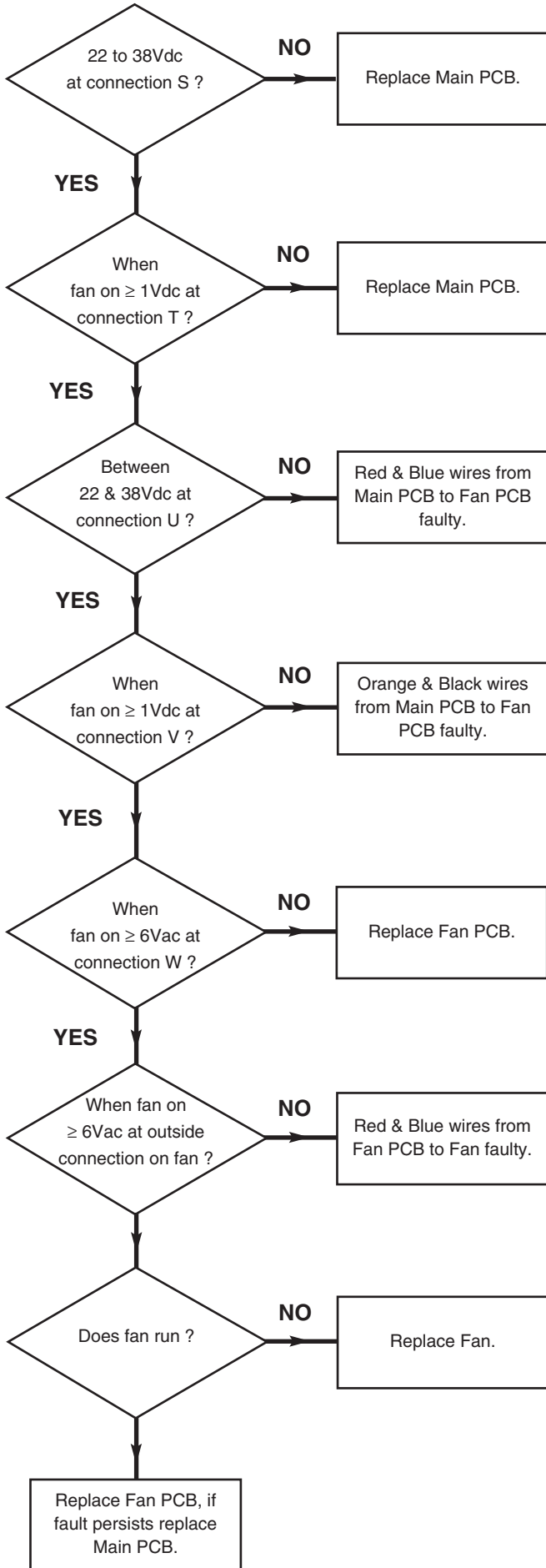
15.0 Fault Finding



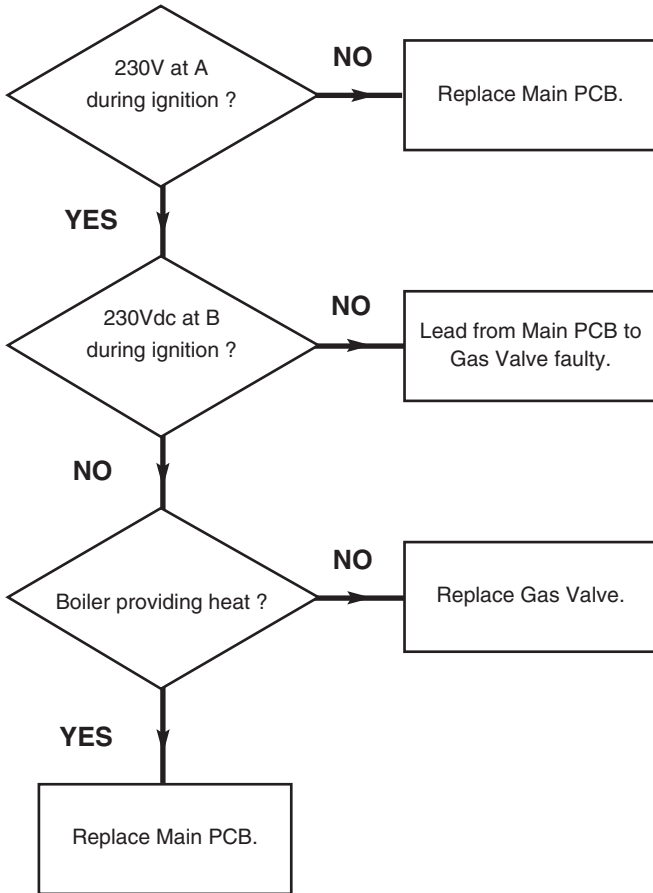
Diverter Valve Plug (when unplugged)



