

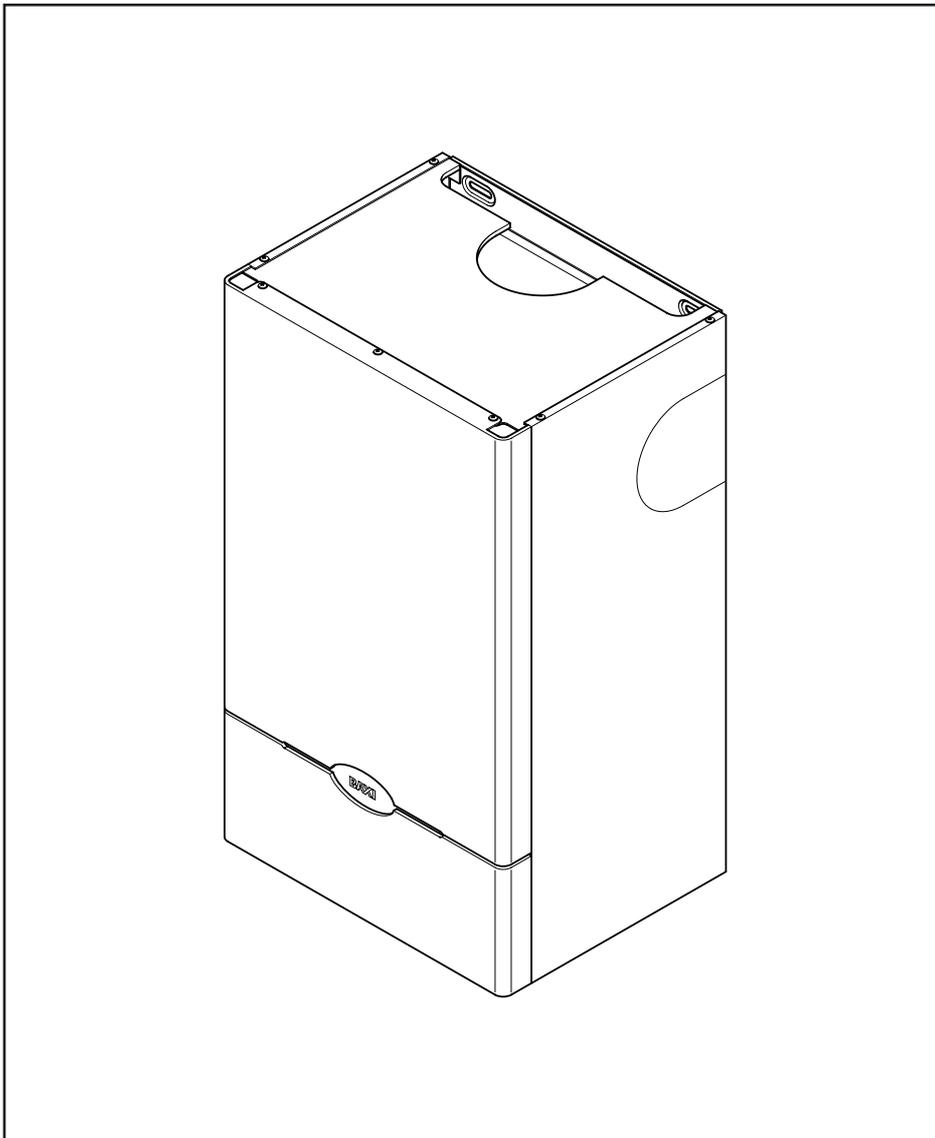
# Baxi Solo 3 PFL Range

Wall Mounted Powered Flue

Gas Fired Central Heating Units

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## Installation and Servicing Instructions



**BAXI**

## Natural Gas

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**Baxi Solo 3 PFL 30**  
G.C.No. 41 075 20

**Baxi Solo 3 PFL 40**  
G.C.No. 41 075 21

**Baxi Solo 3 PFL 50**  
G.C.No. 41 075 22

**Baxi Solo 3 PFL 60**  
G.C.No. 41 075 23

**Baxi Solo 3 PFL 70**  
G.C.No. 41 075 24

**Baxi Solo 3 PFL 80**  
G.C.No. 41 075 30

Baxi UK Limited 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 built 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 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 efficiency requirements for new hot water boilers fired with liquid or gaseous fuels:-

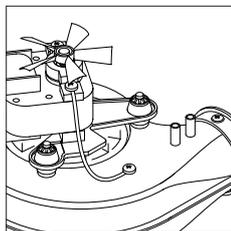
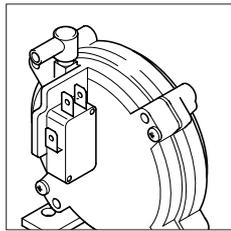
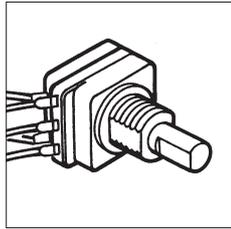
Type test for purpose of Regulation 5 certified by:  
Notified Body 0086.

Product/Production certified by:  
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For GB / IE only.



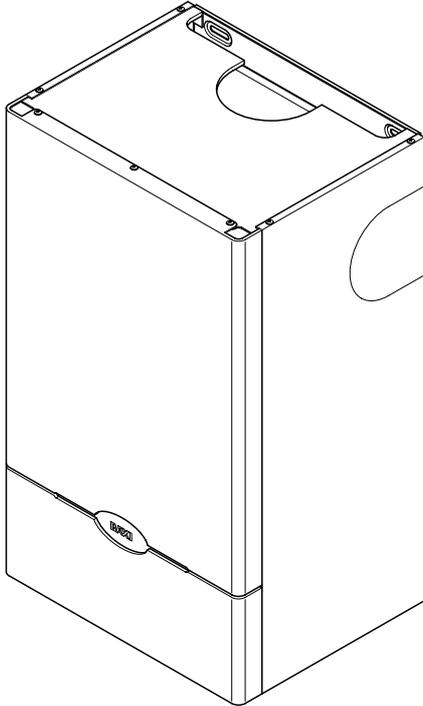
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# 1.0 Introduction



## “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. The Log Book must be left with the user.

**IMPORTANT:** State of adjustment - Check that the state of adjustment given on the data plate is compatible with local supply conditions.

**B.S. Codes of Practice**, most recent version should be used

STANDARD	SCOPE
B.S. 6891	Gas Installation.
B.S. 5546	Installation of hot water supplies for domestic purposes.
B.S. 5449	Forced circulation hot water systems.
B.S. 6798	Installation of gas fired hot water boilers.
B.S. 5440: Pt 1	Flues.
B.S. 5440: Pt 2	Ventilation.
B.S. 7593	Water Treatment.
B.S. 4814	Expansion vessels for hot water systems.
B.S. 6283	Safety and control devices for use in hot water systems.

## 1.1 Description

1. The Baxi Solo 3 PFL is a gas fired room sealed fan assisted central heating boiler with outputs as shown in the table below

Model	Heat Output
30	8.79kW (30,000 Btu/h)
40	11.72kW (40,000 Btu/h)
50	14.65kW (50,000 Btu/h)
60	17.58kW (60,000 Btu/h)
70	20.5kW (70,000 Btu/h)
80	23.44kW (80,000 Btu/h)

2. Each appliance is preset at a heat input rating and is designed for use on **NATURAL GAS** only.

3. All boilers are suitable for fully pumped open vented central heating and domestic hot water systems and sealed systems.

4. The appliance data badge is fitted to the combustion box door.

## 1.2 Installation

1. The appliance is suitable for installation only in G.B. and I.E. and should be installed in accordance with the rules in force. For Ireland install in accordance with I.S.813 “**INSTALLATION OF GAS APPLIANCES**”. The installation must be carried out by a CORGI Registered Installer or other competent person and be in accordance with the relevant requirements of the current **GAS SAFETY** (Installation and Use) **REGULATIONS**, the **BUILDING REGULATIONS** (Scotland) (Consolidation), the **LOCAL BUILDING REGULATIONS**, the **CURRENT I.E.E. WIRING REGULATIONS** and the bye laws of the Local Water Undertaking. Where no specific instructions are given, reference should be made to the relevant current **BRITISH STANDARD CODES OF PRACTICE**.

2. **All systems must be thoroughly flushed and treated with inhibitor (see Section 3.1).**

## 1.3 Important Information

### Man-Made Mineral Fibre

a) Some component parts of this appliance (insulation pads, gaskets and rope seals) are manufactured from man-made mineral fibre.

b) Prolonged or excessive exposure to this material may result in some irritation to the eyes, skin or respiratory tract.

c) It is advisable to wear gloves when handling these items.

d) 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.

e) Always thoroughly wash hands after installation, servicing or changing components.

f) When disposing of any items manufactured from man-made mineral fibre care must be exercised.

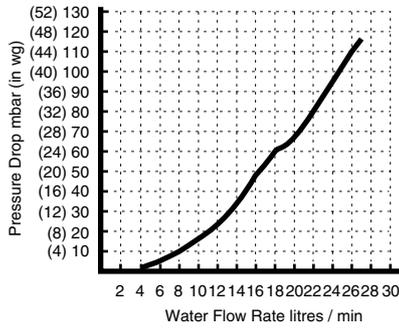
g) If any irritation of the eyes or severe irritation of the skin is experienced seek medical attention.

## 2.0 Technical Data

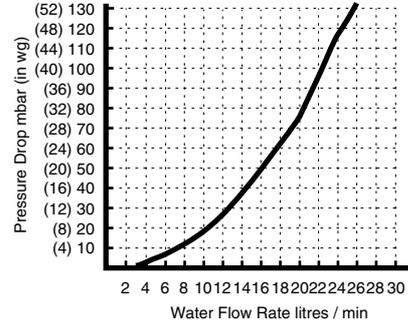
Model		30	40	50	60	70	80
<b>P Heat Output</b>	kW	8.79	11.72	14.65	17.58	20.5	23.44
	Btu/h	30,000	40,000	50,000	60,000	70,000	80,000
<b>Q Heat Input</b>	kW	10.99	14.65	18.32	21.98	25.64	29.31
	Btu/h	37,500	50,000	62,500	75,000	87,500	100,000
<b>Burner Pressure</b>	mbar	16.0 ±0.5	16.0 ±0.5	16.0 ±0.5	16.0 ±0.5	16.0 ±0.5	16.0 ±0.5
	in wg	6.4 ±0.2	6.4 ±0.2	6.4 ±0.2	6.4 ±0.2	6.4 ±0.2	6.4 ±0.2
<b>Gas Rate</b> (after 10 mins)	CV 38mj/m <sup>3</sup>	1.04m <sup>3</sup> /h	1.39m <sup>3</sup> /h	1.74m <sup>3</sup> /h	2.08m <sup>3</sup> /h	2.43m <sup>3</sup> /h	2.78m <sup>3</sup> /h
		36.86ft <sup>3</sup> /h	49.0ft <sup>3</sup> /h	61.3ft <sup>3</sup> /h	73.5ft <sup>3</sup> /h	86.75ft <sup>3</sup> /h	99.24ft <sup>3</sup> /h
<b>Lifting Weight</b>	kg	23.1	23.1	23.1	32.2	32.2	32.2
	lbs	51	51	51	71	71	71
<b>Water Content</b>	litres	1.1	1.1	1.1	1.6	1.6	1.6
	pints	1.9	1.9	1.9	2.8	2.8	2.8
<b>Outercase</b>	Height	600mm	600mm	600mm	600mm	600mm	600mm
<b>Dimensions</b>	Width	350mm	350mm	350mm	462mm	462mm	462mm
	Depth	287mm	287mm	287mm	287mm	287mm	287mm
<b>Flue Terminal</b>	Diameter	100mm					
<b>Dimensions</b>	Depth	70mm					
<b>Static Head</b>	Max	30 metres (100 ft)					
	Min	1 metre (3.25 ft)					
<b>Connections</b>	Flow	22mm Cu tail					
	Return	22mm Cu elbow					
<b>Heat Exchanger</b>		Cast iron monobloc					
<b>Low Head</b>	Min	0.2m (8 in)					
<b>System Design</b>		fully pumped open vented and sealed systems					
<b>Gas Connection</b>		RC <sup>1</sup> / <sub>2</sub> (1/2 in BSPT)					
<b>Electrical Supply</b>		230V ~ 50Hz fused 5A - 90W					
<b>Controls</b>		boiler thermostat, intermittent pilot & electronic flame sensing					
		timed pump over-run, frost protection thermostat					
<b>Internal Fuse</b>		4AF 250V to BS4256 situated on control board					

## 2.0 Technical Data

### Hydraulic Resistance Charts

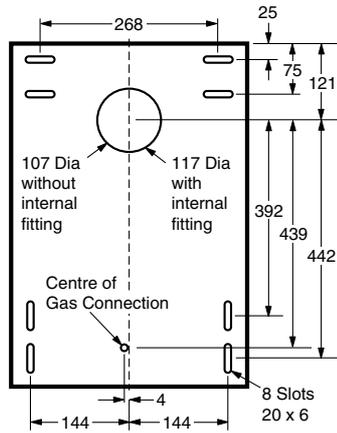


30, 40 and 50 models

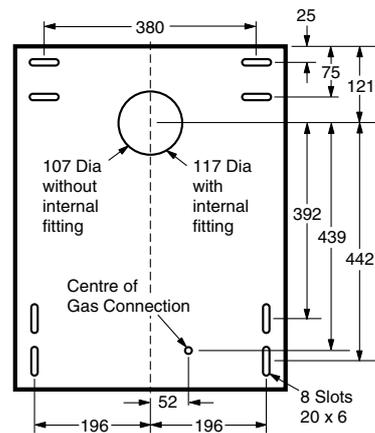


60, 70 and 80 models

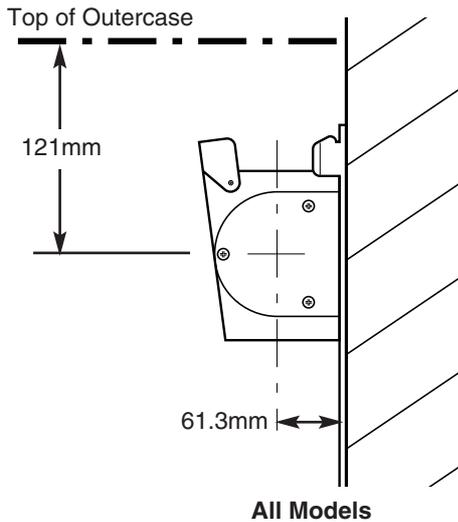
### Templates



Layout of Fixing Points  
30, 40 and 50 models



Layout of Fixing Points  
60, 70 and 80 models



### SEDBUK Declaration For Solo 3 PFL

Model	Seasonal Efficiency (SEDBUK) (%)
30	79.4
40	78.4
50	78.0
60	78.5
70	78.2
80	79.0

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

- This appliance is only intended for installation on a governed supply.
- PMS = 3 bar pressure class 2
- Max CH water pressure 3 bar
- Type C<sub>12</sub>, C<sub>32</sub>, C<sub>52</sub>
- Nox class 1
- Appliance category I<sub>2H</sub> 2H - G20 - 20mbar
- Ref: 86/AU/588
- Burner Injector Sizes: 30=B12 40=B13 50=B14 60=B15 70=B30 80=B16
- This boiler is designed to operate at a maximum water temperature of 85° C.

## 3.0 System Details

### 3.1 Water Circulating Systems

1. The appliance is suitable for use with open vent fully pumped systems and sealed systems where additional control protection is required. **The following conditions should be observed on all systems:**

- The static head must not exceed 30m (100ft) of water.
- The boiler must not be used with a direct cylinder.
- The boiler is fitted with a timed pump overrun that will operate for approximately 8 minutes.
- Drain cocks should be fitted to all system low points.
- All gas and water pipes and electrical wiring must be installed in a way which would not restrict the servicing of the boiler.
- Position isolating valves as close to circulating pump as possible.

#### Treatment of Water Circulating Systems

- All recirculatory water systems will be subject to corrosion unless an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.
- 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, or Fernox Superfloc. Full instructions are supplied with the products, but for immediate information please contact BetzDearborn (0151 420 9563) or Fernox (01799 550 811) directly.
- For long term protection against corrosion and scale, after flushing it is recommended that an inhibitor such as BetzDearborn Sentinel X100, or Fernox MB-1 or Copal is dosed in accordance with the guidelines given in BS 7593:1992.

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

- It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the inhibitor manufacturer's instructions. (Test kits are available from inhibitor stockists.)
- For information or advice regarding any of the above contact the Baxi Helpline.

### 3.2 Bypass Requirements

1. The boiler is fitted with a pump overrun device which allows the removal of residual heat from the boiler.

**NOTE:** The pump overrun will operate for approximately 8 minutes. The system design must therefore, always provide an open circuit for water to circulate between the boiler flow and return.

2. See information opposite "Examples of systems which require a bypass are".

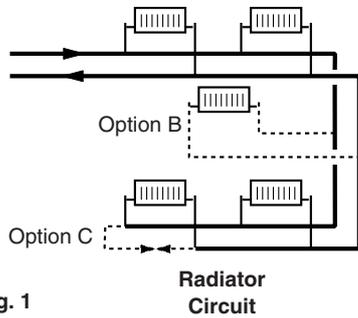


Fig. 1

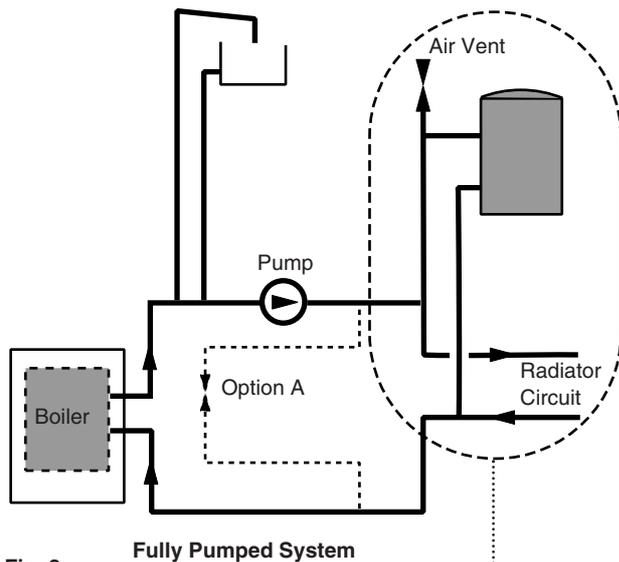


Fig. 2

#### Examples of systems which require a bypass are:-

- A system controlled by non-electrical valves e.g. mechanical thermostatic control valves both on the radiators and the hot water circuit.
- A system using twin zone valves (e.g. Honeywell 'S' Plan) (Fig. 3).
- A system using a 3 port diverter valve (Fig. 4) does not normally require a bypass therefore this system is recommended. The exception to this is where thermostatic radiator valves are used and then a bypass is required.

**NOTE:** For 'S' Plan systems the bypass flow circuit must be situated between pump and zone valves as option A shows (Fig. 2).

#### The bypass circuit can be:-

- For all boilers a minimum of 6 metres of 22mm copper pipe, (measured between the boiler flow and return connections). It should be fitted with a lock shield valve opened at least 1 full turn or a proprietary bypass valve set to give a minimum flow rate of 8 litres/min (1.8 gal/min) (Option C, Fig. 1 & Option A, Fig.2).
- A radiator fitted with lock shield valves. The radiator output should be a minimum of 800 watts (2,700 Btu/h). Typically a convector type radiator with an area of 3750 cm<sup>2</sup> (4 sq ft) is adequate (Option B, Fig. 1).
- Any circuit that provides the same operating conditions as option A or option B (Figs. 1 & 2).

Fig. 4

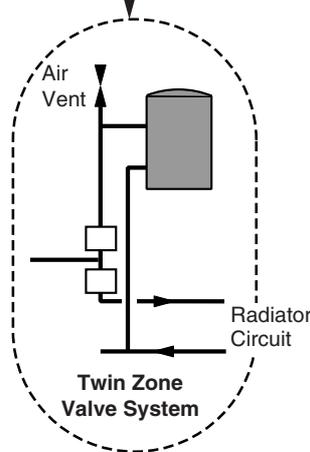
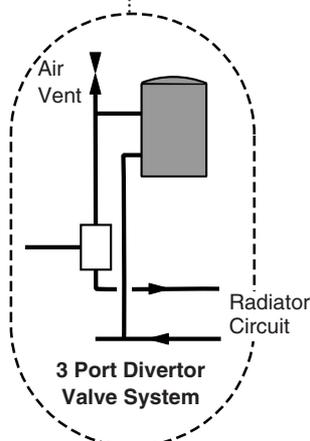


Fig. 3

#### Typical Systems Arrangement



## 3.0 System Details

### 3.3 Pipework

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

2. An 11 °C (20°F) drop in temperature across the system is recommended.

3. In systems using non-metallic pipework it is necessary to use copper pipe for the boiler Flow and Return. The copper must extend at least 1 metre from the boiler and include any branches (Fig. 5). The copper pipe must not be insulated.

