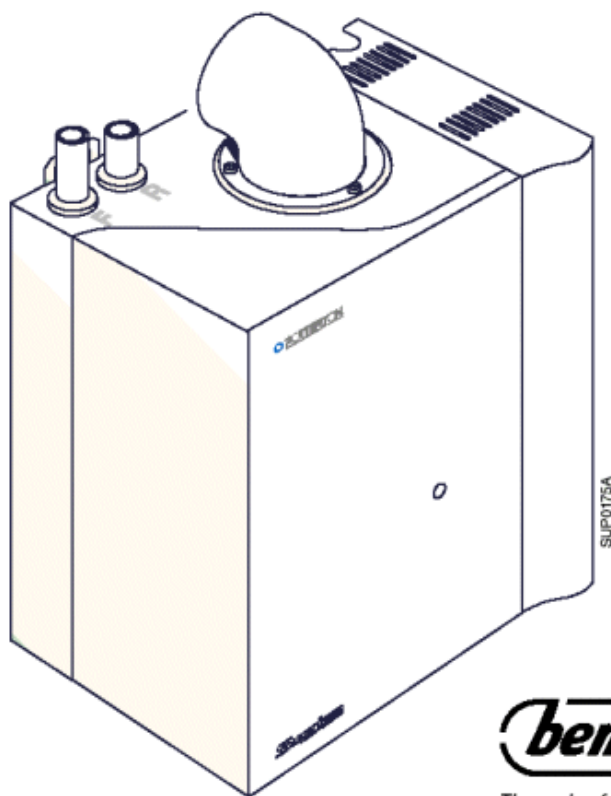




Installation & Service Instructions

Suprema 120

Wall Mounted Fan Assisted Balanced Flue Gas Boiler



*The code of practice for the installation,
commissioning & servicing of central heating systems*

THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS 1998.

“ In your own interest, and that of safety, it is law that all gas appliances are installed by competent persons, in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution.”

Installation must be in accordance with the Installation & Service Instructions and the rules in force.

Leave these Instructions and the Benchmark Log Book with the User for use on future calls

For Use With Natural Gas (G20) Only At 20 mbar For Use in GB & IE



IMPORTANT

PLEASE READ THIS BOOK BEFORE INSTALLING, OPERATING OR SERVICING THIS BOILER.



Contents

Technical Data	3
Introduction	4
1. Installation Requirements	4
1.1 Health & Safety Information	4
1.2 Codes of Practice	4
1.3 Gas Supply	5
1.4 Electricity Supply	5
1.5 Location of Boiler	5
1.6 Air Supply	7
1.7 Flue Systems	7
1.8 Flue Terminal Location	7
1.9 The System	8
Flue Kits	12
Other Kits	13
2. Installation	14
2.1 Unpack & Prepare the Boiler	14
2.2 Install the Flue	15
2.3 Connect the Power Supply Cable	16
2.4 Install the Optional Programmer	17
2.5 Connect the Gas Supply	17
2.6 Connect the Water Supply	18
3. Commissioning	19
3.1 Commission the Boiler	20
3.2 Final Adjustments	21
3.3 Instruct the User	21
3.4 Advise the User	21
4. To Service the Boiler & Component Replacement	22
4.1 General Access	23
4.2 Electronic Control Boards	24
4.3 Electrode	24
4.4 Gas Valve	25
4.5 Temperature Sensor	26
4.6 Overheat Thermostat	26
4.7 Venturi, Fan and Burner	27
4.8 Flue Hood & Internal Flue Tube	28
4.9 Heat Exchanger	29
5. Functional Wiring Diagram	30
6. Wiring Diagrams	31
7. Fault Finding	32
Fault Finding Chart	32
Fault Finding Guide	34
8. Short List of Spares	35

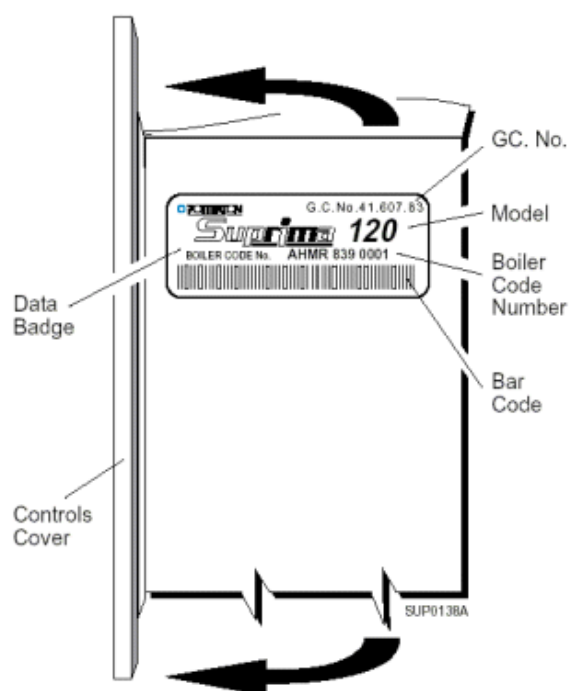
The models covered by these instructions are:-

Suprima 120 - G.C. No. 41 607 83

The boiler model and serial number are given on the boiler data label which is located on the right hand side of the chassis and visible after opening the controls door.

Baxi is a member of the Benchmark initiative and fully supports the aims of the programme. Benchmark has been introduced to improve the standards of installation and commissioning of central heating systems in the UK and to encourage the regular servicing of all central heating systems to ensure safety and efficiency.

Important – Failure to install and commission this appliance to manufacturer’s instructions may invalidate the warranty. This note does not affect your statutory rights.



Publication No. 5000597

Page 2

Technical Data

Nominal Boiler Ratings Suprima 120

Setting	Output		Input		Gas Rate		Efficiency	Injector Size
	kW	Btu/h	kW	Btu/h	m ³ /h	ft ³ /h	%	mm dia.
Summer	23.45	80,000	28.25	96,385	2.69	95.0	83	5.5
Winter	35.17	120,000	43.96	150,000	4.19	148.0	80	5.5

Burner Pressures

	mbar	in. w.g.
Summer	-0.46 to -0.67	-0.18 to -0.27
Winter	-0.6 to -1.1	-0.24 to -0.44

Heat Input & Efficiency figures are quoted as gross

The Burner Pressure is factory set and cannot be adjusted. The burner pressure, depending on flue length can vary between the values shown above. If they are outside the values contact the Potterton Service Department for further advice.

Maximum Working Head	30.5 m (100 ft)
Minimum Working Head	150 mm (6 in)
Gas Supply Pressure	20 mbar
Gas Supply Connection	15 mm

Maximum Flow Temperature	82 °C
* Flow/Return Connections	28 mm Copper
Water Content	2.1 litres (0.46 gal)
Appliance Lift Weight	33.6 kg (74.0 lbs)
Appliance Weight Installed - Dry	38.6 kg (85.1 lbs)
Electricity Supply	230v ~ 50Hz Fused at 3A
Internal Fuse	Type 3.15AT
Power Consumption	80 Watts
Classifications	CAT1 _{2H}
	C13 & C33
	IP20

* It is recommended that the system pipework be 35 mm. The increase from 28 mm to 35 mm should be within 300 mm of the boiler connections.

SAFETY, PERFORMANCE & QUALITY

Suprima boilers have been assessed by a Government appointed Notified Body and shown to meet the 'Essential Requirements' of the European Gas Appliance Directive.

The Directive lays down requirements for the safety and efficiency of the appliance, together with its design, construction, and use of materials.

It also requires the production process to be covered by an approved and monitored system of quality assurance.

Publication No. 5000597

Page 3

Introduction

Gas Safety (Installation & Use) Regulations 1998.

This appliance must be installed and serviced by a competent person, in accordance with the above regulations.

In the UK 'Corgi' Registered Installers (including the regions of British Gas Services) undertake to work to a safe and satisfactory standard.

Failure to install appliances correctly could lead to prosecution.

It is in your own interest, and that of safety, to ensure that the regulations are complied with.

Suprima boilers are fully automatically controlled, wall mounted, fan powered, balanced flue appliances using a cast iron heat exchanger.

The boilers are designed for use on fully pumped open vented or sealed water systems with an indirect hot water cylinder. **THEY MUST NOT BE CONNECTED TO A DIRECT CYLINDER.**

The boilers are for use on Natural Gas (G20) only.

Samples of the Suprima gas boilers have been examined by BG Technology, Certification Services a United Kingdom Notified Body. The range is certified to comply with the essential requirements of the Gas Appliance Directive 90/ 396/EEC, the Low Voltage Directive 72/23/EEC and shows compliance with the Electro Magnetic Compatibility Directive 89/336/EEC and are therefore permitted to carry the CE Mark.

Delivery & Kits Available

The unit is delivered in two packages (1) the boiler with fittings and (2) the flue/terminal assembly. See [page](#)

[12](#) for flue options.

Various kits are available for the Suprima, see [page 13](#).

1. Installation Requirements

1.1 Health and Safety Information for the Installer and Service Engineer

Under the Consumer Protection Act 1987 and Section 6 of the Health and Safety at Work Act 1974, we are required to provide information on substances hazardous to health.

Small quantities of adhesives and sealants used in the product are cured and present no known hazards.

The following substances are also present.

Insulation and Seals

Material - Man Made Mineral Fibre.

Description - Boards, Ropes, Gaskets.

Known Hazards - Some people can suffer reddening and itching of the skin. Fibre entry into the eye will cause foreign body irritation which can cause severe irritation to people wearing contact lenses. Irritation to respiratory tract.

Precautions - Dust goggles will protect eyes. People with a history of skin complaints may be particularly susceptible to irritation. High dust levels are only likely to arise following **harsh** abrasion. In general, normal handling and use will not present high risk, follow good hygiene practices, wash hands before, touching eyes, consuming food, drinking or using the toilet.

First Aid - Medical attention must be sought following eye contact or prolonged reddening of the skin.

1.2 Codes of Practice

The boiler must be installed in accordance with: The Gas Safety (Installation and Use) Regulations 1998 and the current issue of:-

The Building Regulations, Building Standards (Scotland) Regulations, Local Building Regulations, Model and local Water Undertaking Bye-laws, IEE Wiring Regulations and Health & Safety Document No. 635 "The Electrician At Work Regulations 1989", BS1010, BS4814, BS5440:1, BS5440:2, BS5449:1, BS5546, BS6500, BS6759, BS6798, BS6891 and the Institute of Gas Engineers document IGE/ UP/7/1998.

Page 4

1.3 Gas Supply

The meter and supply pipes must be capable of delivering the quantity of gas required in addition to the demand from any other appliances in the house and must be governed at the meter.

The complete installation must be tested for gas soundness and purged as described in BS6891.

1.4 Electricity Supply

230V ~ 50Hz via a fused double pole switch with a contact separation of at least 3 mm in both poles adjacent to the boiler. Power consumption is approximately 80 W. There must be only one common isolator for the boiler and its control system and it must provide complete electrical isolation.

Fuse the supply at 3 A. The minimum requirement for the power supply cable is that it should be a PVC sheathed cord at least 0.75 mm² (24 x 0.2 mm) (code designation HO5 VV-F or HO5 VVH2-F) as specified in table 16 of BS6500:1984.

All wiring external to the boiler shall comply with the latest IEE Wiring Regulations, and any local regulations which apply.

WARNING: THIS APPLIANCE MUST BE EARTHED.

In the event of an electrical fault after installation of the boiler, preliminary electrical systems checks must be carried out i.e. Earth Continuity, Short Circuit, Polarity and Resistance to Earth.

1.5 Location of Boiler

The boiler is not suitable for external installation unless it is suitably protected.

The boiler must be installed so that the flue terminal is exposed to the external air. It is important that the position of the terminal allows the free passage of air across it at all times.

The boiler must be mounted on a flat wall which is sufficiently robust to take the weight of the boiler.

The boiler is suitable for installation to a combustible wall e.g. wood cladding, provided that the flue duct is not closer than 25 mm to combustible material. A metal sleeve should be installed to surround the flue duct to provide a 25 mm annular space. Further guidance is given in BS5440:1:1990, sub-clauses 3.3 and 4.2.5.

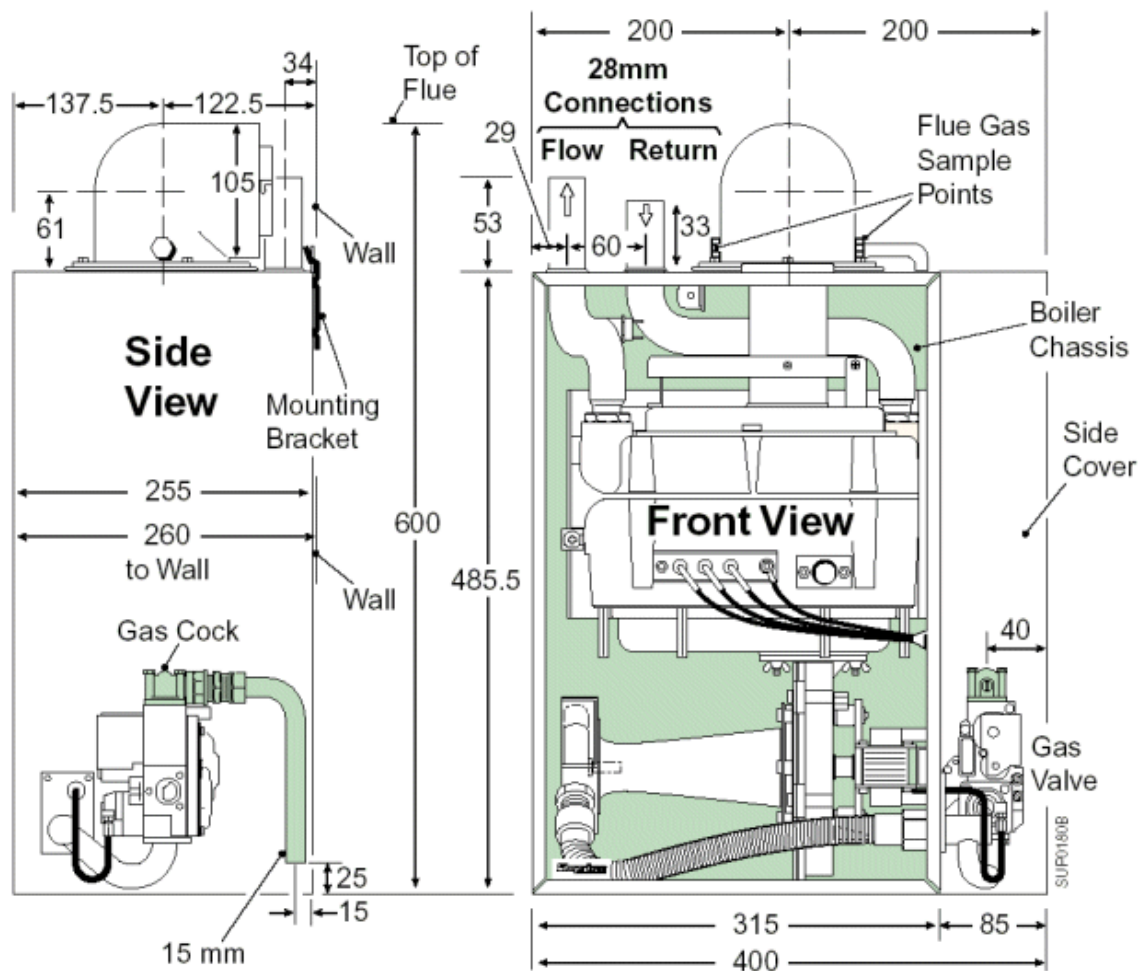
If the boiler is to be installed in a timber framed building it should be fitted in accordance with the Institute of Gas Engineers document IGE/UP/7/1998 (also, British Gas Service publication Part 19 - Building and Kitchen Work). If in doubt advice must be sought from Potterton Limited.

The boiler may be installed in any room, although particular attention is drawn to the requirements of the current IEE Wiring Regulations and, in Scotland, the electrical provisions of the Building Standards applicable in Scotland with respect to the installation of the boiler in a room containing a bath or shower.

Where a room-sealed appliance is installed in a room containing a bath or shower, any electrical switch or appliance control, utilising mains electricity should be so situated that it cannot be touched by a person using the bath or shower. Where the installation of the boiler will be in an unusual position, special procedures may be necessary and BS6798 and BS5546 give detailed guidance on this aspect.

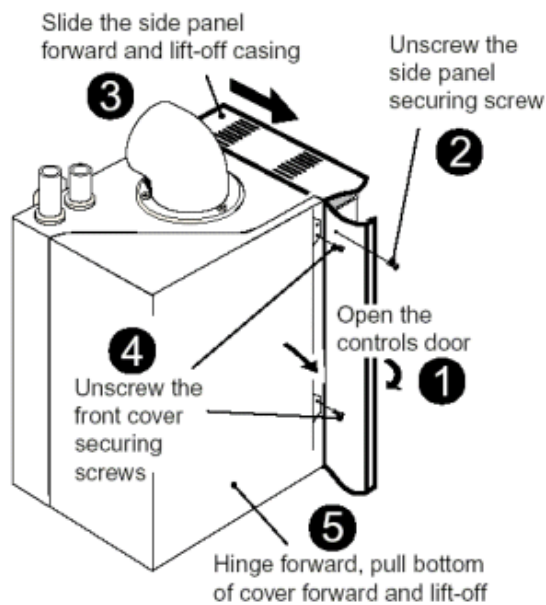
A cupboard or compartment used to enclose the boiler must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used provided that it is modified for the purpose. Details of essential features of cupboard/compartment design including airing cupboard installations are given in BS6798 and BS5546 and should be complied with.

