



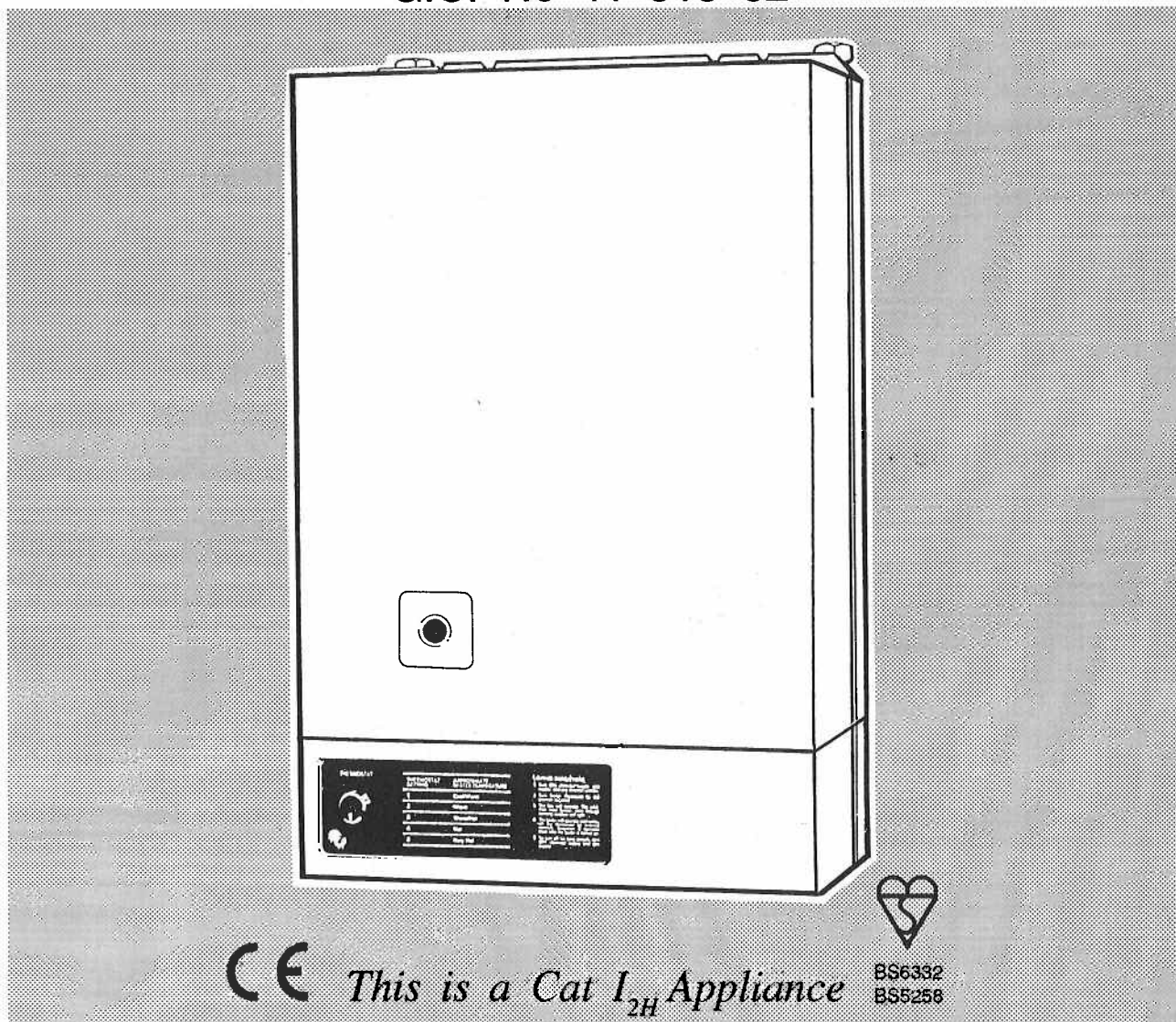
# Installation and Servicing Instructions

To be left with the user

# FUELSAVER 100F

## Fanned Flue Boiler

G.C. No 41 313 32



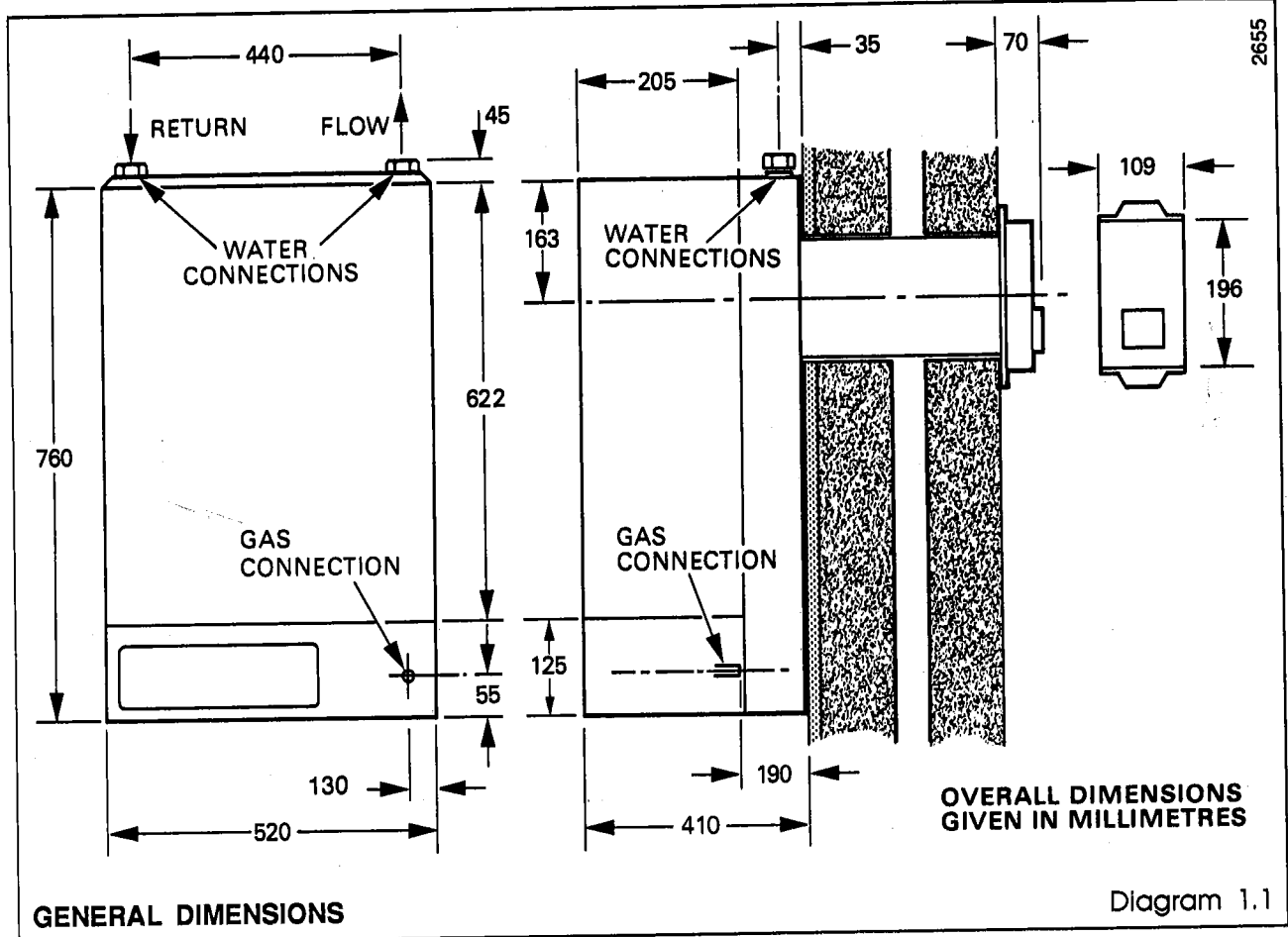
CE This is a Cat I<sub>2H</sub> Appliance



BS6332  
BS5258

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The instructions consist of two parts, Installation and Servicing Instructions and Instructions for Use. They are the property of the user and should be handed to them on completion of the installation.

**Important Notice:** This boiler is for use on natural gas as distributed in the United Kingdom (G20) and cannot be used on any other gas.

All dimensions given are in millimetres (except as noted).

### 1.1 Data

- Gas connection:** Rc $\frac{1}{2}$  ( $\frac{1}{2}$ in BSP)
- Water connection:** 28 mm copper
- Electrical supply:** 240V~50Hz fused 3A
- Weight of boiler:** 42.5kg (94lb)
- Water content:** 1.8 litres

### 1.2 Boiler Operation

The boiler is fully automatic in operation designed to provide central heating and domestic hot water from an open vented fully pumped system.

It is not suitable for use on a sealed water system.

The boiler is operated by turning the thermostat either on or off.

### 1.3 Range Rating

The boiler input is factory preset at maximum rating and should be adjusted to suit system requirements.

The Table gives the setting and outputs.

A self-adhesive arrow indicator is supplied in the loose items pack for fixing to the data label to indicate the adjusted setting.

### 1.4 Procedure

Manufacturers notes must not be taken in anyway as overriding statutory obligations.

### 1.5 Sheet Metal Parts

**WARNING.** When installing or servicing the boiler, care should be taken to avoid injury when handling sheet metal parts.

## 1.6 Statutory Requirements

The installation of this boiler must be carried out by a competent person in accordance with the relevant requirements of the current issue of:

The Gas Safety (Installation and Use) Regulations, as amended, The Building Regulations, Local Water Company Bye-laws, The Building Standards (Scotland) Regulations, (applicable in Scotland), The Health and Safety at Work Act, Control of Substances Hazardous to Health, The Electricity at Work Regulations and any applicable local regulations.

Detailed recommendations are contained in the current issue of the following British Standards and Codes of Practice:

BS6891, BS5440 Parts 1 and 2, BS6798, BS5449, BS5546, BS6700, BS7478, BS7593, BS7671.

## 1.7 B.S.I. Certification

This boiler is certificated to the current issue of BS6332 Part 1, invoking the current issue BS5258 Part 1 for performance and safety. It is, therefore, important that no alteration is made to the boiler without permission, in writing, from Hepworth Heating Ltd.

Any alteration that is not approved by Hepworth Heating Ltd., could invalidate the B.S.I. Certification of the boiler, the boiler warranty and could also infringe the current issue of the Statutory Requirements, Section 1.6.

## CE Mark

The CE mark on this appliance shows compliance with Directive 90/396/EEC on the approximation of the laws of the Member States relating to appliances burning gaseous fuels.

## 1.8 Gas Supply

The gas supply must be in accordance with the current issue of BS6891.

On completion test the gas installation for soundness using the pressure drop method and leak detection fluid and purge in accordance with the above standard.

The supply from the governed meter must be of adequate size to provide a steady inlet working pressure of 20mbar (8in wg) at the boiler.

## 1.9 Electrical Supply

**WARNING.** This boiler must be earthed.

The electrical installation must be carried out by a competent person. All external components shall be of the approved type and shall be connected in accordance with the current issue of BS7671 and any local regulations which may apply.

**Data Table 1.**

TOTAL DRY WEIGHT	42.5kg (94lb)
WATER CONTENT	1.8 litres
GAS CONNECTION	Rc <sup>1</sup> / <sub>2</sub> (1/2 in BSP)
ELECTRICITY RATING	55W Internal fuse F1A
WATER CONNECTION	28mm copper
ELECTRICITY SUPPLY	240V ~ 50Hz, fused 3A
DATA LABEL	Main chassis base

**FUELSAVER 100F**

RANGE RATING		Min.	Med.	Max.
NOMINAL HEAT INPUT	<i>kW</i> <i>Btu/h</i>	30.5 103,900	34.0 116,000	37.4 127,600
NOMINAL HEAT OUTPUT	<i>kW</i> <i>Btu/h</i>	23.4 80,000	26.4 90,000	29.3 10,000
BURNER SETTING PRESSURE	<i>m bar</i> <i>in. w.g.</i>	8.9 3.6	10.8 4.3	13.0 5.2

Connection to the mains supply preferably through a standard 13A unswitched shuttered socket outlet and a 3A fused 3 pin plug, both to the current issue of BS1363. Alternatively, a 3A fused double pole isolating switch may be used, having a minimum double pole contact separation of 3mm, serving only the boiler and system controls.

Heat resistant flexible cable of at least 0.75mm<sup>2</sup> (24/02mm), to the current issue of BS6500, table 16, must be used for all connections to the boiler control box.

## 1.10 Boiler Location

The boiler position should be such that the minimum clearances are provided as shown in diagram 1.2.