### 3.4 System Controls

1. For optimum operating conditions, the heating system into which the boiler is installed should include a control system.

2. Such a system will comprise of a timer control and separate room or cylinder thermostats as appropriate.

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

4. Operation of the system under control of the boiler thermostat only does not produce the best results.

5. A frost thermostat is fitted integrally to the appliance controls and will protect the boiler from frost damage by operating the burner when the water temperature in the boiler drops towards freezing point. The boiler will fire as necessary to maintain a temperature above freezing.

**NOTE:** The frost thermostat operates even if the boiler thermostat is in the OFF ('0') position and it is necessary therefore, if the system is drained, for the external electrical and gas supplies to be isolated. It is recommended that a label be affixed to the appliance to draw attention to the fact that the system has been drained.

### 3.5 Low Head Installation

#### For boilers up to 50,000 Btu/h output

1. Using a close coupled arrangement the minimum head is as shown in the diagrams (Figs. 6 & 7) subject to the following conditions:

- The correct heat input.
- The pump being adjusted to give an 11°C drop across the boiler.
- The pump must be fitted on the flow.
- The pump must be fitted in accordance with the pump manufacturer's instructions.
- The open vent pipe must be taken up from a tee in a horizontal section of the flow pipe.

#### Alternative Low Head Installation for all Solo 3 PFL (Fig. 8)

2. If less height is available then a combined vent and feed pipe may be connected. This must be a minimum of 22mm diameter. It is recommended that an air separator is fitted when using a combined feed and vent pipe.

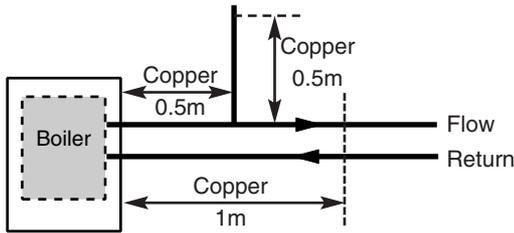


Fig. 5

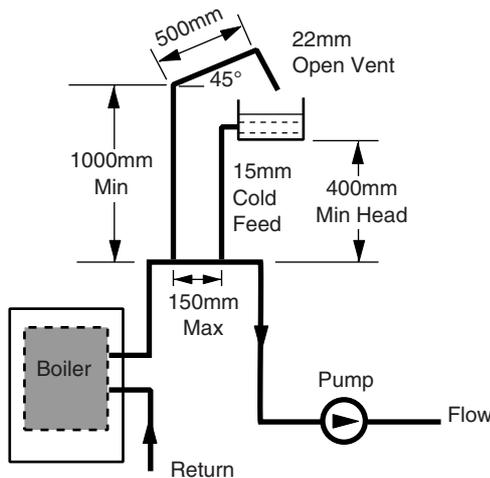


Fig. 6 Typical Low Head Installation

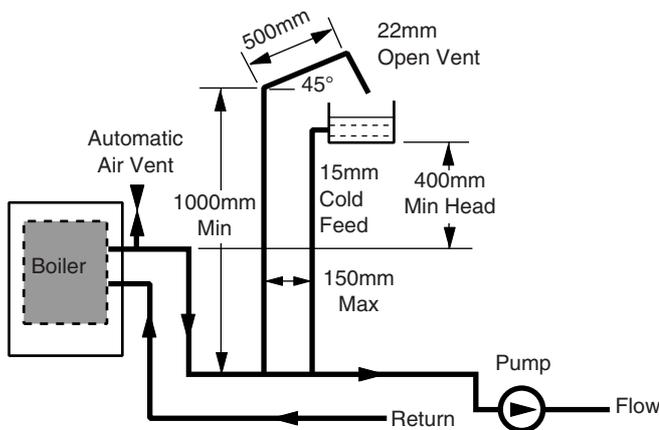


Fig. 7 If Conditions Require, This System Possible

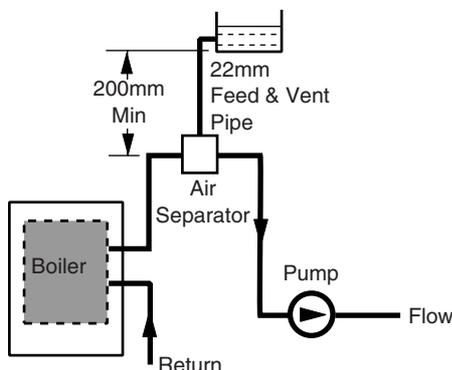


Fig. 8 Alternative Low Head Installation

## 3.0 System Details

### 3.6 Sealed Systems (Fig. 9)

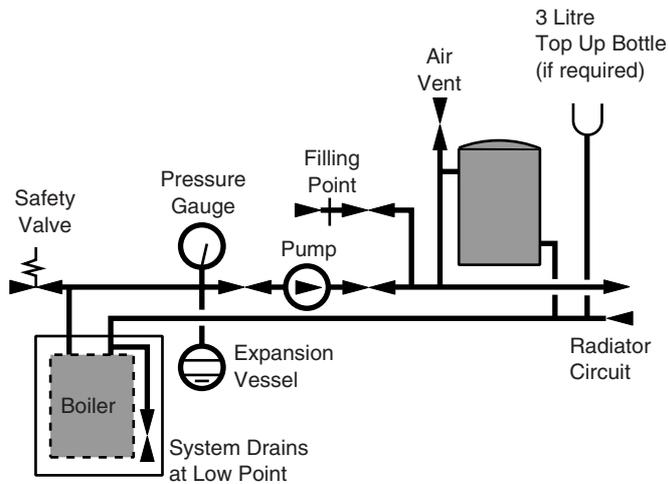


Fig. 9

Max Boiler Flow  
Temp = 82° C

Method of determining minimum value of expansion vessel volume for sealed systems using Baxi Boilers

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

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

Table. 1

#### NOTE

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

1. **SAFETY VALVE** - A safety valve complying with the requirements of BS 6283 Part 1 must be fitted close to the boiler on the flow pipe by means of a horizontal or vertically upward connection with no intervening valve or restrictions and should be positioned to facilitate testing. The valve should be pre-set and non-adjustable to operate at a pressure of 3 bar (45 lbf/in<sup>2</sup>). It must be arranged to discharge any water or steam through a pipe to a safe outlet position.

2. **PRESSURE GAUGE** - A pressure gauge of minimum range 0-4 bar (0-60 lbf/in<sup>2</sup>) with a fill pressure indicator must be fitted to the system, preferably at the same point as the expansion vessel in an easily visible position.

3. **EXPANSION VESSEL** - An expansion vessel complying with the requirements of BS 4814 must be fitted to the system by means of a connection close to the inlet side of the circulating pump in accordance with the manufacturers instructions, the connecting pipe being unrestricted and not less than 15mm (1/2 in) nominal size. The volume of the vessel should be suitable for the system water content and the nitrogen or air charge pressure should not be less than the system static head (See Table. 1).

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

4. **FILLING POINT** - A filling point and an approved stop valve to BS 1010 must be fitted at low level and the method used for filling the system should be approved by the local water undertaking. For further details see BS 6798.

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

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

7. **HOT WATER STORAGE** - The hot water storage vessel must be of the indirect coil type.

8. **SYSTEM COMPONENTS** - All components used in the system must be suitable for operation at 110°C (230°F) and at the pressure allowed by the safety valve.

## 4.0 Site Requirements

### 4.1 Location

1. The appliance may be fitted to any suitable wall with the flue passing through an outside wall and discharging to atmosphere in a position permitting satisfactory removal of combustion products and providing an adequate air supply. The appliance should be fitted within the building unless otherwise protected by a suitable enclosure ie. garage or outhouse. (The appliance may be fitted inside a cupboard. Cooling ventilation and insulation of the cupboard are not required, see section 4.5.)

2. If the appliance is fitted in a room containing a bath or shower reference must be made to the Current I.E.E. Wiring Regulations and Building Regulations. If the appliance is to be fitted into a building of timber frame construction then reference must be made to the Institute of Gas Engineers document UP7 - Guide for Gas Installations in Timber Framed Dwellings.

3. Recommendations for flues are given in BS 5440 Part 1.

### 4.2 Minimum Clearances (Fig. 10)

1. A flat vertical area is required for the installation of the boiler measuring as shown in the table below for each model.

Model	Height mm (in)	Width mm (in)
30	750 (29 <sup>1</sup> / <sub>2</sub> )	360 (14 <sup>1</sup> / <sub>8</sub> )
40	750 (29 <sup>1</sup> / <sub>2</sub> )	360 (14 <sup>1</sup> / <sub>8</sub> )
50	750 (29 <sup>1</sup> / <sub>2</sub> )	360 (14 <sup>1</sup> / <sub>8</sub> )
60	750 (29 <sup>1</sup> / <sub>2</sub> )	472 (18 <sup>5</sup> / <sub>8</sub> )
70	750 (29 <sup>1</sup> / <sub>2</sub> )	472 (18 <sup>5</sup> / <sub>8</sub> )
80	750 (29 <sup>1</sup> / <sub>2</sub> )	472 (18 <sup>5</sup> / <sub>8</sub> )

2. These dimensions include the necessary clearances around the appliance 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 appliance.

3. If fitted inside a cupboard the clearance of 300mm shown is only necessary when the cupboard door is open. A clearance of 5mm (<sup>3</sup>/<sub>16</sub> in) is required when the door is closed.

### 4.3 Flue Position

1. For installations where the flue terminal is inaccessible from the outside, an internal fitting kit is available. This can be obtained free of charge from your local merchant.

2. The following guide lines indicate the general requirements for siting balanced flue terminals.

3. If the terminal is fitted within 1 metre (39in) of a plastic gutter, within 500mm (19<sup>1</sup>/<sub>2</sub> in) of a painted eave or a painted gutter, an aluminium shield of at least 1 metre (39in) long should be fitted to the underside of the gutter or painted surface. An air space of 5mm (<sup>3</sup>/<sub>16</sub> in) should be left between shield and gutter (Fig. 11).

4. 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.

5. If the outer surface of an outside wall is of combustible material, it should be protected by fitting the flue trim provided.

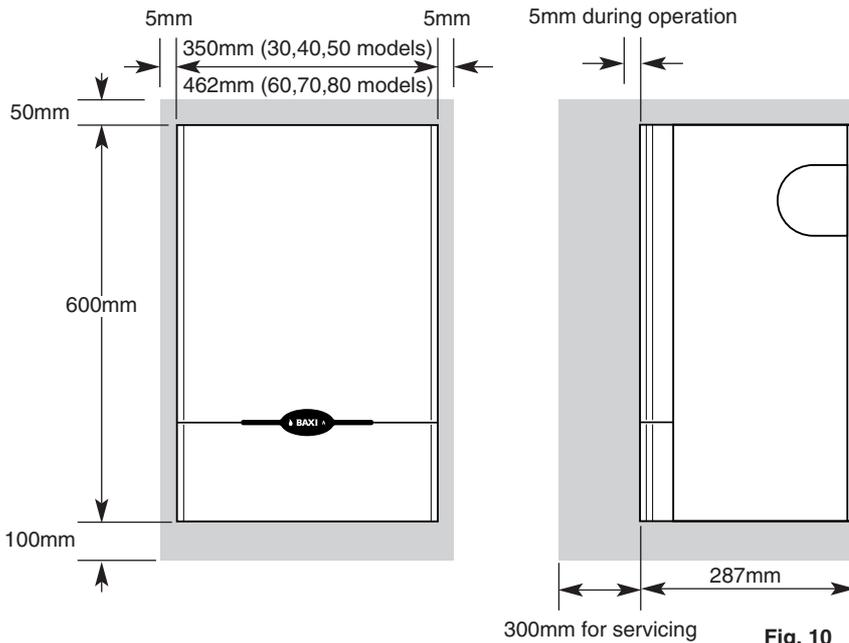


Fig. 10

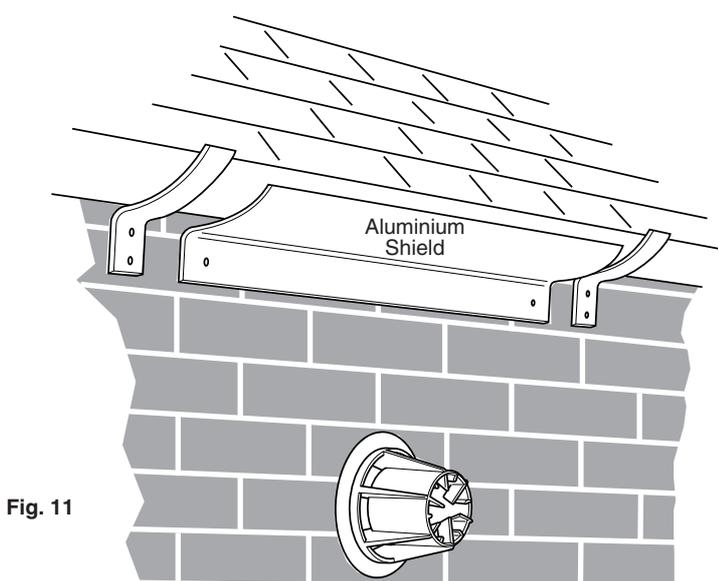


Fig. 11

## 4.0 Site Requirements

### 4.3 Flue Position (Cont)

**WARNING** - The addition of anything that may interfere with the normal operation of the appliance (e.g. FLUE DAMPERS, ECONOMISERS, etc.) without the express written permission of Baxi UK Limited could invalidate the appliance warranty and infringe the GAS SAFETY (Installation and Use) REGULATIONS.

If a terminal is less than 2 metres (78 3/8 in) above a balcony, above ground or above a flat roof to which people have access then a suitable terminal guard must be provided.

6. The flue terminal position must always be in accordance with the current edition of B.S. 5440 Part 1, and either Part J of the Building Regulations England and Wales or Part F of the Building Standards (Scotland) Regulations as appropriate.

7. Table 2 and Fig. 12 show the positioning of the flue terminal relative to buildings and other structures.

8. The dimensions of the flue terminal are shown on page 5.

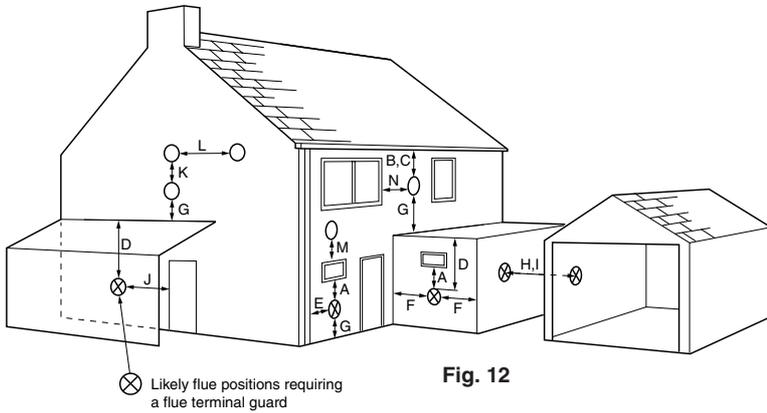


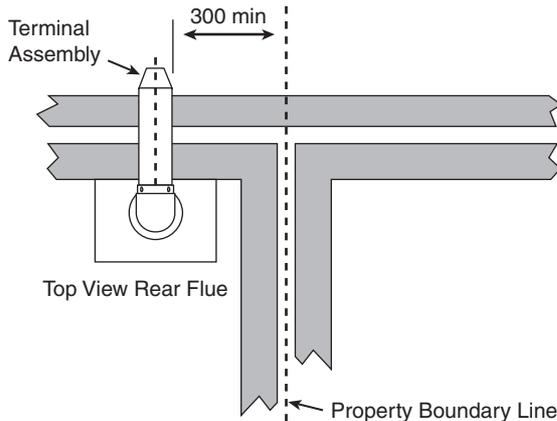
Fig. 12

Horizontal Terminal Position with Minimum Distance (mm)

A	Directly below an openable window, air vent or any other ventilation opening.	300
B	Below gutter, drain/soil pipe.	150
C	Below eaves.	200
D	Below a balcony/car port roof.	200
E	From vertical drain pipes and soil pipes.	150
F	From internal or external corners.	300
G	Above adjacent ground or balcony level.	300
H	From a surface or boundary facing a terminal.	600
I	Facing a terminal.	1200
J	From opening (door/window) in carport into dwelling.	1200
K	Vertically from a terminal on the same wall.	1500
L	Horizontally from a terminal on the same wall.	300
M	Above an opening, air brick, opening window etc.	300
N	Horizontally to an opening, air brick, opening window etc.	300

Table. 2

**NOTE:** Scotland Only - The distance from a fanned draught appliance terminal installed at right angles to a boundary may not be less than 300mm in accordance with the diagram below.



Maximum lengths for side flues using the standard telescopic flue kit

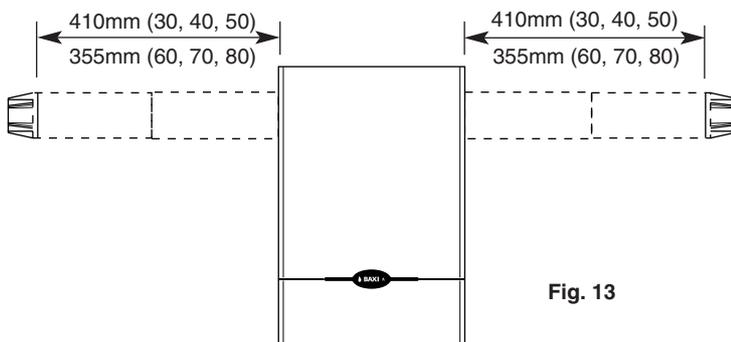


Fig. 13

### 4.4 Flue Dimensions

1. Flue extensions are available as optional extras for installations up to 3 metres (118 3/8 in).

2. Vertical flue kits are available up to 4 metres in length. Vertical twin flue kits are available up to 15 metres in length.

3. The standard telescopic flue is suitable for use with rear flue lengths between 100mm (4in) and 500mm (19 5/8 in).

**NOTE:** Maximum flue length when flued to the left or right is

410mm (16in) - 30, 40, 50 models  
355mm (14in) - 60, 70, 80 models

4. Where it is intended to pass the flue through a combustible wall or timber framed dwelling, reference should be made to the Institute of Gas Engineers document UP7 - Guide for Gas Installations in Timber Framed Dwellings.

5. If the flue is more than 1 metre (39 in) long, it is required that it is supported.

6. All above dimensions are taken from the respective faces of the outer case.

## 4.0 Site Requirements

### 4.5 Ventilation of Compartments

1. Where the appliance is installed in a cupboard or compartment, no air vents are required.

**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. B.S. 5440 refers to room sealed appliances installed in compartments. The Solo 3 PFL will run sufficiently cool without ventilation.

### 4.6 Gas Supply (Fig. 14)

1. The gas installation should be in accordance with BS 6891.
2. The connection of the appliance is a RC $\frac{1}{2}$  ( $\frac{1}{2}$  in BSPT internal) located at the rear of the gas cock.
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 appliance gas connection.**

### 4.7 Electrical Supply

External wiring must be correctly earthed, polarized and in accordance with CURRENT I.E.E. WIRING REGULATIONS.

The mains supply is 230V ~ 50Hz fused at 5A.

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

Connection may be made via a fused double-pole isolator with a contact separation of a least 3mm in all poles and serving the appliance and system controls only.

