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Saunier Duval

Installation & Servicing Instructions

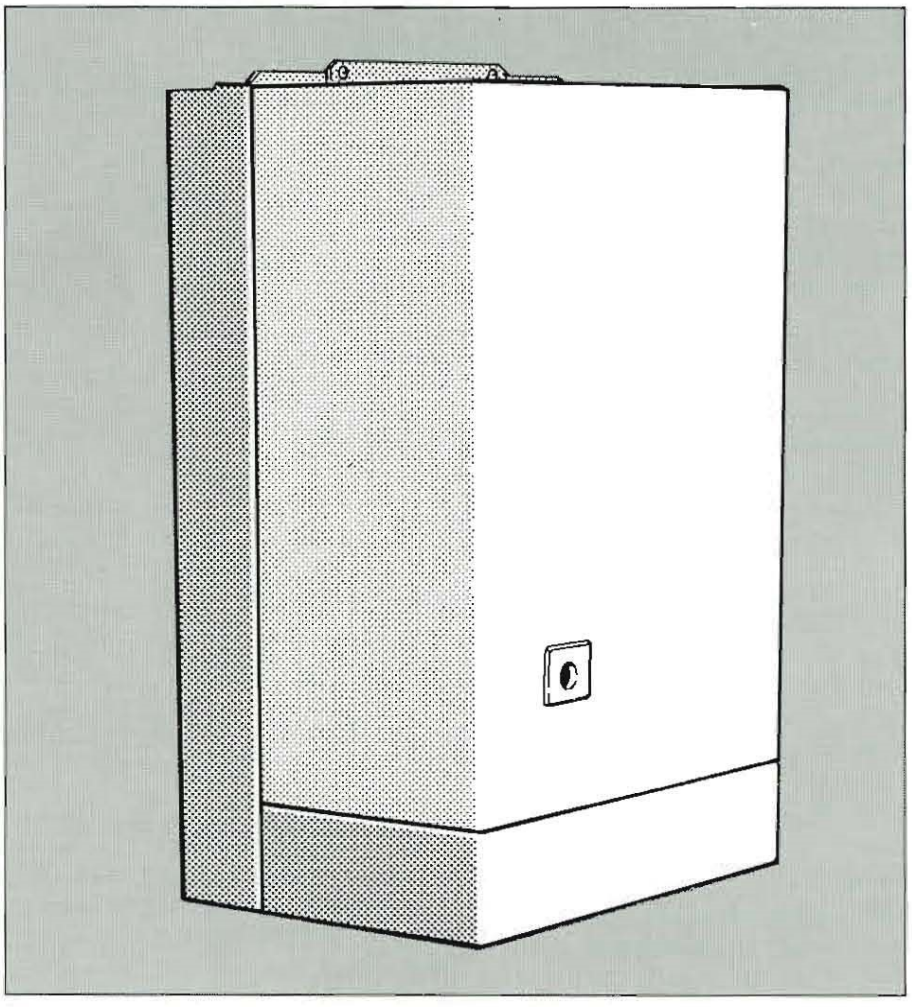
To be left with the user

500.30B G.C. No. 41 920 02

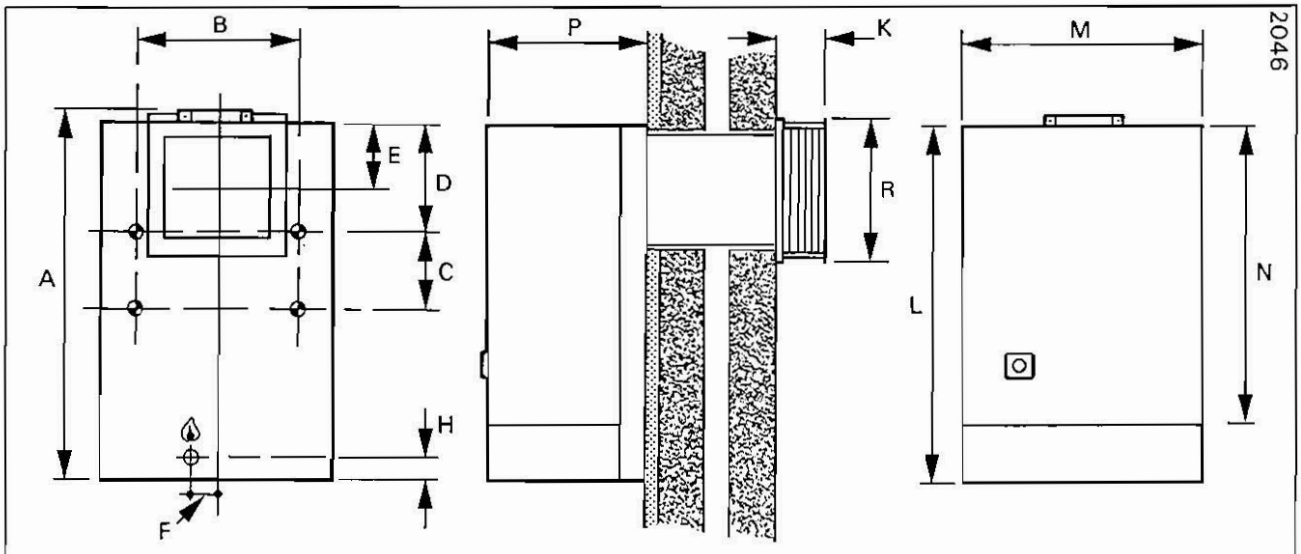
500.40B G.C. No. 41 920 03

500.50B G.C. No. 41 920 04

Balanced Flue Boiler



Saunier Duval Ltd., Nottingham Road, Belper, Derby. DE5 1JT Tel : (0773) 824141



GENERAL DIMENSIONS (all dimensions in mm) Diagram 1.1

MODEL	A	B	C	D	E	F	H	K	L	M		N	P	R
500.30B 500.40B	766	265	168	213	167	24.5	39	100	741	417		640	345	330
500.50B	766	328	168	213	142	56	39	100	741	480		640	345	305

1 General Notes and Information

It is essential that the boiler is installed strictly in accordance with the instructions and information in this booklet.

Important Notice

The boiler is for use on natural gas only and cannot be used on any other gas.

Sheet Metal Parts

When installing or servicing the boiler care should be taken when handling sheet metal parts, to avoid any possibility of personal injury.

1.1 Statutory Requirements

THE INSTALLATION OF THE 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, THE BUILDING REGULATIONS, I.E.E. WIRING REGULATIONS, LOCAL WATER COMPANY BYLAWS, THE BUILDING STANDARDS (Scotland) REGULATIONS (applicable in Scotland).