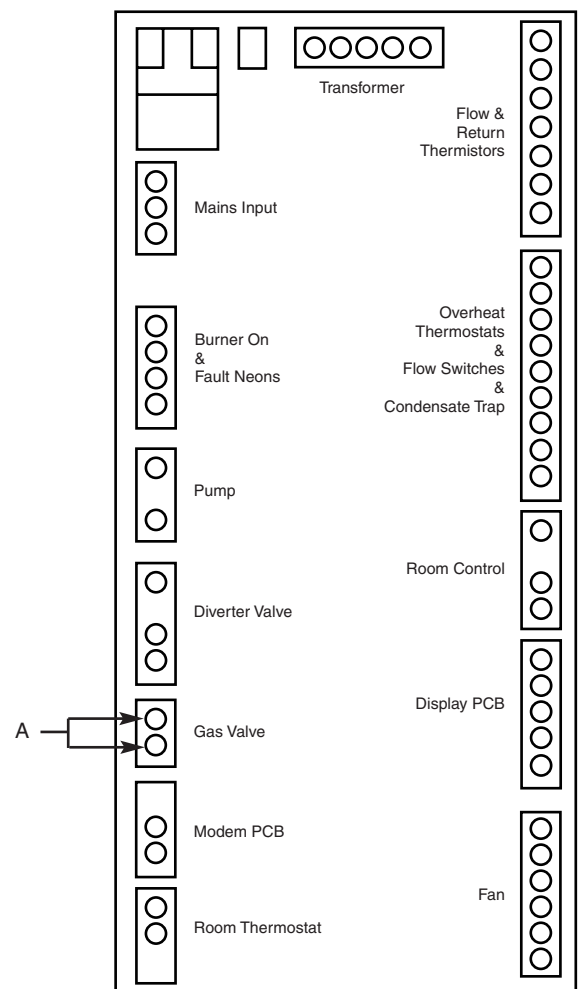
Fan Fault



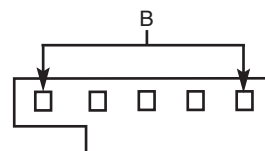
Gas Valve Fault



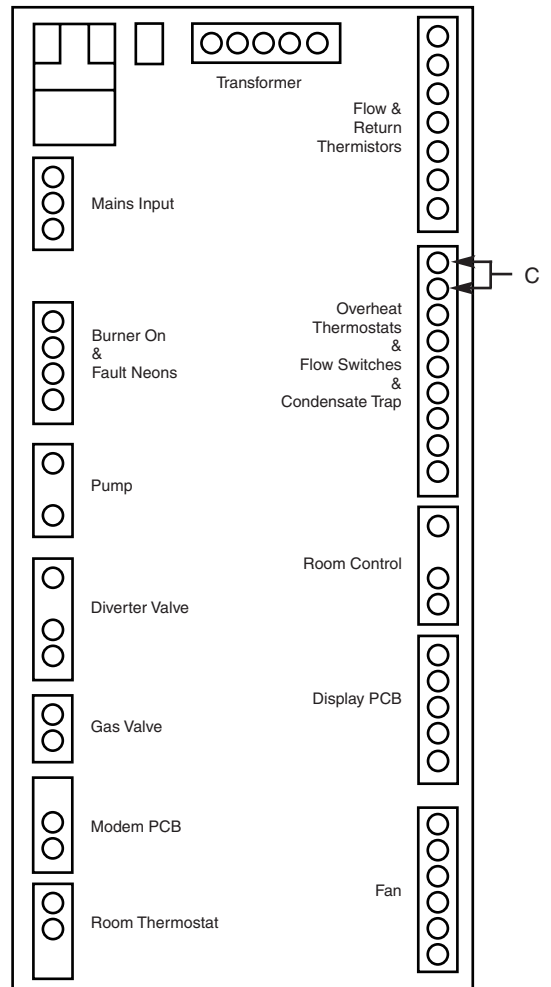
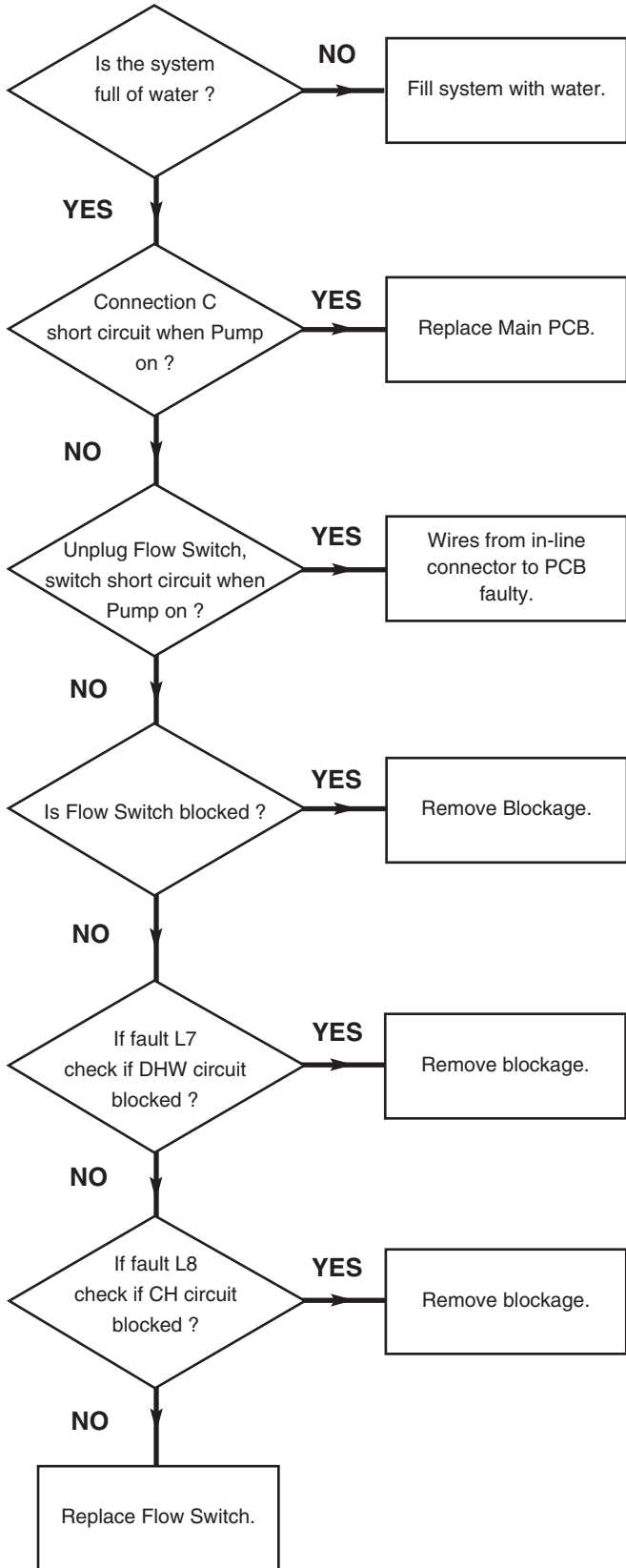
15.0 Fault Finding