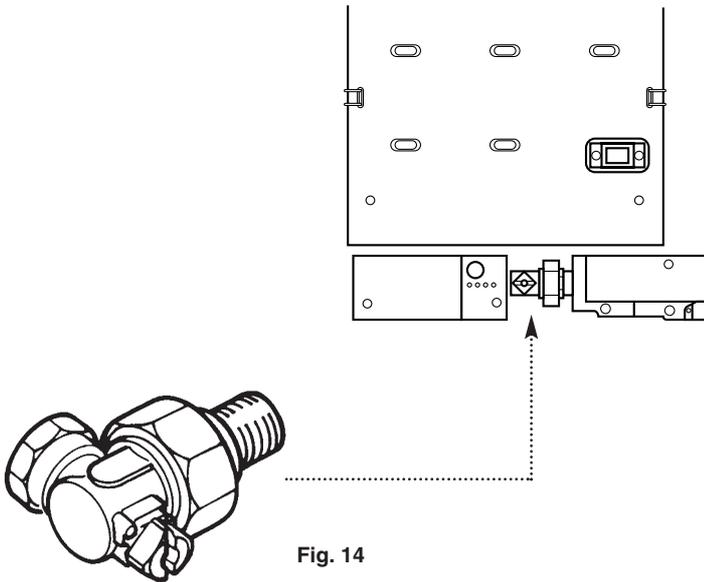


Fig. 14

## 4.0 Site Requirement

### 4.8 Flue Options

1. The Baxi Solo 3 PFL can be fitted with flue systems as illustrated.

2. The standard flue is suitable only for horizontal applications.

3. Maximum permissible equivalent flue lengths are:-

Horizontal	3.0 metres
Vertical	4.0 metres
Vertical (Twin)	20.0 metres

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

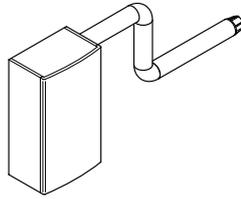
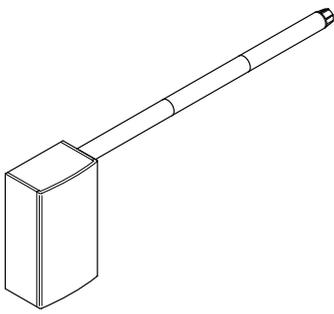
Concentric Pipes:	
45° bend	0.5 metres
90° bend	1.0 metres

Twin Flue Pipes		
	Air Duct	Flue Duct
45° bend	1.3 metres	3.3 metres
90° bend	4.8 metres	12.0 metres

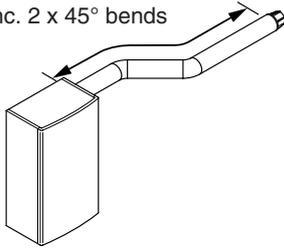
5. The illustrations opposite show examples of maximum equivalent lengths.

6. Full details of part numbers and descriptions of all optional flue components and kits can be found in Baxi Gas Central Heating Boilers Installers' Guide.

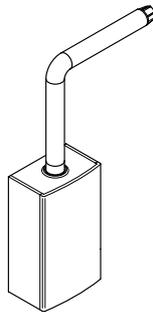
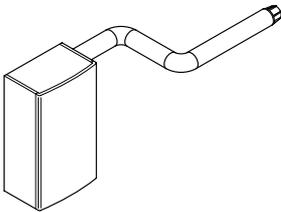
7. Instructions for guidance and fitting are included in each kit.



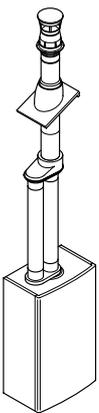
Maximum Length = 2m inc. 2 x 45° bends



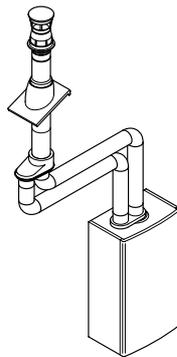
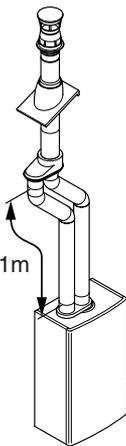
#### Horizontal Flues



#### Vertical Flues (Twin Pipe)

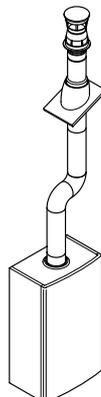
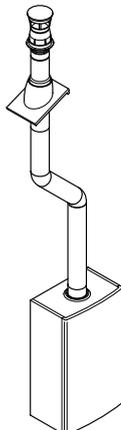
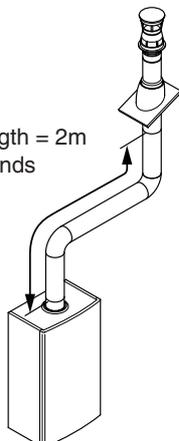
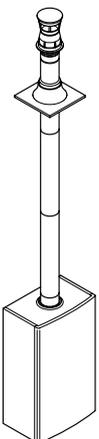


Maximum Length = 21m inc. 4 x 45° bends



#### Vertical Flues

Maximum Length = 2m inc. 2 x 90° bends



## 5.0 Installation

### 5.1 Initial Preparation

1. Unpack contents of carton.
2. Remove the lower door panel from the outer case. Remove the 2 screws holding the outer case to the combustion box.
3. Place the ready assembled outer case in a safe place until required.
4. Release the R clip from the top latch securing the combustion box to the back plate and release both latches (Fig. 15).
5. Lift and remove the combustion box from the back plate (Fig. 16). Place the combustion box on its back.

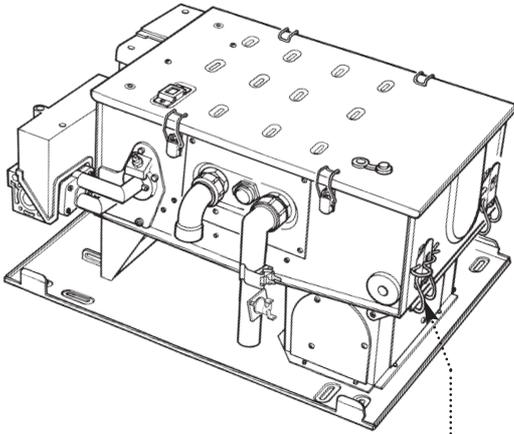


Fig. 15

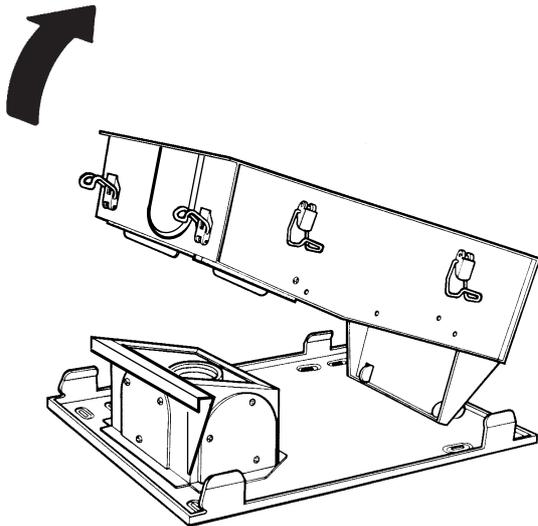


Fig. 16

**IMPORTANT** - When installing a Solo 3 PFL with a rear flue see section 5.2 before continuing the installation.

6. Proceed to the relevant section for flueing the appliance either to the Rear, Left, Right or Vertically.

**NOTE:** For Vertical flueing or flue lengths greater than standard, the relevant optional extra kits must be obtained and their instructions followed.

## 5.0 Installation

### 5.2 Fan Outlet Restrictor

#### Rear Flue only up to 500mm (19<sup>5</sup>/<sub>8</sub> in)

1. Release the four latches holding the combustion box door (Fig 18). Remove the combustion box door by pulling forward (Fig. 17).
2. Release the 5-pin electrical plug connecting the pressure switch and fan (Fig. 19). Withdraw the fan assembly by pulling forwards from the top edge (Fig. 17).
3. Take the sheetmetal restrictor (supplied in the kit of parts), check that the number stamped on the restrictor matches the appliance (e.g. 50 stamped on the restrictor is for PFL 50 appliance).
4. Fit the restrictor to the fan outlet flange, bending the 3 lugs equally ensuring the restrictor seals against the fan outlet flange (Fig. 20).
5. Re-assemble the fan assembly and combustion box door ensuring that the flexible tubes from the fan unit to the pressure switch are routed correctly and that they are not kinked or flattened (Fig. 21).

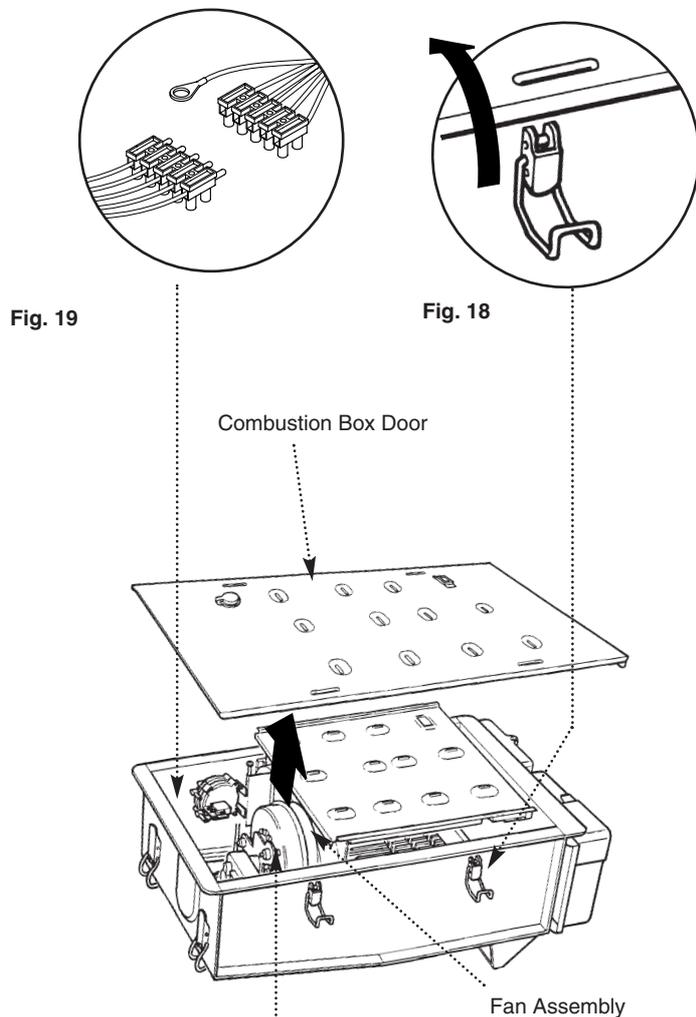


Fig. 17

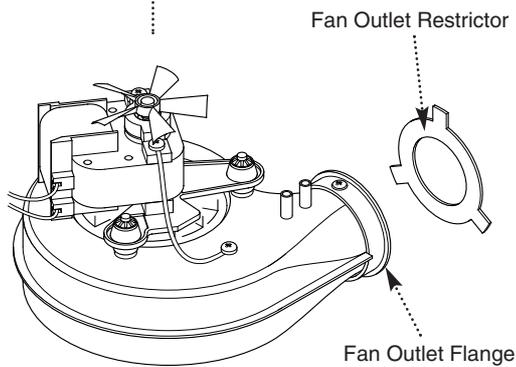


Fig. 20

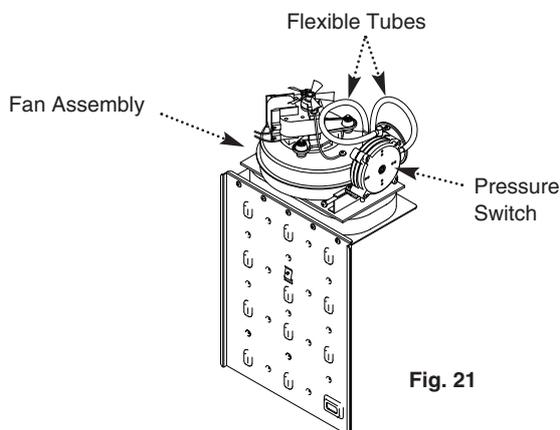


Fig. 21

## 5.0 Installation

### 5.3 Position the Boiler

1. Choose a suitable position for the boiler making necessary allowances for the minimum clearances required (see page 10).
2. Hold the wall template against the wall at the required boiler location. Ensure that the top of the template is level (Fig. 22).
3. The template represents the outer limits of the appliance plus the required minimum side clearance.
4. Mark the position of the flue hole centre and the inward pointing corners of the two triangular cutouts in the template. Mark the position of the four fixing holes. Where possible use the uppermost and lowest fixing hole positions, otherwise space the fixing holes as far apart as possible (Fig. 22).

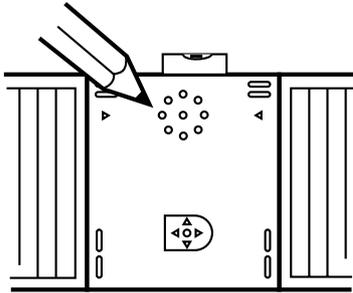


Fig. 22

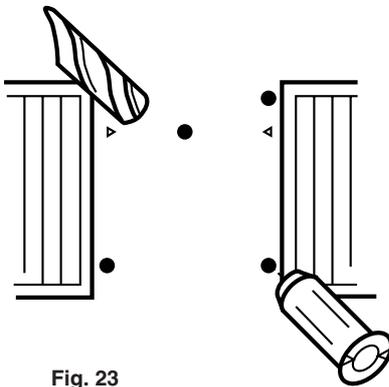


Fig. 23

### 5.4 Rear Flue

**Concentric flue kits are available to allow 3 metres horizontal and 4 metres vertical flueing. Twin flue at 80mm diameter will allow up to 15 metres vertical flueing.**

1. For installations where the flue terminal is inaccessible from the outside, an internal fitting kit is available. This can be obtained from your local merchant quoting Baxi Part N° 236441.
2. **If using the internal fitting kit a 117mm (4<sup>5</sup>/<sub>8</sub> in) diameter hole is required.**
3. Drill the anchorage holes 63mm (2<sup>1</sup>/<sub>2</sub> in) deep to accept suitable wall plugs (Fig. 23).
4. Using the previously marked flue hole centre, cut a hole approximately 107mm (4<sup>1</sup>/<sub>4</sub> in) diameter in the masonry for the 100mm (4 in) diameter flue duct. (When using a core drill, it is important to keep the drill level and square).

## 5.0 Installation

### 5.5 Rear Flue Preparation

Wall thickness 285mm - 500mm ( $11\frac{5}{16}$  -  $19\frac{3}{8}$ ) go to section 5.6.

Wall thickness 100mm - 284mm (4 in -  $11\frac{3}{16}$  in).

If the wall thickness is less than 285mm ( $11\frac{3}{16}$  in), it will be necessary to cut the components of the flue to the appropriate size.

1. Measure the wall thickness (Fig. 24). Mark this dimension on the **Flue Duct** from the flared end and cut the waste off the plain end (Fig. 25).

2. Take the **Flue Terminal Assembly** and measure from the terminal end the wall thickness and subtract 40mm (Fig. 26). Cut the waste off the plain end.

**Wall Thickness - 40mm (all boilers)**

3. The cardboard support should be installed onto the flue tubes to ensure the assembly is supported during cutting (Fig. 28 & 29).

4. Measure the same amount from the flange end of the **Air Duct** and cut the waste off the plain end (Fig. 27).

**Wall Thickness - 40mm (all boilers)**

5. Go to section 5.6.

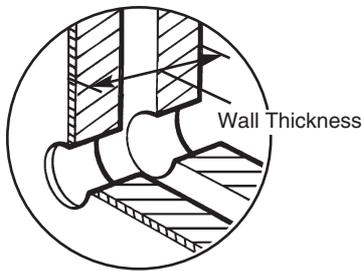


Fig. 24

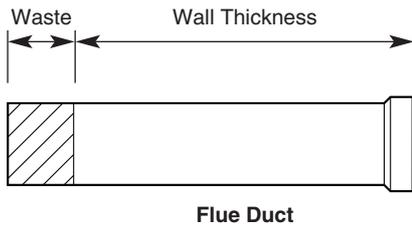


Fig. 25

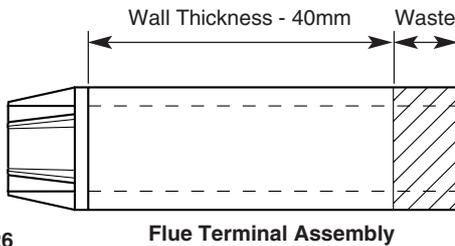


Fig. 26

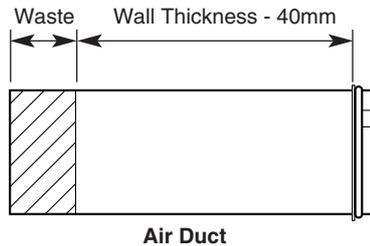


Fig. 27

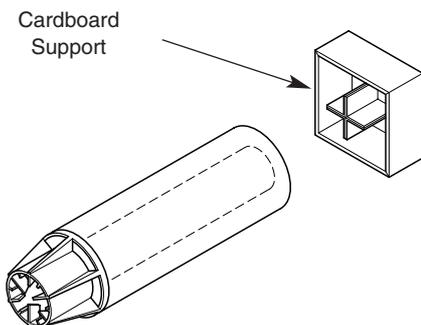


Fig. 28

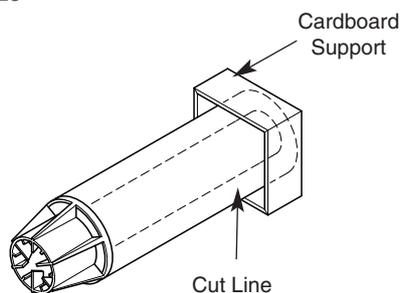


Fig. 29

## 5.0 Installation

### 5.6 Assembly of Rear Flue

1. Remove the rear air box blanking plate from the back plate by releasing the three screws (Fig. 30).
2. Remove the blanking cap at the rear of the turret, by pushing and turning anti-clockwise to release the bayonet fitting (Fig. 30).
3. Locate the flared end of the flue duct over the bayonet fitting on the turret, taking care not to damage the 'O' ring. Lock the flue duct in place by pressing in and turning clockwise (Fig. 31).
4. Engage the bayonet slots of the air duct over the location lugs on the back plate opening and press and turn clockwise to secure the air duct to the back plate (Fig. 32).
5. In order to increase security of the flue, the bayonet tags may be deformed to secure the flue in position.
6. Take the flue terminal assembly and engage on the flue and air ducts. Slide the flues together to the desired wall thickness.
7. Tape the sections of the outer ducts together with the tape provided ensuring a good seal is made (Fig. 33).

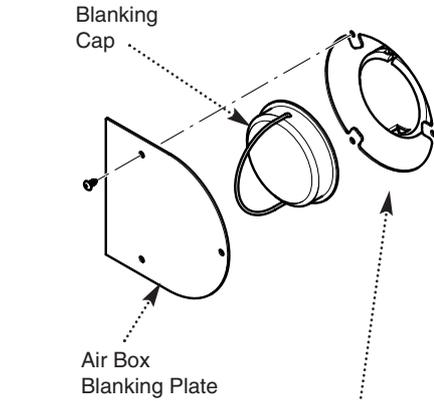


Fig. 30

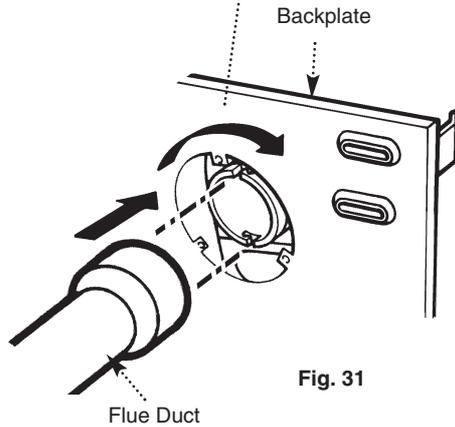


Fig. 31

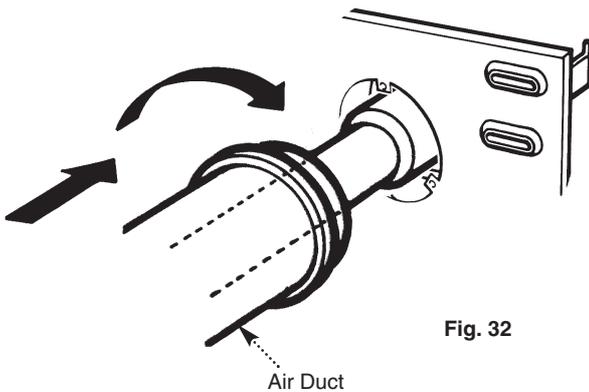


Fig. 32

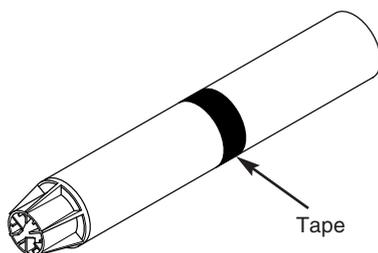


Fig. 33

## 5.0 Installation

### 5.7 Fitting the Back Plate

1. Engage the assembly into the hole previously cut in the wall and slide in place (Fig. 34).
2. Secure the assembly to the wall at the previously drilled anchorage points with suitable screws (Fig. 34). Before finally tightening the screws, check that the assembly is level.
3. Make good between the wall and the air duct outside the building if the internal fitting kit has not been used (Fig. 35).
4. The flue trim provided may be fitted if required, to neaten the make-up around the terminal (Fig. 37).