Detailed recommendations are contained in the current issue of the following British Standard codes of practice: BS6798, BS5440 Parts 1 and 2 BS5546 Part 1, BS5449 Part 1, BS6891.

1.2 DATA			
MODEL	500.30B	500.40B	500.50B
WEIGHT	57.95 kg	57.95 kg	62.8 kg
WATER CONTENT	5.6 litres	5.6 litres	6.4 litres
GAS CONNECTION	Rc ½ in. (½ in. BSPT)		
WATER CONNECTION	4 x Rc1, (1 in. BSPT)		
ELECTRICITY SUPPLY	240V, 50Hz, fused 3A max.		
DATA BADGE	On right hand side of electrical control box		

1.3 Range Rating

This boiler is range rated and may be adjusted to suit the individual system requirements.

The respective Table 1 gives the ratings and settings.

1.4 B.S.I. Certification

The boiler is certificated to the current issue of British Standard 6332 Part 1, invoking the current issue of BS5258 Part 1 for performance and safety. It is, therefore, important that no alteration is made to the boiler without permission, in writing, from Saunier Duval Ltd.

Any alteration that is not approved by Saunier Duval Ltd., could invalidate the B.S.I., Certification of the boiler, warranty and could also infringe the current issue of the Statutory Requirements, Section 1.1.