The boiler requires only the clearances shown on Page 6, after installation.

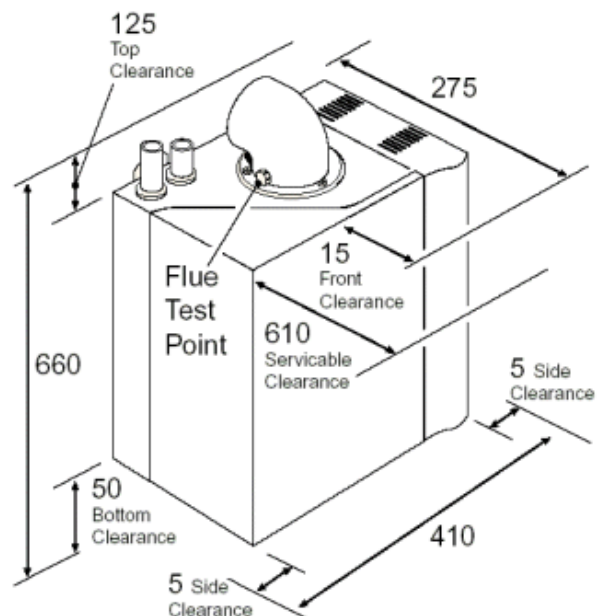


Boiler Dimensions

All Dimensions in mm



Remove the Outer Case



Boiler Clearances

Fig. 1

1.6 Air Supply

The air requirements must meet BS 5440 Part 2.

The room in which the boiler is installed does not require a purpose provided air vent.

If the boiler is installed in a cupboard or compartment, permanent air vents are required in the cupboard or compartment, one at high level and one at low level, either direct to the outside air or to a room. Both high level and low level air vents must communicate with the same room or must be on the same wall to outside air. Both the high level and low level vent must each have a free area as stated below. The free area of each vent may be halved if the ventilation is provided directly from outside.

Free Area - 396 cm²

If the boiler is installed in a cupboard or compartment with a door, allow at least 15 mm clearance between the front of the boiler and the door for air movement.

1.7 Flue Systems

See [Page 12](#) for flue options.

Horizontal

The flue/terminal assembly supplied is suitable for a wall thickness of between 150 mm and 300 mm

A flue/terminal assembly suitable for a wall thickness of up to 550 mm is also available.

Both the flue/terminal assemblies are telescopic and the minimum lengths (150 mm/6 in) are achieved by cutting with an overlap of 20 mm

Maximum equivalent flue length is 2.4 m.

Vertical

Vertical Concentric system.

Maximum equivalent flue length is 2.4 m.

1.8 Flue Terminal Location

If a horizontal flue is sited less than 2 m above a balcony, above ground, or above a flat roof to which people have access, a suitable terminal guard must be fitted. This serves two purposes, to protect the terminal against damage or interference and to protect passers-by. A terminal guard is available (Sales Code: PTERMGUARDEF).

Note: Where a flue terminal is installed less than 1 metre from a plastic, or painted gutter, or 500 mm from painted eaves, an aluminium shield 1 metre long, should be fitted to the underside of the gutter or painted surface. A suitable wall plate should be fitted to the painted wall surface of a mobile home.

IMPORTANT: It is absolutely ESSENTIAL, to ensure that products of combustion discharging from the terminal cannot re-enter the building, or any other adjacent building, through ventilators, windows, doors, natural air infiltration, or forced ventilation/air conditioning. If products of combustion are found to be re-entering any building, the appliance MUST be turned OFF IMMEDIATELY.

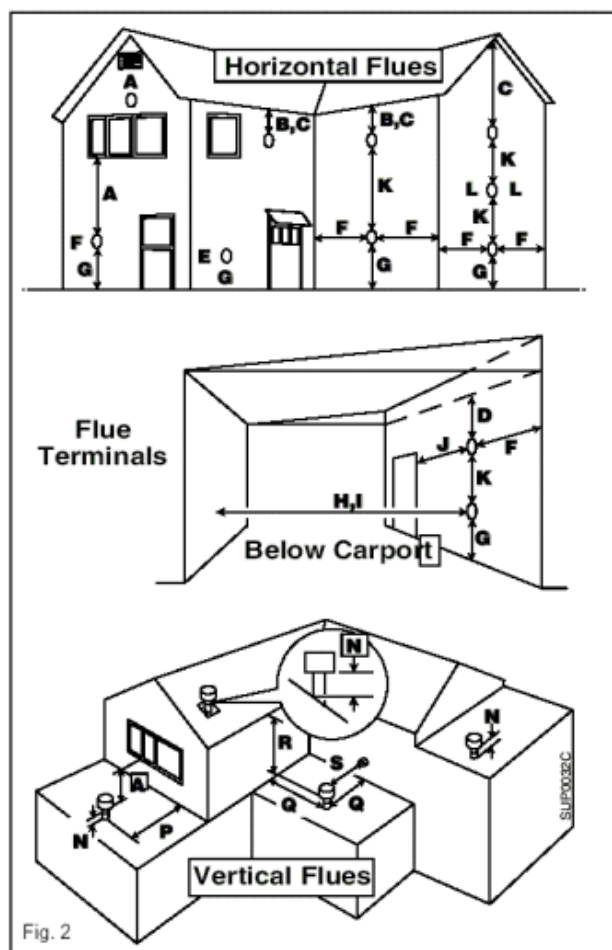


Fig. 2

POSITION

MIN. DISTANCE mm TO EDGE OF TERMINAL

HORIZONTAL FLUES

A	DIRECTLY BELOW AN OPENABLE WINDOW, AIR VENT, OR ANY OTHER VENTILATION OPENING	300
B	BELOW GUTTER, DRAIN/SOIL PIPE	25
C	BELOW EAVES	25
D	BELOW A BALCONY/CARPORT ROOF	25
E	FROM VERTICAL DRAIN PIPES AND SOIL PIPES	25
F	FROM INTERNAL OR EXTERNAL CORNERS	25
G	ABOVE ADJACENT GROUND OR BALCONY LEVEL	300
H	FROM A SURFACE FACING THE TERMINAL	600
I	FACING TERMINALS	1,200
J	FROM OPENING (DOOR/WINDOW) IN CARPORT INTO DWELLING	1,200
K	VERTICALLY FROM A TERMINAL ON THE SAME WALL	1,500
L	HORIZONTALLY FROM A TERMINAL ON THE SAME WALL	300

VERTICAL FLUES

N	ABOVE ROOF LEVEL (TO BASE OF TERMINAL)	300
P	FROM ADJACENT WALL TO FLUE	210
Q	FROM INTERNAL CORNER TO FLUE	230
R	BELOW EAVES OR BALCONY	600

1.9 The System

Before installing a new boiler to an existing system treat the system with an appropriate descaling/flushing agent as per the instructions supplied with the treatment package. It is recommended that any corrosion inhibitors and descalers/ flushing agents used are manufactured by Fernox or BetzDearborn.

If plastic pipe is used for the central heating circuit there must be a run of at least 2m of uninsulated copper pipe from the boiler flow and return connections.

The boiler must be used on Indirect Fully Pumped systems only, which may be sealed or open vented - See [Page 11](#) for pump requirements.

It is recommended that 35 mm pipework is used for the flow and return to within approximately 300 mm of the boiler - See [Figs. 3](#) and [4](#).

The system should be designed so that the maximum static head does not exceed 30.5 m (100 ft) and a minimum of 150 mm (6 in).

For position of pump see [Fig. 3](#). On all systems the pump live connection should be wired to the boiler terminal block, it will then be controlled by the pump over-run. This will ensure that the pump will continue to run after boiler shut down if the water temperature is high, thus preventing nuisance operation of the overheat thermostat.

It is important that where electrically operated zone valves are used the boiler is wired so it does not cycle when the zone valves are closed.

The boiler requires a 22 mm by-pass for correct operation of the pump overrun. The total length of the by-pass circuit taken from the boiler connections should be greater than 4 metres. It is recommended that the by-pass circuit should be fitted with an automatic by-pass valve. The Myson ABV22 by-pass valve is available for such applications.

Additional system information can be found in the Control Systems, pipework and Wiring Guide.

Drain off taps should be fitted in the pipework close to the boiler and in the low points of the system.

Page 8

Note: Although the system can be emptied using the drain off taps installed in the pipework around the system, to empty the boiler it is necessary to remove the drain off screw positioned on the heat exchanger.

Sealed Systems

Installation. The installation must comply with the requirements of BS6798: 1987 and BS5449:1. The British Gas publication "British Gas Specification for Domestic Wet Central Heating Systems" should also be consulted.

Pressure Relief Valve. A non-adjustable spring-loaded pressure relief valve, preset to operate at 3 bar (45 lbf/in²) shall be used. It must comply with BS6759:1. and include a manual testing device. It shall be positioned in the flow pipe either horizontally or vertically upwards and close to the boiler. No shut-off valves are to be placed between the boiler and the safety valve. The valve should be installed with a discharge pipe which permits the safe discharge of steam and hot water such that no hazard to persons or damage to electrical components is caused.

Pressure Gauge. A pressure gauge incorporating a fill pressure indicator, covering the range 0 - 4 bar (60 lbf/in²) shall be fitted to the system. It should be connected to the system, preferably at the same point as the expansion vessel. Its location should be visible from the filling point.

Expansion Vessel. A diaphragm type expansion vessel to BS4814:1. shall be fitted close to the inlet side of the pump. The connecting pipework should not be less than 15 mm Pipework connecting the expansion vessel should not incorporate valves of any sort.

Methods of supporting the vessel are supplied by the vessel manufacturer.

The nitrogen or air charge pressure of the expansion vessel shall not be less than the hydrostatic head, (height of the top point of the system above the expansion vessel). To size the expansion vessel it is first necessary to calculate the volume of water in the system in litres. The following volumes may be used as a conservative guide to calculating the system volume.

Boiler Heat Exchanger:
2.1 litres

Small Bore Pipework:
1 litre per kW of system output

Micro Bore Pipework:
7 litres

Steel Panel Radiators:
8 litres per kW of system output

Low Water Capacity Radiators:
2 litres per kW of system output

Hot Water Cylinder:
2 litres

If the system is extended, the expansion vessel volume may have to be increased unless provision has been made for extension. Where a vessel of the calculated size is not available, the next available larger size should be used.

The boiler flow temperature is controlled at approximately 82 °C

The vessel size can now be determined from the information in Table 1 where V = System volume in litres.

Vessel Charge Pressure (bar)	0.5	1.5
Initial System Pressure (bar)	1.0	1.0
Expansion Vessel Volume (litres)	$V \times 0.11$	$V \times 0.087$

Table 1.

Cylinder. The hot water cylinder must be an indirect coil type.

Method of Make-up. Provision shall be made for replacing water loss from the system either:-

i) from a make-up vessel or tank mounted in a position higher than the top point of the system, and connected through a non-return valve to the system on the return side of the hot water cylinder or the return side of all heat emitters.

or

ii) where access to a make-up vessel would be difficult by using the mains top up method or a remote automatic pressurisation and make-up unit as shown in [Figs. 5 & 6](#).

Mains Connection. There shall be no connection to the mains water supply or to the water storage tank which supplies domestic hot water even though a non-return valve, without the approval of the Local Water Authority.

Filling Point. The system shall be fitted with a filling point at low level which incorporates a stop valve to BS1010 and a double check valve (approved by the National Water Council) to be fitted in this order from the system mains, see [Fig. 5](#).

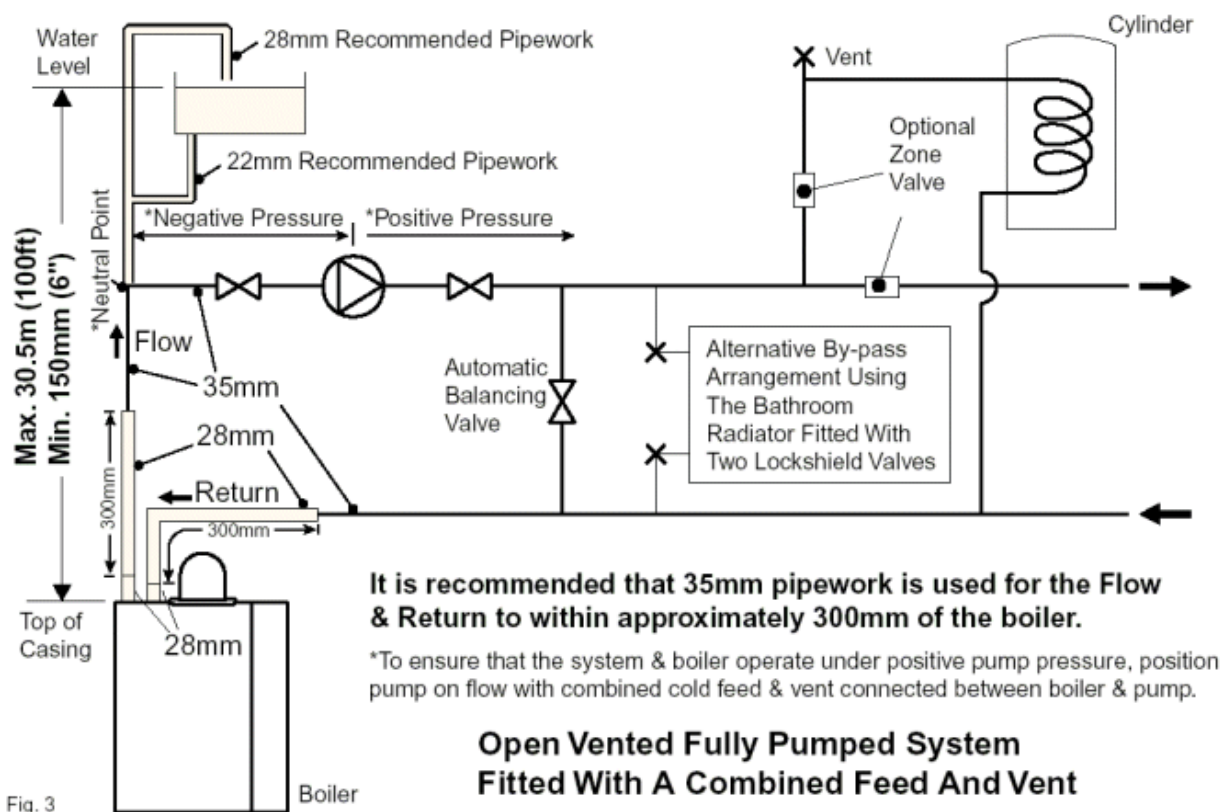


Fig. 3

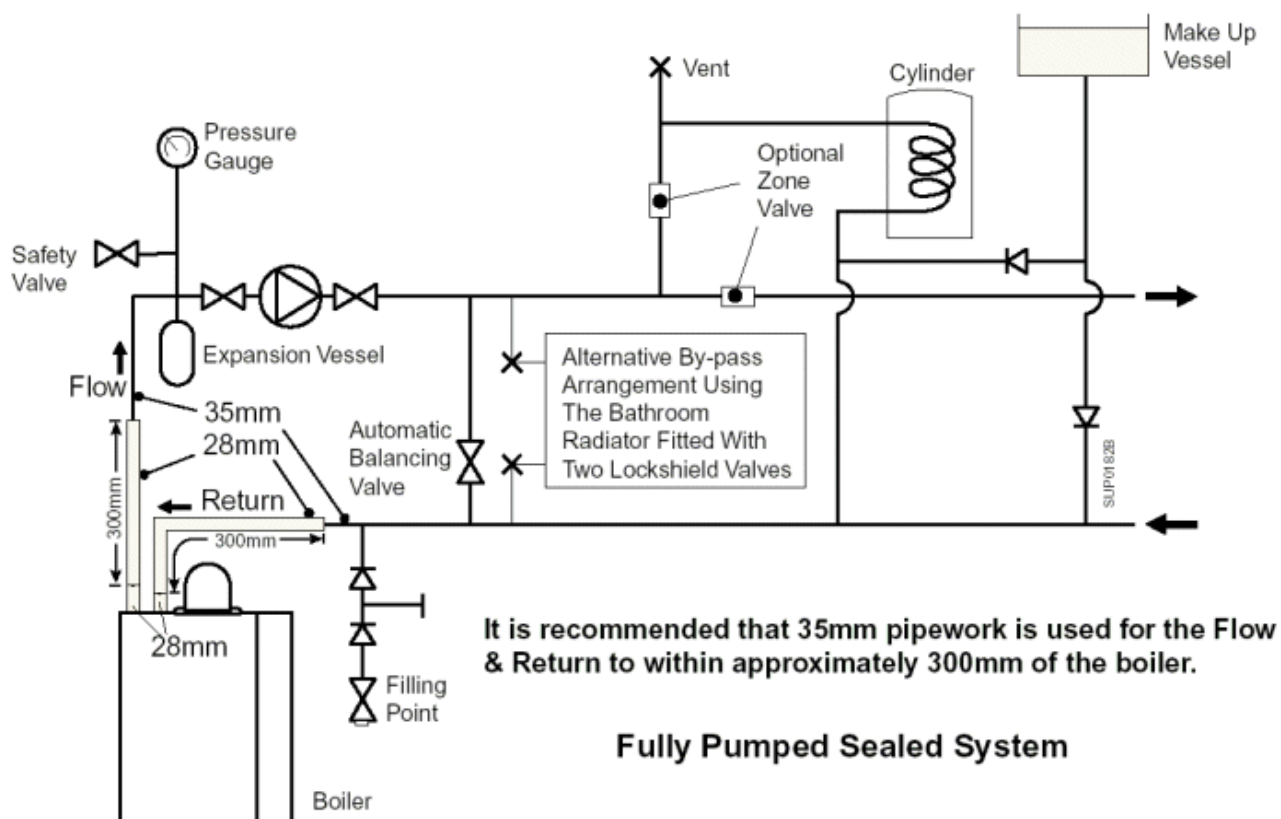


Fig. 4

Method 1

Mains Topping-up Method

NOTE: This method of filling a sealed system may only be used if acceptable to the Local Water Undertaking