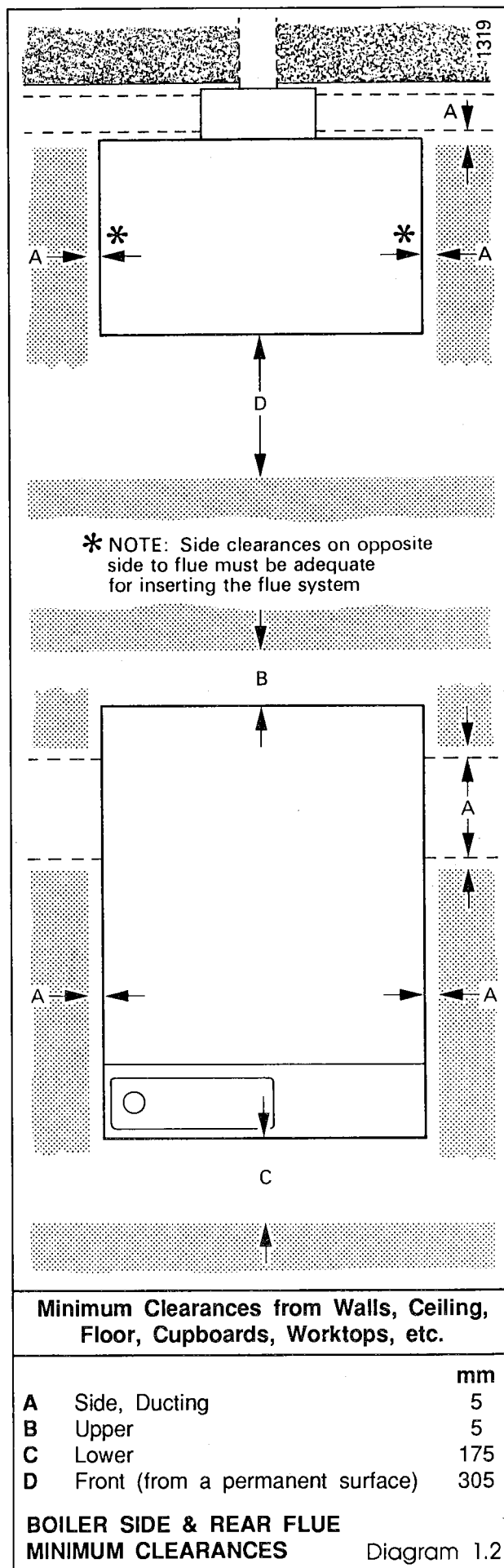
The boiler may be installed in any room, although particular attention is drawn to the requirements of the current issue of BS7671 with respect to the installation of a boiler in a room containing a bath or shower. Any electrical switch or boiler control using mains electricity should be positioned so that it cannot be touched by a person using the bath or shower. The electrical provision of the Building Standards (Scotland) apply to such installations in Scotland.

Where the installation of the boiler will be in an unusual location special procedures are necessary, the current issue of BS6798 gives detailed guidance on this aspect.

A 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 the essential features of cupboard or compartment design are given in the current issue of BS6798.

The boiler must be mounted on a flat, non-combustible surfaced wall which is sufficiently robust to take its weight.

Combustible materials on the wall surface must be protected by a non-combustible sheet, at least the size of the boiler, not less than 25mm thick.



### 2.1 Flue

Detailed recommendations for flues are given in the current issue of BS5440 Part 1.

The boiler must be installed so that the 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.

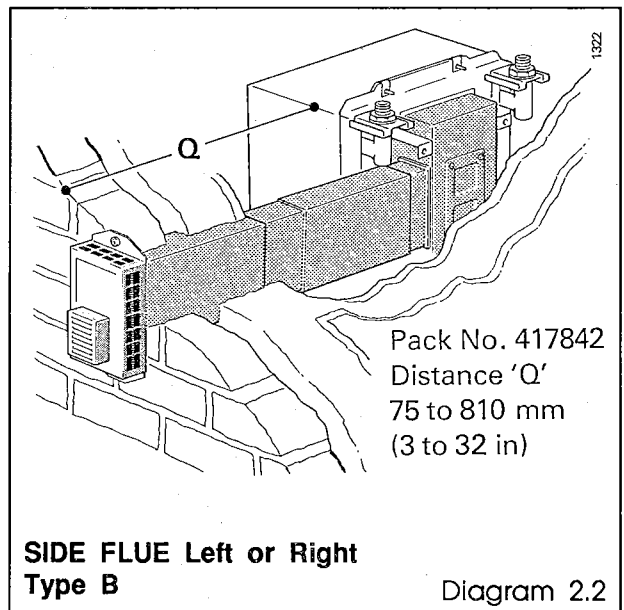
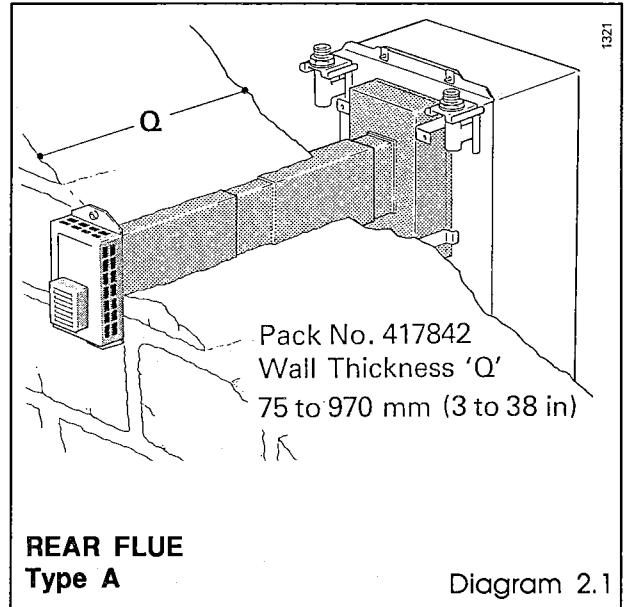
The flue and air duct is suitable for connection at the rear or either side, see diagrams 2.1. and 2.2.

The minimum acceptable spacings from the terminal to obstructions and ventilation openings are specified in diagram 2.3.

Car port or similar extensions of a roof only, or roof and one wall, require special consideration with respect to openings, doors and vents or windows under the roof. Care is required to protect the roof if it is made from plastic sheeting. Seek further advice if the car port comprises a roof or two or more walls.

If the terminal is fitted within 850mm of a plastic or painted gutter or 450mm of painted eaves, an aluminium shield at least 750mm long should be fitted on the underside of the gutter or painted surface.

The air inlet and products outlet duct and the terminal of the boiler must not be closer than 25mm to combustible material. Detailed recommendations on the protection of combustible material are given in the current issue of BS5440 Part 1.



### 2.2 Protecting the Terminal

A terminal guard is required if persons could come into contact with the terminal or the terminal could be subject to damage.

If a terminal guard is required, it must be positioned to provide a minimum of 50mm clearance from any part of the terminal and be central over the terminal.

A suitable guard, reference "H" is available from Tower Flue Components Ltd., Morley Road, Tonbridge, Kent, TN9 1RA telephone Tonbridge 351555, or from Quinnell, Barrett and Quinnell Ltd., 884, Old Kent Road, London, S.E 15, their reference C52.

### 2.3 Timber Frame Building

If the boiler is to be installed in a timber frame building it should be fitted in accordance with the British Gas Publication "Guide for Gas Installation in Timber Framed Housing" reference "DM2". If in doubt seek advice from the local gas undertaking or Hepworth Heating Ltd.

### 2.4 Room Ventilation

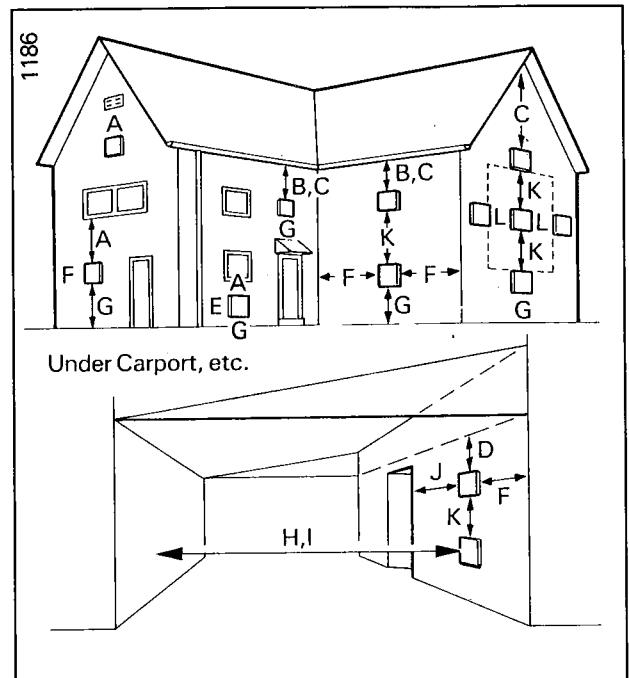
Where the boiler is fitted in a room or internal space no permanent air vent is required.

### 2.5 Cupboard and Compartment Ventilation

Where the boiler is fitted in a cupboard or compartment, the ventilation area must be in accordance with the Compartment Air Vent Table.

Note, both the high and low level air vents must communicate with the same room, or internal space, or must both be on the same wall to out side air.

Air vents through a cavity wall must be ducted.



POSITION	MINIMUM SPACING
A DIRECTLY BELOW AN OPENABLE WINDOW, AIR VENT, OR ANY OTHER VENTILATION OPENING	mm
B BELOW GUTTER, DRAIN/SOIL PIPE	25
C BELOW EAVES	25
D BELOW A BALCONY OR CAR PORT	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	1200
J FROM OPENING (DOOR/WINDOW) IN CAR PORT INTO DWELLING	1200
K VERTICAL FROM A TERMINAL	1500
L HORIZONTALLY FROM A TERMINAL	300

**MINIMUM SITING DIMENSIONS** Diagram 2.3

COMPARTMENT AIR VENT TABLE		
POSITION OF AIR VENTS	AIR VENT AREAS	
	AIR FROM ROOM OR INTERNAL SPACE	AIR DIRECT FROM OUTSIDE
HIGH VENT	337cm <sup>2</sup>	168cm <sup>2</sup>
LOW VENT	337cm <sup>2</sup>	168cm <sup>2</sup>

### 3.1 Pump

The pump should be fitted in the flow from the boiler and it is recommended that a pump producing at least 2.5metres head is used to give a flow rate through the boiler of 38.2litre per minute (8.4gallon per minute), giving a temperature difference of 11°C (20°F).

High resistance micro-bore systems may require a higher duty pump.

For details of pressure loss of boiler see diagram 3.1.

Use a pump with integral valves or fit isolating valves as close to the pump as possible.

### 3.2 Bypass

It is essential to fit a bypass of 22mm od (minimum) on all installations. A suggested convenient position is shown in diagram 3.2.

### 3.3 Cylinder

The hot water cylinder must be a double feed (fully indirect) type.

It is suggested that some form of temperature control be fitted.

### 3.4 Safety Valve

A safety valve need not be fitted to an open vented system.

### 3.5 Open Vented Water System

This boiler is not suitable for sealed water systems.

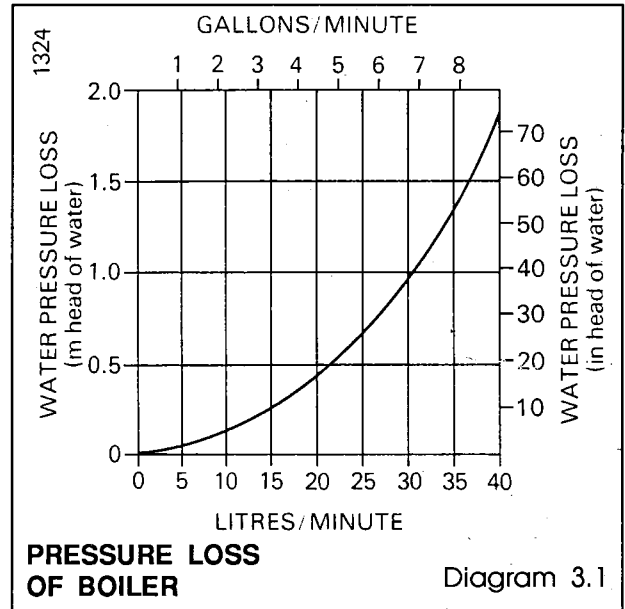
A 22mm diameter unrestricted open vent pipe must be fitted in the flow from the boiler and terminate above a cold feed and expansion cistern.

The vent must have a continuous rise to discharge above the cistern. Horizontal runs should be avoided.

The cistern must not be situated more than 27.5metres above the boiler.