1.5 Gas Supply

The gas installation shall be in accordance with the current issue of BS6891.

On completion test the gas installation for soundness and purge, in accordance with the above code of practice.

1.6 Electrical Supply

WARNING: This boiler must be earthed.

All system components shall be of an approved type and shall be connected in accordance with the current issue of the I.E.E., Wiring Regulations and any applicable local regulations.

Connection of the boiler and system controls to the mains supply must be through a common isolator and must be fused at 3A, maximum. The method of connection should be, preferably, an unswitched shuttered socket outlet and 3 pin (BS1363) plug.

Alternatively, a double pole isolating switch may be used, provided it has a minimum contact separation of 3mm in both poles. The isolator should be clearly marked, showing its purpose. See also Section 1.11.

Cables within the boiler casing must be to the current issue of BS6500 Table 9 not less than 0.75mm2 (24/0.20mm).

1.7 Contents of Packaging

The boiler is delivered in one pack which contains:-

Boiler with outer case and wall frame, burner and loose items pack, also combustion chamber shield and side panels.

The other pack contains the balanced flue terminal assembly and accessories.

Refer to Section 2.3 to check that the flue terminal assembly supplied is suitable.

1.8 Water System

The boiler shall only be used on an unrestricted open vented system with the water supply taken from a feed and expansion cistern, having a head between 1m (3ft 3ins) minimum and 27m (90ft) maximum.

1.9 Draining Tap

A draining tap must be provided at the lowest points of the system which will allow the entire system, the boiler and hot water cylinder to be drained. Draining taps shall be to the current issue of BS2879, type 1.

TABLE 1

Saunier Duval 500.30B RANGE RATING			
RANGE RATING		*Min.*	*Max.*
NOMINAL HEAT INPUT	*kW*	7.71	11.27
	Btu/h	26,300	38,450
NOMINAL HEAT OUTPUT	*kW*	5.86	8.79
	Btu/h	20,000	30,000
BURNER SETTING PRESSURE	*m bar*	6.6	14.3
	in.w.g	2.6	5.7
APPROX. GAS RATE	m^3/h	0.74	1.10
	ft^3/h	26	39
INJECTOR MARKING		BURNER :- 203013 PILOT :- 7215	

Saunier Duval 500.40B RANGE RATING			
RANGE RATING		*Min.*	*Max.*
NOMINAL HEAT INPUT	*kW*	11.55	15.03
	Btu/h	39,400	51,300
NOMINAL HEAT OUTPUT	*kW*	8.79	11.72
	Btu/h	30,000	40,000
BURNER SETTING PRESSURE	*m bar*	10.0	16.3
	in.w.g	4.0	6.5
APPROX. GAS RATE	m^3/h	1.12	1.45
	ft^3/h	40	52
INJECTOR MARKING		BURNER :- F2029 PILOT :- 7215	

Saunier Duval 500.50C RANGE RATING			
RANGE RATING		*Min.*	*Max.*
NOMINAL HEAT INPUT	*kW*	15.32	19.03
	Btu/h	52,300	64,900
NOMINAL HEAT OUTPUT	*kW*	11.72	14.65
	Btu/h	40,000	50,000
BURNER SETTING PRESSURE	*m bar*	10.5	17.0
	in.w.g	4.2	6.8
APPROX. GAS RATE	m^3/h	1.48	1.84
	ft^3/h	53	65
INJECTOR MARKING		BURNER :- F2022 PILOT :- 7215	

1.10 Safety Valve

Where a safety valve is fitted it should be on the flow pipe, as near to the boiler as possible, there must not be any intervening valve or cock.

Safety valves shall be to the current issue of BS6759: Part 1.

1.11 Location

This boiler is not suitable for outdoor installation.