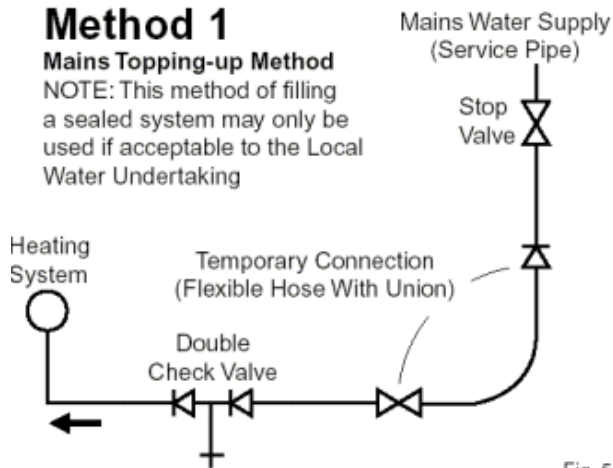


Fig. 5

Fig. 5

Method 2

Cistern Filling Method

NOTE: Cistern to be supplied through a temporary connection from a service pipe or cold water distribution pipe

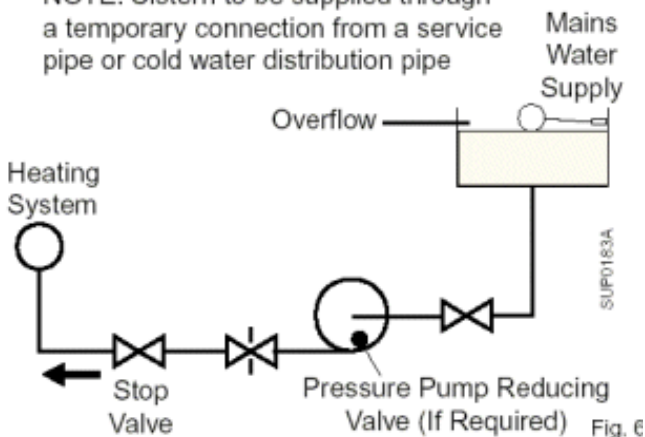


Fig. 6

Fig. 6

Circulation Pump Selection

The resistance through the heat exchanger when operating with a water flow rate producing an 11 °C temperature rise at maximum boiler output is shown in the table.

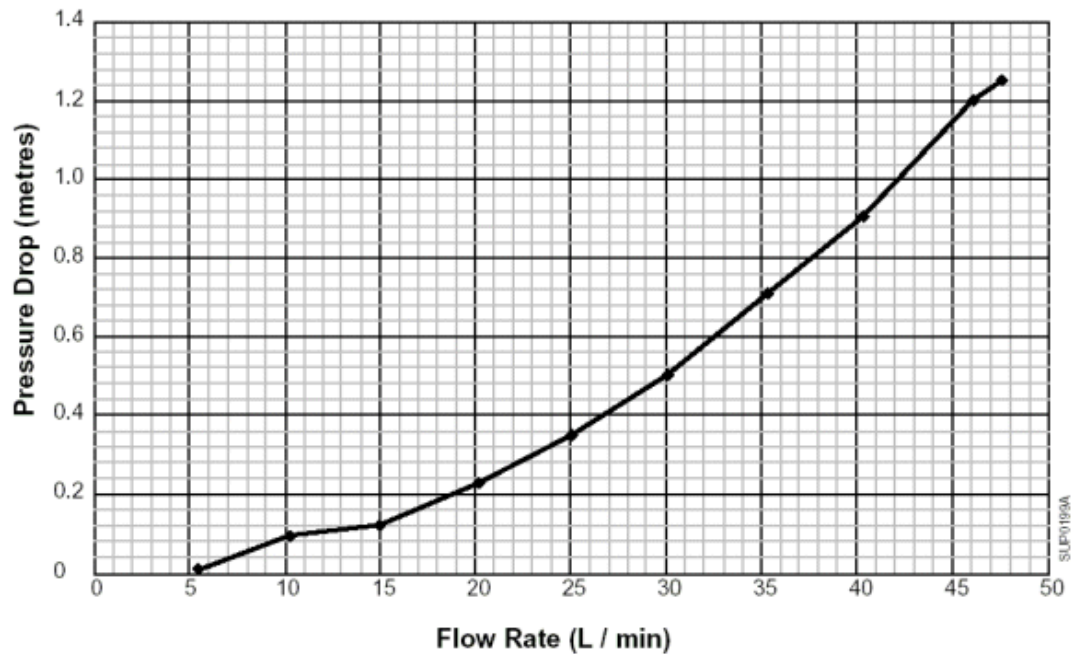
This is a high output boiler requiring a pump producing a high water flow rate - see table and graph. The system resistance including all control valves etc. must also be taken into account.

Most commonly used domestic circulating pumps do not produce the performance required, therefore a higher duty/light commercial pump should be used.

It must be fitted with two isolating valves which are positioned as close to the pump as possible. Closing of any valve must always leave the open vent unobstructed.

	Water Flow Rate	Boiler Resistance	
	l/min	mbar	m
Suprima			
120	45.82	121.0	1.23

Suprima 120 Hydraulic Resistance



Concentric Vertical Flue Kit

Sales Code: SUPKITD120

A) Terminal Assy.

B) Terminal Clamp Bracket

C) Air Tube Adaptor

D) Product Tube Adaptor

E) Ceiling Seal

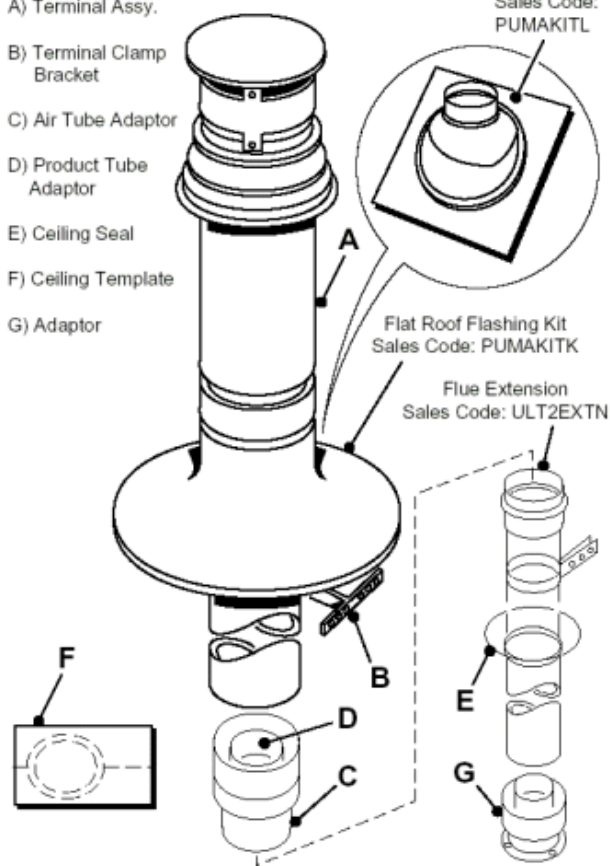
F) Ceiling Template

G) Adaptor

Pitched Roof Flashing Kit
Sales Code: PUMAKITL

Flat Roof Flashing Kit
Sales Code: PUMAKITK

Flue Extension
Sales Code: ULT2EXTN



Telescopic Horizontal Flue Kit

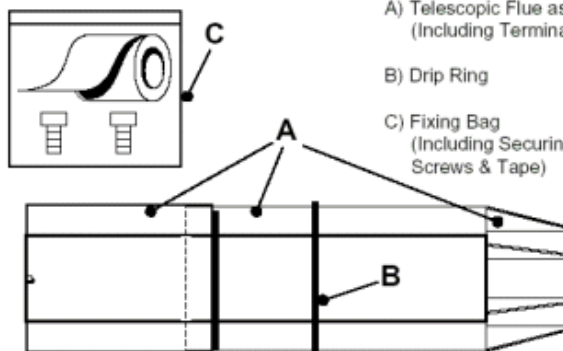
Sales Code: 1SUPFLUE
(up to 300mm) Standard

Sales Code: 2SUPFLUE
(up to 550mm) Alternative

A) Telescopic Flue Assy.
(Including Terminal)

B) Drip Ring

C) Fixing Bag
(Including Securing
Screws & Tape)



Concentric Vertical Flue Adaptor Kit

Sales Code: SUPKITC120



Wall Plate Pack

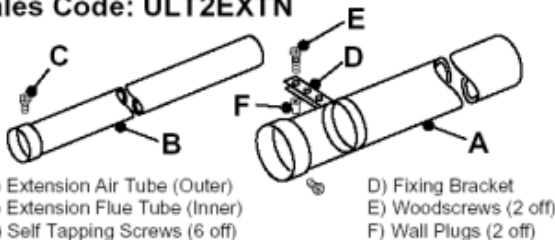
Sales Code: SUPKITB



1m Flue Extension Kit

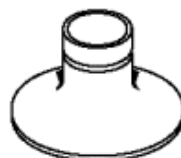
Sales Code: ULT2EXTN

(Max. 2 Kit)



Flat Roof Flashing Kit

Sales Code: PUMAKITK



Pitched Roof Flashing Kit

Sales Code: PUMAKITL



90° In-Line Bend Kit

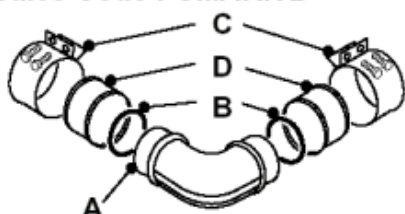
Sales Code PUMAKITB

A) 90° In-Line Elbow

B) Product Tube 'O' Ring (2 off)

C) Air Tube Clamp
(Including Nuts
& Screws)

D) Air Tube Seal
(2 off)



135° In-Line Bend Kit

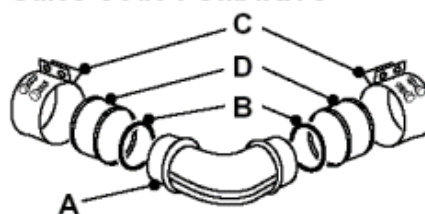
Sales Code PUMAKITC

A) 135° In-Line Elbow

B) Product Tube 'O' Ring (2 off)

C) Air Tube Clamp
(Including Nuts
& Screws)

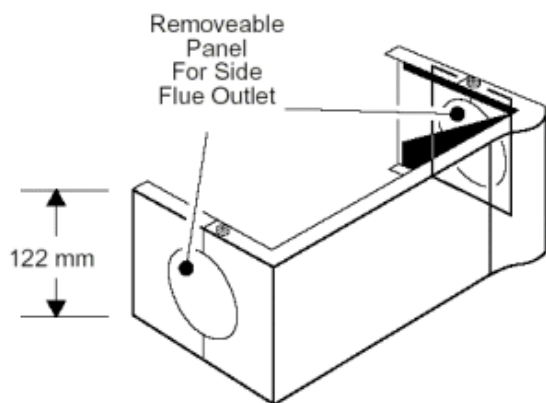
D) Air Tube Seal
(2 off)



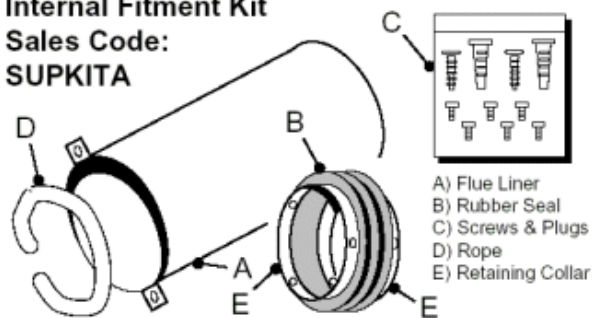
Installation instructions included as necessary with each kit.

Installation instructions included as necessary with each kit.

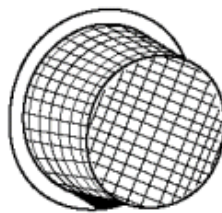
Flue Turret Cover
Sales Code:
SUPFITI



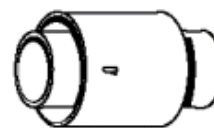
Internal Fitment Kit
Sales Code:
SUPKITA



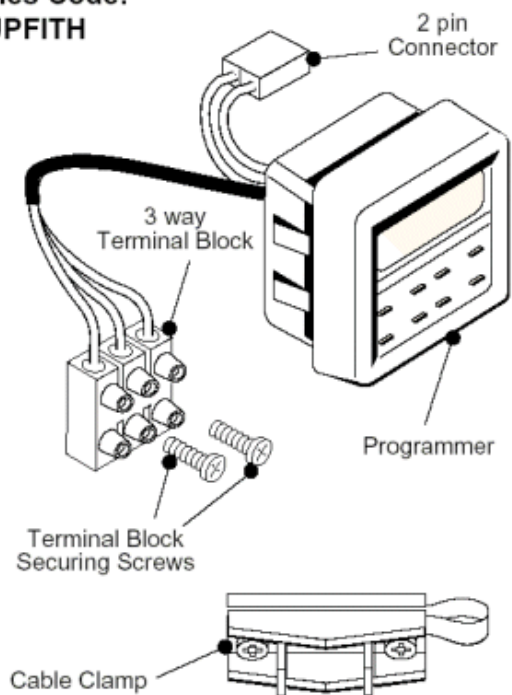
Terminal Guard
Sales Code:
PTERMGUARDEF



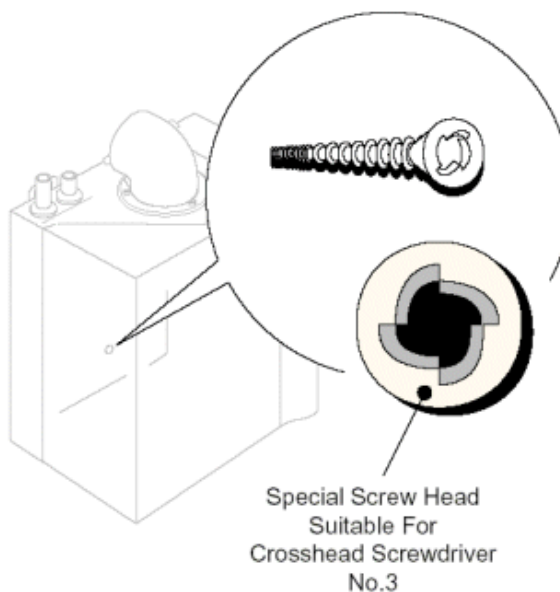
Telescopic In-Line Bend Adaptor
Sales Code:
SUPKITR