#### 5. To fit the flue terminal trim:

- a) The trim should be fitted once the flue is secure.
- b) Take the three edge clips from the kit and fit them equi-spaced onto the inner flange of the trim (Fig. 36).
- c) With the flanges towards the wall pass the trim over the terminal. If required a bead of sealant may be applied to the rear face of the trim.
- d) Push firmly on the trim to ensure the edge clips engage on the flue.

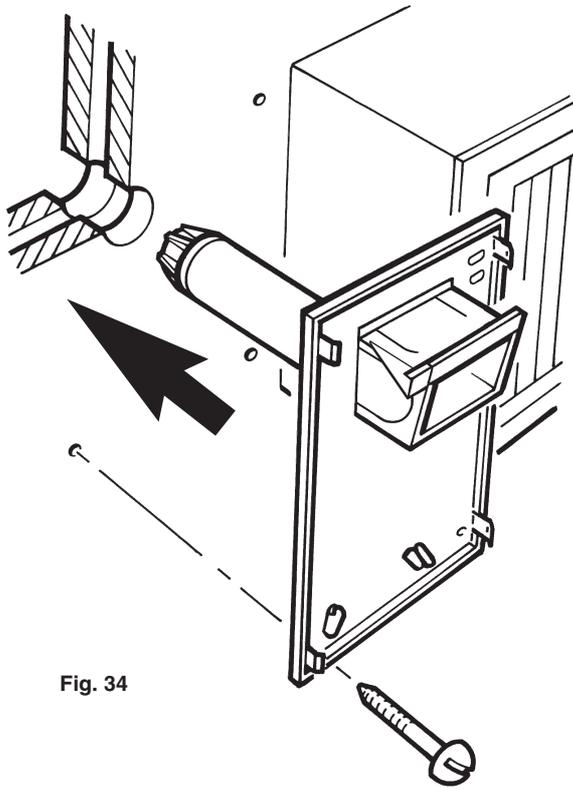


Fig. 34

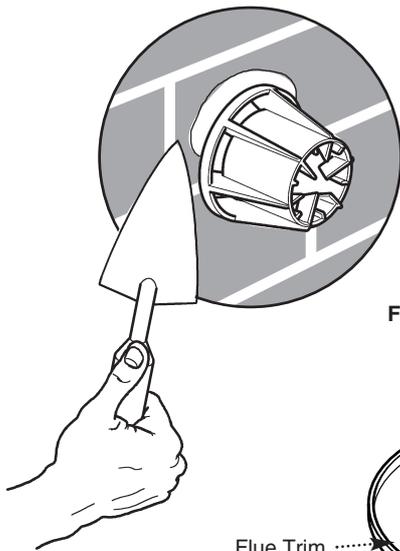


Fig. 35

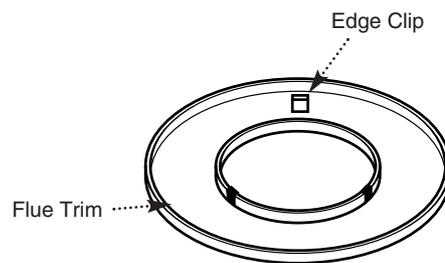


Fig. 36

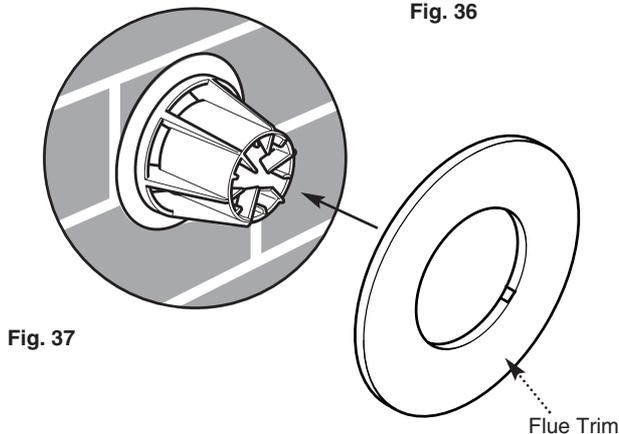


Fig. 37

Maximum lengths for side flues using the standard telescopic flue kit

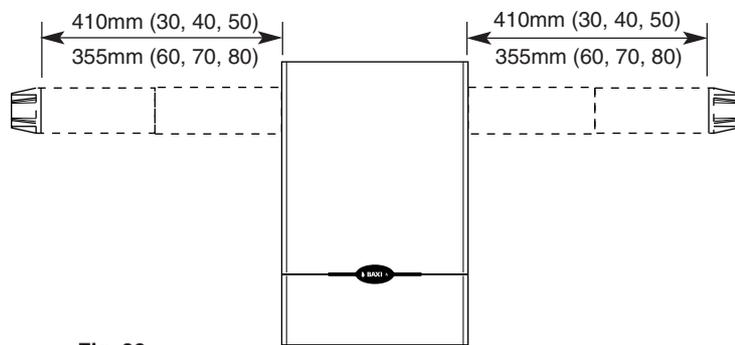


Fig. 38

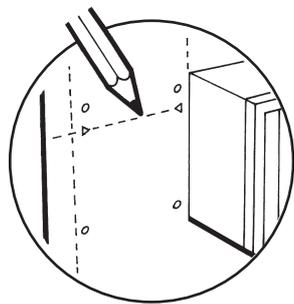


Fig. 39

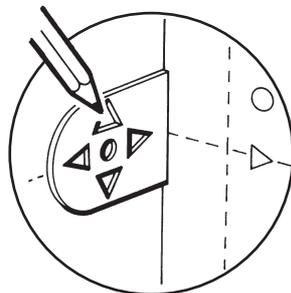


Fig. 42

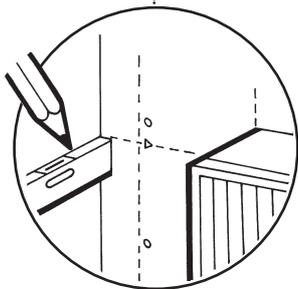


Fig. 40

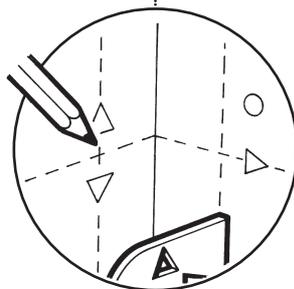


Fig. 43

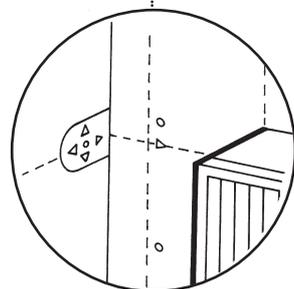


Fig. 41

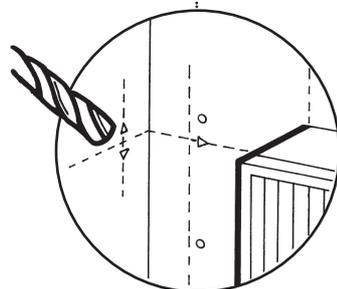


Fig. 44

## 5.0 Installation

### 5.8 Left or Right Flue

Concentric flue kits are available to allow 3 metres horizontal and 4 metres vertical flueing. Twin flue at 80mm diameter will allow up to 15 metres vertical flueing.

**NOTE:** If the flue terminal is inaccessible from outside the building, it is necessary to fix the internal fitting kit in position before continuing with the installation. (See section 5.15 Internal Fitting Kit of these instructions).

1. The procedure for fitting the appliance flued to the left or right hand side is the same (Fig. 38).
2. **30, 40, 50 models** - Left/Right Hand Side maximum flue 410mm (16 in).
3. **60, 70, 80 models** - Left/Right Hand Side maximum flue 355mm (14 in).
4. Using the previously marked flue hole centre (Section 5.3) and the two marks made at the triangular cutouts of the template, mark the horizontal centre line for the flue assembly (Fig. 39).
5. Extend this line either left or right as required, to the corner of the room (Fig. 39).
6. Extend the horizontal centre line around the corner for approximately 300mm (12 in). Ensure that the line remains horizontal by checking with a spirit level (Fig. 40).
7. From the wall template cut out the 'D' shaped section. Using this as a template, line up the horizontal triangular cut outs with the extended 300mm (12 in) line and make sure that the flat of the template is butted up against the corner of the wall (Fig. 41).
8. If the appliance mounting wall is out of true, use string or a straight edge to determine the true corner position and mark a vertical line to accommodate the flat edge of the template.
9. Holding the template firmly, mark the vertical centre line for the flue assembly by marking the point at the outer corners of the upper and lower cut outs (Fig. 42).
10. Remove the template and draw a vertical line between the two marks. The intersection of the vertical and horizontal lines is the centre of the flue hole (Fig. 43).
11. If using the internal fitting kit a 117mm ( $4\frac{5}{8}$  in) diameter hole is required.
12. Cut a hole approximately 107mm ( $4\frac{1}{4}$  in) diameter in the masonry for the 100mm (4 in) diameter flue duct (Fig. 44). (Use of a core drill is recommended. When using a core drill, it is important to keep the drill level and square, particularly with the wall onto which the boiler is to be fitted).
13. Drill the anchorage holes 63mm ( $2\frac{1}{2}$  in) deep to accept suitable wall plugs.

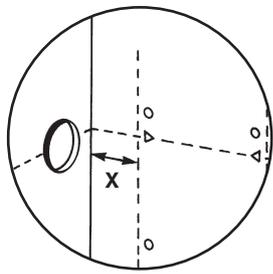


Fig. 45

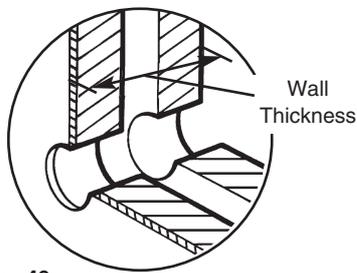


Fig. 46

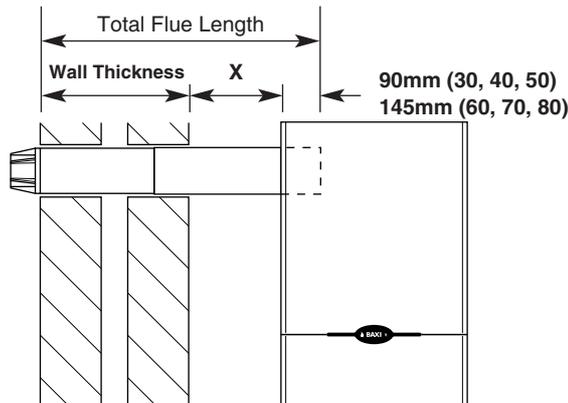


Fig. 47

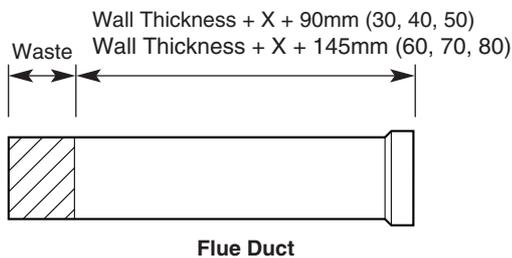


Fig. 48

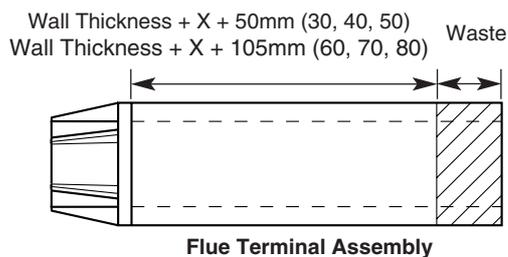


Fig. 49

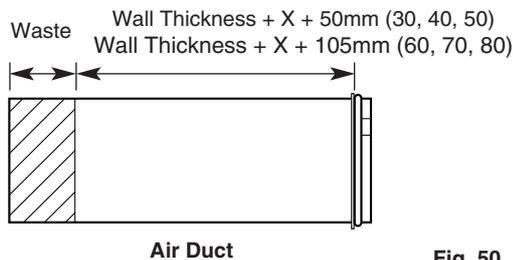


Fig. 50

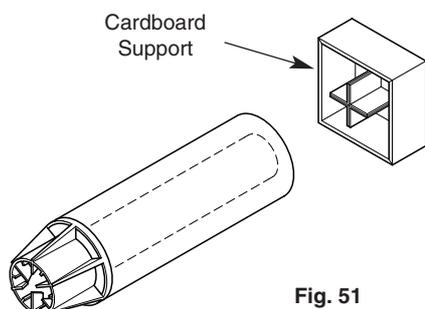


Fig. 51

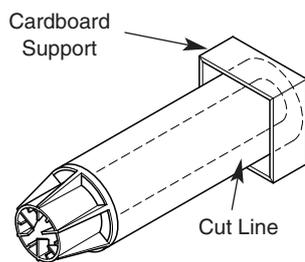


Fig. 52

## 5.0 Installation

### 5.9 Side Flue Preparation

1. For both Left and Right Hand Flue - Measure the distance from the wall to the nearest line marked from the template. This will be known as dimension **X** (Fig. 45).

2. Measure the thickness of the wall from the inside. This will be known as Wall Thickness (Fig 46).

3. To make up the total flue length, add 90mm (30, 40, 50 models) or 145mm (60, 70, 80 models) to the Wall Thickness + X dimension (Fig. 47):

Total flue length =

**Wall Thickness + X + 90mm (30, 40, 50)**

**Wall Thickness + X + 145mm (60, 70, 80).**

**NOTE:** if total calculated flue length exceeds 500mm (19<sup>5</sup>/<sub>16</sub> in), a flue extension kit will be required.

### CUTTING THE FLUE

**NOTE:** If **Wall Thickness + X** is less than; **195mm (30, 40, 50 models)** or **140mm (60, 70, 80 models)**, it will be necessary to cut the components of the flue to make up the appropriate size.

4. Take the **Flue Duct** and measure the dimension below from the flared end. Cut the waste off the plain end (Fig. 48).

**Wall Thickness + X + 90mm (30, 40, 50 models)**  
**Wall Thickness + X + 145mm (60, 70, 80 models)**

5. Take the **Flue Terminal Assembly** and measure from the terminal end the dimension below (Fig. 49). Cut the waste off the plain end.

**Wall Thickness + X + 50mm (30, 40, 50 models)**  
**Wall Thickness + X + 105mm (60, 70, 80 models)**

6. Measure the same amount from the flange end of the **Air Duct** and cut the waste off the plain end (Fig. 50).

**Wall Thickness + X + 50mm (30, 40, 50 models)**  
**Wall Thickness + X + 105mm (60, 70, 80 models)**

7. The cardboard support supplied in the flue pack should be installed onto the flue tubes to ensure the assembly is supported during cutting (Fig. 51 & 52).

## 5.0 Installation

### 5.10 Fitting the Flue and Back Plate

1. **NOTE:** There are two options for fitting the flue and back plate they are:

**Method A** - Fitting the flue and back plate as an assembly (usually used where there are no side clearance problems).

**Method B** - Pre-fitting the flue through the wall, fitting the back plate to its position on the wall and then connecting the two together (usually used where side clearances are restrictive).

### 5.11 Method A

1. Remove the left or right hand air box blanking plate, as appropriate, from the back plate air box by releasing the three screws (Fig 53).

2. Rotate the turret to face the selected opening (Fig. 54) and remove the side blanking cap by pushing in and turning anti-clockwise to release the bayonet fitting (Fig. 53).

3. Locate the flared end of the flue duct over the bayonet fitting on the turret, taking care not to damage the 'O' ring. Lock the flue in place by pressing in and turning clockwise (Fig. 55).

4. Ensure that the 'O' ring seal is in position against the sealing flange.

5. Fit the air duct over the flue duct and draw towards the air box on the back plate. Engage the bayonet slots of the air duct over the location lugs of the back plate opening and press and turn clockwise to secure the air duct to the air box (Fig. 56).

6. In order to increase security of the flue, the bayonet tags may be deformed to secure the flue in position.

7. Take the flue terminal assembly and engage on the flue and air ducts. Slide the flues together to the desired flue length. Tape the outer duct sections together with the tape provided ensuring a good seal is made.

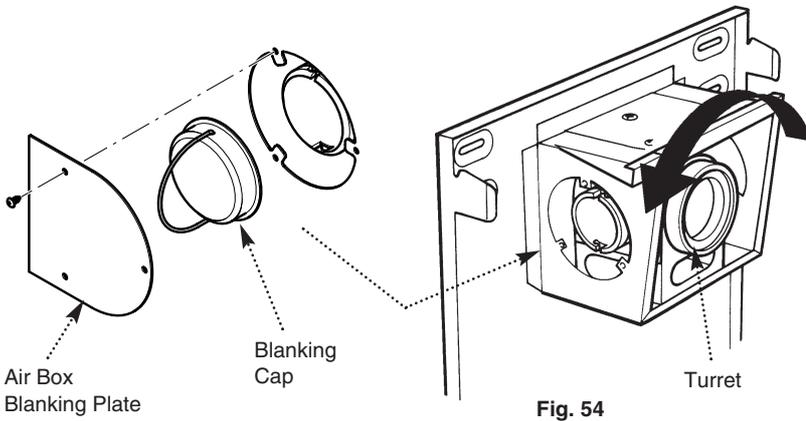


Fig. 53

Fig. 54

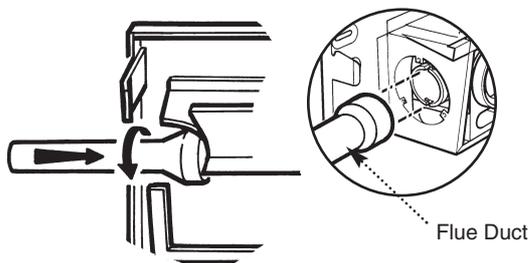


Fig. 55

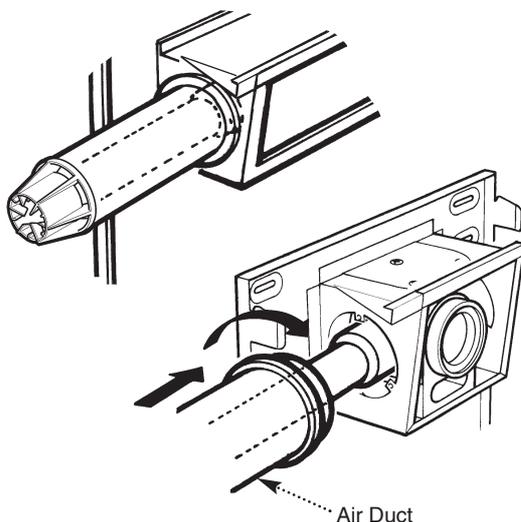


Fig. 56

## 5.0 Installation

### 5.11 Method A (Cont)

7. Engage the assembly into the hole previously cut in the wall and slide into place.

8. Secure the assembly to the wall at the previously drilled anchorage points with suitable screws. Before finally tightening the screws, check that the assembly is level (Fig. 57).

9. Make good between the wall and the air duct inside and outside the building if the internal fitting kit has not been used (Fig. 58).

10. The flue trim provided may be fitted if required, to neaten the make-up around the terminal (Fig. 60).

#### 11. To fit the flue terminal trim:

a) The trim should be fitted once the flue is secure.

b) Take the three edge clips from the kit and fit them equi-spaced onto the inner flange of the trim (Fig. 59).

c) With the flanges towards the wall pass the trim over the terminal. If required a bead of sealant may be applied to the rear face of the trim.

d) Push firmly on the trim to ensure the edge clips engage on the flue.