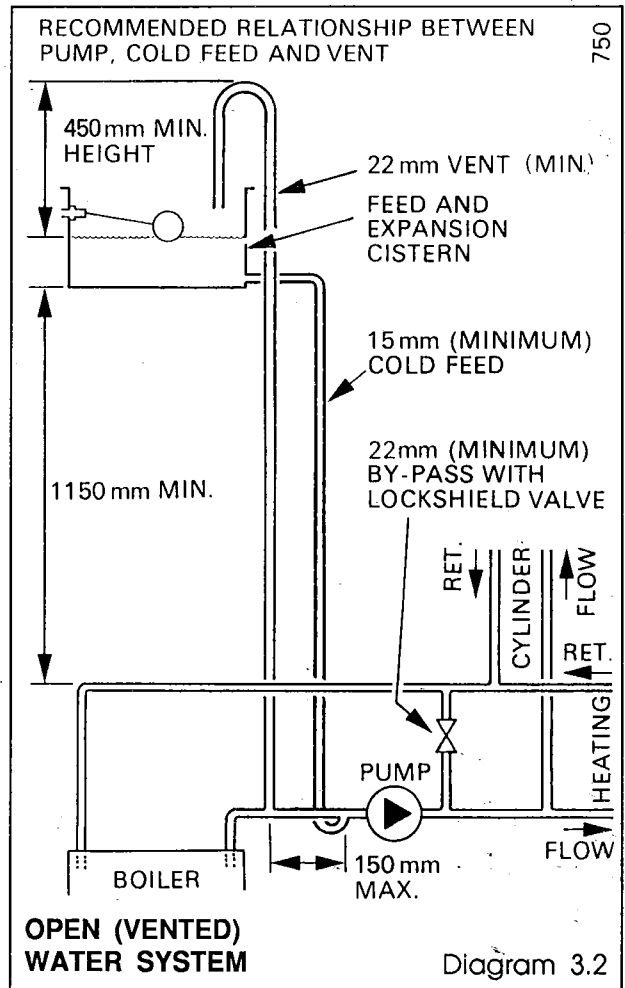
A 15mm minimum diameter cold feed must be fitted in the system.

It is important that the relative position of the pump, cold feed and open vent should be as shown in diagram 3.2.



**PRESSURE LOSS OF BOILER**

Diagram 3.1



**OPEN (VENTED) WATER SYSTEM**

Diagram 3.2

### 3.6 Controls

**WARNING.** This boiler must be earthed.

All controls for the heating and hot water system, including the boiler, must be through one common electrical supply.

Any external boiler control must be connected to replace the red link between terminals 7 and 12 (SL) on the boiler, see diagram 8.3.

The pump must be connected directly to the boiler control box as shown in diagram 8.3.

All controls should be installed in accordance with the manufacturer's instructions.

### 3.7 Draining Tap

A draining tap must be fitted at the lowest points of the system which will allow the drainage of the entire system and hot water cylinder. Draining taps should be to the current issue of BS2879. A drain point is provided on the boiler for heat exchanger draining.

### 3.8 Water Connections

The boiler is fitted with nuts and olives to accept 28mm diameter copper tubing to BS2871.

The right hand connection is the flow, the left hand the return.

### 3.9 Inhibitor

Attention is drawn to the current issue of BS5449 and BS7593 on the use of inhibitors in central heating systems.

If an inhibitor is to be used in the system, contact the inhibitor manufacturer so that they can recommend their most suitable product.

If fitting the boiler into an existing system, special care should be taken to drain the entire system, including the radiators, then thoroughly cleaning out before fitting the boiler whether or not adding an inhibitor.

## 4 Preparation

**WARNING:** Remove the cardboard fitting and wall template from the boiler carton. The rear side panels are packed within one cardboard fitting.

Slide the controls cover forward to remove from the boiler.

Remove the boiler from the carton and place on its back. The loose items pack will be found in the carton.

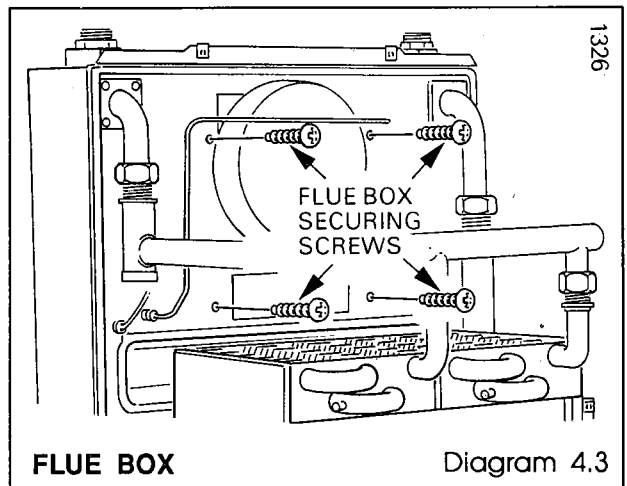
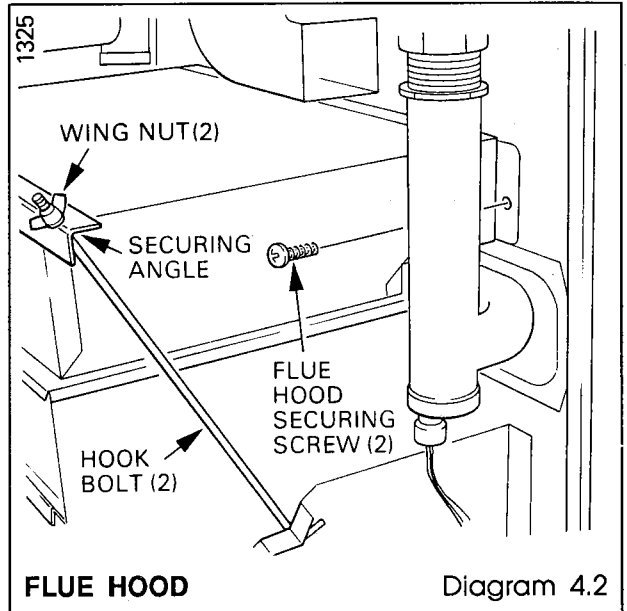
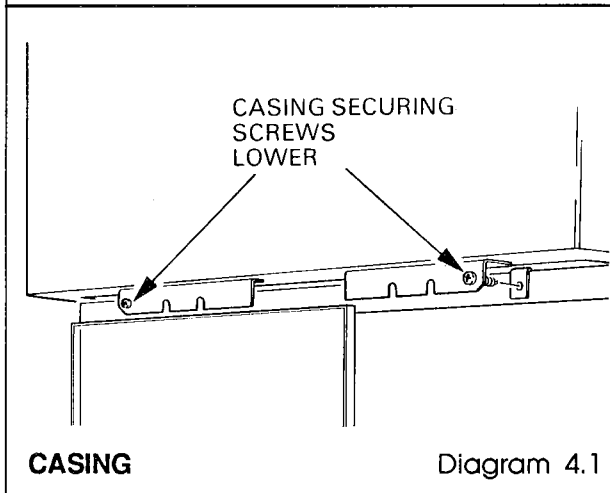
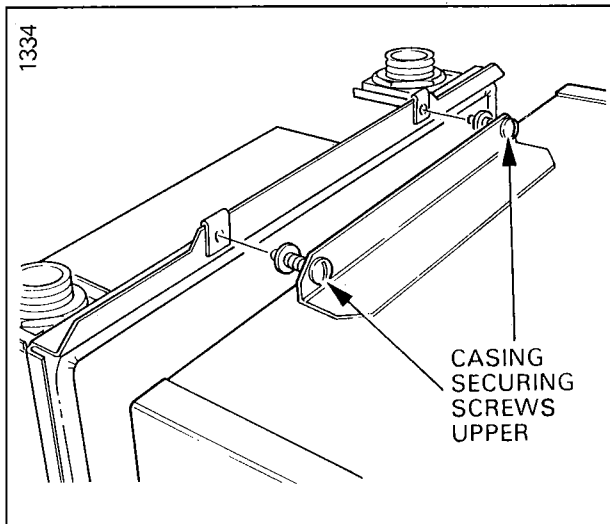
Remove the outer casing after unscrewing the two upper and two lower securing screws, see diagram 4.1.

Remove the wing nuts holding the securing angle, see diagram 4.2 and remove the flue hood angle.

Remove the two screws securing the flue hood to the back plate and lift off the flue hood.

Remove the four securing screws, see diagram 4.3, which secure the flue box to the back of the boiler back panel.

The flue box is used with the flue components to mount on the wall, as described in the flue instructions.



## 5 Flue Ducting and Terminal

Refer to instructions supplied with the flue pack.

The flue box, lower support bracket, flue and air duct assembly must now be fitted, to enable the boiler to be installed.

## 6 Boiler Fixing

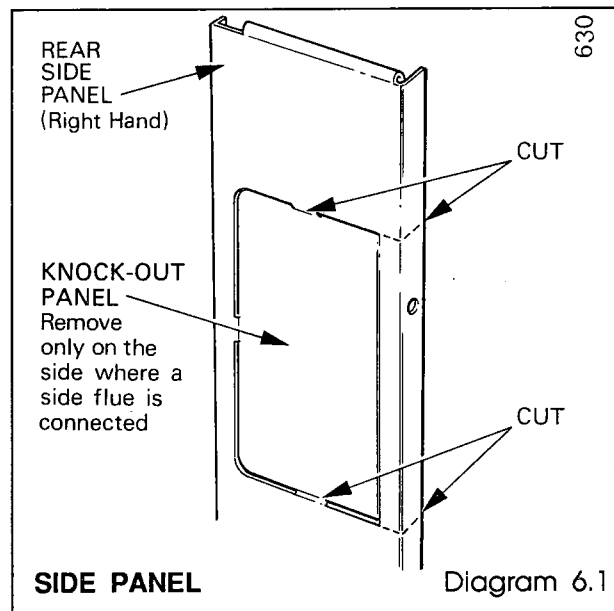
Proceed as follows after installing the flue system required.

Take one or both rear side panels, if required, then hook on at the top and secure with the No.6 self tapping screw provided.

In the case of a side flue installation, the rear side panel on the flue side will require the knock-out panel removing after the larger flange has been cut as shown in diagram 6.1.

Position the boiler centrally on the lower support bracket on the wall and ease the boiler back to the flue box, securing with the four screws previously removed, see diagram 4.3. Ensure that a good seal is made between the flue box and the back of the boiler.

Replace the flue hood, ensuring that a good seal is made between the gasket on the flue hood and the back panel. Secure the flue hood and the back panel. Secure the flue hood with the two screws at the rear and two hook bolts and wing nuts at the front. Do not over tighten the wing nuts.



## 7 Gas Supply Connection

The gas inlet to the boiler is Rc $\frac{1}{2}$  ( $\frac{1}{2}$ in BSPT) and is situated at the base on the union gas service cock. Make the gas connection to the boiler.

The gas installation should be in accordance with the current issue of BS6891. The whole of the installation should be purged and tested in accordance with the above code.

**Warning.** The boiler must be earthed and have a permanent mains supply.

The electrical isolator must isolate both the boiler and any system control, be adjacent to the boiler and clearly marked showing its purpose.

### 8.1 Supply Cable Connection

Remove the control box by supporting the box and removing the two fixing screws at the front above the fascia, then lower the front of the box until it is clear of its cover. Push the box towards the rear of the boiler to disengage its hinging arrangement, lower the box and pull forward clear of its cover, see diagram 8.1. The box will still be attached to the boiler by the plastic retaining strap. If the box is to be removed entirely, pull the strap off the plastic fastener. Care should be taken not to damage the thermostat or over heat cutoff capillaries or electrical cables.

Using heat resistant cable of suitable length and rating as stated in the Electrical Section, thread the mains cable in through the hole in the rear of the control box, through the cable clamp and connect to the terminal strip, see diagram 8.2 and 8.3. When making the connections make sure that the earth conductor is made longer than the live and neutral conductors, so that if the cable is strained the earth conductor would be the last to be disconnected.

For installations with less than 175mm lower clearance, allow an extra 300mm of installation cable to permit servicing of the control box.

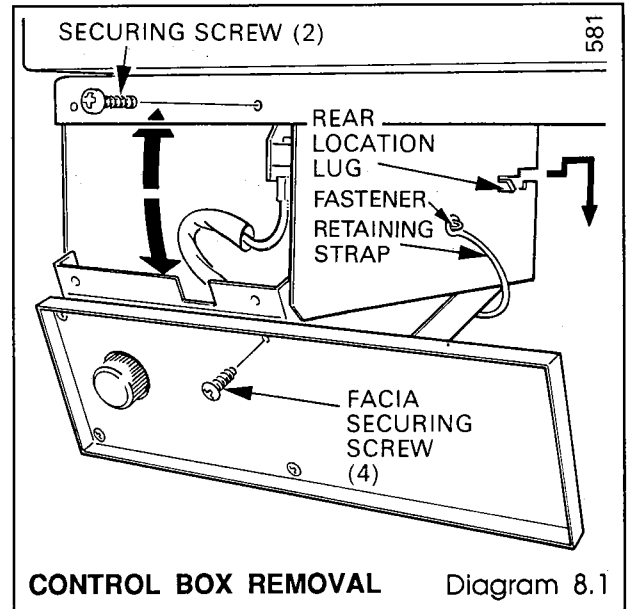
It is essential that the live and neutral conductors are correctly connected.