Programmer Kit
Sales Code:
SUPFITH



Anti-theft Kit
Sales Code:
SUPFITP



SUP020 1A

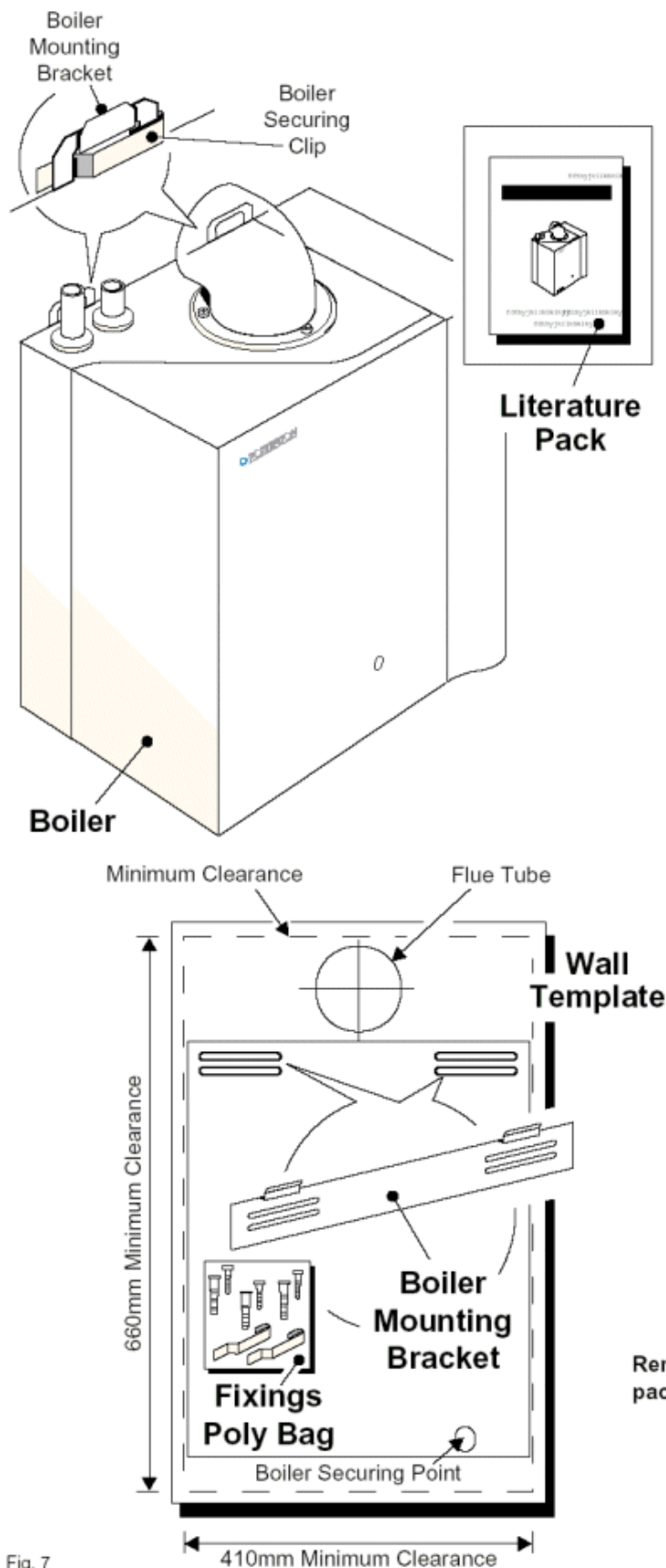
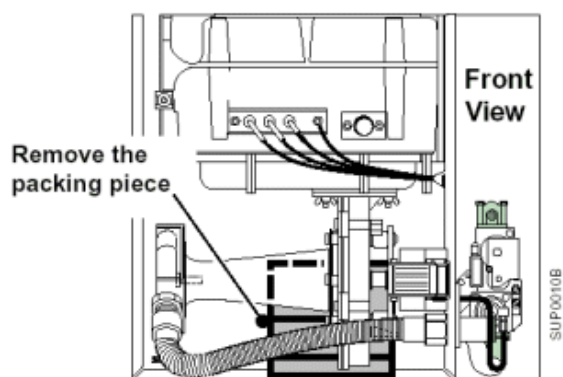


Fig. 7

Fig. 7



2.1 Unpack & Prepare the Boiler

These instructions assume you have decided on where the boiler will be located and the type of flue system to be used.

1. Carefully unpack the boiler.
 2. Do not discard any packaging until all the items are accounted for.
 3. Open the controls cover, remove the securing screw and washer, pull off the controls cover and put safely aside.
 4. Remove two screws and washers, remove the white front case and put safely aside.
 5. Place the mounting template in the proposed boiler position ensuring that it is level. Minimum clearances are accounted for on the template.
 6. Mark the flue hole, remove the template and carefully cut the flue hole through the wall. See [Fig. 8](#) for Side Flue.
 7. Place the mounting template centrally over the hole (ensure the template is level) and mark out the two screw fixing hole positions.
 8. Remove the template and drill the three holes using a 7 mm drill.
 9. Insert wall plugs and secure the mounting bracket to the wall using three No. 12 x 2" woodscrews.
 10. Lift the boiler onto the mounting bracket, slide both boiler securing clips over the mounting bracket (this prevents the boiler from being accidentally lifted off the mounting bracket), see [Fig. 7](#).
 11. The third screw provided is also to prevent the boiler from being lifted off the mounting bracket, once the boiler is mounted on the wall. This screw can be replaced by an anti-theft kit see note below.
- Note:** There is provision for an anti-theft securing point (sales code: SUPKITP) which may be used if required.
12. Remove the transport packing piece from behind the fan.

Page 14

2.2 Install the Flue

Maximum flue length is 2.4 m

Note: For flue lengths less than the minimum telescopic length, the tubes can be cut to suit. Ensure that the same length is removed from the inner and outer tubes to maintain a 20 mm overlap (minimum).

These instructions are for rear and side flue applications.

Rear Flue

1. Measure the wall thickness and add 66 mm.

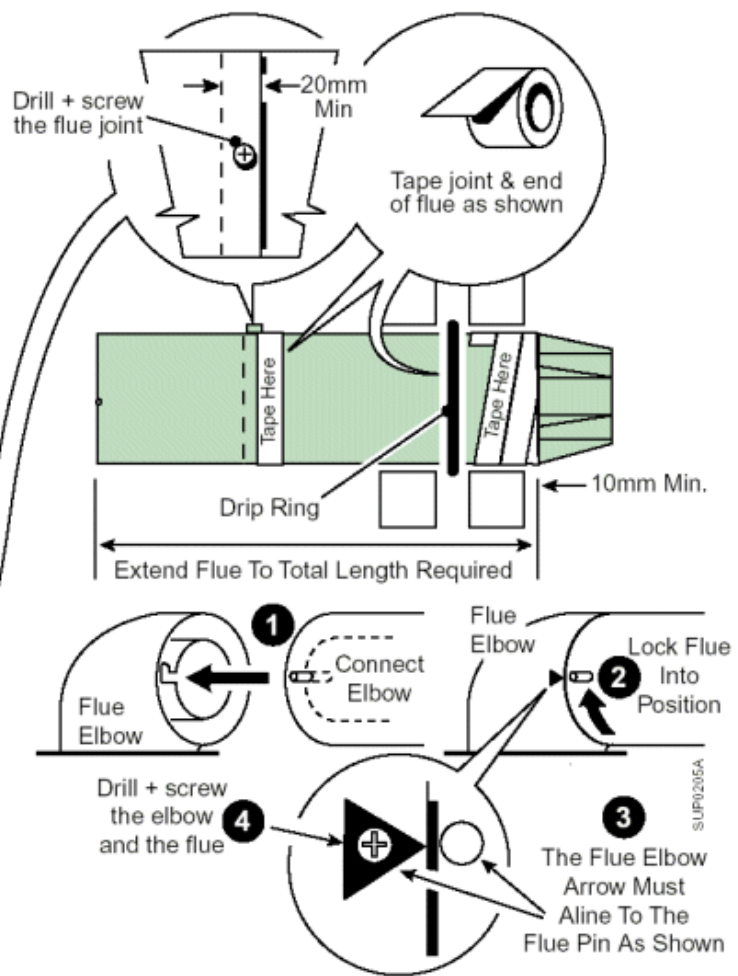
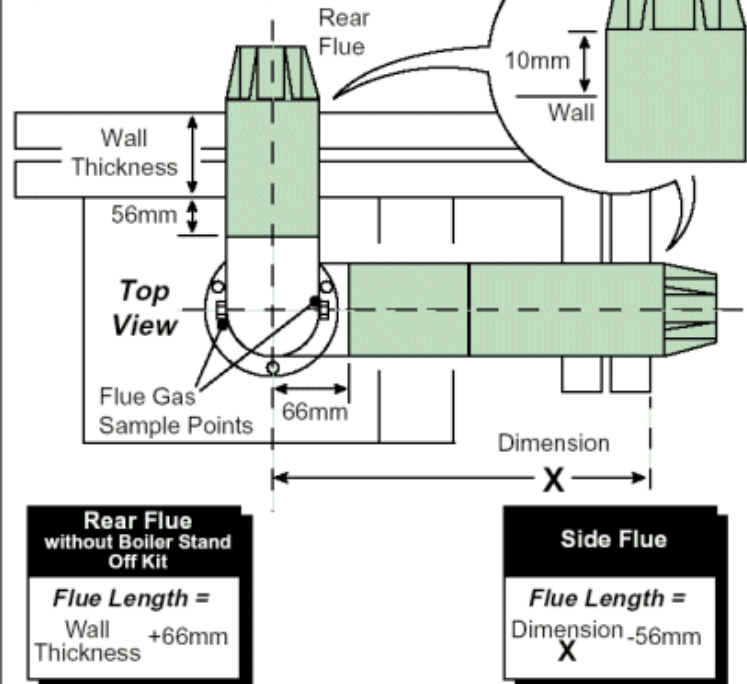
Side Flue

1. Determine the X dimension (wall thickness + distance to boiler centreline).

For both Rear & Side Flues

2. Extend the telescopic flue to the required length, minimum 20 mm overlap.
3. Drill through the pilot hole and secure with self tapping screw.
4. Wrap tape around the joint on the outer duct to seal the flue, slide drip ring into a position to coincide with the air gap in the wall (cavity wall) .
5. Slide the flue through the hole until it stops on the pin.
6. The boiler is supplied with the flue elbow set to the rear. For side outlet slacken the screws and turn the elbow to the required position and re-tighten screws. Ensure that the seals are still correctly located.
7. Hang the boiler onto the mounting bracket. To square the boiler to the wall adjust the boiler alignment screws on the back panel of the boiler.
8. Slide the flue back until it engages in the elbow bayonet connection, twist anticlockwise to lock.
9. Drill through pilot hole and lock flue in position with the self tapping screw provided.
10. Make good the wall around the flue, both outside and inside.

Flue Measurements (Standard Flue Shown)



Maximum Flue Length Guide:

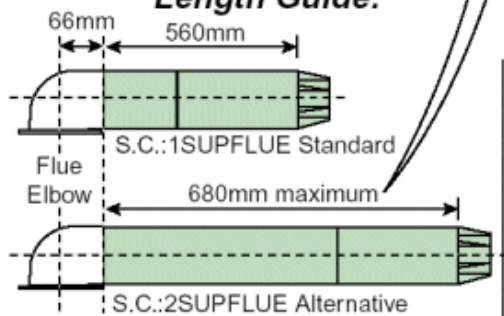


Fig. 8

Fig. 8

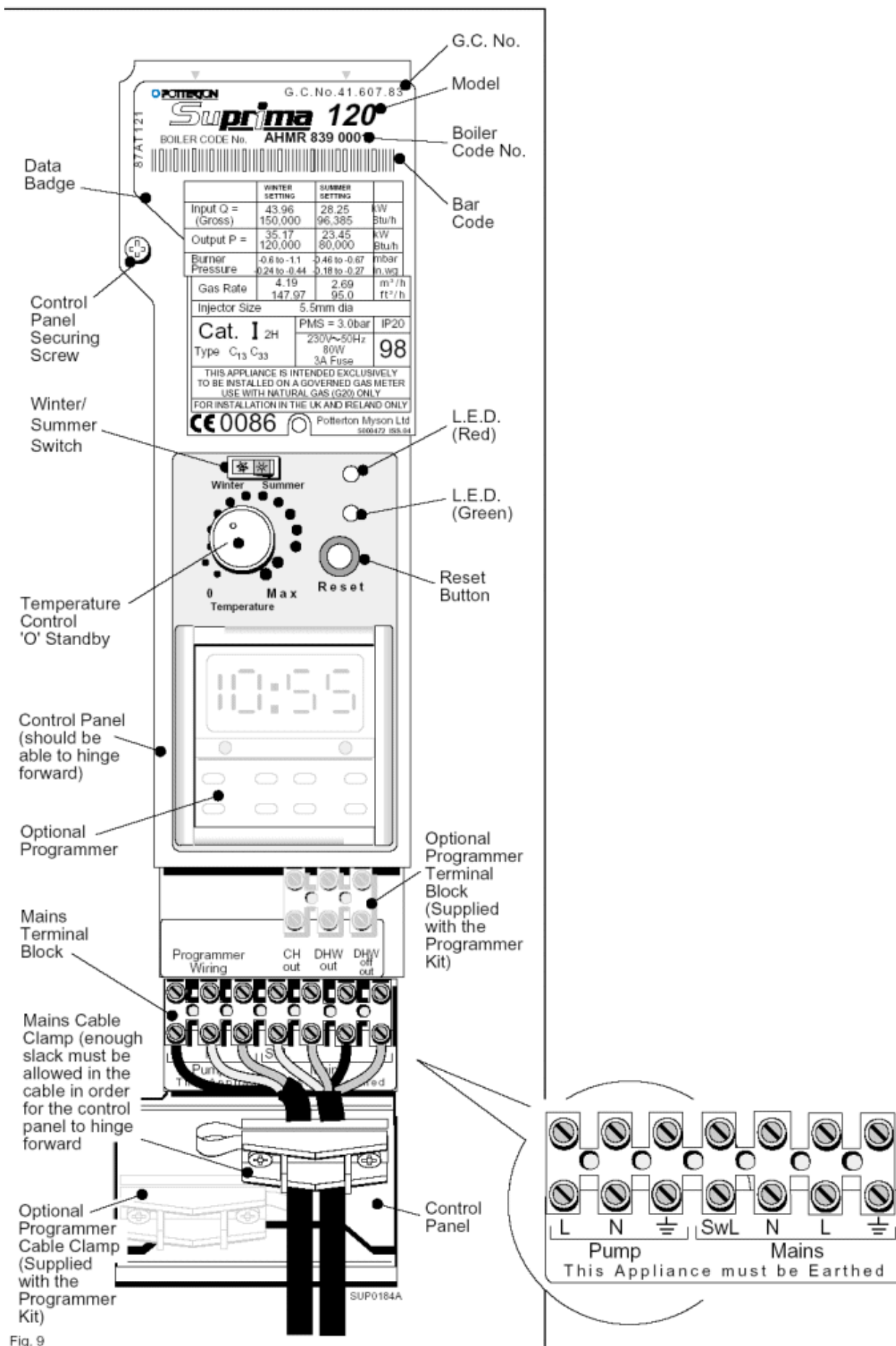


Fig. 9

Fig. 9

2.3 Connect the Power Supply Cable

1. Cable clamping is provided on the front of the controls panel. Feed the cables up and over the back of the chassis, through the clamp and into the terminal connection. Connect the wires, brown to L and blue to N

and green/yellow to earth ().

Note: When connecting the power supply cable, ensure that the length of the earth wire is such, that if the power supply cable pulls out of the cable clamp the live and neutral wires become taut before the earth wire.

2. The pump wiring should be routed through the hole in the base of the rear cover, through the cable clamp and connected to the terminal connection.

3. Take up excess slack in the cables between the terminal block and the cable clamp, then tighten the cable clamp screws. Ensure sufficient slack is available to the cable clamps to allow the control panel to hinge freely. Check by opening the control panel.

If fitting the optional Potterton timer go to [section 2.4](#) before performing steps 4 and 5 below.

4. Secure the controls assembly to the chassis using the screw previously removed.

5. Carry out preliminary electrical system checks i.e. Earth Continuity, Short Circuit, Polarity and Resistance to Earth.

Frost Thermostat:

If a Frost Thermostat is to be fitted, the connections should be made in the wiring external to the boiler.

The Frost Thermostat should be connected between the Permanent Live & Switch Live in the supply cable to the boiler.

Do not switch on the electricity supply at this stage.

Page 16

2.4 Install the Optional Programmer

1. Carefully remove the blanking panel from the facia and locate the programmer into the cut out.

2. Remove the two plastic sleeves and connect the programmers electrical plug onto position J4 on the circuit board.

3. Connect the 3 way terminal block to the metal work immediately below the programmer using the two screws provided.

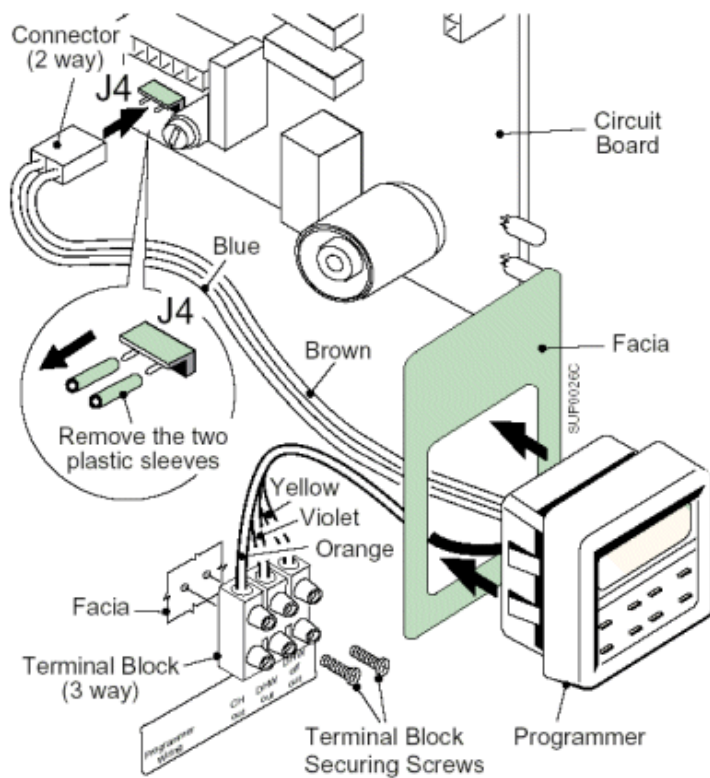


Fig. 10

2.5 Connect the Gas Supply

Ensure that the gas supply is isolated. Connect the gas supply using a suitable adaptor to the gas cock.