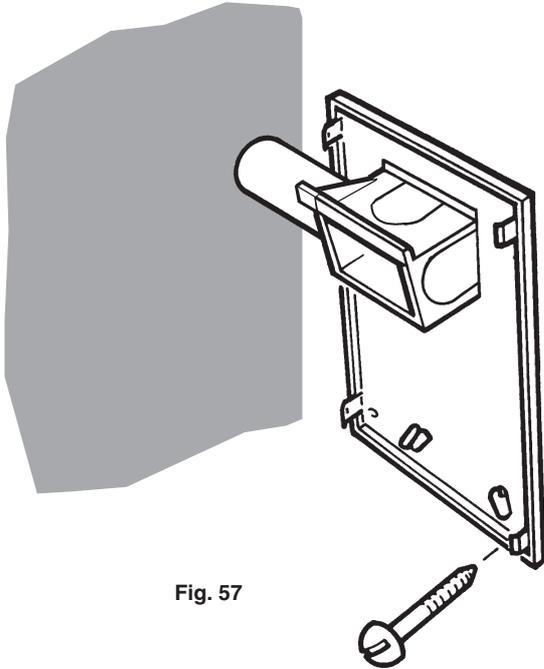


Fig. 57

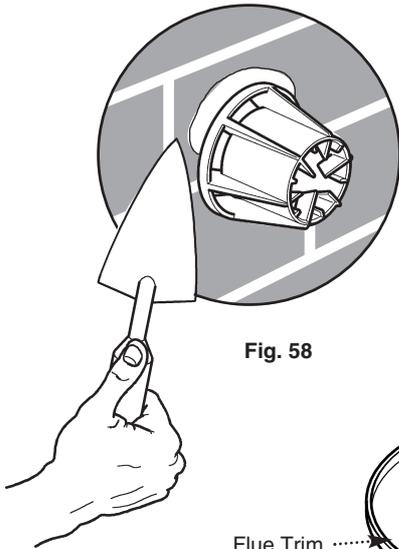


Fig. 58

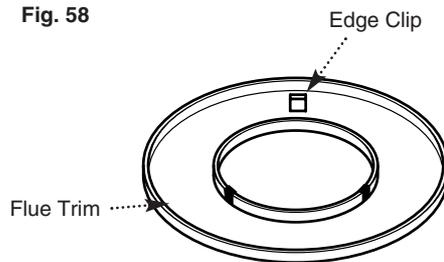


Fig. 59

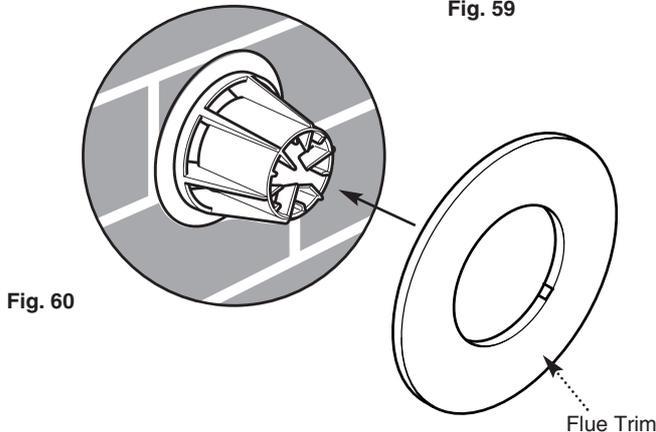


Fig. 60

## 5.0 Installation

### 5.12 Method B

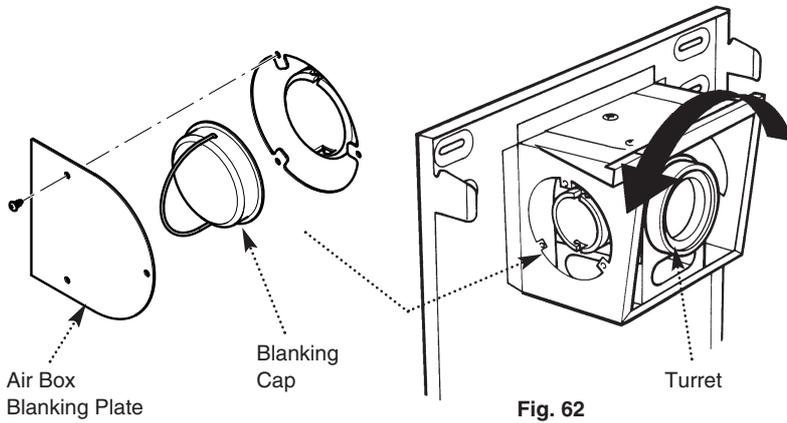


Fig. 61

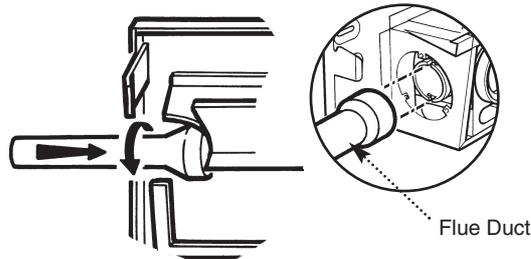


Fig. 63

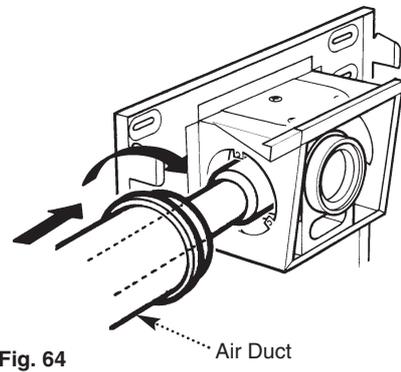


Fig. 64

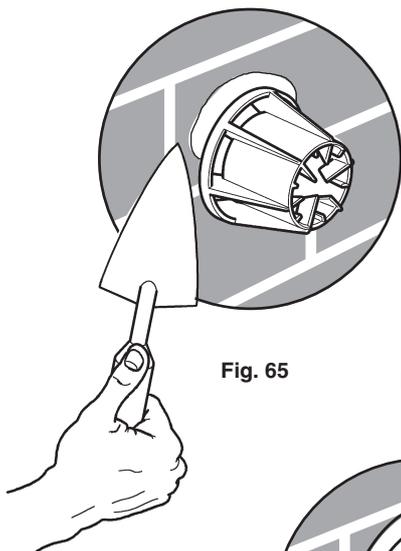


Fig. 65

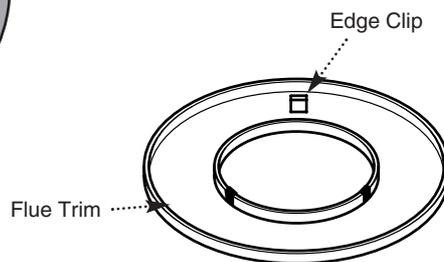


Fig. 66

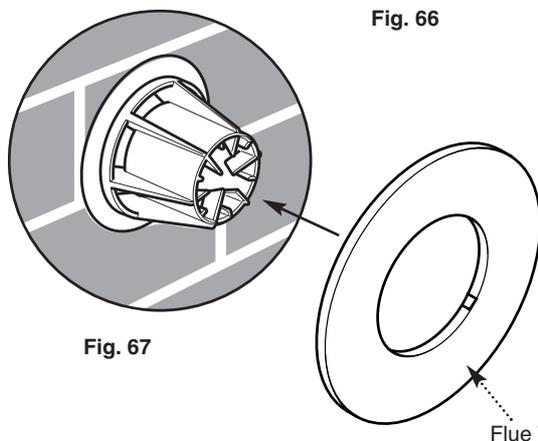


Fig. 67

1. Remove the left or right hand air box blanking plate, as appropriate, from the back plate air box by releasing the three screws (Fig. 61).

2. Rotate the turret to face the selected opening (Fig. 62) and remove the side blanking cap by pushing in and turning anti-clockwise to release the bayonet fitting (Fig. 61).

3. Locate the flared end of the flue duct over the bayonet fitting on the turret, taking care not to damage the 'O' ring. Lock the flue duct in place by pressing in and turning clockwise (Fig. 63).

4. Engage the bayonet slots of the air duct over the location lugs on the back plate opening and press and turn clockwise to secure the air duct to the back plate (Fig. 64).

5. Engage the flue and air ducts into the hole previously cut in the wall and through holes in other partitions (cupboards, walls etc.).

6. Secure the back plate to the wall at the previously drilled anchorage points with suitable screws. Before finally tightening the screws, check that the assembly is level.

7. Take the flue terminal assembly and pass through the cut hole from outside. Engage on the flue and air ducts. Slide the flues together to the desired wall thickness, tape the outer duct sections together with the tape provided ensuring a good seal is made.

8. In order to increase security of the flue, the bayonet tags may be deformed to secure the flue in position.

9. Make good between the wall and the air duct inside and outside the building if the internal fitting kit has not been used (Fig. 65).

10. The flue trim provided may be fitted if required, to neaten up the make-up around the terminal (Fig. 67).

#### 11. To fit the flue terminal trim:

a) The trim should be fitted once the flue is secure.

b) Take the three edge clips from the kit and fit them equi-spaced onto the inner flange of the trim (Fig. 66).

c) With the flanges towards the wall pass the trim over the terminal. If required a bead of sealant may be applied to the rear face of the trim.

d) Push firmly on the trim to ensure the edge clips engage on the flue.

## 5.0 Installation

### 5.13 Terminal Guard

1. When codes of practice dictate the use of terminal guards, they can be obtained from most plumbers and builders merchants nationwide.
2. When ordering a terminal guard, quote the appliance name and model number.
3. There must be a clearance of at least 50mm between any part of the terminal and the guard.

### 5.14 Fitting a Terminal Guard (Fig. 68)

1. Position the guard over the terminal on the outside wall. Ensure the guard is equally spaced about the terminal. Mark the fixing positions.
2. Drill and plug fixing the positions then secure the guard to wall.

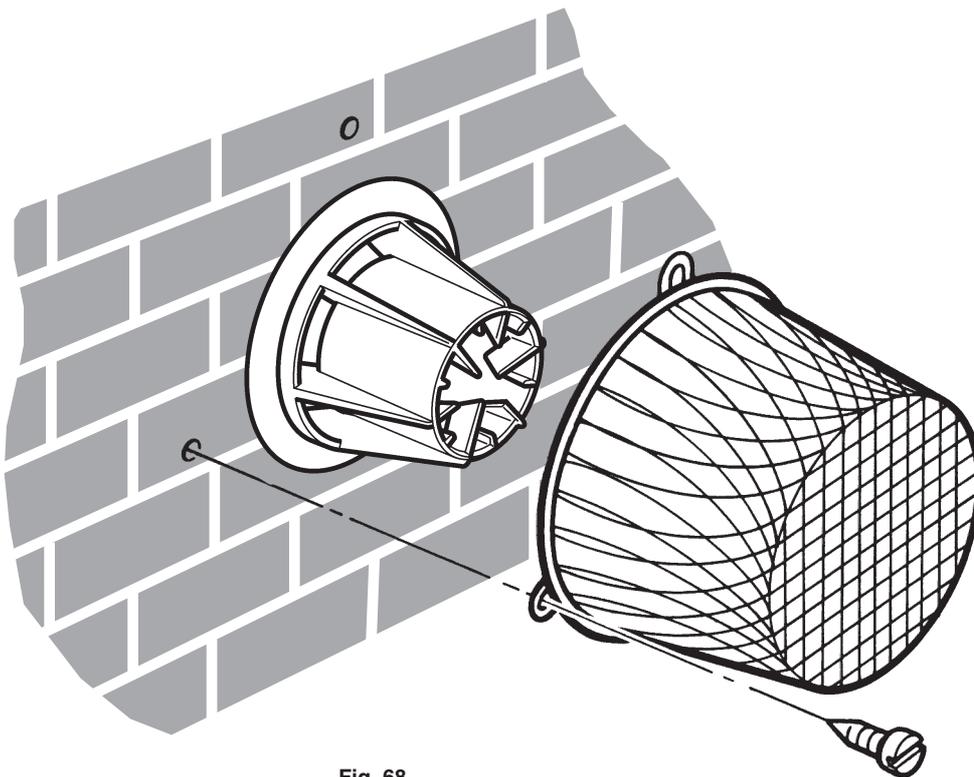


Fig. 68

## 5.0 Installation

### 5.15 Internal Fitting Kit

1. An internal fitting kit (available from merchants, quote Baxi Part N<sup>o</sup>. 236441BAX) is suitable for walls between 100mm (4in) and 285mm (11<sup>3</sup>/<sub>16</sub>in) in thickness.

2. **TO INSTALL THE KIT** - Mark the flue hole centre as described in section 5.4 or 5.8. Cut a hole in the masonry approximately 117mm (4<sup>5</sup>/<sub>8</sub> in) diameter for the internal fitting kit. The use of a core drill is recommended. (When using a core drill, it is important to keep the drill level and square).

3. Measure the wall thickness and from this dimension subtract 10mm (<sup>3</sup>/<sub>8</sub> in) (Fig. 69).

4. Remove the wall liner from its packing and remove the end piece (Fig. 70).

5. Mark off the dimension, wall thickness - 10mm (<sup>3</sup>/<sub>8</sub> in), measuring from the beaded end of the duct and cut off the remaining length of the duct. Ensure that the cut is square and reasonably straight (Fig. 71).

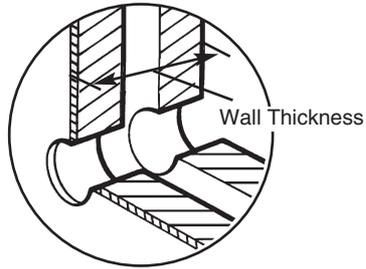


Fig. 69

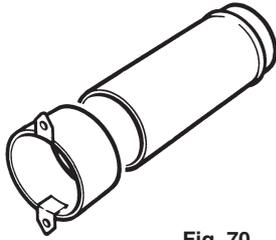


Fig. 70

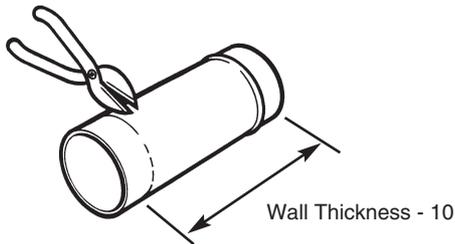


Fig. 71

## 5.0 Installation

### 5.15 Internal Fitting Kit (Cont)

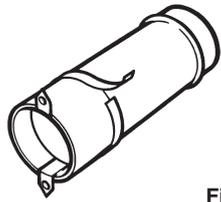


Fig. 72

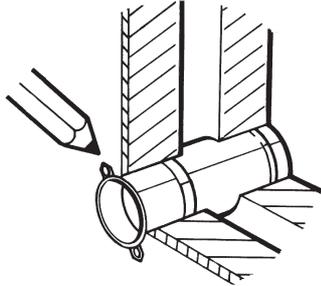


Fig. 73

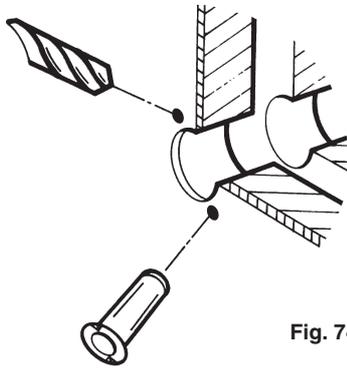


Fig. 74

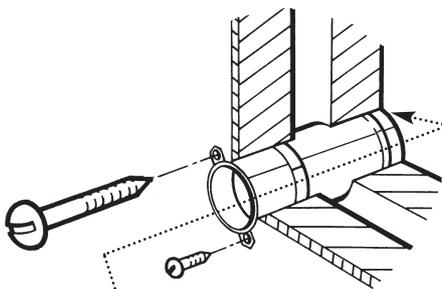


Fig. 75



Fig. 76

6. Refit the end piece to the liner and open out to the thickness of the wall. Seal the two pieces together using the tape provided with the kit (Fig 72).

7. Slide the assembled wall liner into the hole in the wall until the tags stop against the inner wall with the seam of the liner uppermost. Mark the positions of the holes in the tags on the wall and then rotate liner so that tags reveal marks (Fig. 73).

8. Drill and plug the wall in these positions (Fig. 74).

9. Rotate liner back until the tags align with the holes drilled and secure it to the wall using suitable screws (Fig. 75).

10. Make good between the edge of the liner and the outside wall with cement mortar or a similar substance, by reaching through the liner and pressing the mortar between liner and the outside brick work (Fig. 76). Make good between the liner and the inside wall. Apply soap solution to the 'O' ring inside the liner.

11. The rest of the installation may now proceed as described.

## 5.0 Installation

### 5.16 Fitting the Combustion Box

1. Offer up the combustion box to the back plate and locate the rear bottom edge of the combustion box onto the self locating support at the base of the wall plate (Fig. 77).
2. Swing the top of the combustion box backwards against the top air box (Fig. 78).
3. Engage the two retaining latches and secure with the 'R' clip previously removed (Fig. 79).

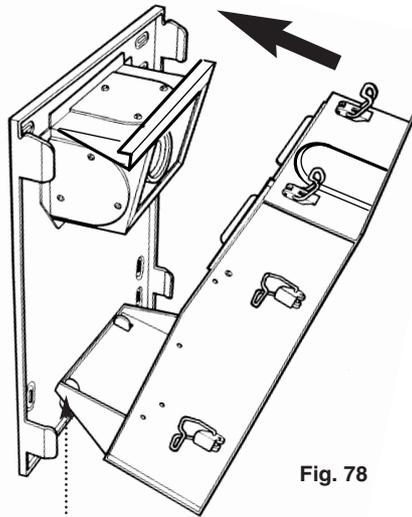


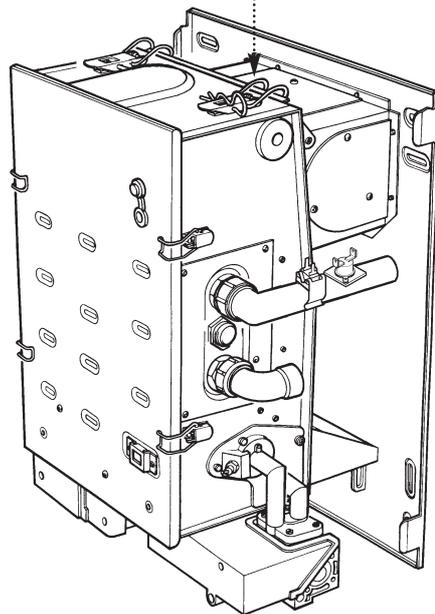
Fig. 78



Fig. 77

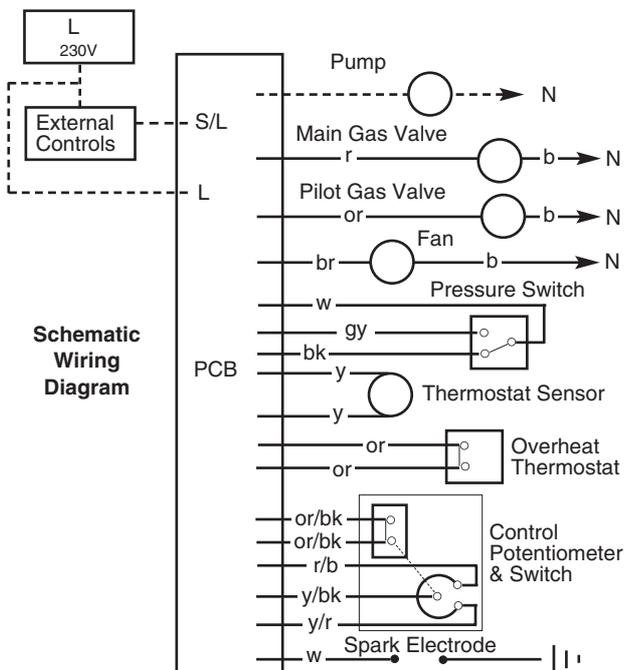
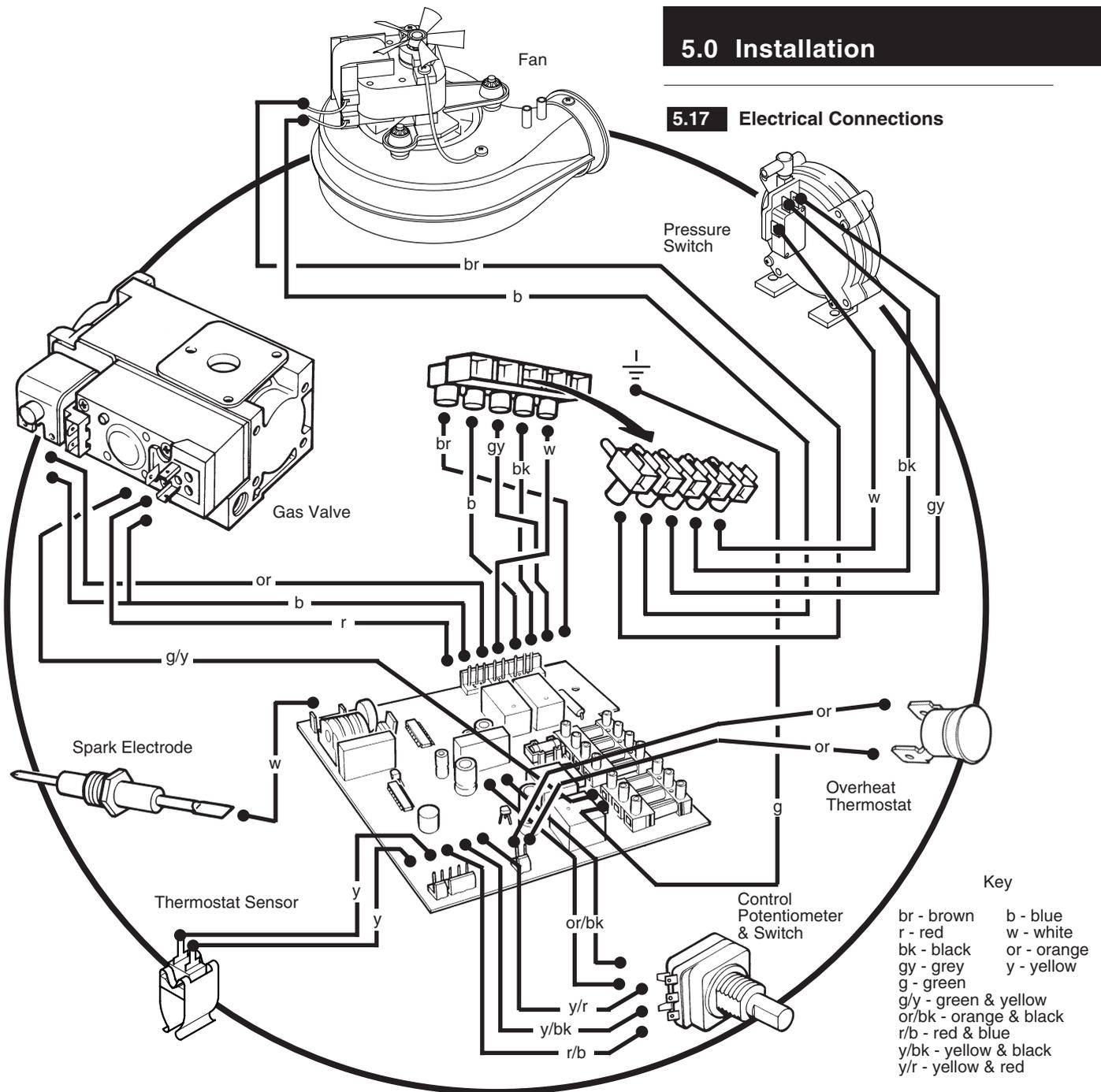


Fig. 79



## 5.0 Installation

### 5.17 Electrical Connections



**NOTE:** The method of connection to the electricity supply must facilitate complete electrical isolation of the appliance. Connection may be made via a fused double pole isolator with a contact separation of at least 3mm (1/8 in) in all poles and serving the appliance and system controls only. All cables should be routed to avoid hot surfaces.