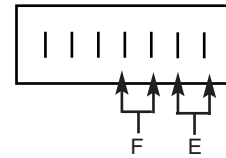
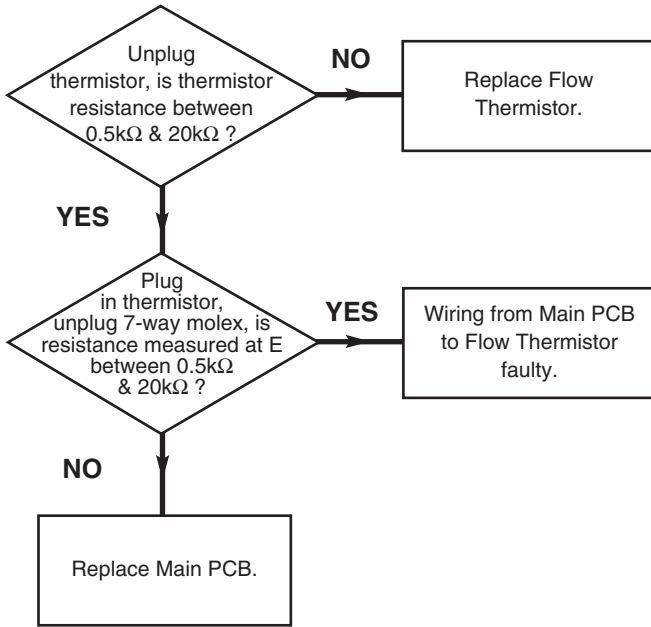
Gas Valve Plug (when unplugged)