Important:

Do not solder the fitting whilst assembled to the gas cock.

The pipe diameter required will depend on the pipe length from the gas meter. Ensure that the gas supply pipe is selected in accordance with BS6891 so that an adequate gas supply to the boiler is provided. It is recommended that a 22 mm supply is used on lengths greater than 1 metre.

Do not turn the gas supply on at this stage.

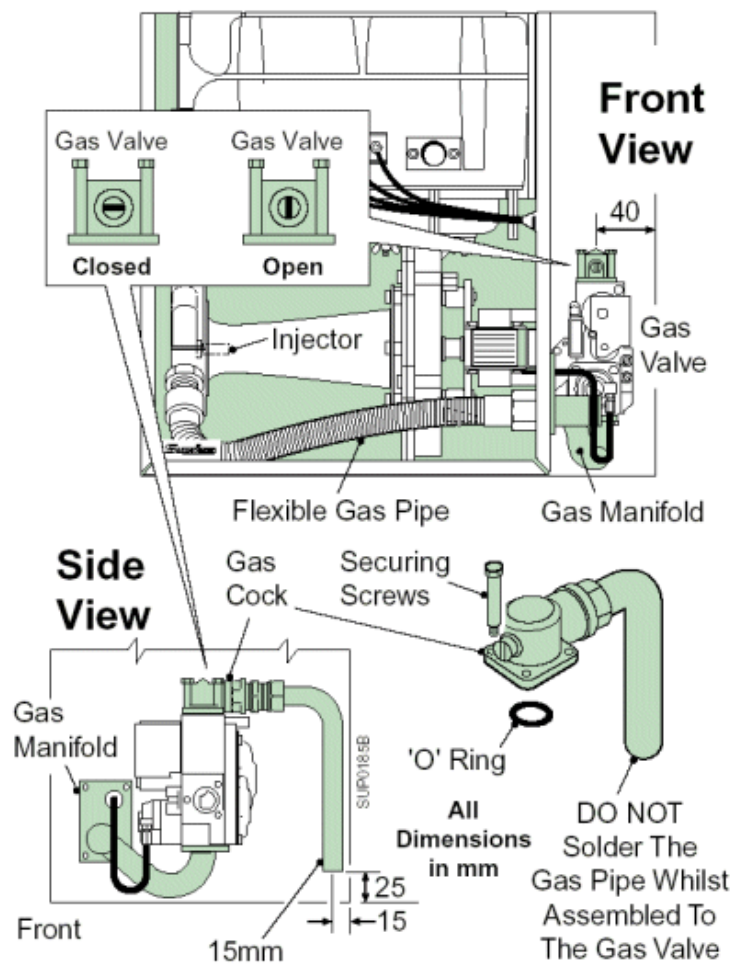


Fig. 11

It is recommended that 35mm pipework is used for the Flow & Return to within approximately 300mm of the boiler.

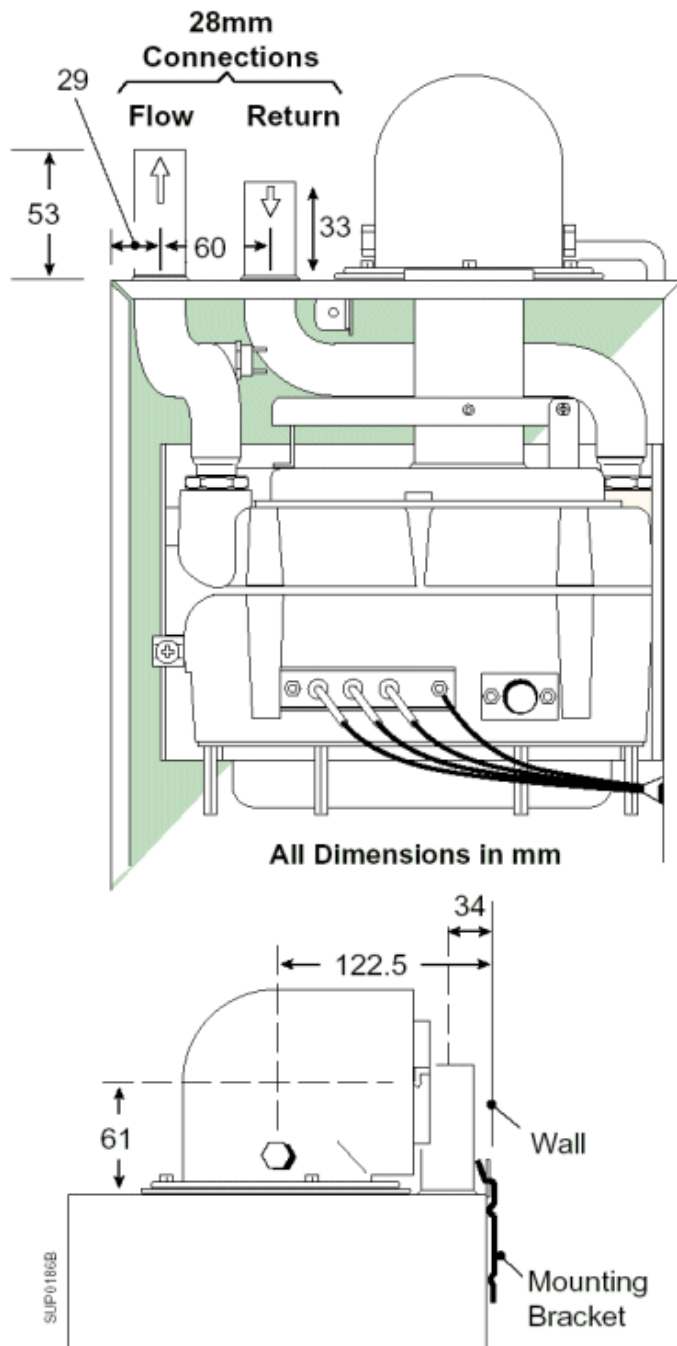


Fig. 12

2.6 Connect the Water System

1. Connect system pipework to the boiler, compression fittings should be used.

Note: A Drain off tap should be installed close to the boiler and at the lowest point in the system.

3. Commissioning

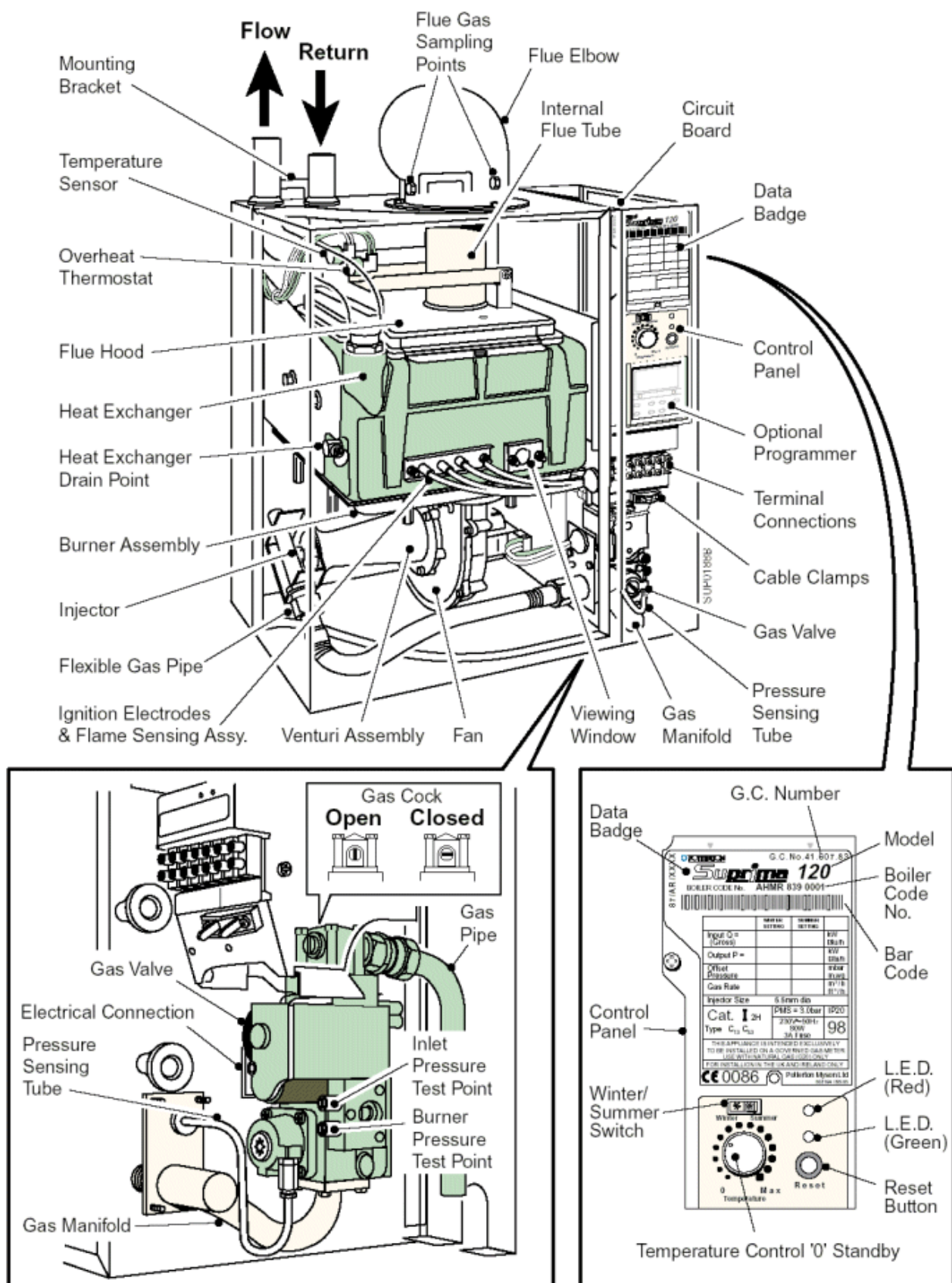


Fig. 13

3.1 Commission the Boiler

Important

When checking for gas soundness open all windows and doors in the room.

Extinguish all naked lights, cigarettes, pipes, etc.

Important

The commissioning and boiler adjustment must only be carried out by a suitably qualified personnel. Baxi Heating Limited offer this service on a chargeable basis.

Open Vented Systems - Remove the pump and flush the system thoroughly. Re-fit the pump. Fill and vent the system then check for leaks.

Sealed Systems - Note: The system can be filled using a sealed system filler pump with a break tank or by any other method approved by the Local Water Authority. Remove the pump and flush the system thoroughly. Re-fit the pump. Fill and vent the system until the pressure gauge registers 1.5 bar (21.5 lbf/in²) and check for leaks. Raise the pressure until the safety valve lifts, this should occur within ± 0.3 bar of the preset lift pressure of 3 bar. Release water to attain the correct cold fill pressure.

All Systems

Warning: Before lighting the boiler, ensure that the outer white case has been correctly fitted and that the sealing strip fitted to the outer white case is forming a tight seal with the main boiler chassis. The controls cover is left off at this stage.

Preliminary electrical system checks. These checks must be carried out before attempting to light the boiler.

They are:- Earth Continuity, Short Circuit, Polarity & Resistance to Earth.

- 1) The whole of the gas installation must be checked for soundness and purged in accordance with BS 6891.
- 2) Set the boiler temperature control knob to 'O' Standby and the Winter/Summer switch to Winter.
- 3) Turn the boiler gas service cock to the 'On' position and that the main gas supply is turned 'On'.
- 4) Make sure that the system is full of water and that the pump and radiator isolating valves are open. Vent air from the system.
- 5) Ensure that the main electricity supply is 'On'.
- 6) Check that the time control, if fitted, is in an 'On' position and that the room and cylinder thermostat, where fitted are set to high temperatures.

First time lighting:

- 7) Set the temperature control knob to its maximum setting.

The boiler will attempt to light, if the boiler does not light within 3 attempts (due to air in the gas supply) the boiler controls will go to 'Lockout' and the upper Red LED on the control panel will go to a flashing mode. To re-start the lighting sequence press the reset button on the control panel. There will be a short delay before the lighting sequence starts.

When the boiler burner flame has established and the burner lights the lower Green LED on the user control panel will be on continuously.

LED Indicators	Green LED	Red LED
Status		
Mains ON Only	OFF	ON
Ext. Call for Heat (<i>Boiler set to STNDBY, Temp. Control set to 'O' Off</i>)	FLASHING 2 PER Sec.	ON
Ext. Call for Heat (<i>STNDBY switch to ON, Temp. Control set to Max.</i>)	FLASHING 2 PER Sec.	OFF

Ignition (<i>i.e. Gas and Sparks ON</i>)	FLASHING 16 PER Sec.	OFF
FLAME Detected	ON	OFF
Boiler Temperature Control Satisfied	FLASHING 2 PER Sec.	ON

8) With the main burner running, check for gas soundness using leak detection fluid.

9) Allow the system to reach maximum working temperature and examine for water leaks. Set the temperature control to 'Standby' and drain the system whilst still hot.

Note: Should the boiler fail to operate correctly refer to the [Fault Finding Guide](#) and the boiler [wiring diagram](#) for further information.

10) Re-fill and vent the system making a final check for leaks.

11) To ensure it operates correctly under minimum load conditions, the automatic by-pass valve should be adjusted in accordance with the manufacturers instructions.

On sealed systems adjust to the correct cold fill pressure. Set the pressure gauge pointer to the system design pressure.

Page 20

If the boiler fails to operate

Check the LED indicator fault modes below and refer to [fault finding guide](#) and boiler [wiring diagram](#).

LED Indicators Fault Modes	Green LED	Red LED
Status		
Blocking - Mains Frequency incorrect > 1 min. or Reset button held in to force a restart	ON	FLASHING 2 Per Sec.
Earth Fault or Mains Reversal	FLASHING 2 Per Sec.	FLASHING 2 Per Sec.
Lockout - overheat condition	OFF	FLASHING 2 Per Sec.

3.2 Final Adjustments

Other than the checks shown below, the boiler is preset at the factory and requires no adjustment.

1) *With the burner **NOT** operating.* Use a pressure gauge to check the inlet pressure is 20 mbar.

2) Turn the boiler on and allow to run for 10 minutes.

3) With the burner operating. Check that the inlet pressure is above 16 mbar.

4) Check that the burner pressure/gas rate at the meter is correct. See [Page 3](#) for the burner pressure and gas rate values.

5) Shut down the boiler, remove the pressure gauge, re- fit the screws and check for gas soundness.

6) Re-fit the controls cover and secure with the screw previously removed.

Control Thermostat

At its minimum and maximum settings, the thermostat should control the water flow temperature at approximately 60 °C - 82 °C

Set the temperature control knob to 'O' Standby and check that the main burner shuts down.

Overheat Thermostat

The overheat thermostat is pre-set and no adjustment is possible. It will require manual re-setting if an overheat condition occurs (the LED will go to flashing Red).

The re-set button is located on the controls assembly.

Winter/Summer Switch

At times when only domestic hot water is required, the boiler may be operated at the 'Summer' setting (low output - 80,000 Btu/hr). When central heating and domestic hot water are required, the boiler should be operated at the 'Winter' setting.

Other Boiler Controls

No further setting or checking is necessary as all boiler mounted controls are designed so that if a fault should occur they will fail safe.

External Controls

Check that any other external controls connected in the system, such as clocks or thermostats, control the boiler as required.

3.3 Instruct the User

On completion of the installation, the installer should demonstrate the operation of the boiler and its associated controls. Also hand over all the instructions.

3.4 Advise the User

1. If a timer is fitted, set the time and programme the required settings. For a wall mounted programmer, see separate programmer instructions. For the Suprima timer, see the timer Instructions for Use fitted to the controls cover door.
2. Instruct the User in the safe operation of the boiler and controls.
3. Advise the User of the precautions necessary to prevent damage to the system and to the building in the event of the system remaining inoperative during frost conditions. Also, demonstrate the use of the Winter/Summer switch.
4. Advise the User that for continued efficient and safe operation of the boiler it is important that adequate servicing is carried out at least once a year by a Baxi Service Engineer, the local Gas Supplier or a C.O.R.G.I. Registered Installer.
5. Leave a permanent card attached to the boiler giving:
 - a. Name and address of installer.
 - b. Date of installation.
 - c. A wiring diagram of the external control circuit.
6. And finally, complete the Benchmark Log Book and hand over all the instructions supplied.

Page 21

4. To Service the Boiler & Component Replacement

To ensure continued efficient operation of the appliance, it is recommended that it is checked and cleaned as necessary at regular intervals.

The frequency of servicing will depend upon the particular installation conditions and usage but in general once per year should be adequate.

It is the law that any service work must be carried out by a competent person who is C.O.R.G.I. Registered.

Before servicing, fire the appliance and check that the flames are blue.

Yellow flame and excessive lifting indicate poor combustion.

WARNING

Before commencing work turn the temperature control knob to 'O' Off and allow the appliance to cool, isolate the electricity supply.

If the gas valve is to be removed turn off the gas supply at the appliance service cock.

IMPORTANT

Always test for gas soundness before and after completing any servicing of gas carrying components and carry out functional checks of controls.