**WARNING - THIS APPLIANCE MUST BE EARTHED.** 4 core input cable for connection to the appliance must be not less than 0.75mm<sup>2</sup> (24 x 0.2mm) PVC grade to IEC 227 code 53 (heat resisting). External controls and the appliance **MUST** be supplied via the same isolator.

**NOTE:** Polarity of the appliance **MUST** be correct otherwise the appliance will not operate correctly.

## 5.0 Installation

### 5.18 Making the Electrical Connections

1. Remove the cover from the control box by removing the 2 screws (Fig. 80).
2. Slide the box forward for easier access.
3. The terminal strips may be removed by carefully pulling them forward. Connect the supply cable and the pump cable to the terminal strips (Fig. 82).

**IMPORTANT** - When installing in conjunction with a thermal store or heat store please refer to the store manufacturers installation instructions when wiring the boiler.

4. The pump must be connected to the boiler terminals.
5. A permanent live must be connected to the 'L' terminal.
6. The switched live must be connected to the 'S/L' terminal.
7. Clamp the cables in the grips provided. Ensure that the lengths of the supply cables are such that the current carrying wires become taut before the earth wires if the cable should pull out of the cable clamp (Fig. 81).
8. Tuck the cables under the box and clip to the wall where necessary. Make sure sufficient slack is left to allow the box to slide forward for future access.
9. A cable clip is provided in the base of the box.

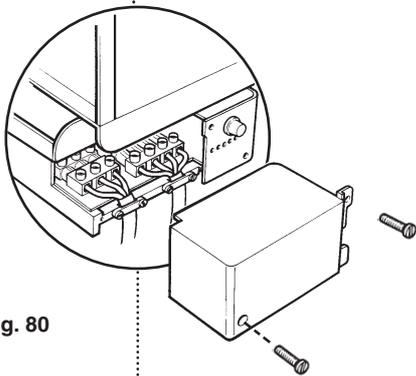
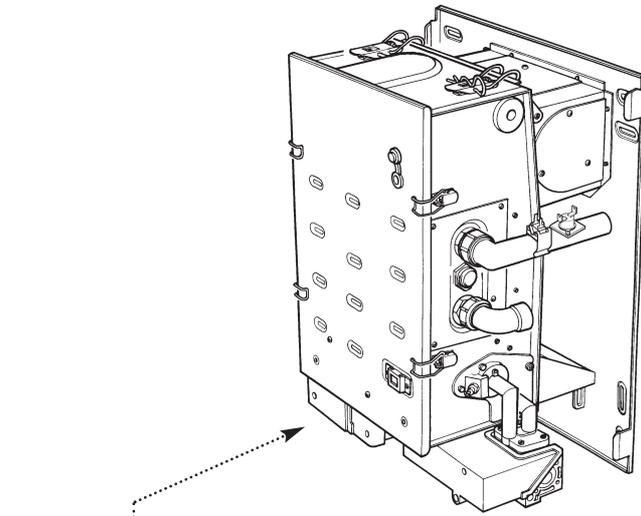


Fig. 80

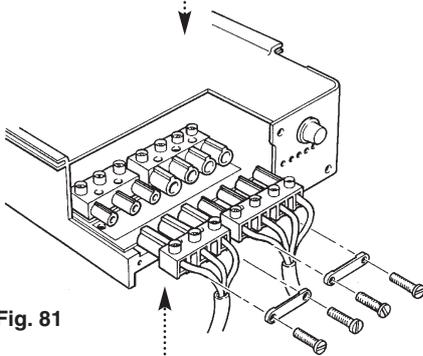


Fig. 81

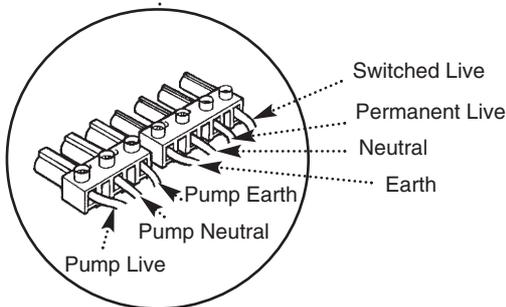


Fig. 82

## 5.0 Installation

### 5.19 Water Connections

1. The boiler has two side water connections, the top connection being FLOW and the bottom connection being RETURN (Fig. 83).
2. It is essential that FLOW and RETURN pipes are connected to the correct fittings.
3. The top flow connection incorporates the boiler thermostat and overheat thermostat (Fig. 85).
4. A copper elbow, compression nut and olive are provided in the kit for the return connection.

**NOTE:** Drain cocks should be fitted to all the system's low points.

### 5.20 Pipe Routes

1. Ensure that any pipework is routed so as to leave the boiler via the spaces at the rear of the outer case, either at the top or at the bottom.
2. Pipes may be dropped down within the outer case in the spaces between the back plate and the combustion box.

**NOTE:** It is important that the pipework does not interfere with the correct fitting of the outer case and a space of 14mm clearance must be left between any vertical pipes and the outer sides of the back plate.

### 5.21 Gas Connection

1. Connection to the gas supply is RC $\frac{1}{2}$  ( $\frac{1}{2}$  in BSPT internal) located at the rear of the gas cock (Fig. 86).
2. When connecting the gas feed pipe, the control box may be pulled forward to give greater access.

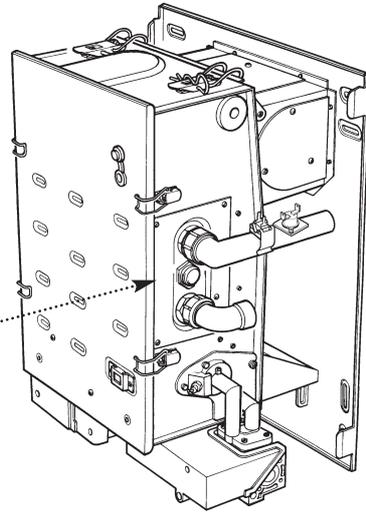


Fig. 83

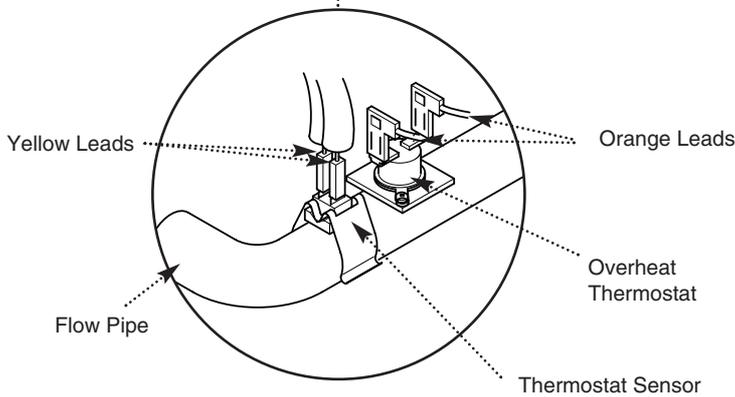


Fig. 85

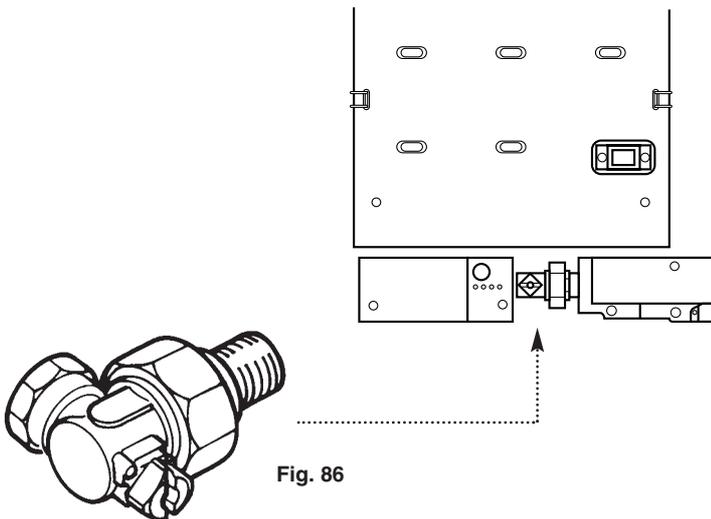


Fig. 86

## 6.0 Commissioning the Appliance

### 6.1 Commissioning the Appliance

1. Flush the whole system in accordance with BS 5793 (see Section 3.1 Water Circulating Systems). Check for water leaks.
2. Purge away air from the supply pipe at the gas service cock. (BS 6891) (Fig. 87).
3. Ensure that the electrical supply is isolated.
4. Check the electrical supply for earth continuity, polarity, short circuit and resistance to earth.
5. Turn the gas service cock anti-clockwise to the ON position and check for gas soundness up to the gas valve.
6. Loosen the pressure test point screw on the right hand side of the gas control valve (there is no need to completely remove this screw to obtain a pressure reading) and connect a pressure gauge.
7. Turn the boiler thermostat control knob fully anti-clockwise to the OFF position marked 0 (Fig. 88).
8. Ensure that the electricity supply is turned ON and set any external controls to the ON position.
9. Turn the boiler thermostat knob fully clockwise.
10. The fan will start running and after approximately 10 seconds, the ignition spark will commence.
11. The sparking will continue until the pilot light is established (Fig. 89) and then the main burner will light from the pilot flame.
12. Check that both the main burner and the pilot are alight by observing through the viewing window. The indicator lights should also be illuminated.
13. Should this sequence not occur, then refer to the fault finding section of these instructions.

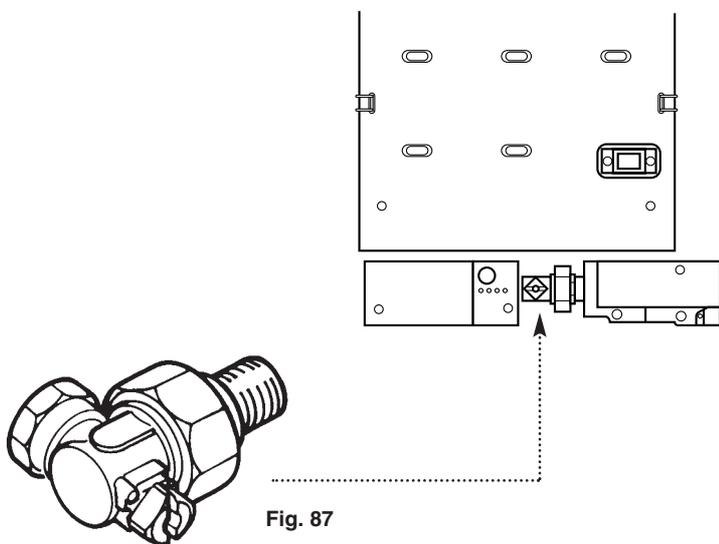
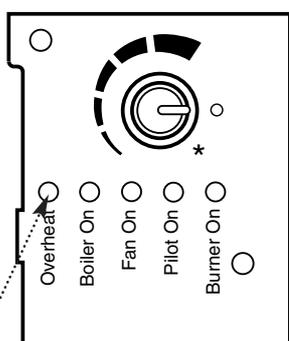
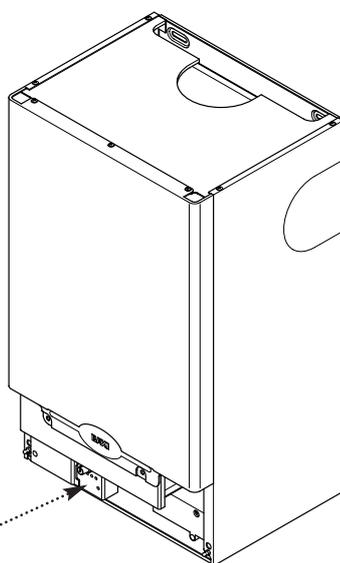


Fig. 87



Overheat Neon Warning

Fig. 88

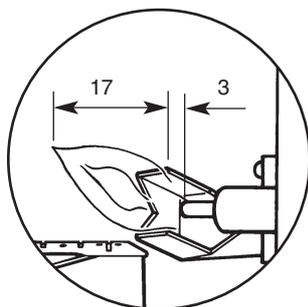


Fig. 89

**NOTE:** The pilot rate for this appliance is factory set, sealed and therefore non-adjustable.

## 6.0 Commissioning the Appliance

Model	Input P		Setting Pressure	
	kW	Btu/h	mbar	in wg
30	10.99	37, 500	16.0 ± 0.5	6.4 ± 0.2
40	14.65	50, 000	16.0 ± 0.5	6.4 ± 0.2
50	18.32	62, 500	16.0 ± 0.5	6.4 ± 0.2
60	21.98	75, 000	16.0 ± 0.5	6.4 ± 0.2
70	25.64	87, 500	16.0 ± 0.5	6.4 ± 0.2
80	29.31	100,000	16.0 ± 0.5	6.4 ± 0.2

### 6.1 Commissioning the Appliance (Cont)

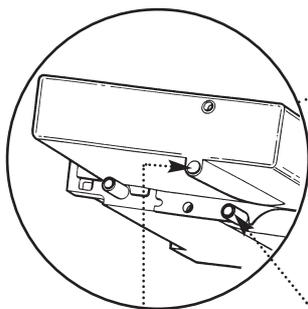
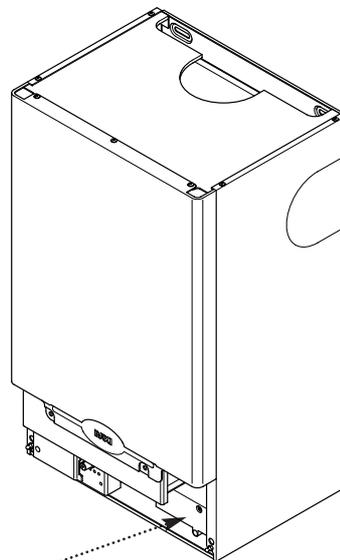
1. The burner pressure is factory set.
2. From the table opposite check that the main burner pressure is correct after the appliance has been running for 10 minutes. If necessary, adjustment to main burner pressure can be made by altering the regulator as shown (Fig. 90).
3. Check for gas soundness, with main burner alight, using leak detection fluid.
4. Turn the boiler thermostat to the OFF position marked 0. Screw home the pressure test point screw. Turn the boiler thermostat knob to the required setting.
5. The boiler and system should be run and then flushed and treated in accordance with BS 7593:1992 and the flushing agent / inhibitor manufacturers instructions. When all the air has been removed from the water circuit, the pump and radiators should be balanced to achieve the design temperature drop across the system.
6. Make a final check for gas soundness and set any timer control, room thermostats etc. to the customer's specific requirements.
7. The boiler is protected by an integral frost-stat, but if the boiler is not to be used for a long period of time, the system should be drained.

**NOTE:** The frost thermostat operates even if the boiler thermostat is in the OFF position and it is necessary therefore, if the system is drained, for the external electrical and gas supplies to be isolated.

It is recommended that a label be affixed to the appliance to draw attention to the fact that the system has been drained.

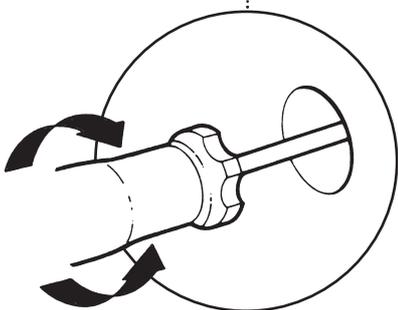
**WARNING** - If the system is filled with very cold water and the boiler lit, the action of the frost protection thermostat will prevent the boiler from shutting down before the water temperature reaches 10°C.

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.



Burner Pressure Test Point

Fig. 90



Regulator

## 7.0 Fitting the Outercase

### 7.1 Fitting the Outercase

1. The warning label may be removed unless the boiler is to be fitted within a cupboard.

2. Taking the ready assembled outercase, the front door of which has already been removed, proceed as follows:

3. If the appliance is flued to the left or to the right, remove the relevant infill panel by removing the retaining clips and fixing screws (Fig. 91).

4. Offer the outer case up to the hooks on the top of the back plate (Fig. 93).

5. Ensure that the outer case is located over the lower tabs on the back plate on both sides (Fig. 94).

6. Using the two screws previously removed, secure the outer case to the combustion box (Fig. 92).

7. Replace the lower front door panel.

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

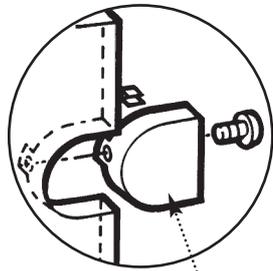


Fig. 91

Infill Panel

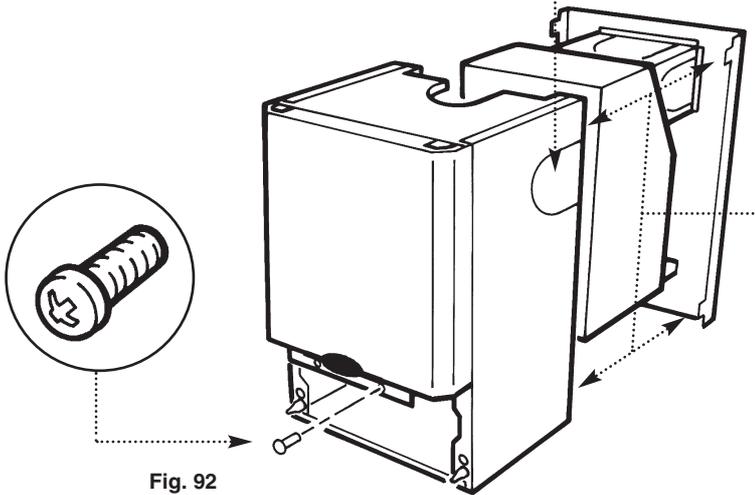


Fig. 92



Fig. 93

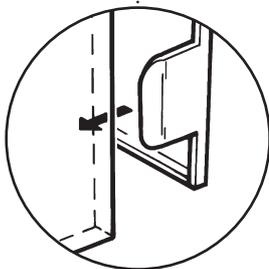


Fig. 94

## 8.0 Overheat Cut-off Device

### 8.1 Operation

1. The overheat cut-off device is of the manual reset type and therefore it is important that the user knows how to reset the control should it ever cut out.

**NOTE:** Cut-out is indicated by illumination of the neon light on the control box.

2. Remove the lower door panel by following the sequence of diagrams (Fig 95).

3. **To reset the boiler** - Turn the boiler thermostat control knob fully anti-clockwise to the OFF position marked '0' (Fig. 96). Wait ten seconds, turn the control knob clockwise to the required thermostat setting, the red neon goes out, the boiler will start automatically.

4. No adjustment to the gas controls or main thermostat are required.

5. If the overheat thermostat drops out repeatedly, refer to the fault finding chart at the rear of this booklet or consult a competent service engineer.