The boiler may be installed in any room, although particular attention is drawn to the requirements of the current issue of the I.E.E., Wiring Regulations with respect to the installation of a boiler in a room containing a bath or shower. Any electrical switch or boiler control utilising mains electricity should be so situated that it cannot be touched by a person using the bath or shower. The Electrical provisions of the Building Standards (Scotland) are applicable to such installations in Scotland.

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

1.12 Boiler Clearance

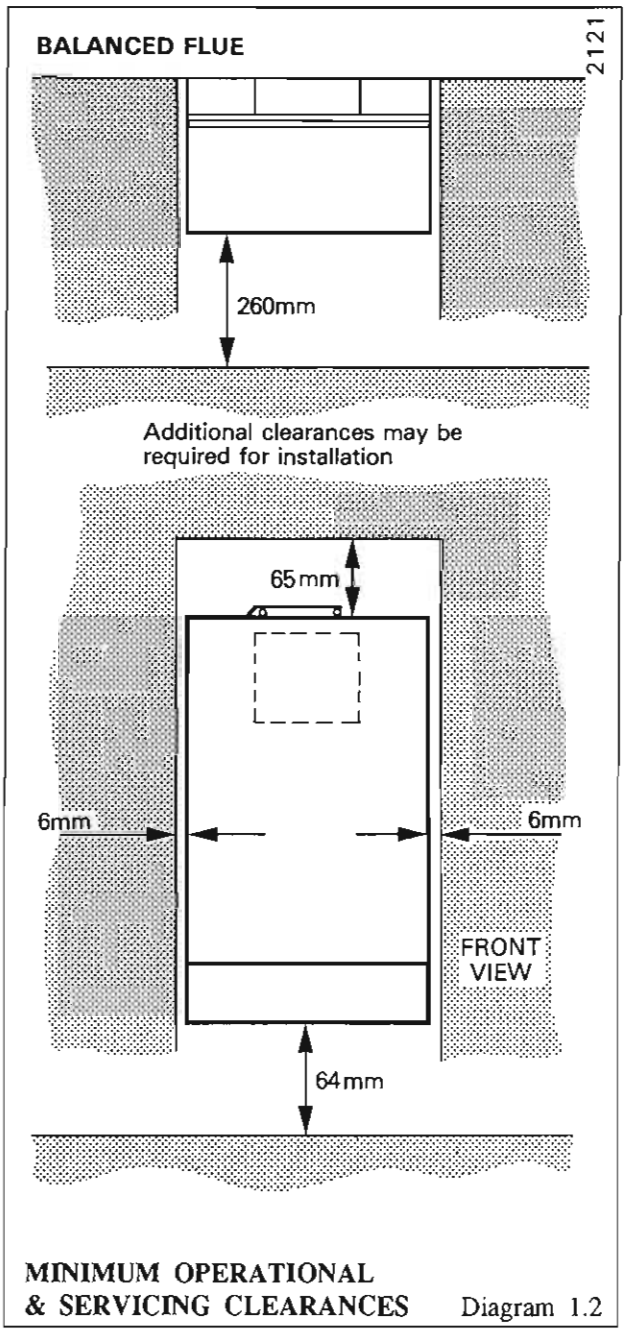
Refer to diagram 1.2.

The boiler must be positioned so that at least the minimum operational and servicing clearances are provided.

Additional clearances may be required for installation.

If fixtures are positioned next to the boiler they should be made removable for access to pipework.

Sufficient clearance must be left in front of the boiler for servicing.



MINIMUM OPERATIONAL & SERVICING CLEARANCES Diagram 1.2

2 FLUE AND VENTILATION

2.1 Terminal Position

The minimum acceptable spacings from the terminal to obstructions and ventilation openings are shown in diagram 2.1.

Where the terminal is fitted within 850mm (34in) below plastic guttering or within 450mm (18in) of painted eaves or painted gutters an aluminium shield 750mm (2ft 6in) long should be fitted to the underside and immediately beneath the guttering/eaves.

2.2 Terminal Protection

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.