### 8.2 Pump Cable Connection

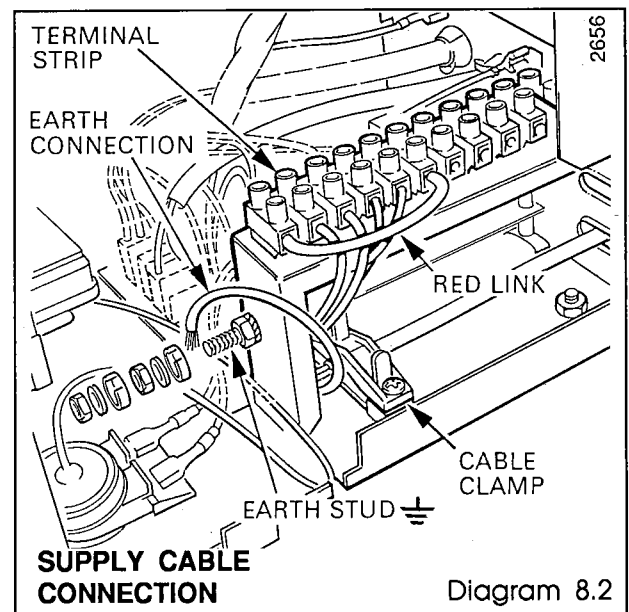
The pump must be connected to the boiler control box as shown in diagram 8.3, passing the cable through the hole in the rear of the control box.

### 8.3 Testing

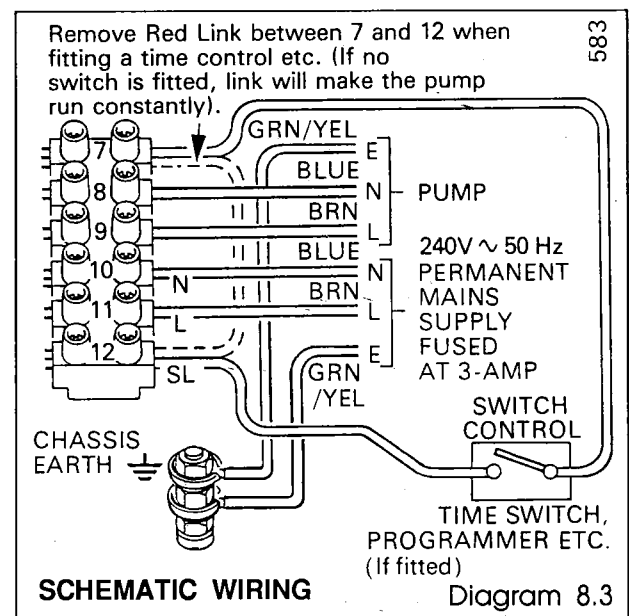
In the event of an electrical fault after installation of the boiler, preliminary system checks must be carried out as described in the British Gas Multimeter Instruction Book, or similar publication.



**CONTROL BOX REMOVAL** Diagram 8.1



**SUPPLY CABLE CONNECTION** Diagram 8.2



**SCHEMATIC WIRING** Diagram 8.3

### 9.1 Final Assembly

Position the self adhesive arrow indicator on to the data label against the output the boiler is to be set to.

The arrow is in the loose items pack.

Fit the casing using the two upper and two lower screws previously removed, see diagram 4.1.

**DO NOT OPERATE THE BOILER WITHOUT THE CASING BEING FITTED.**

### 9.2 Flushing

The system must be thoroughly flushed out, with cold water, without the pump in position. Refit the pump and fill and vent the system including the pump and check for water leaks.

### 9.3 Electrical Supply

Check that the main electrical supply to the boiler is switched Off and that the boiler thermostat is set to "O", the Off position.

### 9.4 Gas

Turn the gas supply on at the gas service cock.

Open all windows and doors and extinguish any naked lights, pipes or cigarettes.

Purge air from the supply pipe.

Test for gas soundness around the boiler using a suitable leak detection fluid.

### 9.5 Initial Lighting

**Note:** Before lighting the boiler make sure that the CASING has been CORRECTLY fitted and that the edge of the cover makes a TIGHT SEAL with the sealing strip in the GROOVE AROUND THE BOILER BACKPLATE.

**Warning:** The gas valve operates on mains voltage, the terminals will become "LIVE".

Remove the pressure test point screw on the gas manifold, see diagram 9.1 and fit a suitable pressure gauge.

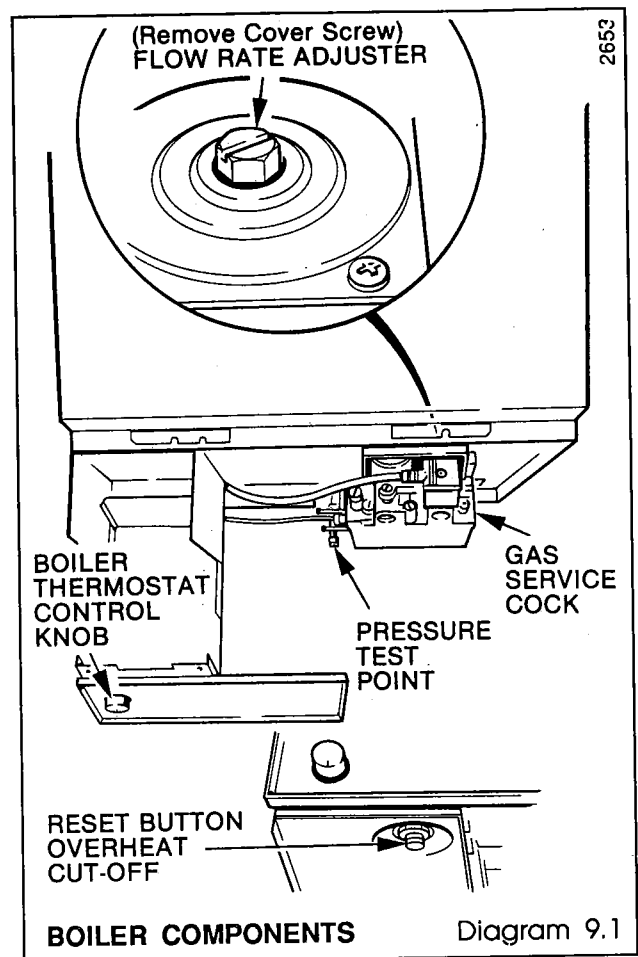
Make sure that any remote controls are calling for heat.

Switch on the electrical supply to the system and check that the pump is working.

Turn the boiler thermostat knob clockwise to a high setting, the highest setting is about 82°C (180°F), and the main burner will light directly, look through the window in the boiler casing.

If the burner does not light, press the reset button under the control box, see diagram 9.1

Should the burner still not light then check all electrical connections and refer to Section 14.



**BOILER COMPONENTS** Diagram 9.1

The pilot gas rate is preset and no adjustment should be necessary.

Prise the plastic cover off the flow rate adjuster.

Set the gas rate required, using a spanner, by means of the flow rate adjuster, see diagram 9.1, turning clockwise to decrease.

For heat output refer to pressure settings Table on page 3.

Replace plastic cover.

Turn off electrical supply to the boiler. Remove the pressure gauge and refit the screw ensuring that a gas tight seal is made.

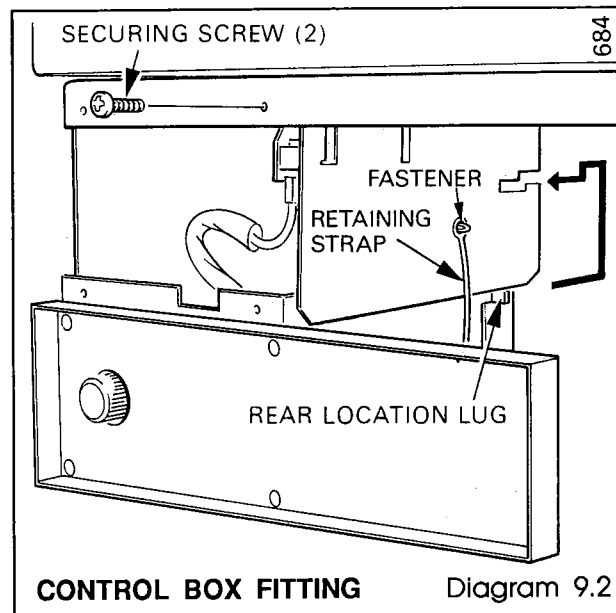
9.6 Testing

Relight the burner and check that there is adequate air for combustion by the appearance of the flames.

Should any doubt exist about the gas rate check the rate at the meter 10 minutes after lighting up. The gas rate should be in the range of 3 to 3.6m<sup>3</sup>/h, (104 to 128<sup>3</sup>ft/h). These figures are for guidance only.

The boiler will give off a "burning smell" for a short time, this is quite normal.

Replace the control box, engage the tabs on each side of the box on to the bottom edge of the cover and slide the box backward. When the box is at the rear of the cover raise the rear of the box and replace the two screws, see diagram 9.2. Refit the plastic strip on to the fastener if the box has been removed completely.



CONTROL BOX FITTING

Diagram 9.2

10 Commissioning and Testing Boiler

Check that any remote controls control the boiler as required.

Allow the system to reach maximum working temperature and examine for water leaks. The system should then be turned off, whilst hot and drained as rapidly as possible.

Refill the system, vent all air and check for water soundness.

The pump overrun will keep the pump running when the boiler has shut down, as long as the water temperature within the boiler is above a set level.

When commissioning the system the boiler should first be fired with the bypass fully closed on full service, that is, central heating and domestic hot water. The system should then be balanced, adjusting the pump and lockshield valves as necessary. Having achieved a satisfactory condition operate the boiler with the bypass valve fully closed on minimum load, normally this will be on central heating only with one radiator operating, in the main living area. The valve should be gradually opened to achieve a flow rate of 38.2litre per minute (8.4gal/min). This is equal to a temperature difference of 11°C (20°F) across the boiler, if necessary re-adjust the pump.

Under NO CIRCUMSTANCES should this valve be left in the fully CLOSED position.

Adjust the thermostat and any remote controls to the required settings.

Do not attempt to adjust the thermostat calibration screw.

Operate the boiler again on full service and check that the balancing is satisfactory, making adjustments as necessary.

If thermostatic radiator valves are fitted care must be taken to ensure that there is adequate flowrate when the valves close, refer to BS7478 for guidance.

Check that when the pump is switched on or off air is not drawn into the system or water discharged at the open vent.

The boiler will not operate without the casing being correctly fitted, sealed and secured to the back panel.

The lighting sequence is:

1. Mains electrical supply on to the boiler.
2. Gas supply on.
3. All remote controls on.
4. Turn boiler thermostat to required setting and the automatic lighting procedure starts.
5. The fan will run.
6. The air pressure switch operates.
7. The first, pilot, solenoid opens.
8. The spark igniter operates.
9. The pilot burner ignites.
10. Spark ignition switches off.
11. The second solenoid operates and the main burner lights

This will continue until the boiler thermostat or a remote control switches the burner off.

When the boiler switches off all burners go out, the complete lighting sequence will operate when heat is again required.

Note, if the boiler thermostat is switched off, by hand, wait for 30 seconds before turning on to the setting required.

**12 Completion**

Refit the controls cover by sliding it on to the runners.

Instruct the User in the safe and efficient operation of the boiler and system.

Hand the Instructions for Use to the user for their retention.

Advise that to ensure the continued efficient and safe operation of the appliance it is recommended that it is checked and serviced at regular intervals. The frequency of servicing will depend upon the particular installation and usage, but in general once a year should be enough.

It is the law that any servicing must be carried out by a competent person.

Reminder, leave these instructions with the user for use during future service calls.

This boiler must be serviced by a competent person.

Before commencing a service, turn off the gas supply at the gas service cock and isolate the boiler from the electrical supply.

The boiler WILL NOT operate without the casing being CORRECTLY FITTED, SEALED and SECURED to the back panel.

After completing a service MAKE SURE this is checked.

### 13.1 Heat Exchanger Cleaning

Remove the controls cover by pulling it forward and clear of the boiler.