Dry Fire Fault

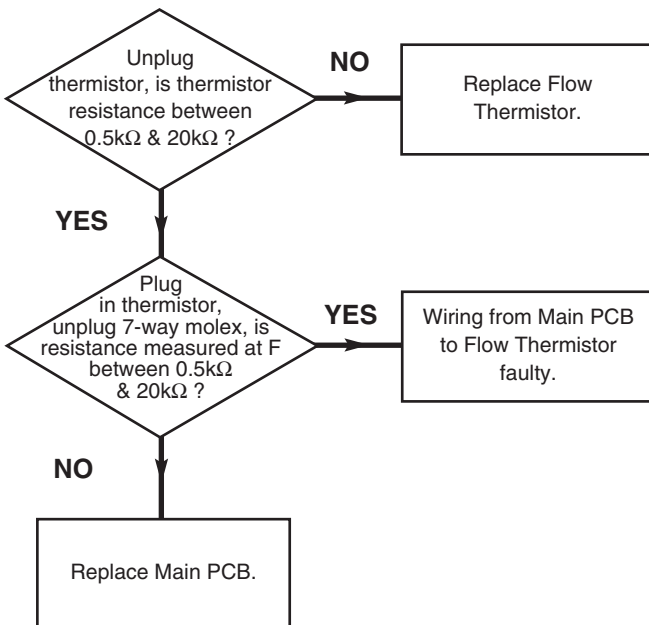


Flow Thermistor

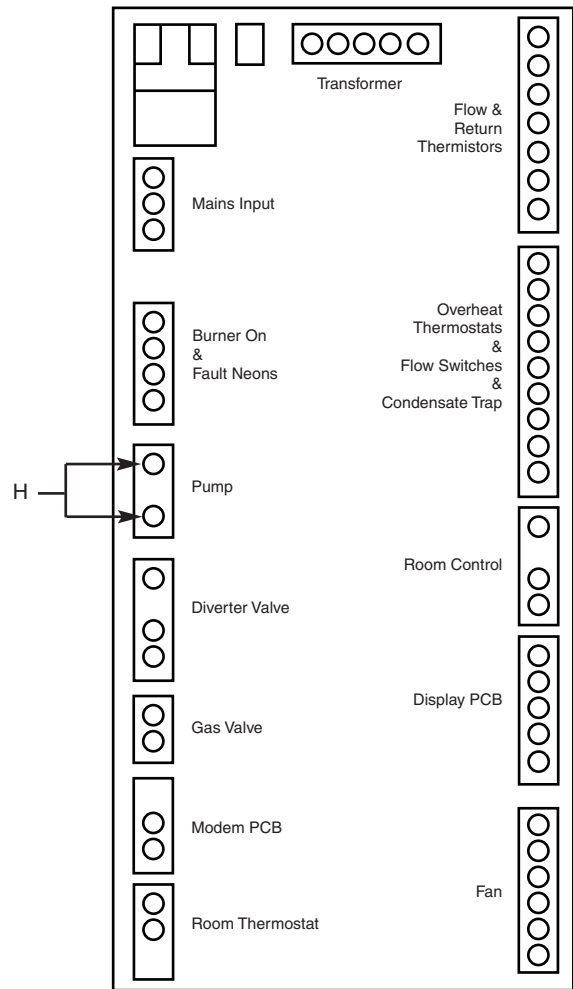
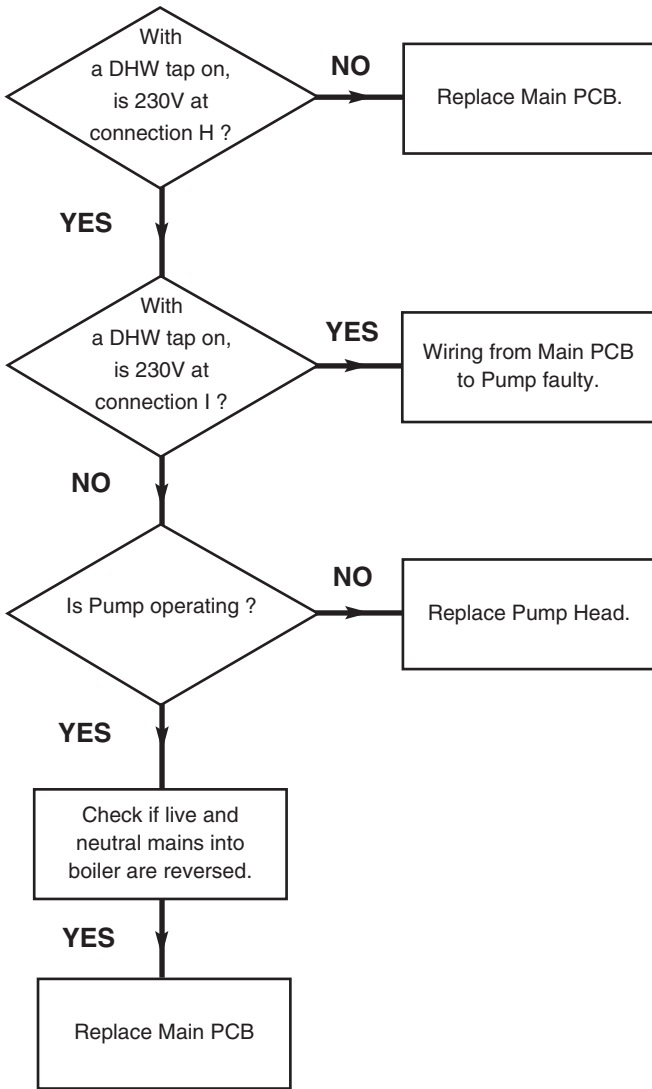