IMPORTANT

Ensure that the outer white case is correctly fitted and that the sealing strip fitted to the door is forming a tight seal with the boiler casing.

Remember to fill in the Benchmark Log Book

Notes on Cleaning Boiler Components

Heat Exchanger With the fluehood and burner removed place a sheet of paper under the heat exchanger then, using a flat blade tool (Part No. 907736), scrape the flueway fin surfaces in a downward movement. This will ensure that most of the deposits will be collected on the paper.

Burner Gently brush the burner top and check that the flame ports are clear. Any blockage may be removed with a fine brush. Turn the burner upside down and tap gently to remove any debris.

Electrode Clean the electrode surfaces using a solvent.

Main Injector Omit this operation if the gas rate is correct, otherwise clean by blowing through.

Fan Assembly Examine the fan and carefully remove any debris.

Flue Inspect the flue terminal and flue/air tube for blockage and integrity, rectify if necessary.

Flue gas sampling points are located on the flue elbow - see [Fig. 14](#).

Typical maximum CO and CO₂ values are: CO = 0.016 %, CO₂ = 9.3 %.

Page 22

Component Replacement

4.1 General Access

Warning: Before starting work, open the controls cover and set the temperature control knob to 'O' Standby. Isolate the electricity supply and if a gas carrying component is to be removed, isolate the gas supply at the appliance service cock. Allow the boiler to cool.

Important: Always test for gas soundness before and after completing any exchange of gas carrying components and carry out a functional check of the controls.

Re-assemble all parts in reverse order.

1. Open the controls door **(1)** and unscrew the retaining screw **(2)**. Slide the side panel **(3)** forwards and away from the boiler. Put safely aside.

2. Unscrew retaining screws **(4)**, hinge cover forward, pull bottom of cover forward **(5)** and lift off. Put safely to one side.

Warning

Before attempting to remove any component from the appliance first disconnect the mains electricity supply by removing the plug from the wall socket or by switching off the appliance at the external isolating switch.

Notes

The 'O' (Standby) position on the boiler temperature control will leave parts of the boiler Live. If the appliance gas valve is to be removed it will be necessary to isolate the gas supply at the appliance isolating valve.

Important

After removal or replacement of any gas carrying component a test for gas soundness must be made and functional check of the controls carried out.

Important

Any 'O' rings, seals or gaskets disturbed during replacement of parts must be visually inspected and replaced if worn or damaged.

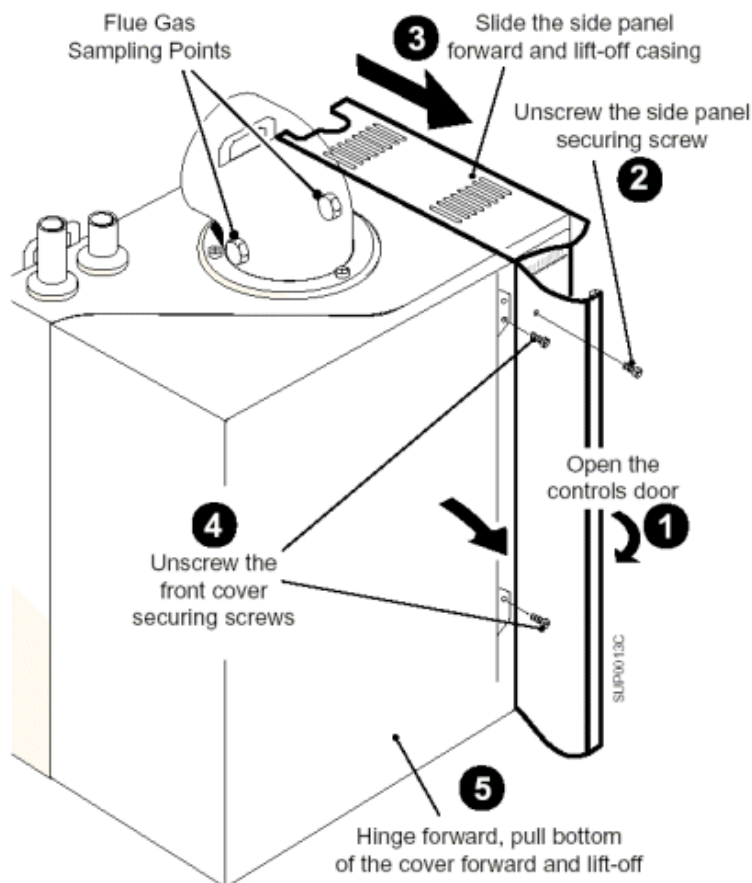


Fig. 14

Page 23

4.2 Electronic Control Board

Gain General Access - See [4.1](#)

1. Remove the securing screw and allow the control panel to pivot forwards.
2. Disconnect all connectors and wires, unscrew the four securing screws and remove the board.
3. On re-assembly refer to the [wiring diagram](#) when re-connecting wires and connectors.

Note: If the fan circuit board or transformer require replacement proceed as follows:-Disconnect wiring connectors and unscrew the item from its mounting points. On reassembly refer to the [wiring diagram](#).

4.3 Electrode

Gain General Access - See [4.1](#)

1. Remove M5 nuts securing earth lead to ignition/electrode assembly.
2. Remove M5 nut and spacers, carefully remove ignition assembly and gasket.
3. Replace ignition assembly and/or gasket as required.

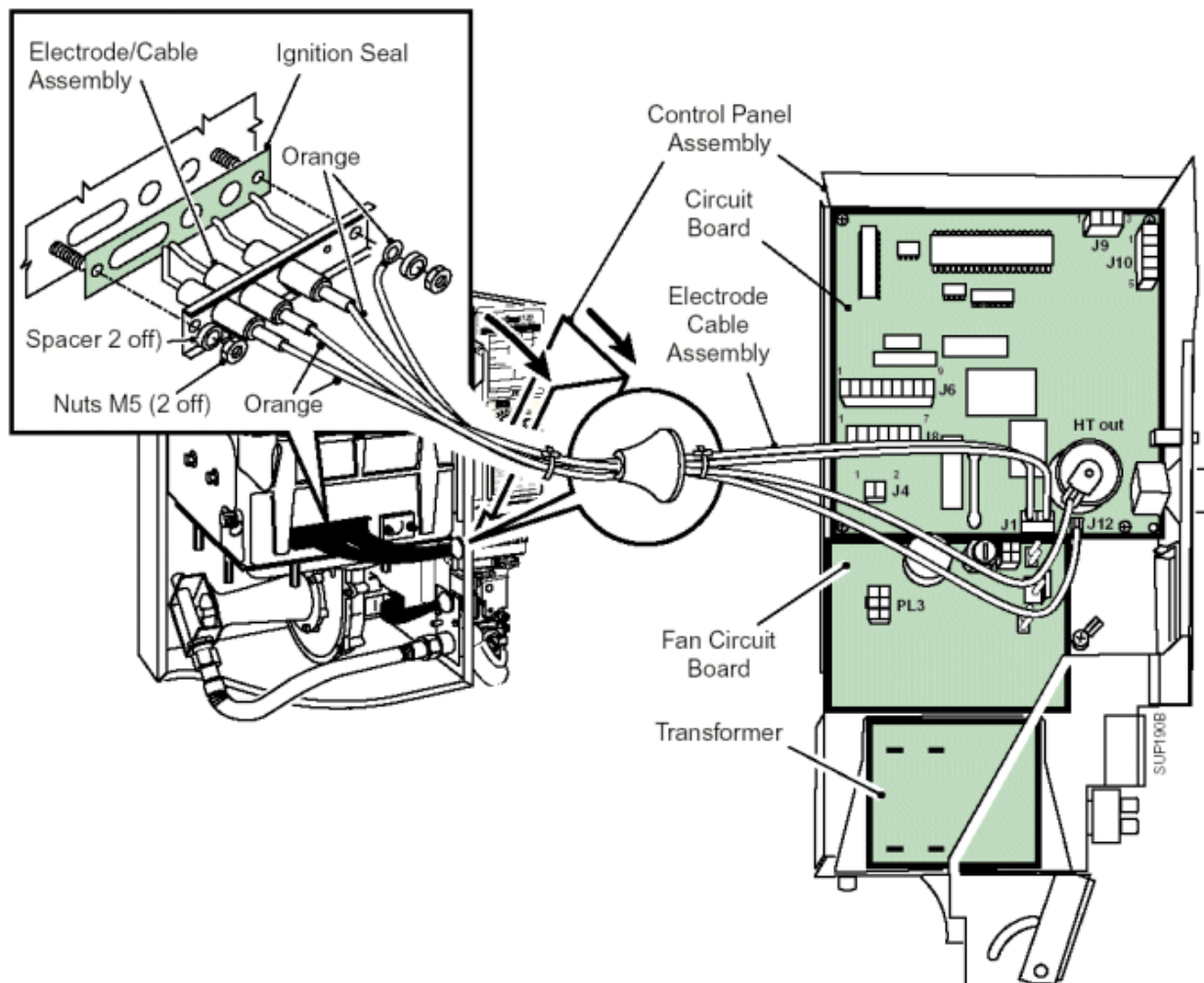


Fig. 15

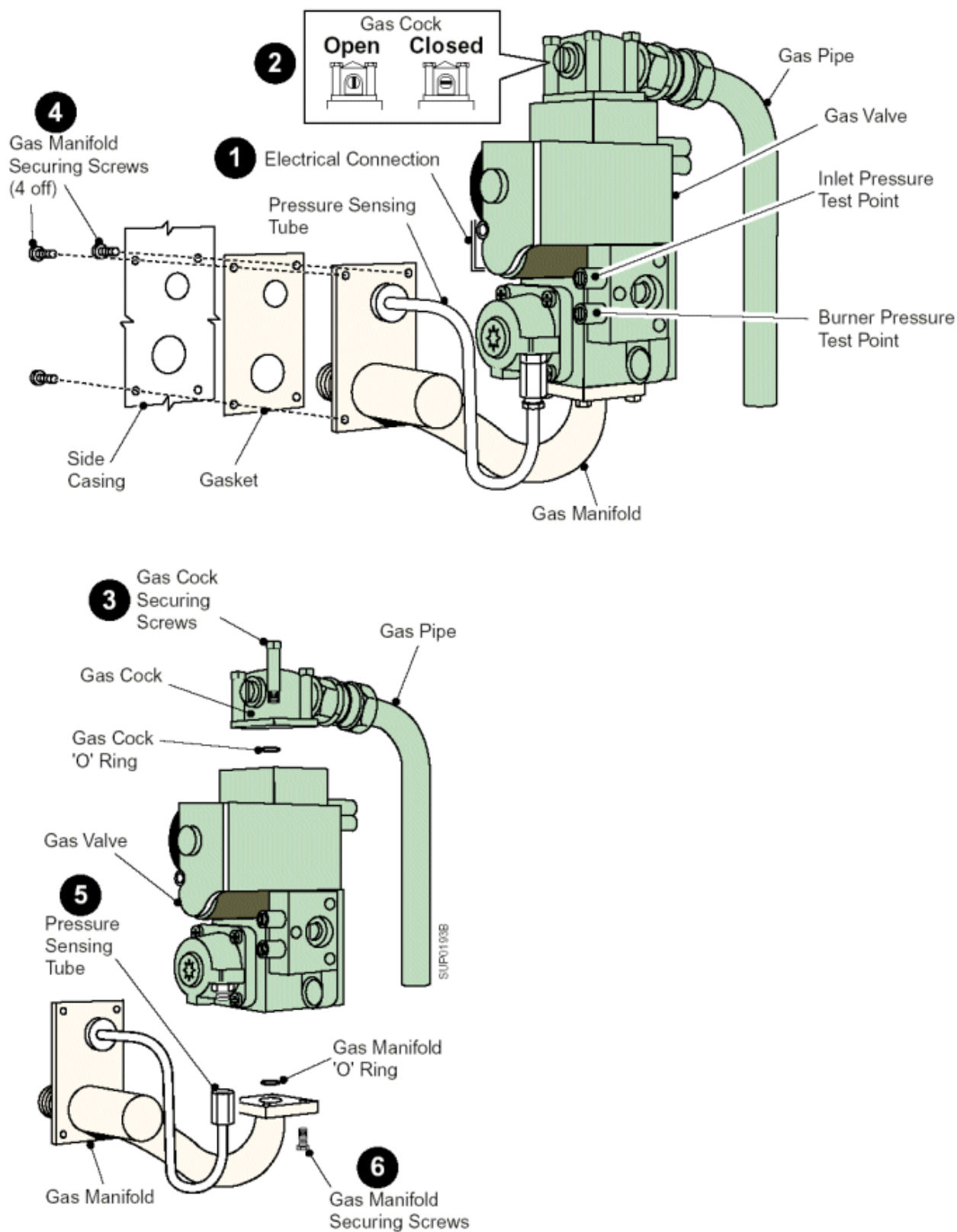


Fig. 16

4.4 Gas Valve

Gain General Access - See [4.1](#)

1. Close the gas cock **(2)**. Pull off the electrical connector **(1)** at the valve.
2. Remove the gas cock by unscrewing the four long hexagonal head screws **(3)** from the top of the valve.
3. Disconnect the pressure sensing tube **(5)** at the gas valve.

4. Remove the four screws **(4)** (inside the case) securing the gas valve manifold assembly to the chassis and remove the complete assembly.
5. Remove the four screws **(6)** securing the gas manifold to the gas valve.
6. Use a new 'O' ring and refit the manifold to the new gas valve.
7. Re-assemble in reverse order, use a new 'O' ring in the gas cock and a new manifold gasket.

Page 25

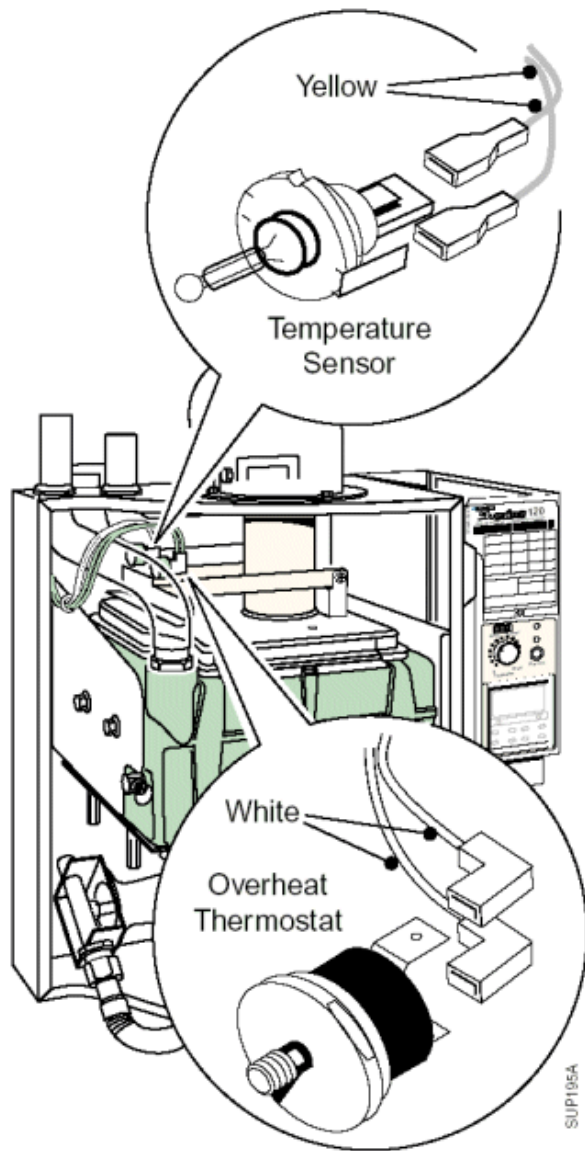


Fig. 17

4.5 Temperature Sensor

Gain General Access - See [4.1](#)

1. Disconnect the wires from the sensor.
2. Depress the clips on the outside of the sensor and pull it clear of the pipe.
3. Re-assemble in reverse order, use fresh conducting paste.

4.6 Overheat Thermostat

Gain General Access - See [4.1](#)

1. Disconnect the wires from the thermostat.
2. Unscrew the thermostat.
3. Re-assemble in reverse order.

Page 26

4.7 Venturi, Fan and Burner

Gain General Access - See [4.1](#)

1. Pull off the electrical connection **(1)** to the fan.
2. Disconnect one end of the flexible gas tube **(2)**.
3. Remove the fan from the burner **(3)**- slacken off the 2 left hand wing studs, remove the right hand wing stud and the fan can be removed. Clean the unit if required.
4. Remove the venturi **(4)** from the fan.
5. Visually inspect the injector **(5)** and replace if necessary.
6. Remove the burner nuts **(6)** and carefully remove the two stiffening brackets, burner assembly and gasket. Clean if required.
7. Re-assemble in reverse order.