Unscrew the two upper and two lower casing securing screws and remove the casing by drawing it forward, see diagram 13.1.

Remove the wing nuts holding the securing angle, see diagram 13.2 and remove the angle securing the flue hood.

Remove the two screws securing the flue hood to the back plate and lift off the flue hood.

Remove the combustion chamber front panel by removing the wing nut at the bottom front and the four screws securing the combustion chamber sides.

Disconnect the ignition lead from the electrode, taking care not to damage the lead insulation.

Support the main burner and unscrew the tubing nut at the base of the pilot burner.

Remove the two screws securing the pilot burner assembly to the main burner, see diagram 15.9.

Spring the pilot tube downward sufficiently to allow the main burner to move forward to disengage from the injector at the rear. Raise the burner up through the combustion chamber and remove. Take care not to damage the insulation inside the combustion chamber.

Cover the pilot tube and injector for protection. Place a sheet of paper in the combustion chamber, brush any deposits onto it and remove.

### 13.2 Burner, Injector and Pilot Cleaning

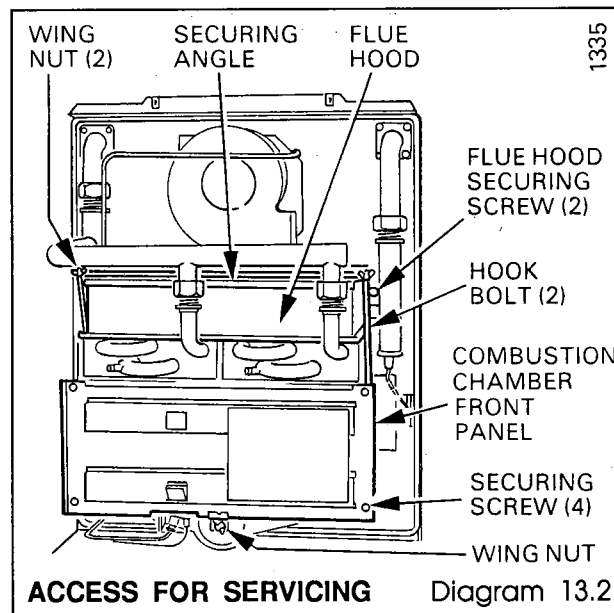
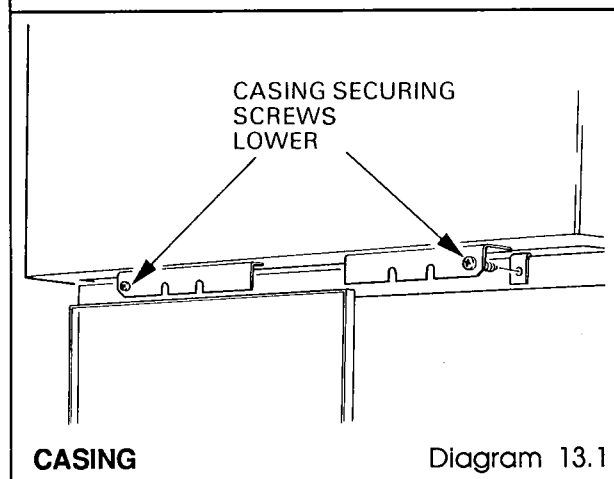
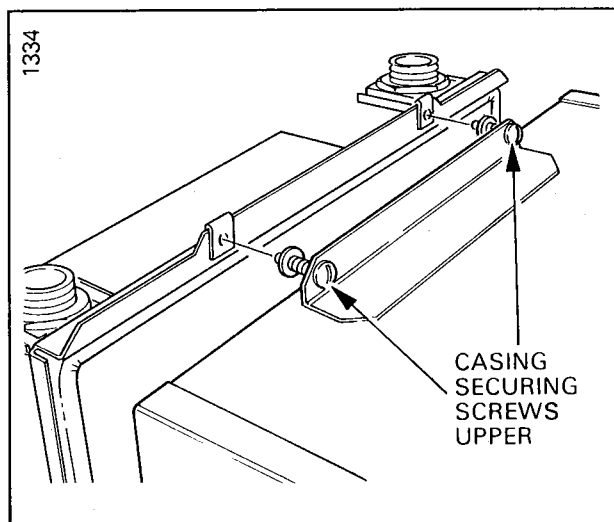
With the main burner already removed brush off any deposits from the burner, ensuring that the flame ports are unobstructed. Brushes with metallic bristles must not be used.

Check the main burner injector for blockage and or damage and remove if necessary. Replace with sealing washer in position.

Inspect the pilot burner and spark electrode, clean if necessary. Check condition of components.

When replacing, make sure that the main burner is pushed fully home on to the injector with the vertical guides engaging either side of the injector, see diagram 15.1.

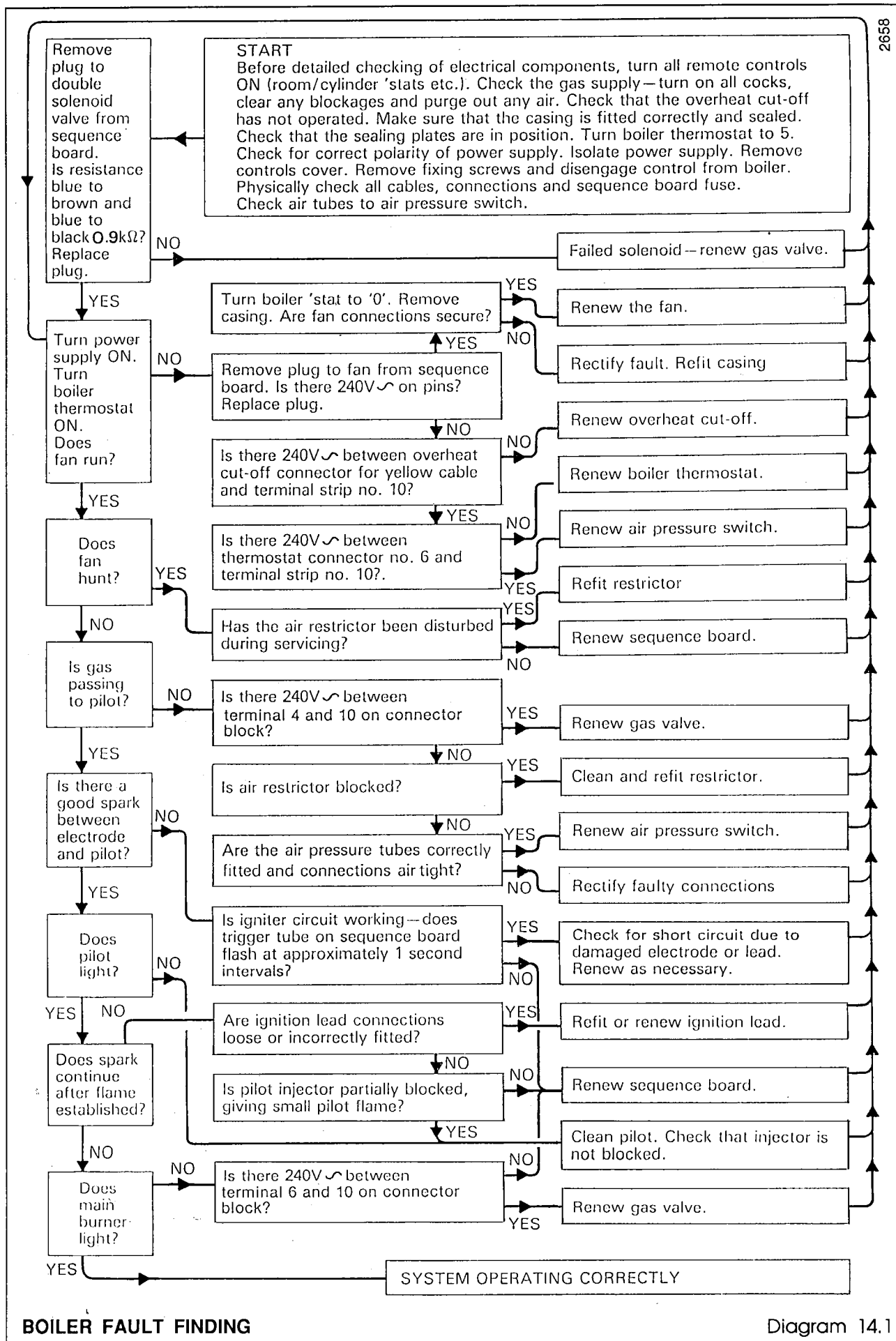
Replace the flue hood, as Section 6.

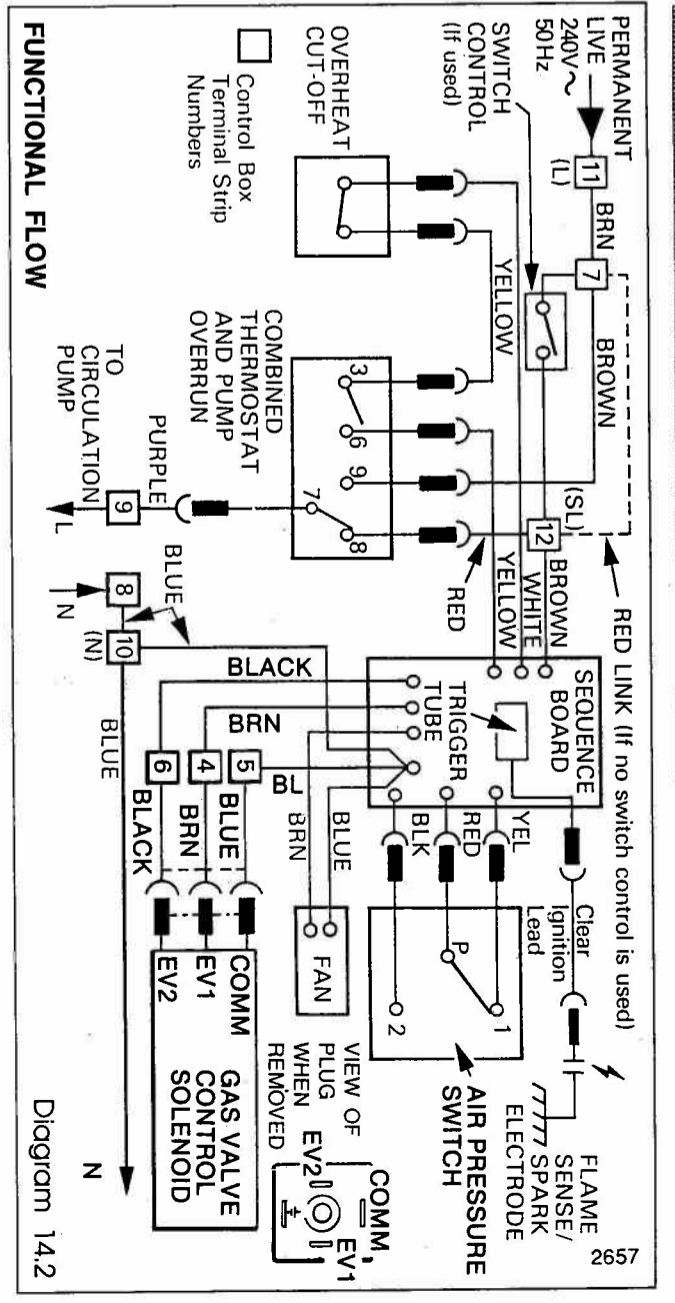


### 13.3 Operation Checks

After completion of the service, before refitting the case, check the casing seal to make sure that it is in good condition, replace if necessary.

Light the boiler and carry out the operation checks as described in "Commissioning and Testing the Boiler", Section 9.





**14 Fault Finding - Electrical**

Important, the preliminary electrical system checks contained in the British Gas Multimeter Instruction Book, or similar publication, are the first checks to be carried out during a fault finding procedure.

On completion of the service fault finding task, which has required the breaking and remaking of the electrical connections then the checks, earth continuity, polarity and resistance to earth must be repeated.

Refer to Fault Finding diagram 14.1 and Functional Flow diagram 14.2.

A spare fuse for the sequence board is supplied in the control box.

Note, the boiler WILL NOT operate UNLESS the casing is CORRECTLY fitted and SECURED to the back panel.

**FAULT AND CAUSE****REMEDY****14.2 Burner Will Not Ignite**

- Electrical fault. \_\_\_\_\_ Refer to fault finding diagram 14.1.
- Boiler thermostat not operating. \_\_\_\_\_ Check that boiler thermostat is in an "ON" position and functioning correctly.
- Overheat cut-off operated. \_\_\_\_\_ Allow system to cool and press reset button, see diagram 9.1.
- Case sealing fault. \_\_\_\_\_ Ensure that the case is fitted correctly and sealed. Check that the sealing plates are in position.