Molex

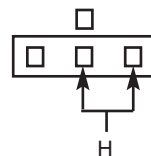
Return Thermistor



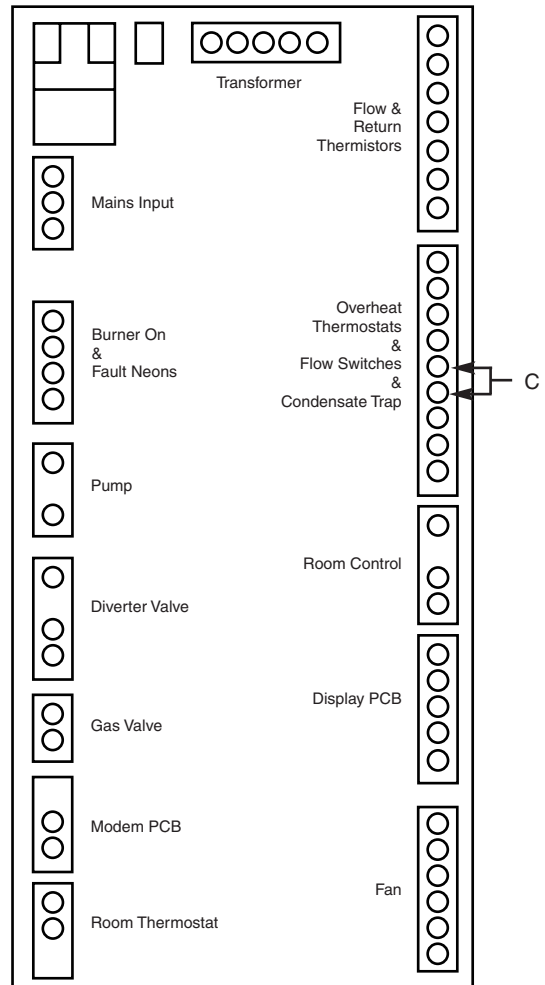
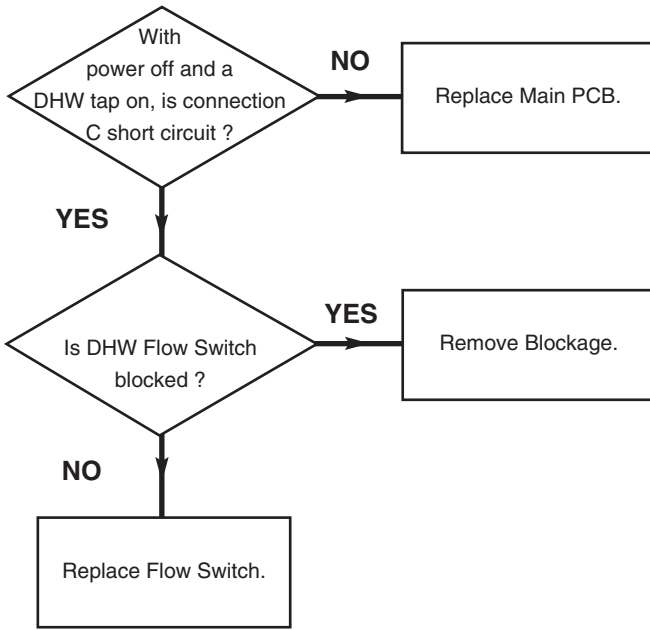
Pump Fault



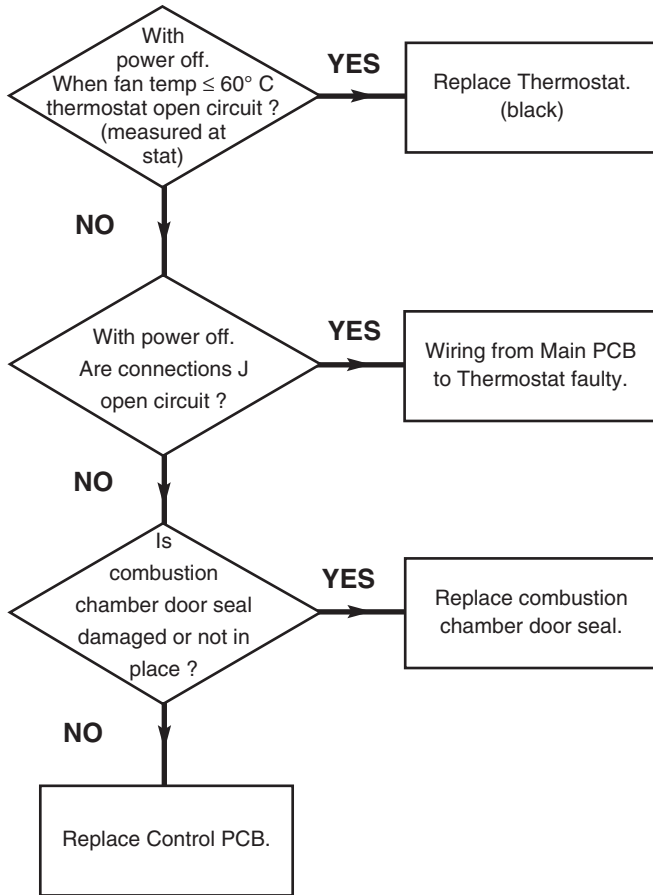
Pump Plug (when unplugged)