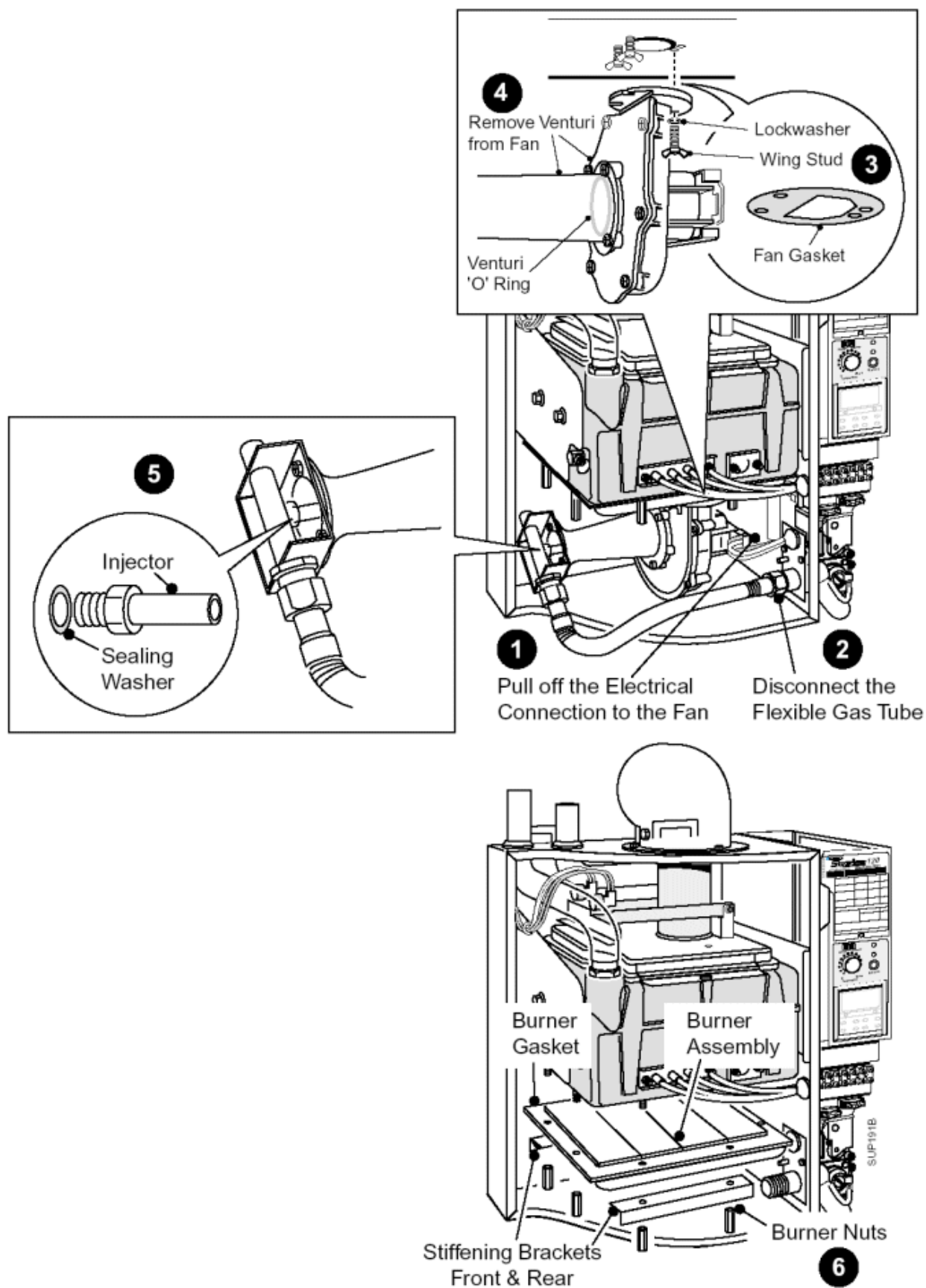


Fig. 18

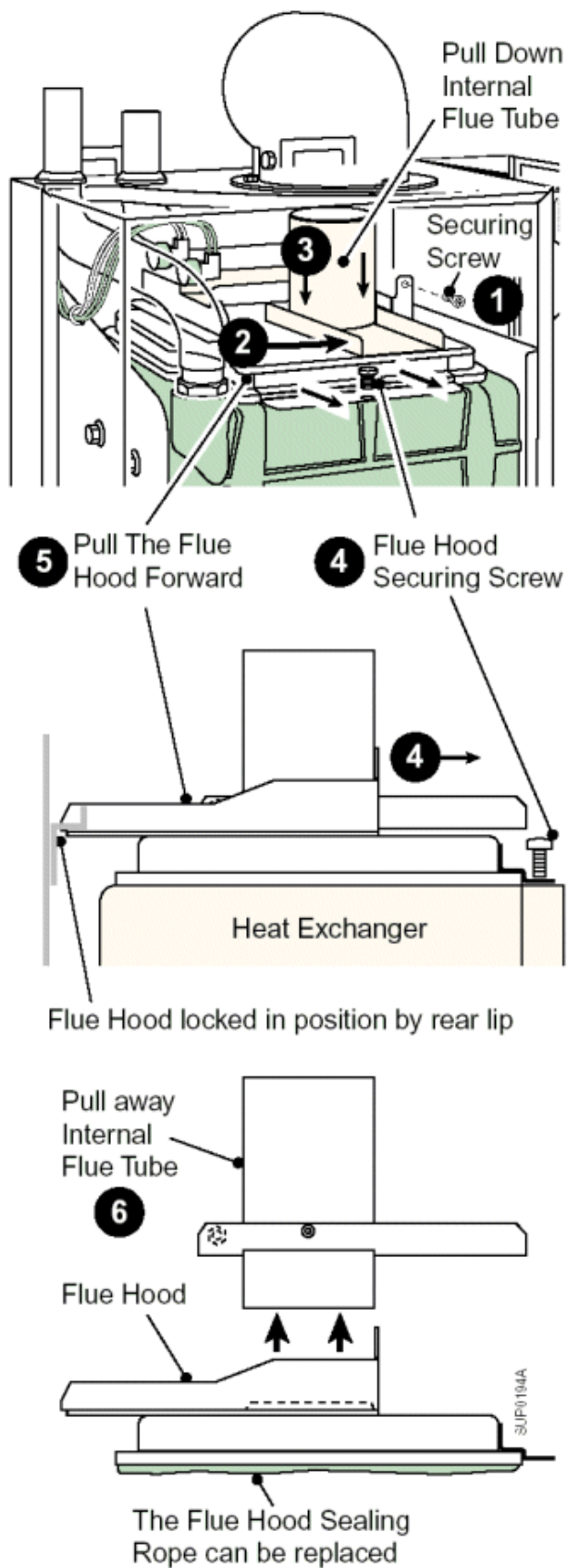


Fig. 19

4.8 Flue Hood & Internal Flue Tube

Gain General Access - See [4.1](#)

1. Remove securing screw (1), twist the internal flue tube (2) towards you and pull down (3) from the flue elbow.

2. Remove the flue hood securing screw **(4)** and pull the flue hood **(5)** forwards away from the heat exchanger and out of the boiler.
3. Separate the internal flue tube from the flue hood **(6)**. Clean as required.
4. *Flue Hood*: On re-assembly ensure that the flue hood locates under the two brackets at the rear of the chassis. Check the seal and replace if damaged.
5. *Internal Flue Tube*: On re-assembly ensure that it is located correctly into the base of the flue elbow.
6. Re-assemble in reverse order.

Page 28

4.9 Heat Exchanger

Warning

On Sealed Systems, relieve system pressure before draining.

Gain General Access - See [4.1](#).

1. Drain the system at its lowest point.
2. Remove the venturi, fan and burner - See [4.7](#).
3. Remove the flue hood and internal flue tube - See [4.8](#).
4. Hold a suitable container under the left hand side of the heat exchanger and unscrew the drain screw. Drain the heat exchanger.
5. Release both the flow and return nuts at the top of the heat exchanger.
6. Support the heat exchanger, remove the four bolts (Two each side) and carefully remove the heat exchanger.
7. Replace rubber seals in flow and return ports, feed the new heat exchanger into position ensuring the pipe connections are correctly located.
8. Secure the heat exchanger with the four fixing screws and tighten the two sealing nuts.
9. Re-assemble in reverse order.

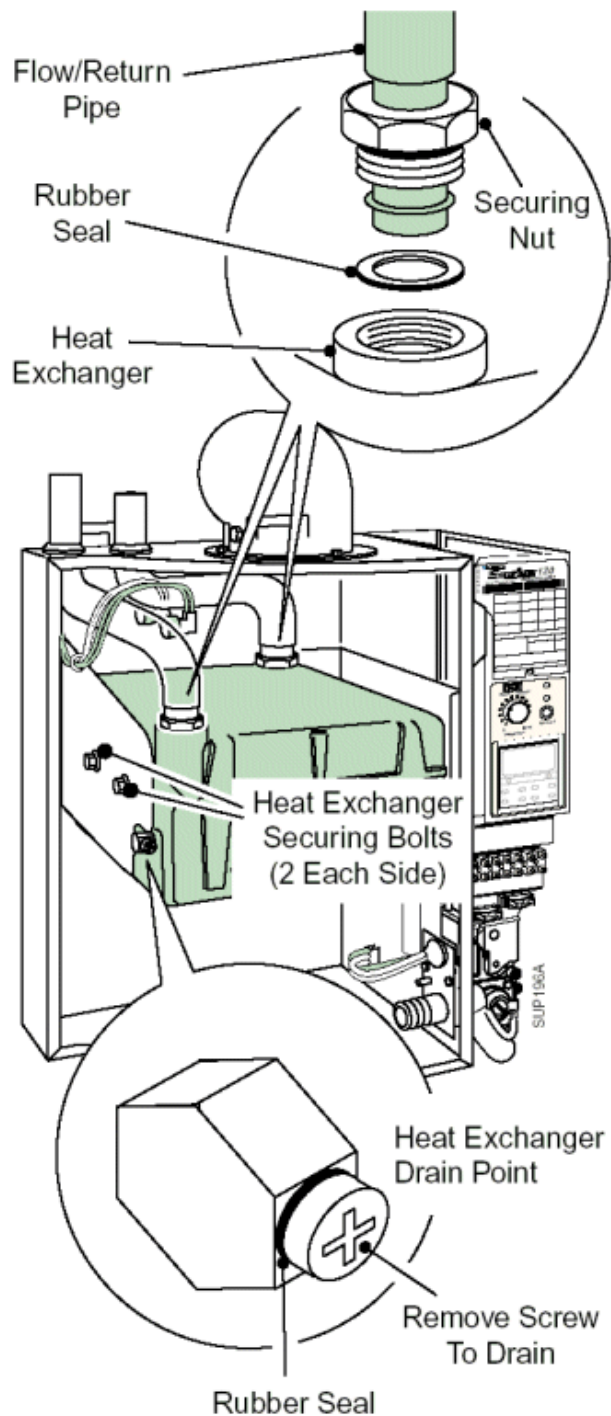


Fig. 20

Page 29

5. Functional Wiring Diagram

Boiler Lighting Sequence

1. Supply external voltage to boiler terminal connections L and N, 230 volts, 50 HZ.
2. Supply external voltage to boiler terminal connection SwL 230 volts, 50 HZ.
3. Pump live from boiler energised, diverter/zone valves operate in accordance with system demand.
4. Boiler control checks.
5. If OK control switches on the fan.

6. There is a ten second purge period.

7. Ignition for 3 seconds then gas valve opens (green light flashes rapidly).

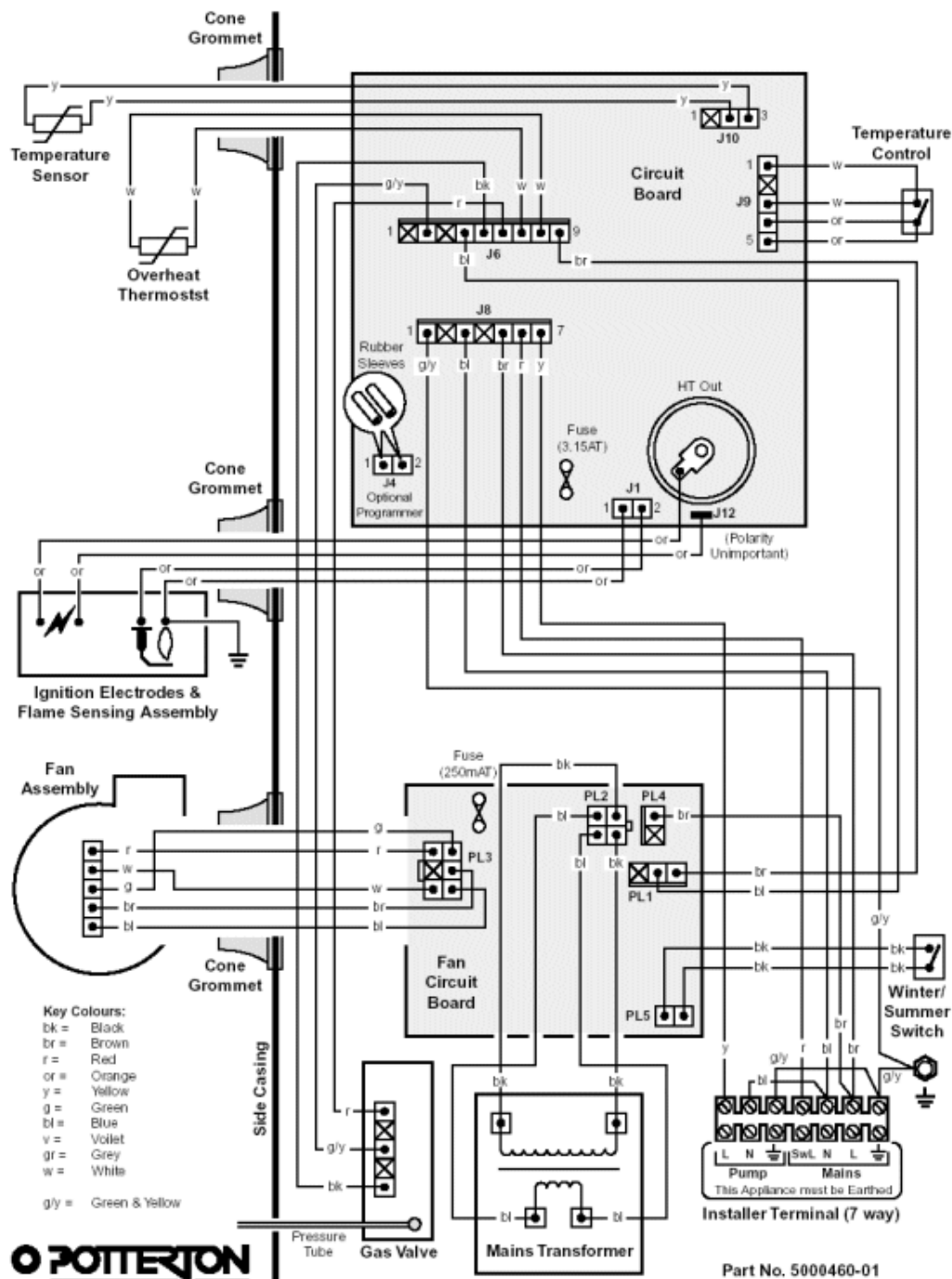
8. Boiler firing (green light "On" only). 9. If the flame is not detected at this time, the boiler will turn off.

10. The above sequence will repeat for a further two ignition attempts before going to lockout (indicated by the red light flashing).

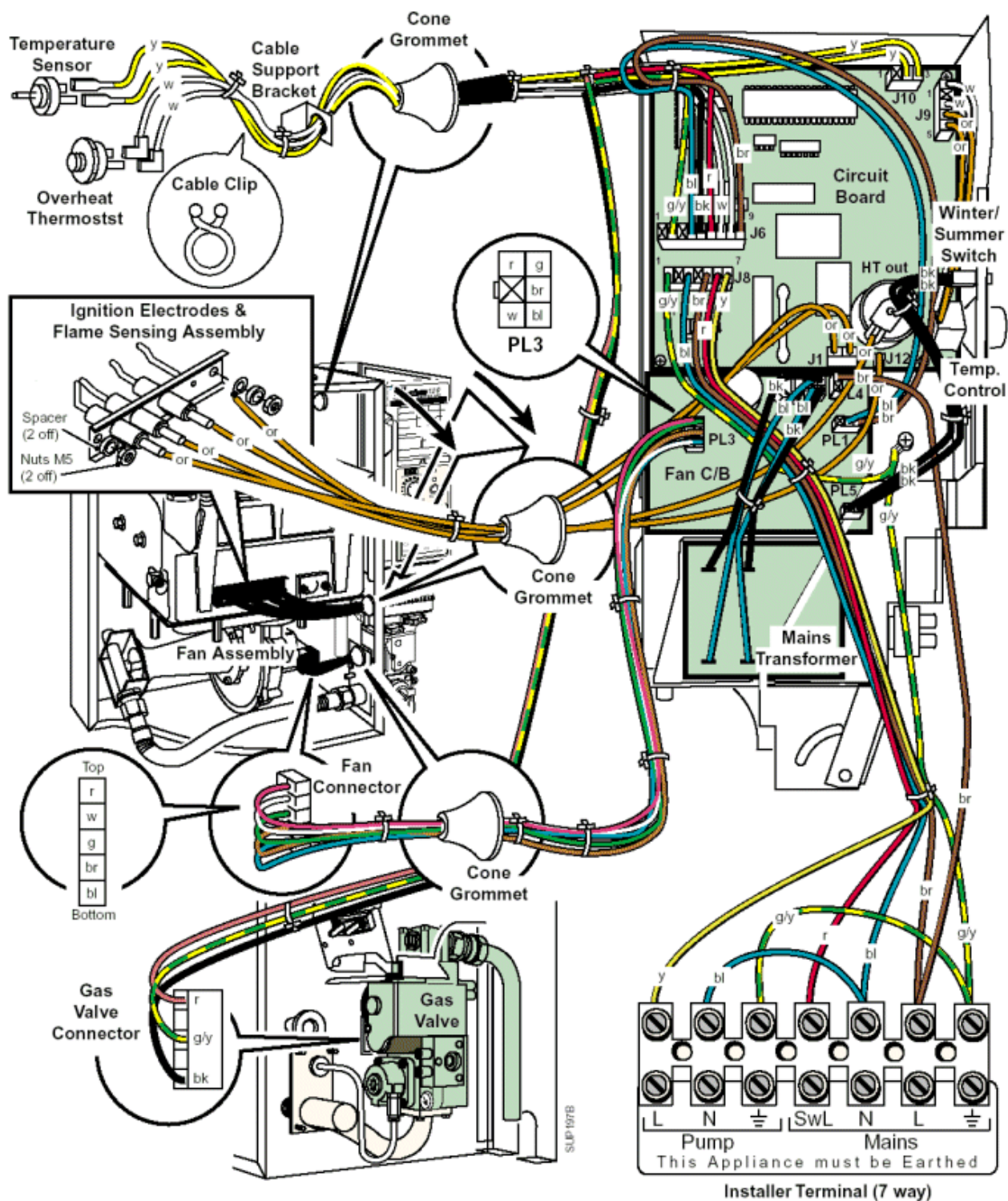
11. Pressing the reset button will re-start boiler at No. 1. 12. The control will continue to run the pump for several minutes after any firing of the boiler.