**14.3 Thermostat Will Not Cut Out**

- Thermostat phial not correctly fitted. \_\_\_\_\_ Fit phial in pocket, using heat sink compound and secure with pin.
- Faulty thermostat. \_\_\_\_\_ Renew thermostat.

**14.4 Overheat Cut-off Operates Prematurely.**

- Air in heating body. \_\_\_\_\_ Vent system. Alter system layout if necessary.
- Water circulation low or stopped. \_\_\_\_\_ Pump not functioning correctly. Check that the pump is connected to the boiler, to run while boiler is on. Alter layout if necessary.
- Overheat cut-off operates before boiler cycles on maximum boiler thermostat setting. \_\_\_\_\_ Change faulty overheat cut-off.
- Correctly set overheat cut-off operates prematurely (causes 1 and 2 satisfactory). \_\_\_\_\_ Change faulty heating body.

**14.5. Insufficient Heat**

- Thermostat set too low. \_\_\_\_\_ Increase setting. Check for correct operation.
- Gas supply pressure inadequate. \_\_\_\_\_ Check gas supply, clear any blockage, make sure all cocks are fully open.
- Burner pressure incorrect (While measuring pressure ensure thermostat is on maximum setting). \_\_\_\_\_ Check burner pressure against data badge. Reset only if more than 10% away from required figure.

**14.6 Boiler Noisy in Operation\***

- Overgassed. \_\_\_\_\_ Check burner pressure against data badge and adjust if necessary, but only if more than 10% away from the required figure.
- Complete lack of water flow. \_\_\_\_\_ Check system controls for correct installation or correct type of controls.
- Air in system. \_\_\_\_\_ Remove air from the system. When boiler is first commissioned the air dissolved may take some time to boil out, therefore attempts should be made to remove air periodically during the first weeks of the installation. Check venting of system as air bubbles can remain suspended in the water if system is not well vented.
- Water flow rate. \_\_\_\_\_ Check that flow rate is correct. Check that pump is correct size and is correctly adjusted. Bypass not fitted or correctly set.

\* There remains on most boilers a residual noise which is more noticeable at high temperatures. Normal operation of the boiler over a period should remove most noise.

**15.1 Procedure**

Replacement of parts must be carried out by a competent person.

Replace parts in the reverse order, unless stated otherwise.

**15.2 Isolation**

Before removing any parts turn off the gas supply at the gas service cock and isolate the electrical supply to the boiler.

**15.3 Casing**

The boiler will not operate without the casing being correctly fitted, sealed and secured to the back panel.

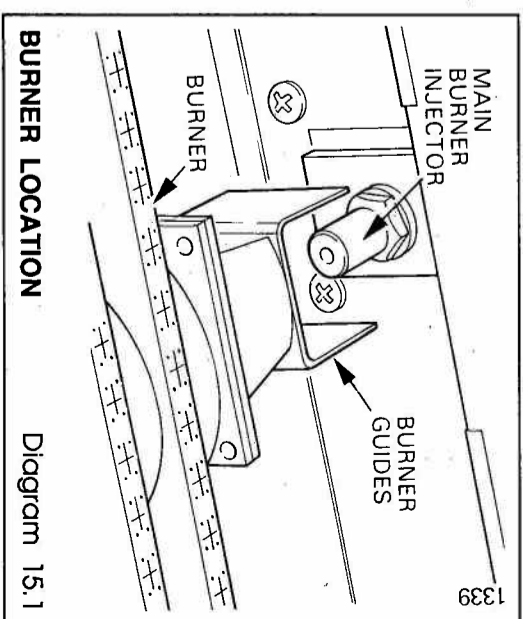
Before turning the boiler on make sure that this is checked.

**15.4 Main Burner Injector**

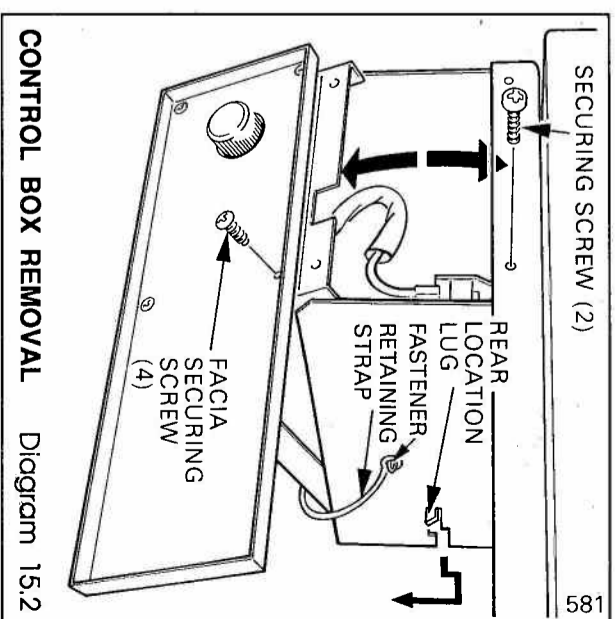
Remove the main burner, refer to Section 13.

Unscrew the injector for replacement. Renew the sealing washer to ensure gas soundness.

When replacing the main burner make sure that it is pushed fully home on to the injector with the vertical guides engaging either side of the injector, see diagram 15.1.



**BURNER LOCATION** Diagram 15.1



**CONTROL BOX REMOVAL** Diagram 15.2

### 15.5 Gas Valve

Remove the controls cover by sliding it forward.

Remove the four screws and control fascia from the control box, see diagram 15.2.

Disconnect the pilot supply tube nut connection at the gas valve, see diagram 15.3.

Remove the four screws from the gas service cock flange.

Support the gas valve and remove the four screws at the left.

Ease the valve clear of the flanged; connections and discard the "O" rings.

Remove the plug on the valve.

When fitting the valve, make sure that the new "O" rings supplied are used and are seated correctly.

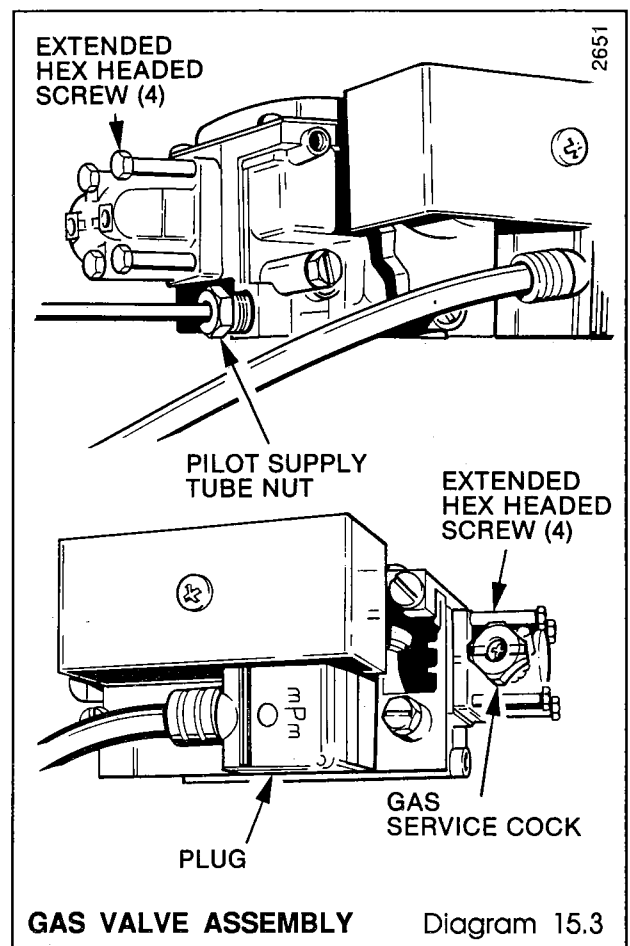
Reconnect the plug, see diagram 15.4, making sure that the valve is the right way round, that is, the gas flow is from right to left, in the direction of the arrow.

Place the valve in position and refit the eight screws.

Reconnect the pilot supply tube.

The supply may have to be purged of air after this operation.

Test for gas soundness with a suitable leak detection fluid.



**GAS VALVE ASSEMBLY**

Diagram 15.3

2652

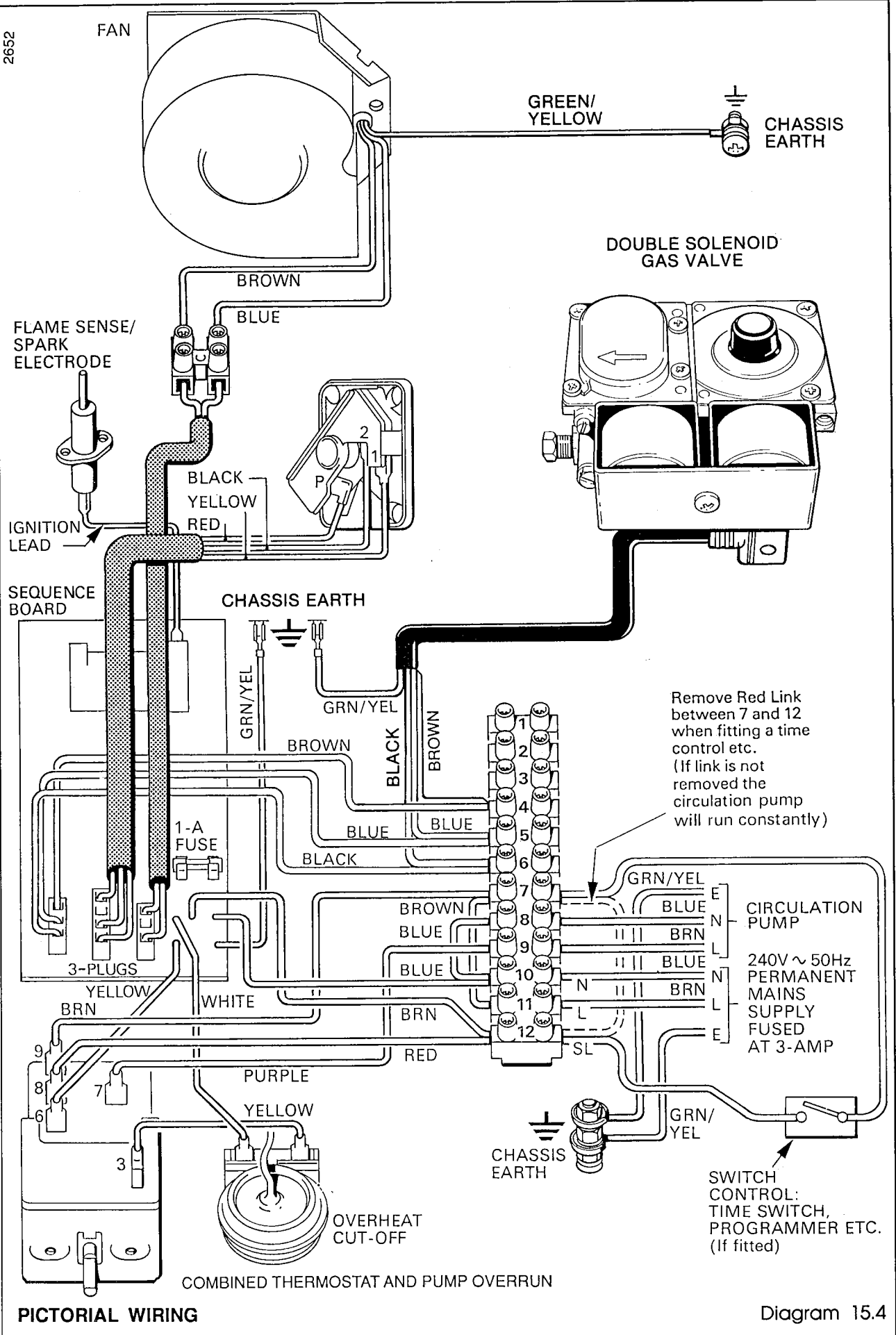


Diagram 15.4

### 15.6 Air Pressure Switch

Remove the controls cover by sliding it forward and off.

Remove the control box, by supporting the box and removing the two fixing screws at the front above the fascia, then lower the front of the box until it is clear of its cover. Push box toward the rear of the boiler to disengage its hinging arrangement, lower the rear of the box and pull it forward clear of its cover, see diagram 15.3. The box will still be attached to the boiler by the plastic retaining strap. If the box is to be removed entirely, pull the strap off. Care should now be taken not to damage the thermostat and overheat cutoff capillaries or electrical cables.

Disconnect the electrical connectors at the air pressure switch, see diagram 15.5.

Push air pressure switch upward against spring plate and pull the bottom to the left to disengage from its clip.

Disconnect the flexible tubes at the rear of the switch, taking care not to lose the air restrictor in the lower connection.