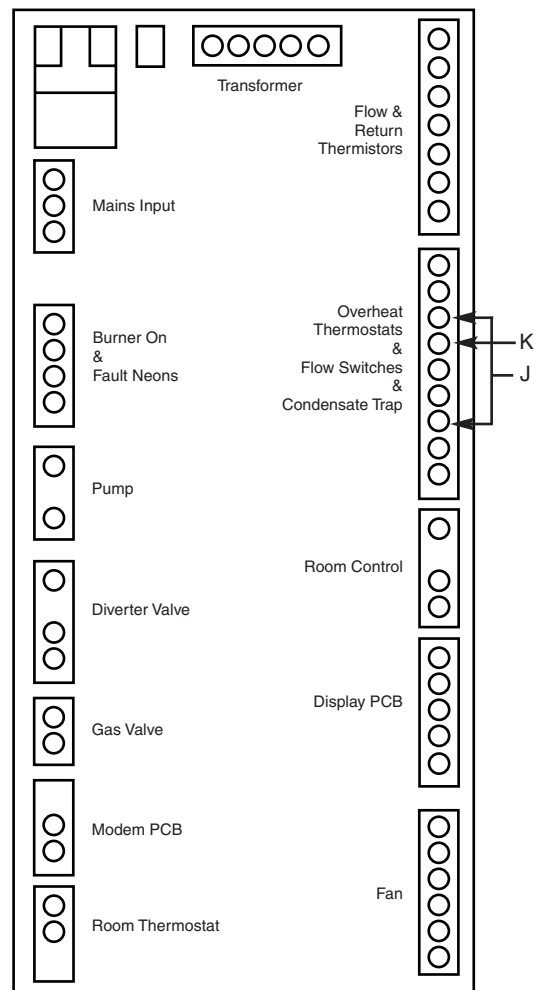
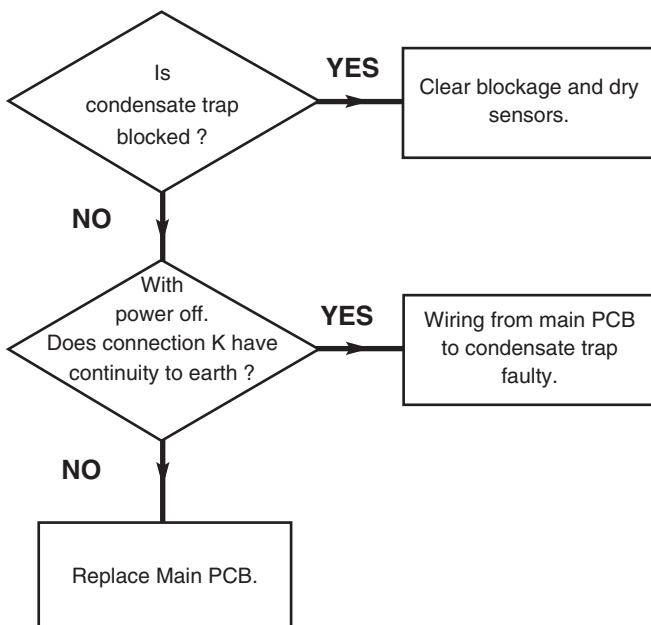
DHW Flow Switch Fault