Guards are available from: Tower Flue Components Ltd., Tonbridge 351555, quoting reference types "A" or Quinell, Barrett and Quinell Ltd., 884, Old Kent Road, London, S.E.15., quoting reference type "E".

2.3 Wall Thickness

Check the thickness of the wall.

The standard flue terminal assembly supplied covers wall thicknesses between 155mm and 310mm (6in to 12 $^{1}/_{4}$in).

COMPARTMENT AIR VENT TABLE 2 SAUNIER DUVAL 500.30B					2940
COMPARTMENT VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA		LOW LEVEL VENT AREA		
	cm^2	in^2	cm^2	in^2	
VENTILATION FROM ROOM OR SPACE	102	16	102	16	
VENTILATION FROM OUTSIDE	51	8	51	8	

COMPARTMENT AIR VENT TABLE 2 SAUNIER DUVAL 500.40B				
COMPARTMENT VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA		LOW LEVEL VENT AREA	
	cm^2	in^2	cm^2	in^2
VENTILATION FROM ROOM OR SPACE	136	22	136	22
VENTILATION FROM OUTSIDE	68	11	68	11

COMPARTMENT AIR VENT TABLE 2 SAUNIER DUVAL 500.50B				
COMPARTMENT VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA		LOW LEVEL VENT AREA	
	cm^2	in^2	cm^2	in^2
VENTILATION FROM ROOM OR SPACE	172	26	172	26
VENTILATION FROM OUTSIDE	86	13	86	13

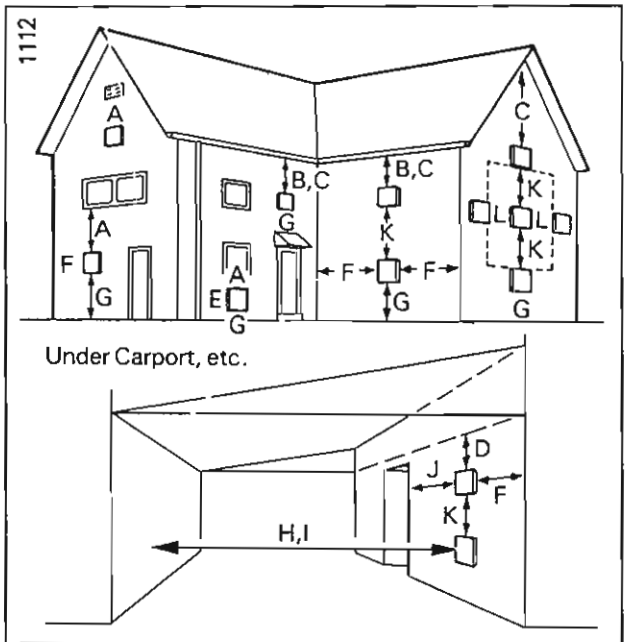
If the wall thickness is less than 155mm (6in) the Air Duct "A" can be shortened by 45mm ($1\,^3/_4$in) to accommodate wall thicknesses between 110mm to 155mm ($4\,^1/_4$in to 6in). An extension kit to suit wall thicknesses between 311mm to 520mm ($12\,^1/_4$in to $20\,^1/_2$in) is available, to order.

2.4 Boilers in a Compartment

Where the installation of the boiler will be in an unusual location, special procedures are necessary. Refer to the current issue of BS6798 for guidance.

A compartment used to enclose the boiler must be designed and constructed specifically for this purpose.

The doorway opening should be sufficient size to allow for easy removal of the boiler.