13. The control will run the pump automatically for a few minutes every twenty four hours to maintain the free running of the pump.

14. The standby position on the thermostat control knob will prevent the boiler firing but will permit operation of the pump for sequences 12 and 13.



6. Wiring Diagram



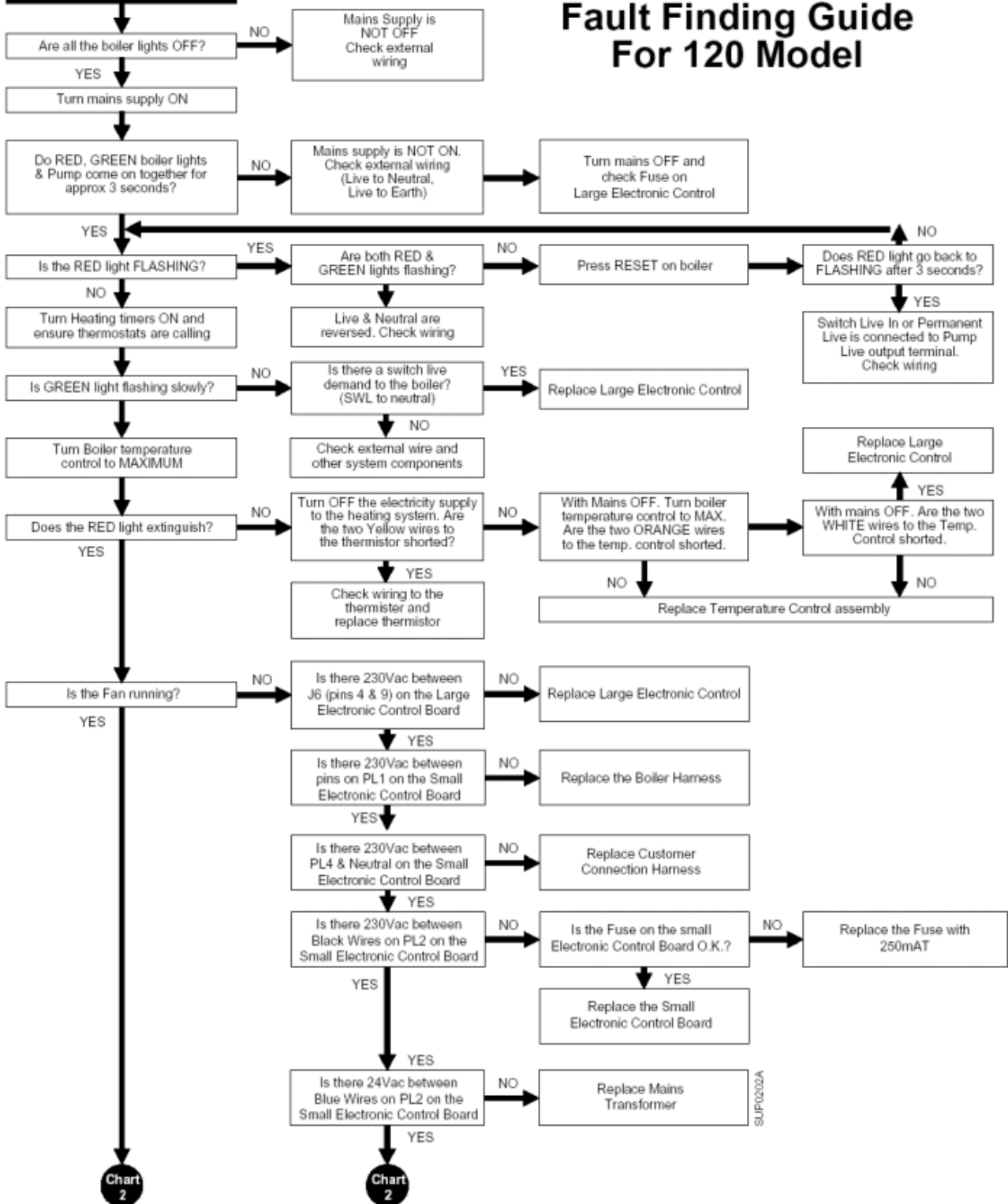
POTTERTON

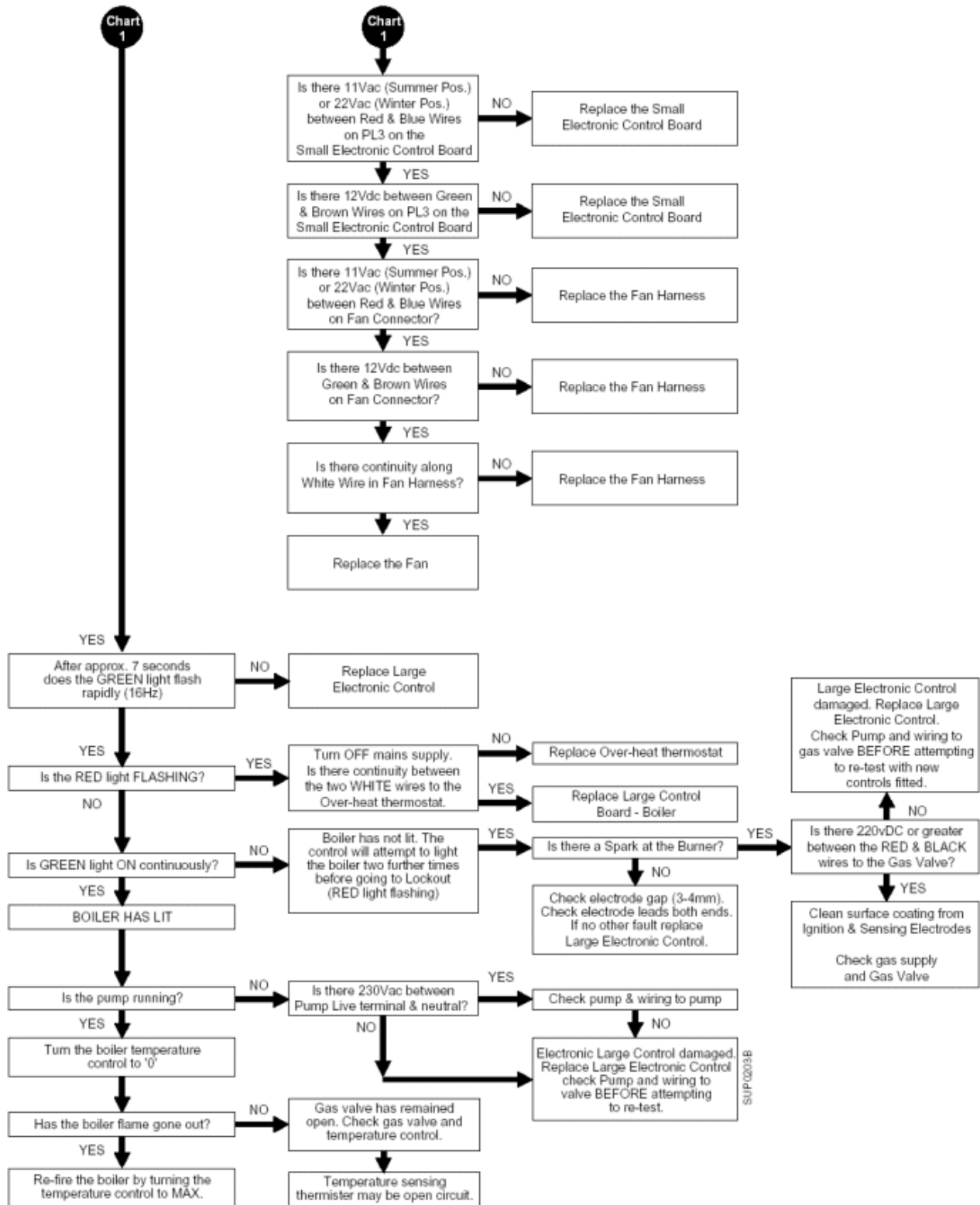
7. Fault Finding

Fault Finding Guide & Chart

INITIAL CONDITIONS
 1. Ensure mains supply is OFF.
 2. Heating timers set to OFF.
 3. Boiler user control set to +0.
 4. Gas supply to boiler ON.

Fault Finding Guide For 120 Model





Sequence of Events

1. On start-up boiler checks that
 - a. The reset button is not stuck ON
 - b. The Live and Neutral are not swapped
 - c. There is no Pump Live wiring fault
 - d. The gas valve is not energised
 - e. There is no flame detected

Note: If there is a fault the Control will go to lockout

2. Control continues to hold gas valve open until either the set temperature is reached or the switch live demand is removed
3. Pump remains energised whilst there is a demand
4. Setting control thermostat to 'O' has the same result as reaching the set temperature
5. Control checks that flame is not detected
6. Control re-starts ignition sequence

Check list in the event of a fault

1. Switched Live call for heat is recognised by the Control but as boiler control thermostat is set to 'O' the ignition sequence is not started
2. Flashing Green indicates a call for heat to the user
3. Control thermostat set to call for heat
4. Control starts the ignition sequence
5. Fan is energised
6. Control waits for 10 seconds before starting EHT spark and a further 3 seconds before energising the gas valve
7. Control checks gas valve is energised. If valve is not energised overheat thermostat may be faulty
8. Control checks for flame detection within 3 seconds, if a flame is not detected the fan is turned off and the ignition sequence is restarted for two further attempts from '4'

Intermittent Lockout - Main causes are:

- Switch Live connected to Pump Live
- Poor burner ignition due to gas pressure
- Poor burner ignition due to incorrect spark gap
- Slow opening gas valve after a long standby period
- Weak spark due to electrode lead or Control
- Pre-pay gas meter running out

Other common reasons for complaint are:

- Other system faults (actuator, room thermostat, timer)
- Lack of user education in the operation of system control
- System wiring faults affecting operation or temperature

8. Short List Of Spare Parts

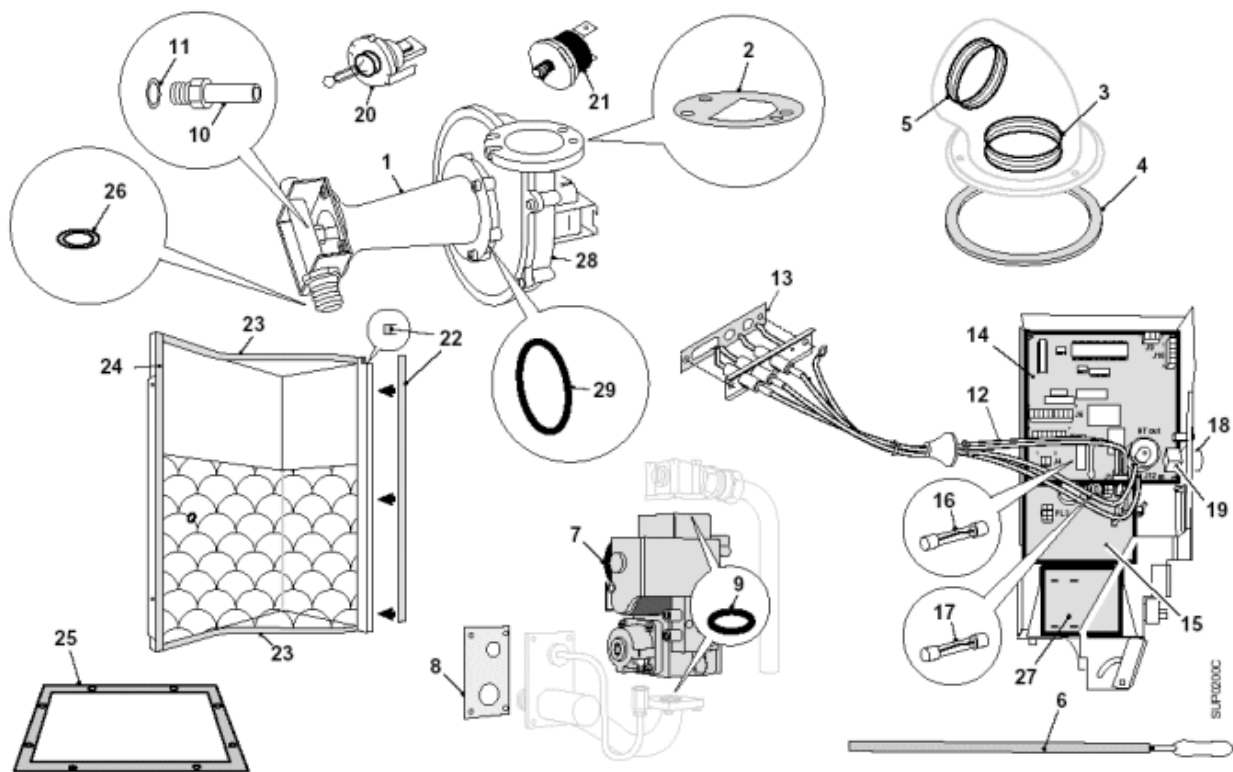


Fig. 21

Drg. Ref	G.C. No.	Description	Qty.	Part No.
1		Venturi Assembly	1	5000482
2		Fan Gasket	1	5000507
3	114 948	Fan Outlet Seal	1	8238147
4	114 945	Flue Elbow Seal	1	8238146
5	114 949	Flue Tube/Elbow Seal	1	8238148
6	337 862	Flue Scraper	1	907736
7		Gas Valve	1	5000476
8		Manifold Gasket	1	5000470
9	114 962	'O' Rings - Manifold/Gas Cock	2	8401648
10		Injector	1	5000631
11		Washer	1	400984
12		Ignition Electrode & Cable Assembly	1	5000494
13		Ignition Electrode Gasket	1	5000071
14		Control Board - Boiler	1	5000477
15		Control Board - Fan	1	5000502
16	114 983	Fuse (type: 3.15AT)	1	8160036
17		Fuse (type: 250mAT)	1	8160053
18	114 864	Thermostat Knob	1	8238172
19	114 863	Temperature Control	1	8933012
20	114 776	Temperature Sensor	1	8404516
21	173 130	Overheat Thermostat	1	8404517
22	114 873	Front Panel Seal - Type 1	1	8650691
23	114 874	Front Panel Seal - Type 2	1	8650692
24	114 875	Front Panel Seal - Type 3	1	8650693
25		Burner Gasket	1	5000429
26		Flexible Gas Pipe Seal	1	401658

27		Transformer	1	5000478
28		Fan (includes Drg. Ref. 29)	1	409592
29		'O' Ring	1	409586

Sales Enquiries:

Sales Operations
Eastern Avenue,
Team Valley Trading Estate,
Gateshead,
Tyne & Wear. NE11 0PG.

Tel: 0191 491 7500
Fax: 0191 491 7568

Service Enquiries:

Service Operations
Brooks House,
Coventry Road,
Warwick. CV34 4LL.

Tel: 08706 096 096 *
Fax: 01926 410006

Spares Enquiries:

Spare parts are available nationwide via the Interpart Stockists network.

For your local stockist consult Yellow Pages under Central Heating

Trade Support:

Trade Support
Brooks House,
Coventry Road,
Warwick. CV34 4LL.

Tel: 08706 049 049 *
Fax: 01926 410006

Training Administration:

National Training Administrator
Tel: 0845 600 7402

Responsible for allocation and booking of all courses and activities at all training facilities in the UK

Brochure Hotline:

Tel: 0345 697509

The Internet:

<http://www.baxi.com>
<http://www.potterton.co.uk>

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Sceptre Way, Bamber Bridge, Preston. PR5 6AW
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* To aid continuous improvement and staff training, calls to this line may be monitored or recorded.

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