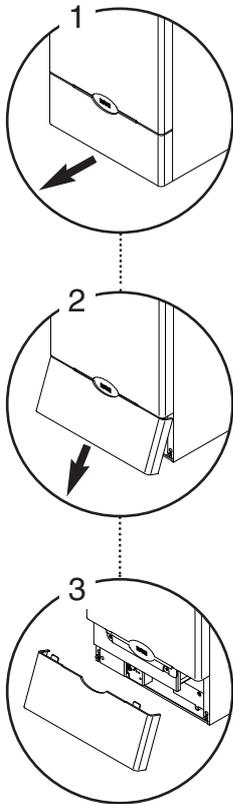
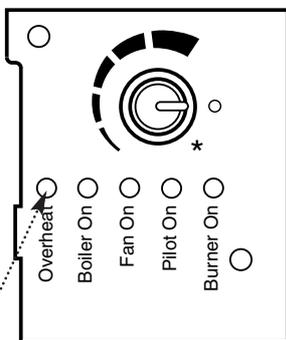
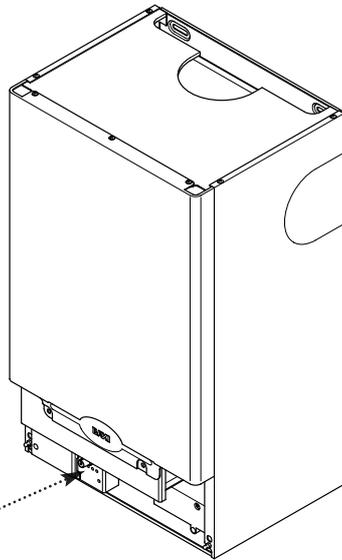


Fig. 95



Overheat Neon Warning

Fig. 96

## 9.0 Annual Servicing

### 9.1 Dismantling the Boiler

1. To ensure its continued safe and efficient operation, it is important that the appliance is regularly serviced. (For location of British Gas service test point see Changing Components section of these instructions).

2. Before servicing the boiler please read Section 1.3 Important Information.

3. 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.

4. Isolate the electrical supply to the boiler.

5. Remove the outer case lower door panel by following the sequence of diagrams (Fig. 97).

6. Remove the outer case from the boiler by unscrewing the two screws and lift the case clear (Fig. 98).

7. Release the four latches holding the combustion box door (Fig. 99). Remove the combustion box door by pulling forward (Fig. 101).

8. Release the 5-pin electrical plug connecting the pressure switch and fan (Fig. 100). Withdraw the fan assembly by pulling forwards from the top edge (Fig. 101).

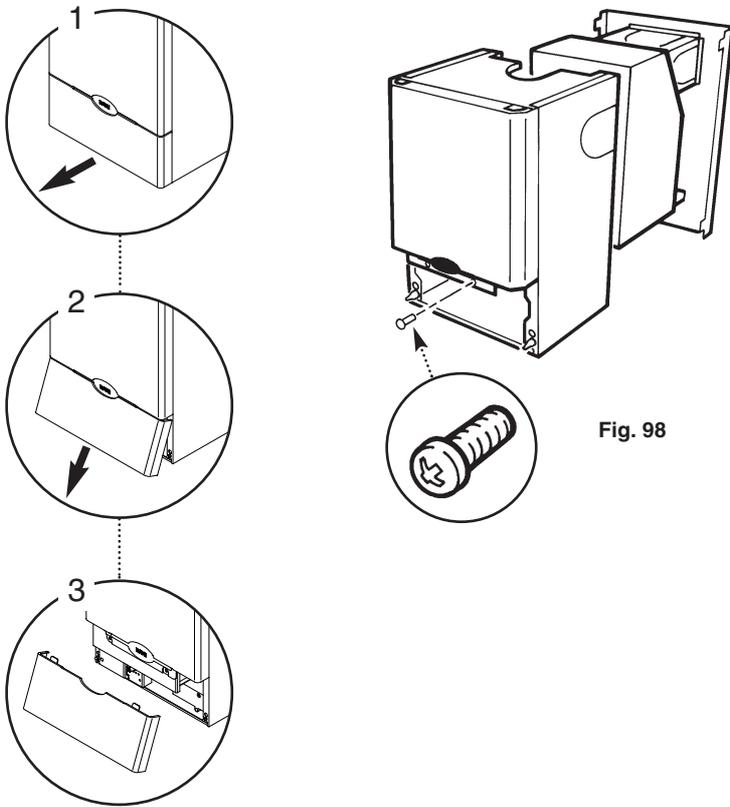


Fig. 97

Fig. 98

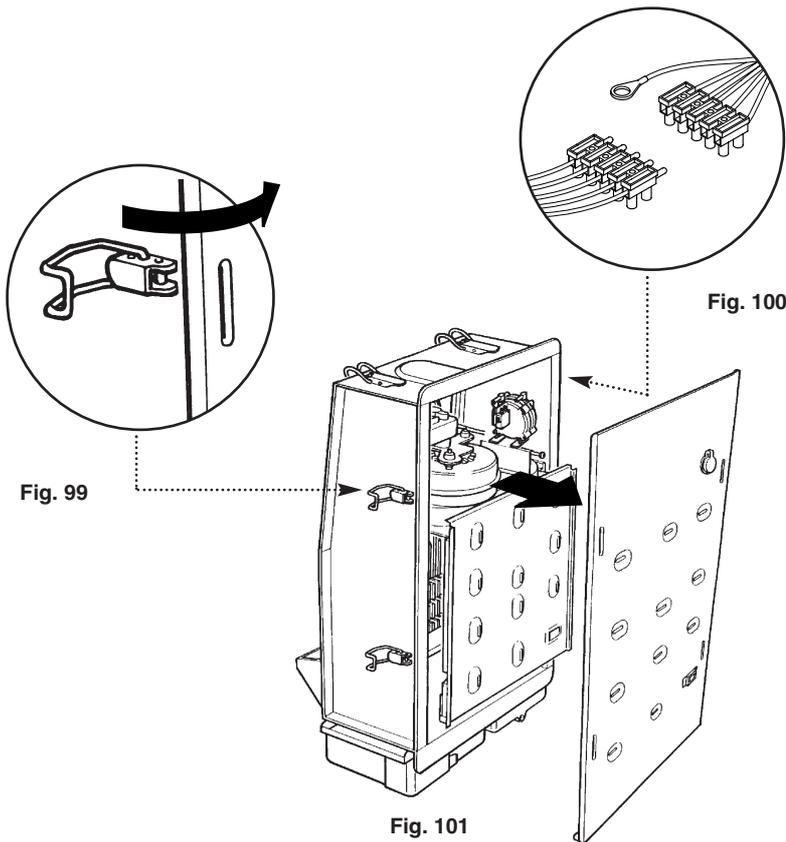


Fig. 100

Fig. 101

## 9.0 Annual Servicing

### 9.2 Cleaning the Combustion Box

1. Remove the burner assembly by pulling it forward (Fig. 103).
2. Lightly brush any dirt from the top of the burner blades and ensure that the ports are free from obstruction.
3. Remove the baffle retention clip (Fig. 102).
4. Lift the baffles out of the heat exchanger (Fig. 103).

### 9.3 Cleaning the Heat Exchanger

1. The heat exchanger may be cleaned by insertion of a thin metal strip e.g. a hack saw blade or steel rule, from above or below, taking care not to damage any insulation.
2. Clean the front and rear fin sections and ensure that any blockages are cleared.

### 9.4 Cleaning the Burner Injector

1. Remove the injector which is screwed into the burner feed manifold (Fig. 104).
2. Examine and clean carefully, then replace ensuring that the copper washer is in position. Tighten the injector fully.

### 9.5 Cleaning the Pilot

1. Disconnect the spark electrode lead at the electrode (Fig. 105).
2. Unscrew the electrode from the manifold and withdraw the electrode (Fig. 105).
3. Remove the right hand side insulation carrier bracket by releasing the screw. Remove the side insulation (Fig. 103).
4. Release the screw securing the pilot hood and remove (Fig. 106).
5. Carefully remove the pilot injector (Fig. 106). Examine and clean it as necessary. Do not use a wire or pin to clean the injector orifice.
6. Examine the sealing washer (Fig. 106) and replace if it is damaged in any way. Reassemble in reverse order.
7. Replace all components in reverse order ensuring that the flexible tubes from the fan unit to the pressure switch are routed correctly and that they are not kinked or flattened (107).
8. Check that the seal to the combustion box door is good.
9. Re-commission the boiler before use, checking for gas soundness and ensuring all controls are working correctly.
10. Complete the relevant section of the "Benchmark" Installation, Commissioning and Service Record Log Book and hand it back to the user.

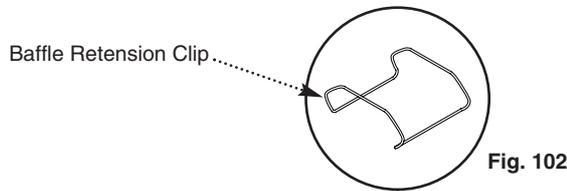


Fig. 102

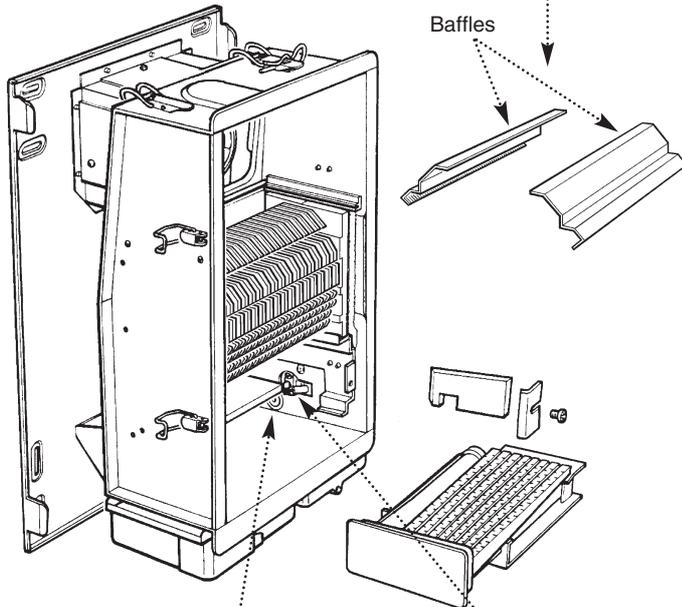


Fig. 103

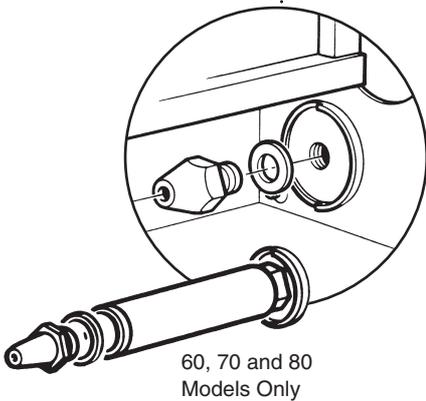


Fig. 104

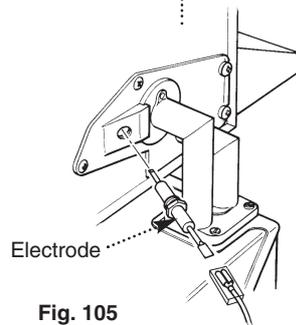


Fig. 105

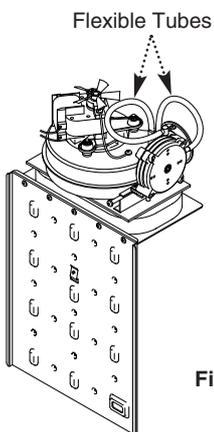


Fig. 107

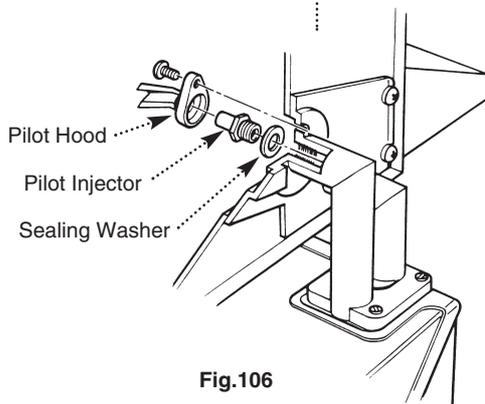


Fig. 106

## 10.0 Changing Components

### 10.1 Changing Components

1. When changing components ensure that the gas and electrical supplies are isolated before the work is started.

2. Before changing any components please read Section 1.3 Important Information.

3. Remove the outer case lower door panel (Fig. 108).

4. Remove the outer case from the boiler by unscrewing the two screws and lift the case clear (Fig 109).

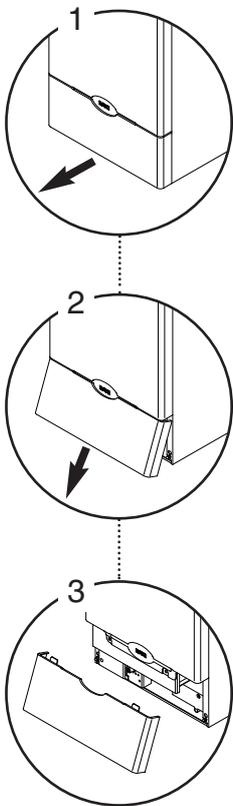


Fig. 108

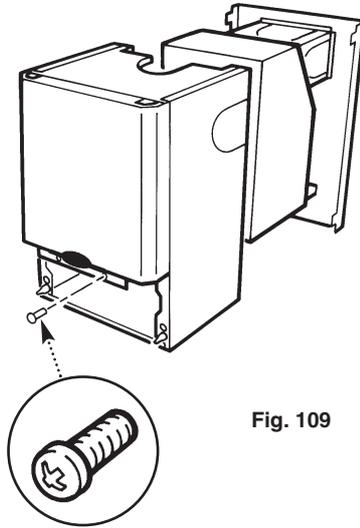


Fig. 109

British Gas Service  
Test Point.  
For use by B.G.  
Personnel only

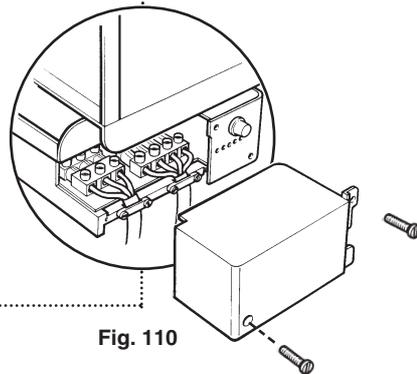
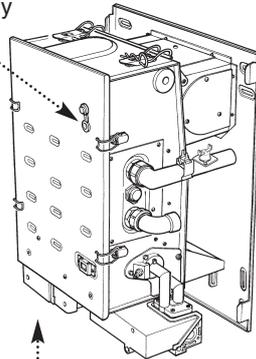


Fig. 110

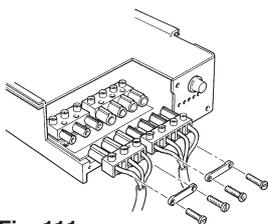


Fig. 111

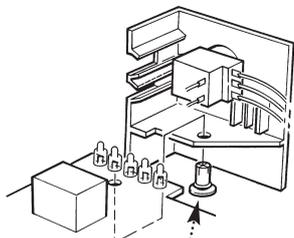


Fig. 112

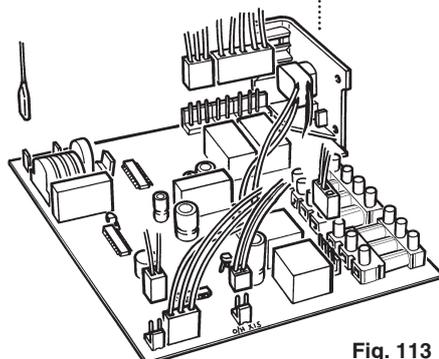
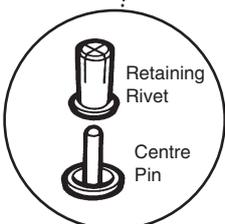


Fig. 113

### 10.2 Replacing the Circuit Board

1. Ensure that the electrical supply is isolated.

2. Remove the cover from the front of the controls box (Fig. 110).

3. Release the mains cables from the cable clamps and unplug the mains connection blocks from the circuit board (Fig. 111).

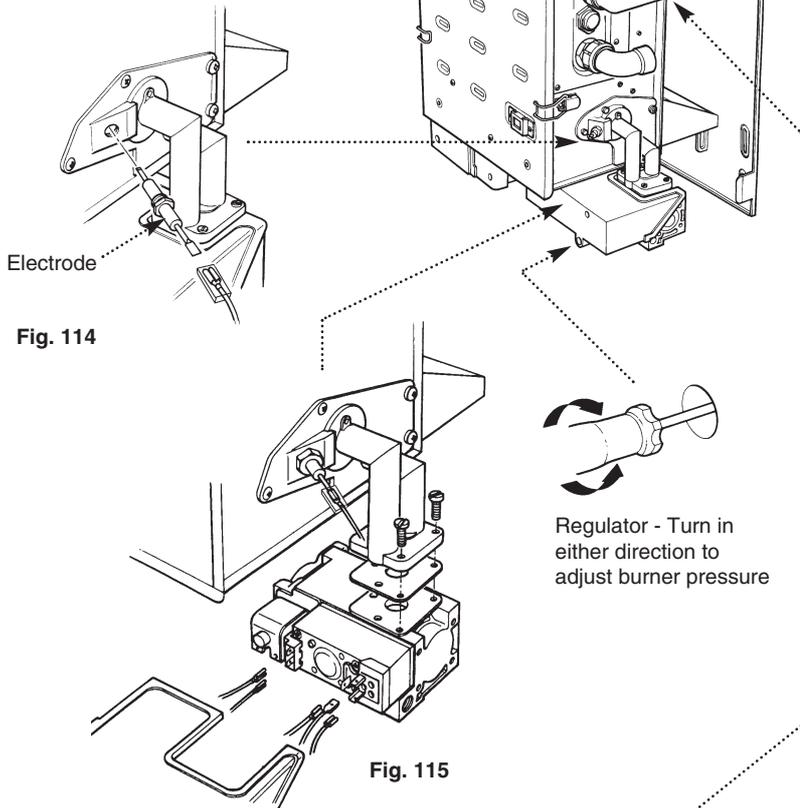
4. Remove the screw retaining the thermostat control panel and slide the circuit board from the box.

5. Carefully withdraw the centre pin from the retaining rivet which then allows the retaining rivet to be removed. Remove the thermostat control panel (Fig. 112). (On reassembling ensure the control panel is located over the retaining rivet body before inserting the centre pin.)

6. Disconnect the plugs from the sockets on the circuit board (Fig. 113).

7. Replace new circuit board in reverse order checking that the connections are correct as shown in the diagram (See Electrical Connections section 5.17 of these instructions) and that the harness is retained in the strain reliefs.

British Gas Service  
Test Point.  
For use by B.G.  
Personnel only



## 10.0 Changing Components

### 10.3 Ignition Electrode (Fig. 114)

1. Disconnect the spark electrode lead at the electrode.
2. Unscrew the electrode from the manifold and withdraw the electrode.
3. Replace the new electrode in reverse order, ensuring that the sleeving is pushed over the end of the electrode.

### 10.4 Gas Valve (Fig. 115)

1. Disconnect the inlet gas cock union.
2. Remove the cover from the front face of the gas valve and remove the electrical connections from the tags on the gas valve.
3. Disconnect the gas valve by unscrewing the three screws on the top face of the gas manifold. If access to these screws is difficult the valve can be removed with the manifold.
4. Remove the gas valve being careful not to damage the gasket.
5. Fit the new gas valve by re-assembling all components in reverse order, ensuring that the gasket is properly positioned.
6. Check Burner pressure is  $16\text{mbar} \pm 0.5$  (See section 6.1 paragraph 2 if burner pressure needs adjusting).

### 10.5 Thermostat Sensor (Fig. 116)

1. Disconnect the two electrical tags from the sensor.
2. Prise the clip and sensor off the flow manifold.
3. Clip the new sensor to the pipe and reconnect the wires. Either wire can be connected to either spade terminal - there is no polarity.

### 10.6 Over-Heat Thermostat (Figs.116 & 117)

1. Disconnect the two electrical tags from the overheat thermostat.
2. Remove the two screws securing the thermostat to the pipe.
3. Ensure the thermostat mounting plate is clean and free of debris. Fit the new thermostat using the screws previously removed.
4. Connect the two electrical tags to the terminals on the overheat thermostat - either wire can be connected onto either terminal - there is no polarity.