MINIMUM SITING DIMENSIONS FOR BALANCED FLUE TERMINALS		
POSITION		MINIMUM SPACING
		mm
A	DIRECTLY BELOW AN OPENABLE WINDOW, AIR VENT, OR ANY OTHER VENTILATION OPENING	300
B	BELOW GUTTER, DRAIN/SOIL PIPE	300
C	BELOW EAVES	300
D	BELOW A BALCONY OR CAR PORT	600
E	FROM VERTICAL DRAIN PIPES AND SOIL PIPES	75
F	FROM INTERNAL OR EXTERNAL CORNERS	600
G	ABOVE ADJACENT GROUND OR BALCONY LEVEL	300
H	FROM A SURFACE FACING THE TERMINAL	600
I	FACING TERMINALS	600
J	FROM OPENING (DOOR/WINDOW) IN CAR PORT INTO DWELLING	1200
K	VERTICAL FROM A TERMINAL	1500
L	HORIZONTALLY FROM A TERMINAL	300

Diagram 2.1

Where the boiler is fitted in a cupboard or compartment, permanent high and low level ventilation must be provided. The minimum ventilation areas required are given in the respective Table 2.

An existing cupboard or compartment modified for the purpose may be used.

Refer to the current issue of BS6798 for guidance.

2.5 Timber Frame Buildings

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 Saunier Duval Ltd.

FROST PROTECTION

If the position of the boiler is such that it may be vulnerable to freezing it should be protected as specified in the current issue of BS5422. It is also recommended that a frost protection thermostat be installed.

3.1 Cylinders

For all systems supplying domestic hot water the cylinder must be indirect. It is recommended that the cylinder be fitted with some form of temperature control.

3.2 Gravity Domestic Hot Water with Pumped Heating

It is important that the flow and return connections are in the same relative positions as shown in diagram 3.1. The domestic flow and return must both be on one side of the heat exchanger. The heating flow and return are taken from the other.

3.3 Pumped Heating and Hot Water

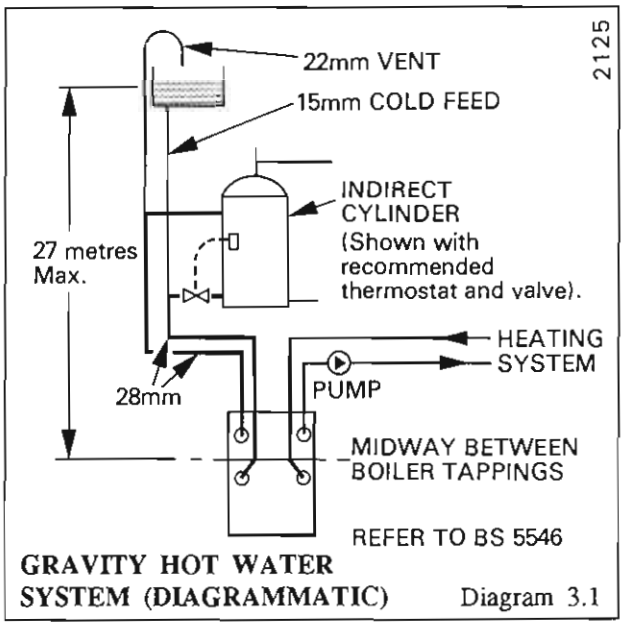
It is important that the flow and return connections are made as shown in diagram 3.2. These connections may be fitted on the opposite side to that shown but always in the same relative position.

3.4 Pump

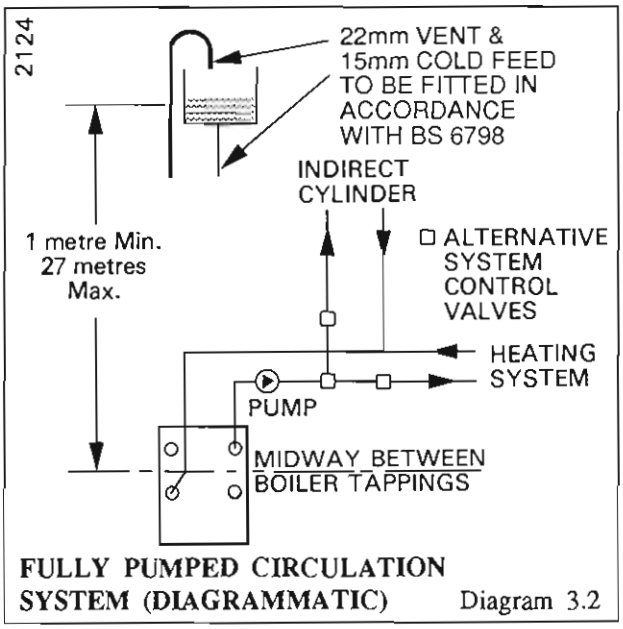
This should be fitted on the flow pipe and have isolating valves fitted each side, integral, if possible.