When replacing the tubes to the air pressure switch, note that the air restrictor must be fitted into the lower connection.

Refer to diagram 15.4 when re-connecting the electrical connectors.

Refit the control box, engage the tabs on side of box on to bottom edge of cover and slide the box backward. When the box is at the rear of the cover raise the rear of the box to engage the pivot arrangement and raise the front of the box and secure with the two screws, see diagram 15.6. If the control box has been removed refit the plastic strap on to the fastener.

### 15.7 Air Restrictor

Release the control box as Section 15.6.

Remove the air pressure switch as Section 15.6, refer to diagram 15.5.

Remove the air restrictor from the lower air pressure switch connection. Renew it or clean by blowing out any obstruction.

Refit control box as Section 15.6.

### 15.8 Sequence Board

Remove the controls cover by sliding it forward and off.

Release the control box as Section 15.6.

Disconnect the three plugs at the front of the board and the ignition lead at the back, see diagram 15.8.

Disconnect the white cable at the overheat cutoff.

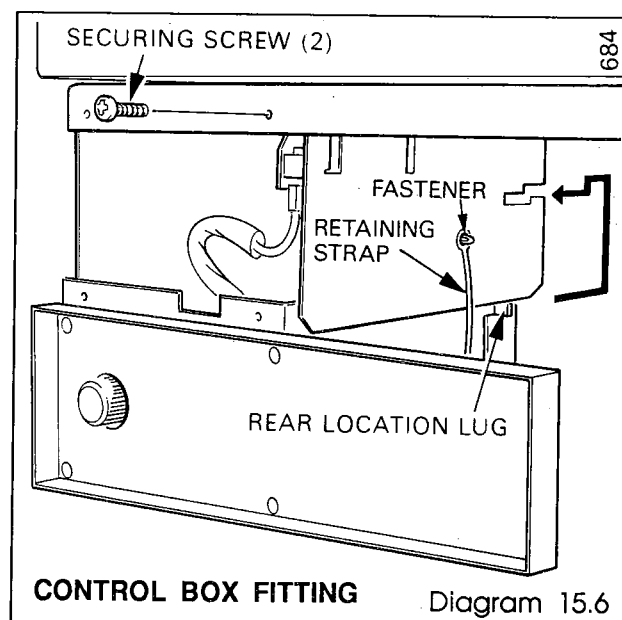
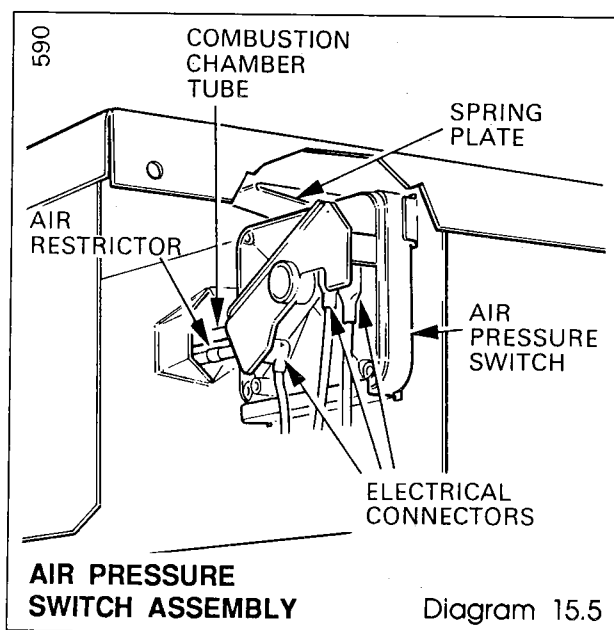
Disconnect the yellow cable at No.6 terminal of the thermostat.

Disconnect the live and neutral (brown and blue) connections of the sequence board at the terminal strip and the control board earth cable (green and yellow).

The sequence board can now be eased from the two front fixing studs, then removed from the location tags and support posts, see diagram 15.8.

To reconnect see diagram 15.4.

Refit control box.



### 15.9 Thermostat

Remove the controls cover by sliding it forward.

Remove the fascia by removing the four small screws, see diagram 15.2.

Pull off the thermostat knob.

Release the control box.

Remove the casing after unscrewing the two upper and two lower securing screws, see diagram 13.1.

Remove the sealing angle at the right, where the capillaries pass through the back panel, see diagram 15.7.

Remove the screw and nut securing the capillary clips to the control box to release the clips and capillary, then pull the surplus through the hole in the back panel.

Remove the retaining clip securing the thermostat phials into the pocket then remove the phial and coil, see diagram 15.7.

Feed the phial capillary through the hole in the back panel and pull clear at the bottom.

Disconnect the connectors at the thermostat. Remove the two screws securing the thermostat and remove it.

To reconnect, see diagram 15.4.

Refit control box.

When refitting the thermostat, push the phial upward at the rear right-hand side of the boiler into the guide until it is visible and can be passed through the sealing angle hole in the back panel, pulling available capillary through the hole.

When replacing the phial and coil, smear with the heat sink compound supplied, and secure in the pocket with the clip, see diagram 15.7.

Feed the surplus capillary back through the hole in the back panel before fitting the sealing angle. When fitting the case do not trap the capillaries.

### 15.10 Overheat Cutoff

Slide the controls cover forward and off.

Release the control box, as Section 15.6.

Remove the casing as in Section 15.9.

Remove the sealing angle as Section 15.9, pulling surplus length of capillary through the hole in the back panel.

Remove the clip securing the phials in the pocket and pull out the phial and coil, see diagram 15.7. Feed the coiled capillary through the hole in the back panel.

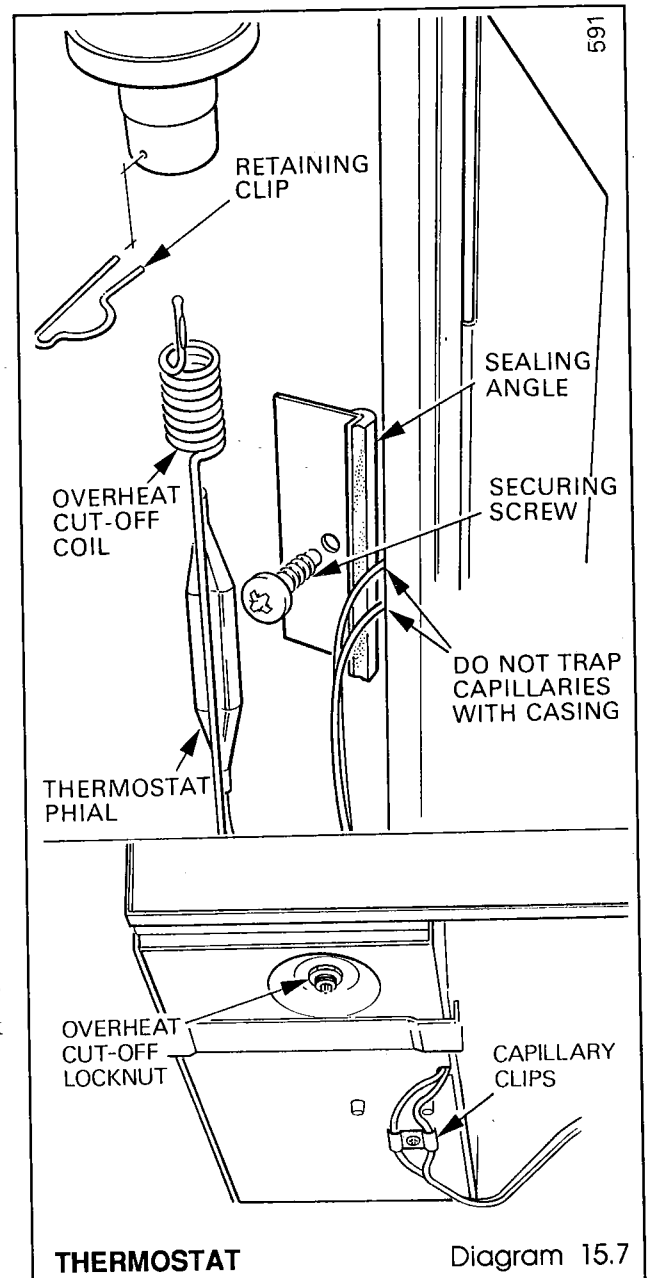
Remove the screw and nut securing the capillary clips to the control box to release the clips and capillaries.

Disconnect the connectors at the overheat cutoff, noting their positions.

Remove the nut securing the cutoff and remove it.

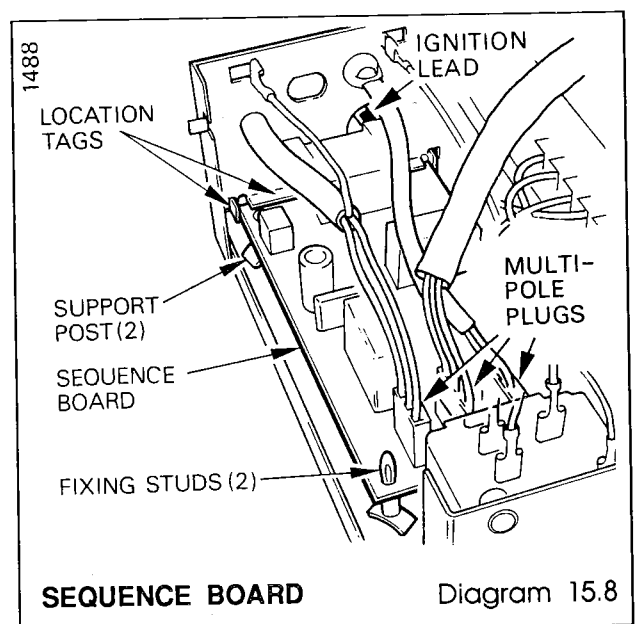
When fitting the capillary generally follow the information in Section 15.9.

Refit the control box.



THERMOSTAT

Diagram 15.7



SEQUENCE BOARD

Diagram 15.8

### 15.11 Ignition Lead

Remove the controls cover by sliding it forward.

Remove the casing as Section 15.9

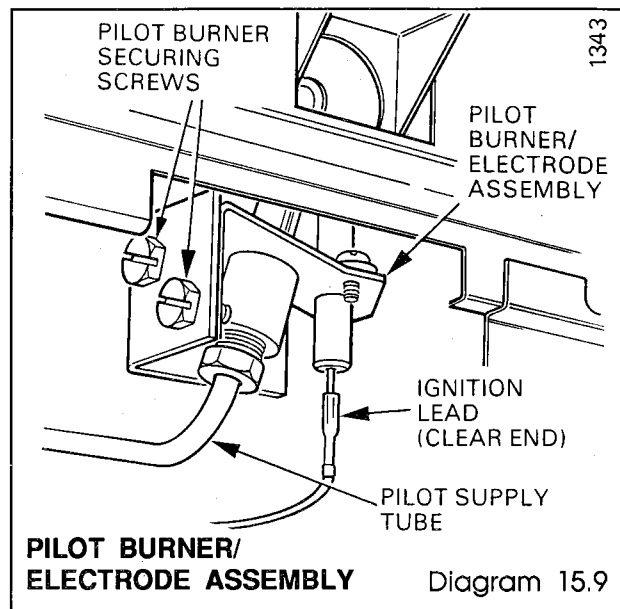
Release the control box as Section 15.6

Disconnect the ignition lead at the connection at the back of the sequence board and the electrode, see diagrams 15.8 and 15.9.

Remove one of the sealing angles where the lead passes through the back panel and replace the lead, feeding it through in the same way as the original, secure it to the pilot supply tube by passing it through the tubing guides.

The clear end is fitted to the electrode.

Refit the control box.



### 15.12 Pilot and Electrode Assembly

Remove the controls cover by sliding it forward.

Remove the casing as Section 15.9.

Pull off the ignition lead from the electrode.

Disconnect the pilot supply tube at the base of the pilot burner, see diagram 15.9.

Remove the two screws securing the pilot burner assembly to the burner and lift off.

Fit the new pilot assembly and check the spark gap, as diagram 15.10.

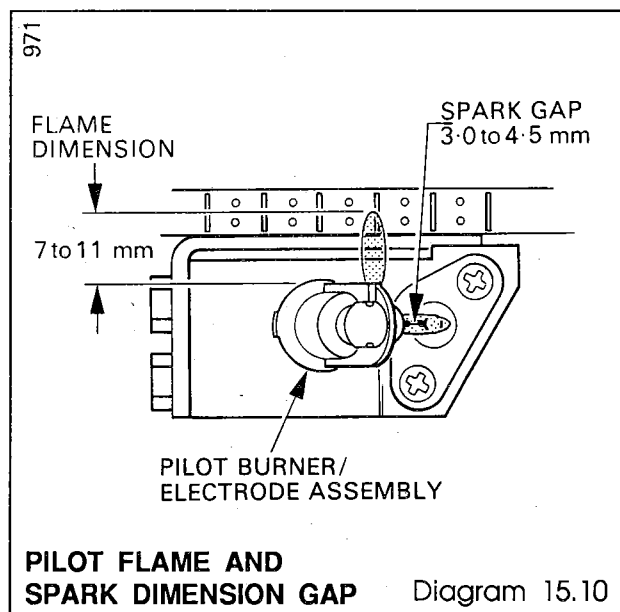
To prevent pilot ignition during testing for soundness, remove the ignition lead at the P.C.B.