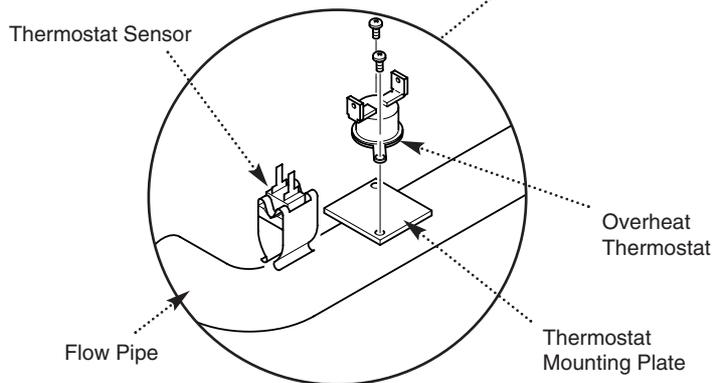


Fig. 116

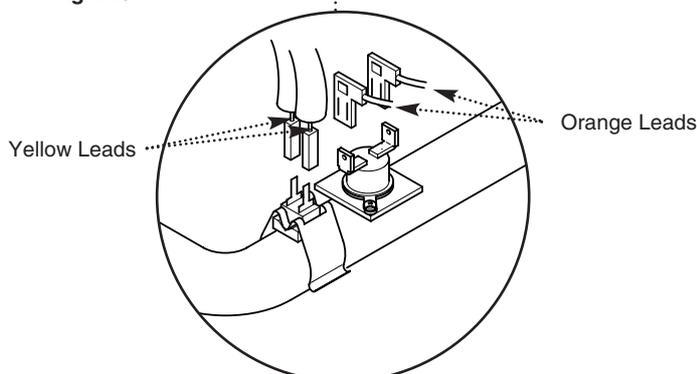


Fig. 117

## 10.0 Changing Components

### 10.7 Changing Components (Cont)

1. To change Fan - Pressure Switch - Burner - Burner Injector - Pilot Burner Injector - Gas Manifold, proceed as follows:-

2. Release the four latches holding the combustion box door (Fig. 118). Remove the combustion box door by pulling forward (Fig. 120).

3. Release the 5-pin electrical plug connecting the pressure switch and fan (Fig. 119). Withdraw the fan assembly by pulling forwards from the top edge (Fig. 120).

### 10.8 Fan (Fig. 121)

1. Disconnect the two sensing tubes from the venturi situated on the fan.

2. Disconnect the 2 fan wires from the connection on the electrical plug. Remove the 3 screws securing the fan to the fan hood.

3. **30, 40, 50 models only** - Remove the two screws securing the fan outlet flange to the fan and remove. Clean all sealing mastic from the outlet flange.

4. Fit the outlet flange onto the new fan, fix with the 2 screws and seal the outside gap between the fan body and the outlet fan with the mastic provided.

5. **60, 70, 80 models only** - When fitted, unbend the tabs securing the fan outlet restrictor to the outlet flange on the original fan.

6. Fit the outlet restrictor to the new fan outlet flange. Bend the tabs over the flange to secure the restrictor.

7. Fit the new fan and re-assemble all components in reverse order of dismantling, reconnect the new fan wires into the connections on the electrical plug - either wire can be connected into either connection.

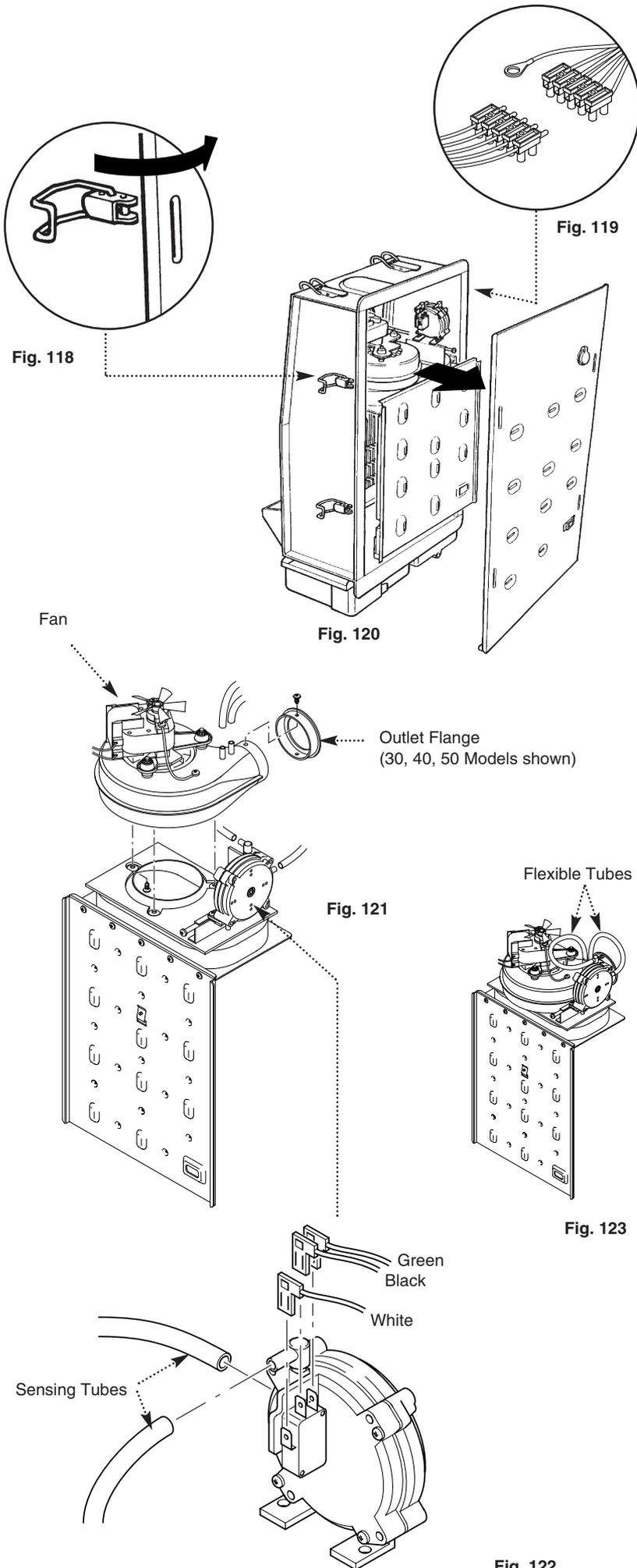
### 10.9 Pressure Switch (Fig. 122)

1. Disconnect sensing tubes noting their positions.

2. Remove the screw securing the pressure switch to its bracket and unhook the pressure switch.

3. Disconnect the 3 electrical terminals from the pressure switch. Note the position of the tags before removal and reconnect in correct order.

4. Fit new pressure switch and re-assemble all components ensuring that the flexible tubes from the fan unit to the pressure switch are routed correctly and that they are not kinked or flattened (Fig. 123). Ensure that the electrical terminals are connected to their correspondingly marked tags.



## 10.0 Changing Components

### 10.10 Burner (Fig. 124)

1. Remove the burner assembly by pulling it forward.
2. Fit new burner and re-assemble all components in reverse order of dismantling.

### 10.11 Burner Injector (Fig. 125)

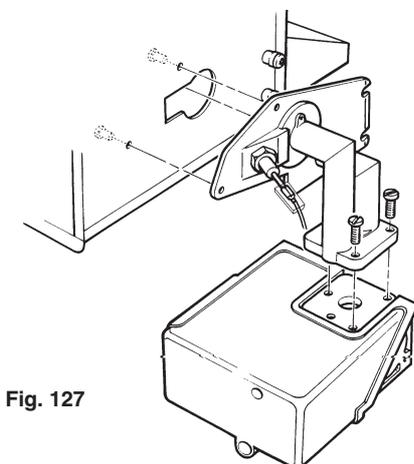
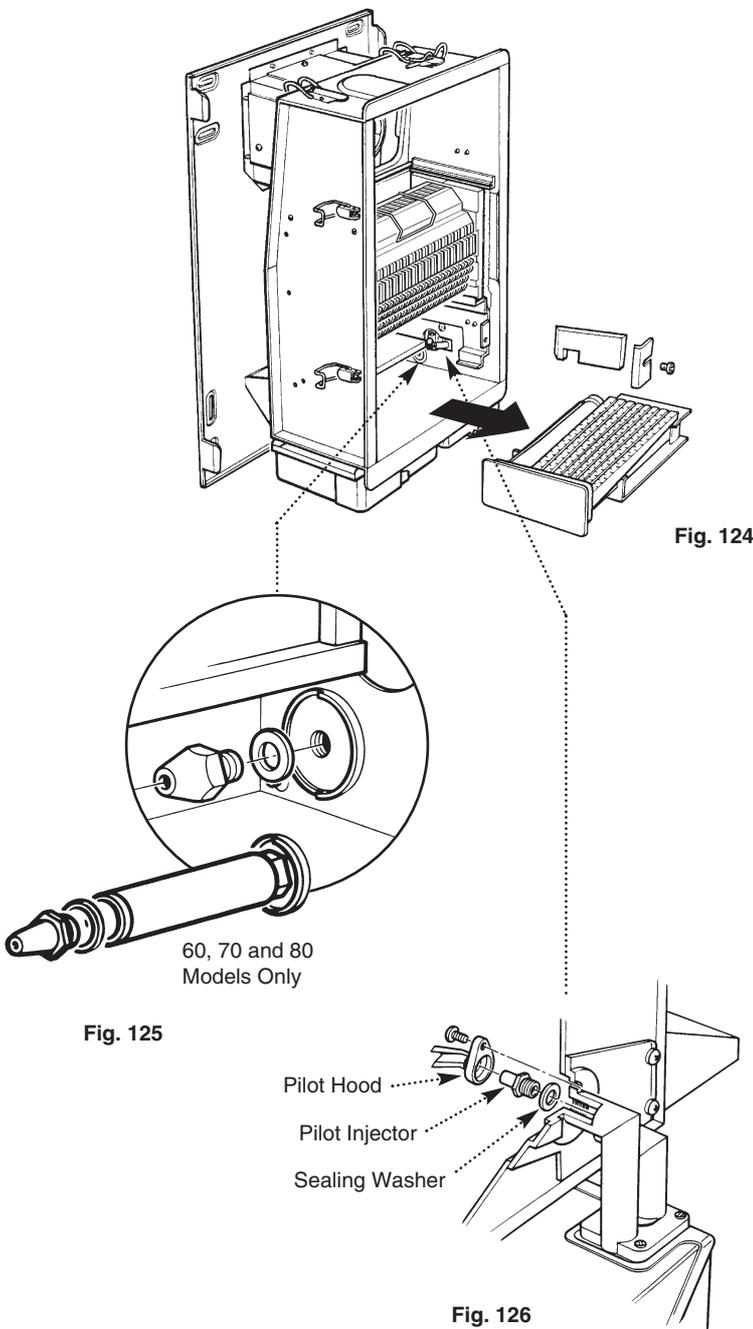
1. Release and remove the burner injector which is screwed into the burner feed manifold.
2. Fit the new burner injector ensuring that the copper washer is in position. Tighten the injector fully.
3. Re-assemble all components in reverse order.

### 10.12 Pilot Burner Injector (Fig. 126)

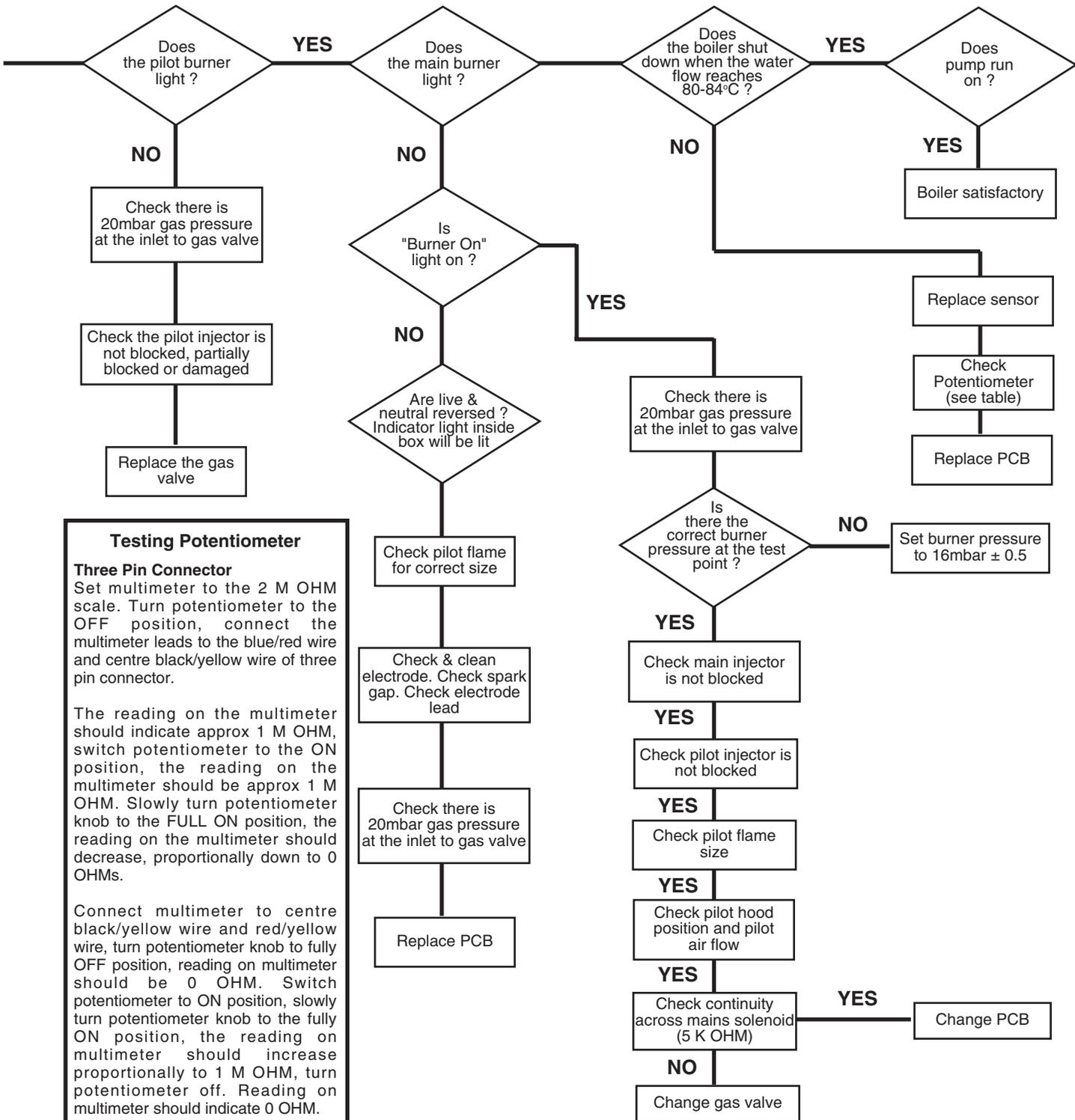
1. Remove the right hand side insulation carrier bracket by releasing the screw. Remove the side insulation panel.
2. Release the screw securing the pilot hood and remove. Carefully remove the pilot injector. Fit the new pilot injector ensuring the new sealing washer is in position. Tighten the injector fully.
3. Re-assemble all components in reverse order.

### 10.13 Gas Manifold (Fig. 127)

1. Remove the right hand side insulation carrier bracket by releasing the screw. Remove the side insulation panel (Fig. 124).
2. Remove the two screws securing the manifold from the inside of the combustion box and slide the manifold forward from under the two rear locating studs.
3. Remove valve and ancillary components from manifolds as necessary.
4. Replace all ancillary components onto manifold and replace manifold by sliding rear edge backwards under the two rear locating studs and securing from inside the combustion box using the two screws previously removed. Ensure that the sealing gasket is properly positioned and undamaged.







**Testing Potentiometer**

**Three Pin Connector**  
Set multimeter to the 2 M OHM scale. Turn potentiometer to the OFF position, connect the multimeter leads to the blue/red wire and centre black/yellow wire of three pin connector.

The reading on the multimeter should indicate approx 1 M OHM, switch potentiometer to the ON position, the reading on the multimeter should be approx 1 M OHM. Slowly turn potentiometer knob to the FULL ON position, the reading on the multimeter should decrease, proportionally down to 0 OHMs.

Connect multimeter to centre black/yellow wire and red/yellow wire, turn potentiometer knob to fully OFF position, reading on multimeter should be 0 OHM. Switch potentiometer to ON position, slowly turn potentiometer knob to the fully ON position, the reading on multimeter should increase proportionally to 1 M OHM, turn potentiometer off. Reading on multimeter should indicate 0 OHM.

**Two Pin Connector**  
Check potentiometer is in OFF position.

Set multimeter to continuity, connect multimeter leads to both potentiometer leads. Turn potentiometer to the on position, the multimeter's audible alarm should now be sounding to indicate continuity.

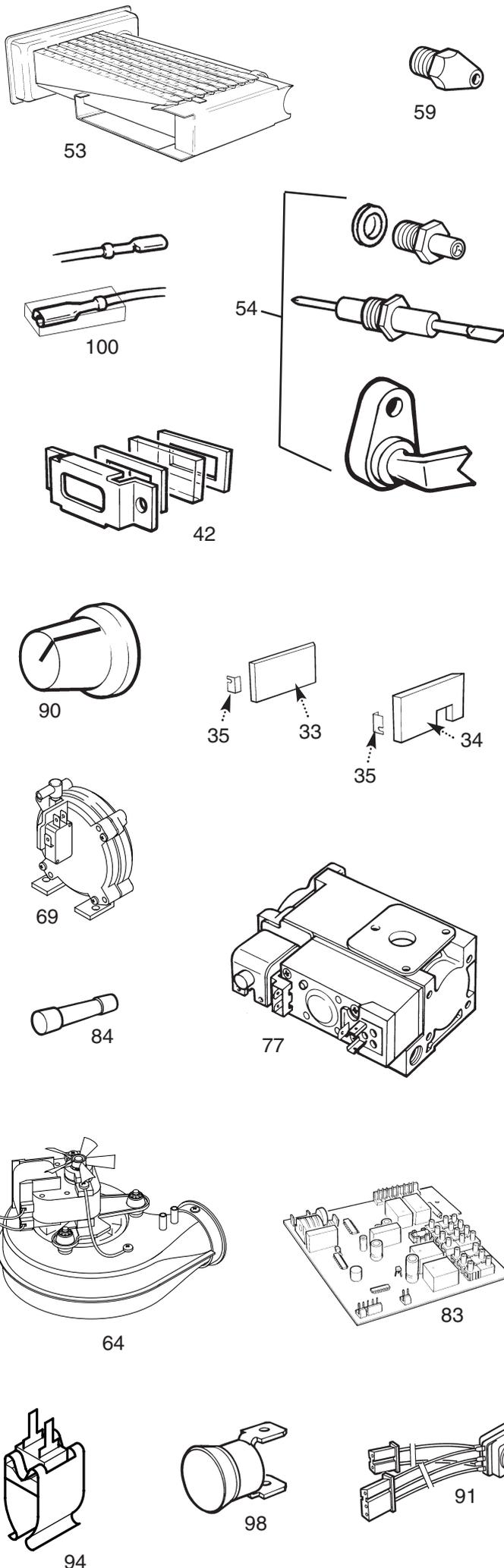
**Warning**

It is important that both the air and flue ducts are cut to their correct lengths also ensure that the flue duct is fully engaged.

Failure to comply with the recommended fitting instructions will adversely affect the operation of the appliance.

## 12.0 Short Parts List

### 12.1 Short Parts List



Key N°	Description	Model	G.C. N°	Manuf'rs Part N°
53	Burner	30-40-50	364 878	231708
		60-70-80	364 879	231709
59	Burner Injector	30	364 880	231354
		40	364 881	231355
		50	364 882	228104
		60	364 873	231776
		70	E01 623	239619
		80	369 981	231777
54	Pilot Kit	All models	170 558	236142
100	Electrode Lead	All models	364 745	225826
90	Control Knob	All models	364 886	230981
42	Viewing Window Kit	All models	364 588	224183
34	Insulation R.H.	All models	364 889	230653
33	Insulation L.H.	All models	364 890	230652
35	Retaining Clips	All models	364 891	230817
77	Gas Valve	All models	E24 690	245122
98	Overheat Thermostat	All models		5106746
84	Fuse	All models	364 892	231402
64	Fan	30, 40, 50	E26 180	246051
		60, 70, 80	E26 213	246052
94	Thermostat	All models	379 030	246064
83	PCB	All models	379 031	231711
91	Potentiometer	All models	379 960	231252
69	Pressure Switch	30, 40, 50	E26 186	246053
		60, 70	E26 219	246054
		80	E26 221	246055





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