The pump should be set to give a temperature difference of 11°C (20°F) between flow and return, with the boiler thermostat set at "MAX" which is about 82°C (180°F).

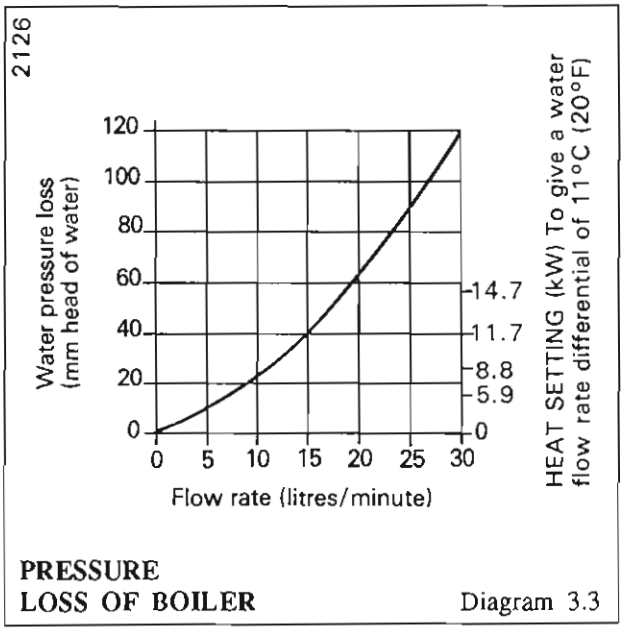
The resistance through the boiler can be found from diagram 3.3.



GRAVITY HOT WATER SYSTEM (DIAGRAMMATIC) Diagram 3.1



FULLY PUMPED CIRCULATION SYSTEM (DIAGRAMMATIC) Diagram 3.2



PRESSURE LOSS OF BOILER Diagram 3.3

4.1 Unpacking

Unpack and check that the contents, listed below are present and undamaged:

Boiler, combustion chamber shield, 2xside panels, loose items pack (with check list), templates (to be cut out of the bottom tray packaging).

With the boiler still in the bottom tray, slide the controls cover upward and remove as shown in diagram 4.1. Remove the outer case by undoing (and retaining), the four screws and lifting the tray off, see diagram 4.2.

Release the wall frame by removing and keeping the two retaining screws at the back of the combustion chamber, see diagram 4.3.

To remove the boiler, turn it over, sideways, out of the bottom tray, see diagram 4.2A, taking care not to damage the controls, so that it is face down on the floor, exposing the 4 Rc1 (1in BSP) water connections.

Remove the remaining loose items, including the wall frame which is in the bottom of the tray.

Note. It is NOT recommended that the boiler be placed in an upright position. If it is unavoidable great care must be taken not to damage the gas valve, to avoid this is is suggested that support be placed under the boiler, positioned as shown in diagram 4.2B.

4.2 Preparation

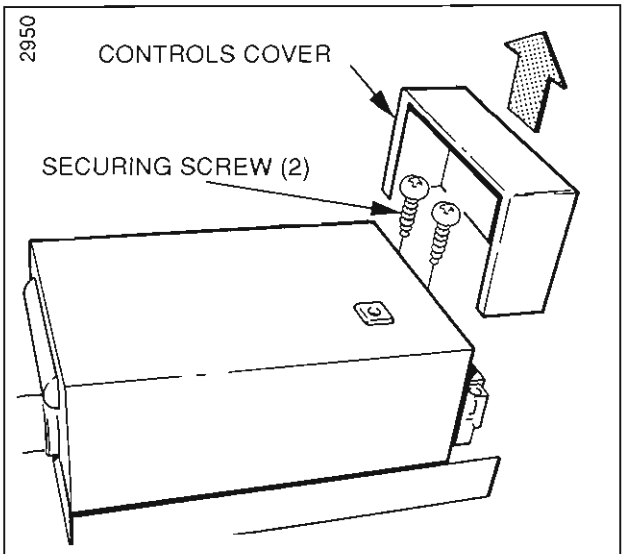
Select the boiler position. Take due account of the position of the flue terminal, see diagram 2.1.