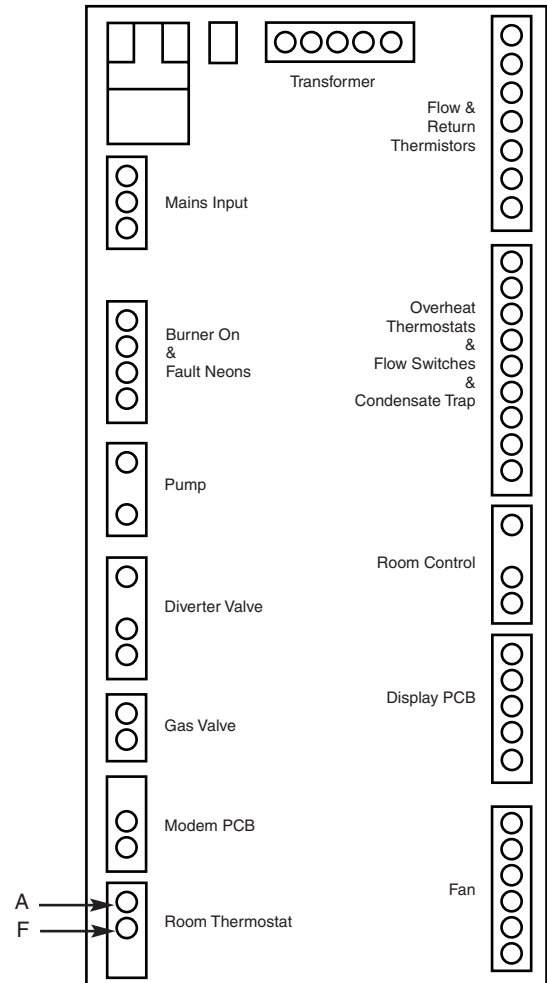
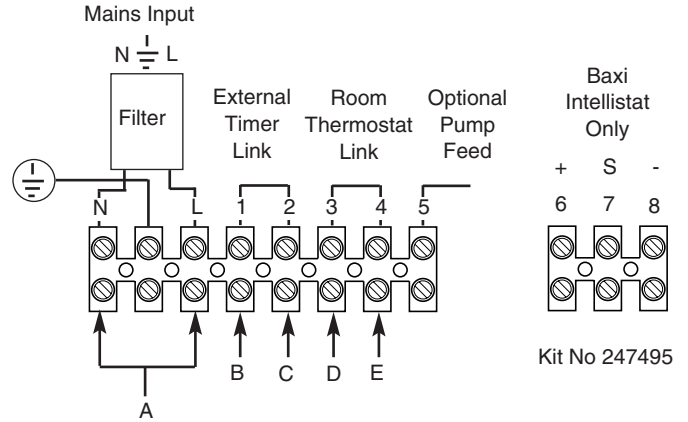
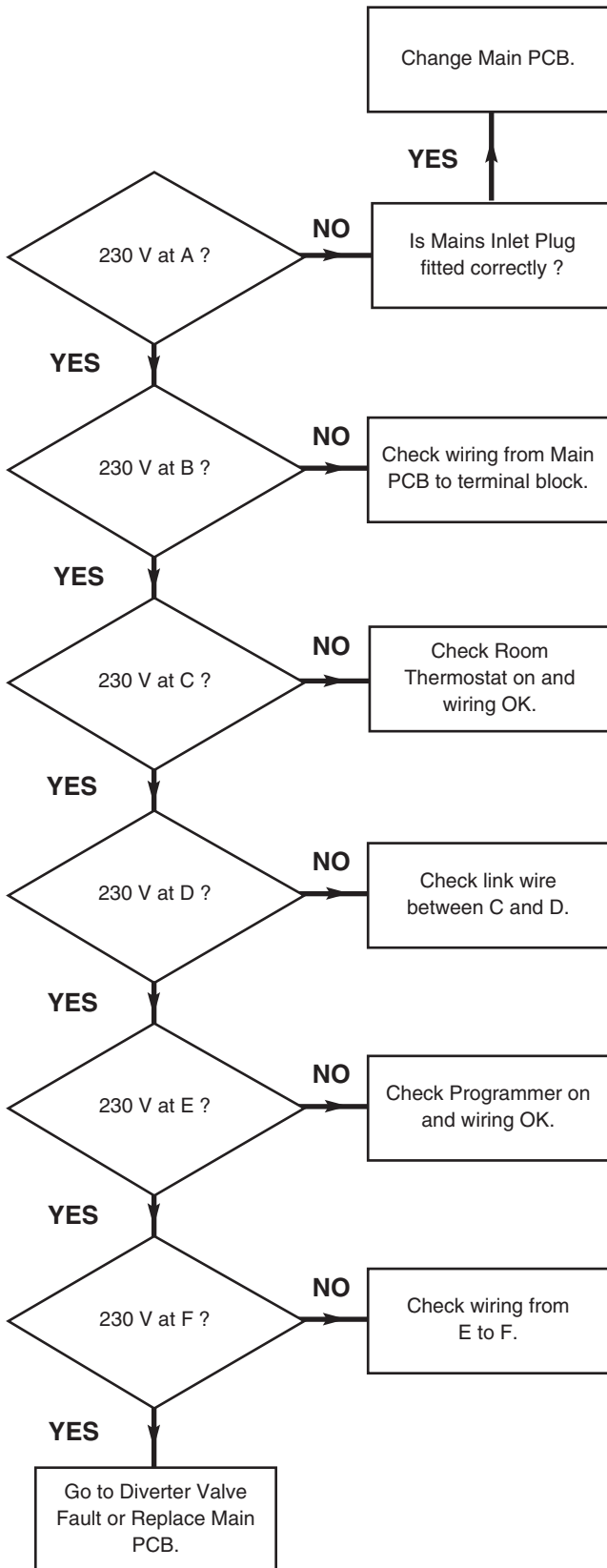