Switch on the electrical supply and test for gas soundness at the pilot, using a suitable leak detection fluid.

Switch off the electrical supply and refit the ignition lead at the P.C.B.

Refit the case.

After assembly and turning on, check that the pilot flame is correct, see diagram 15.10. If not, refer to Section 13.2.



### 15.13 Fan Assembly

Remove the controls cover by sliding it forward.

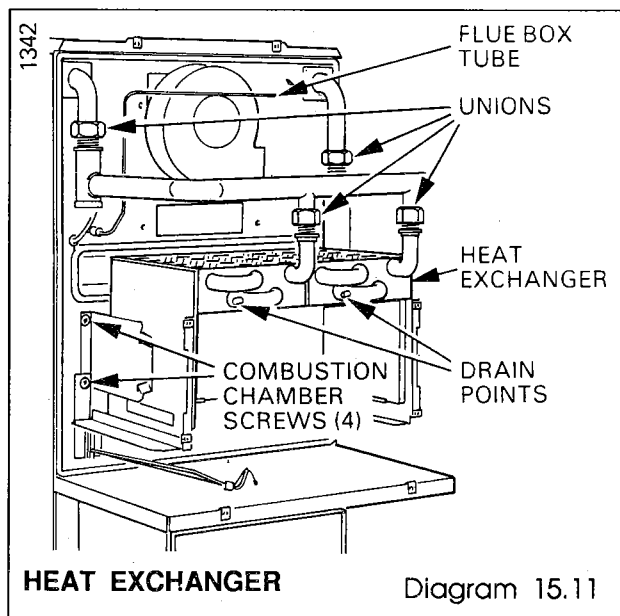
Remove the casing as Section 15.9.

Disconnect the cables from the fan at the two-way terminal strip and earth connection.

Release the cable from the support clip.

Remove the three screws securing the fan assembly to the back panel. The plastic clip securing the electrical harness can now be removed. Withdraw the fan forward and upward.

Replace the fan assembly, ensuring that the gasket is fitted to the fan, in the reverse order making sure that the clip supporting the electrical harness is replaced.



**15.14 Heat Exchanger Body**

- Remove the controls cover by sliding it forward.
- Remove the casing as Section 15.9.
- Drain the boiler circuit at the draining tap(s), see diagram 15.11.
- Remove the flue hood as described in Section 13.1.
- Remove the combustion chamber front panel as Section 13.1.
- Remove the retaining clip and thermostat phials as Section 15.9.
- Remove the burner as Section 13.1.

Cover the pilot as Section 13.1.

Remove the two screws securing the sealing angle to the heat exchanger, see diagram 15.12.

Disconnect the unions of the heat exchanger, see diagram 15.11.

Remove the four screws securing the combustion chamber to the back plate, see diagram 15.11, lower the combustion chamber and heat exchanger assembly to disengage the flow and return manifold and remove.

The heat exchanger can now be removed and be replaced.

Replace the heat exchanger assembly on to the combustion chamber.

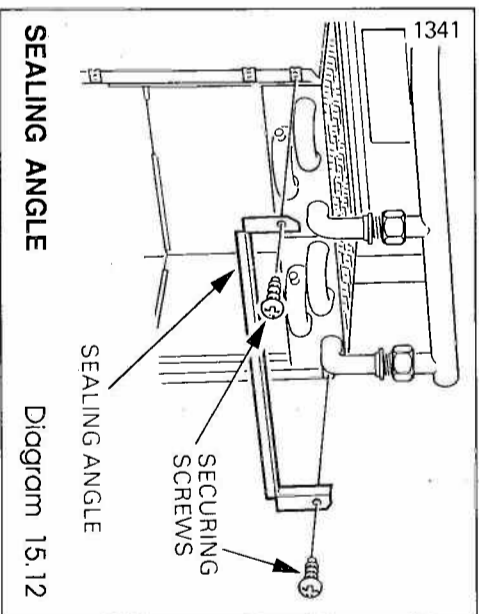
Lift the heat exchanger and combustion chamber assembly into position, locating the flow and return connection unions.

Secure to the back plate with the four screws, making sure that the baffle on the left-hand side is attached at the same time.

Smear the thermostat phial and coil with heat sink compound supplied. Fit the thermostat phial and coil into the phial pocket and secure with the clip as described in Section 15.9.

Secure the sealing angle as shown in diagram 15.12.

Replace the flue hood, as Section 6.4.



SEALING ANGLE Diagram 15.12

**15.15 Combustion Chamber Insulation**

- Front Insulation
- Remove the controls cover by pulling it forward and off.
- Unscrew the two upper and two lower casing screws and remove the casing by drawing it forward, see diagram 13.1.
- Remove the combustion chamber, front panel by undoing the wing nut at the bottom front and the four screws securing to the combustion chamber sides.
- Remove the screw securing the front insulation and slide it out, see diagram 15.13.

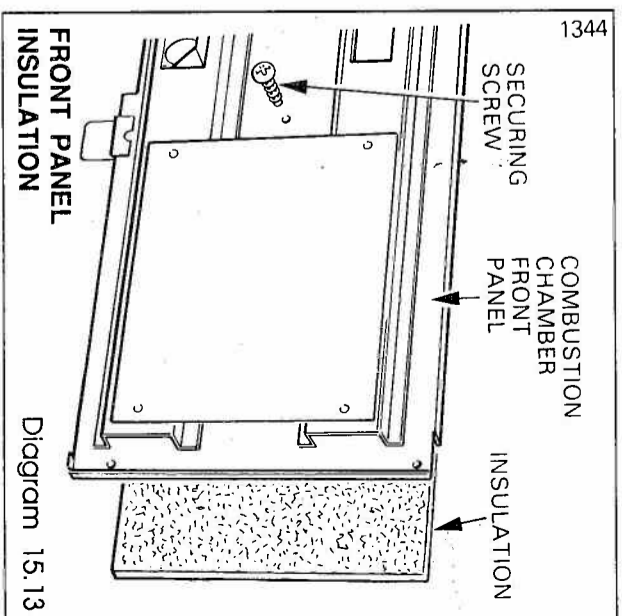
**Side Insulation**

Follow the instructions above.

The side insulation can now be removed by sliding it forward.

**Rear Insulation**

When the side insulation is removed the rear insulation can be lifted out.



FRONT PANEL INSULATION Diagram 15.13

**16 Spare Parts**

When ordering spare parts, please quote the part number, description, the boiler name, Fuelsaver 100F and its serial number, visible after the controls cover is removed by sliding it forward.

The GC part number should be given to the local gas undertaking.

Key No:	Glow-worm Part No:	Description	G.C Part No:
1	800125	Gas valve assembly	313 193
2	203052	Main injector 4.8	312 693
3	202005	Air pressure switch	395 802
4	417268	Pilot burner and electrode assy	334 602
5	WW4612	Ignition lead	355 500
6	202505	Over heat cutoff assembly	395 799
7	202006	Sequence board	334 623
8	417876	Fan assembly	312 675
9	202516	Control thermostat	394 299
10	416144	Thermostat knob assembly	355 401
11	202015	Fuse - 1A Type F BS4265	334 750
12	411194	Sight glass	355 153

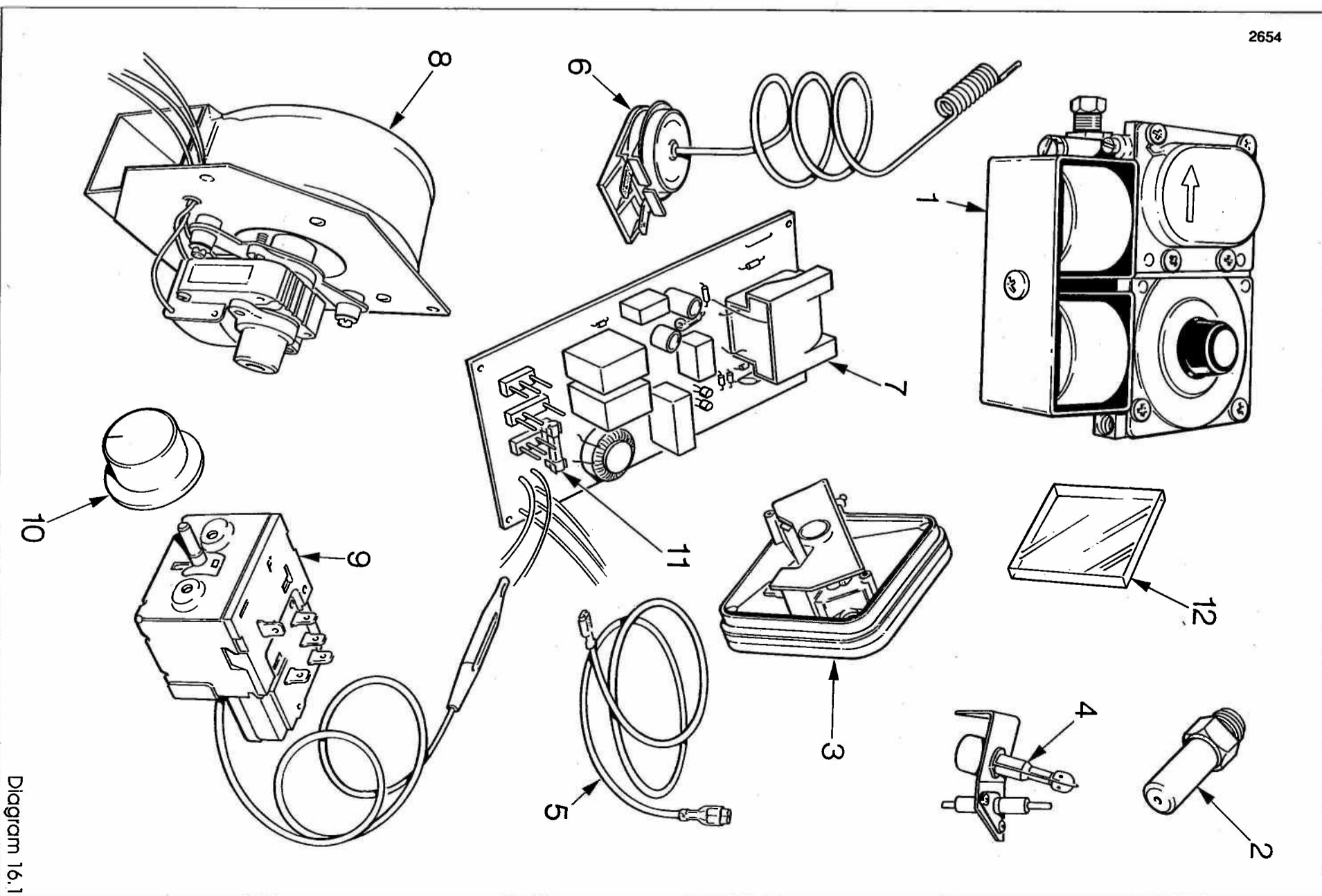


Diagram 16.1

**Information for the Installer and Service Engineer.**

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

The adhesives and sealants used in this appliance are cured and give no known hazard in this state.

**INSULATION PADS/CERAMIC FIBRE, GLASSYARN, MINERAL WOOL**

These can cause irritation to skin, eyes and the respiratory tract.

If you have a history of skin complaint you may be susceptible to irritation. High dust levels are usual only if the material is broken.

Normal handling should not cause discomfort, but follow normal good hygiene and wash your hands before eating, drinking or going to the lavatory.

If you do suffer irritation to the eyes or severe irritation to the skin seek medical attention.

**THERMOSTATS**

These contain very small amounts of xylene in the sealed phial and capillary. If broken, under normal circumstances the fluid does not cause a problem, but in cases of skin contact, wash with cold water.

If swallowed drink plenty of water and seek medical attention.

**CUT-OFF DEVICES**

These contain a very small amount of ethylene glycol and methanol in the capillary.

If broken, under normal circumstances the fluid does not cause a problem, but in cases of skin or eye contact, wash with cold water.

If swallowed drink plenty of water and seek medical attention.

*Because of our constant endeavour for improvement details may vary slightly from those in the instructions.*