Fan Temperature Overheat Lockout



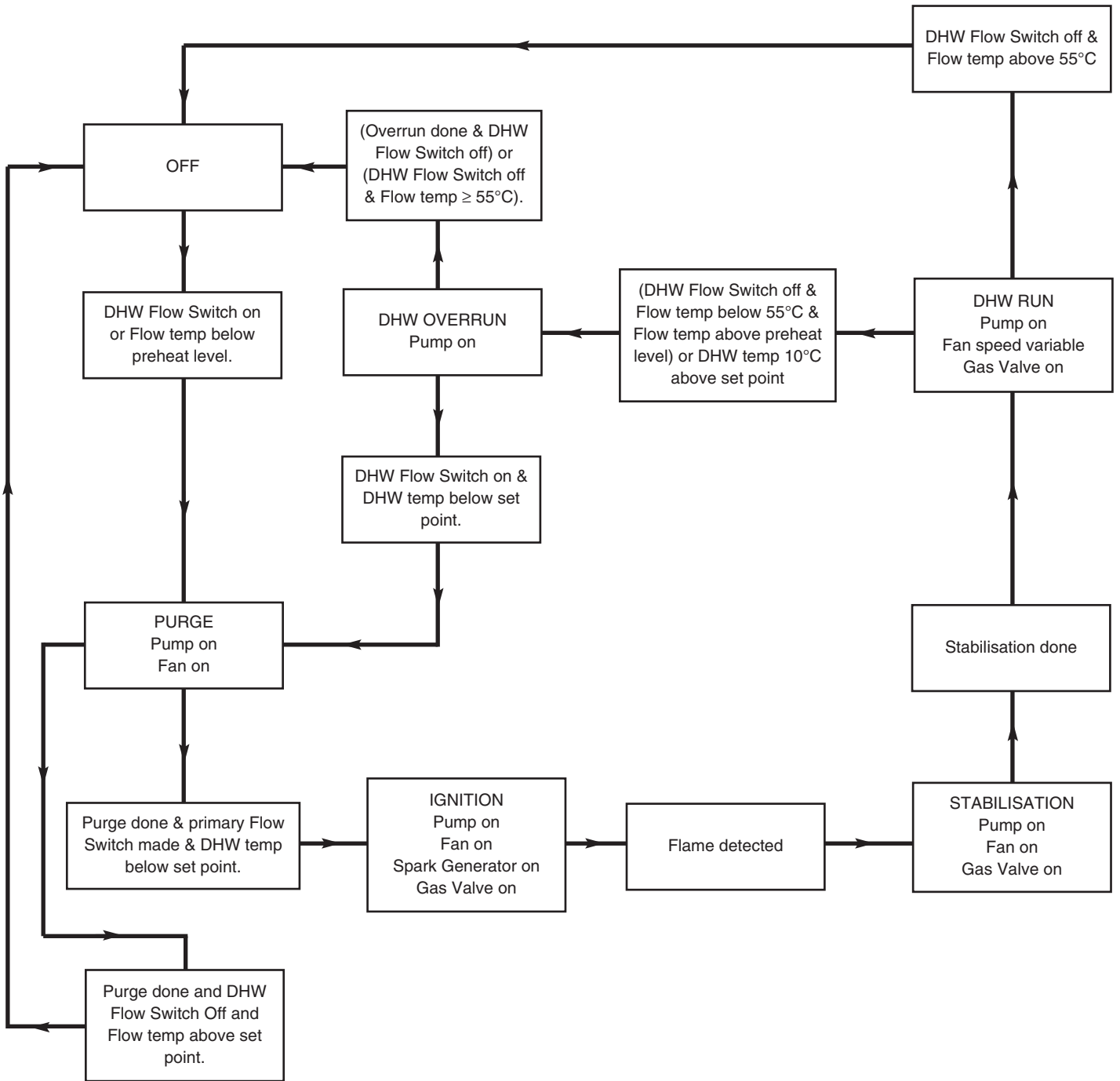
Condensate Trap Blocked





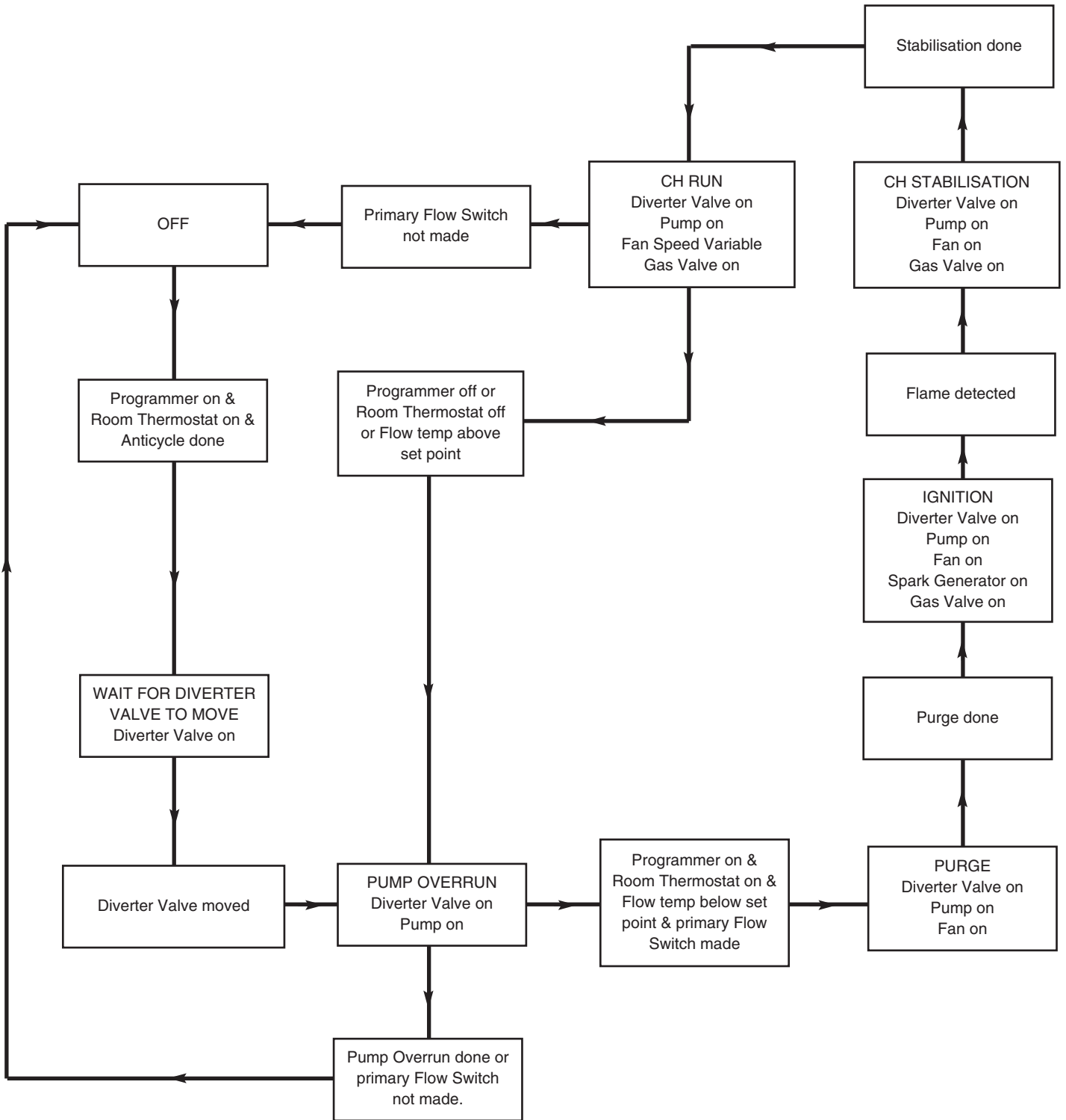
16.0 Operational Flow Chart

16.1 Domestic Hot Water Mode



16.0 Operational Flow Chart

16.2 Central Heating Mode



Baxi manufacture a comprehensive range of products for the domestic heating market.

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