Use the template and mark out the position of the flue opening, see diagram 4.4. Cut a hole through the wall as neatly as possible. Note, if the hole is oversize or of an irregular shape it must be faced off to the hole dimensions shown. Reuse template, making sure that it is positioned both square and central to the flue hole, mark the four fixing holes and drill. Secure the wall frame with its cross members at the top, to the wall, using the plugs and screws provided.

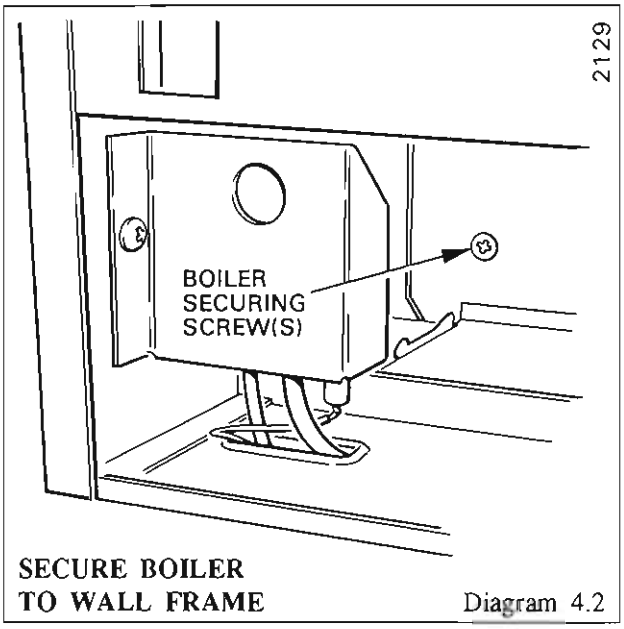
Ensure the wall frame is level.

Fit suitable Rc1 (1in BSP) fittings into the appropriate tappings. Tighten to required position and then fit suitable fittings and short lengths of pipe into these fittings, ensuring that they will be in an accessible position when the boiler is fixed.

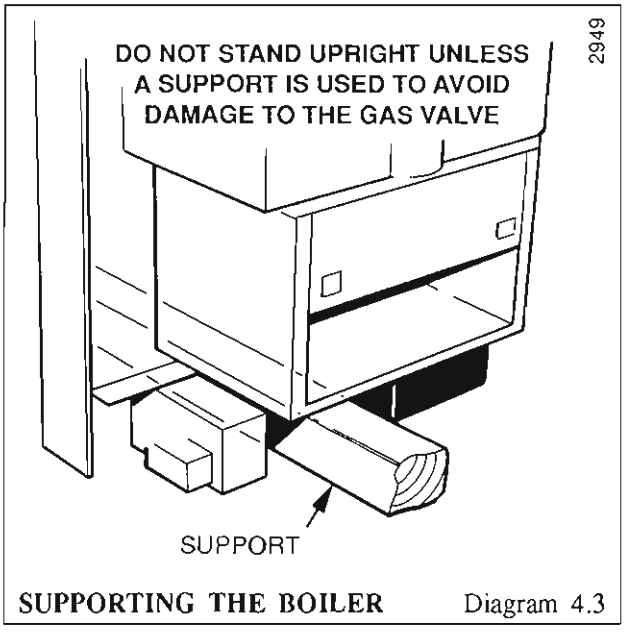
Note: It is important to ensure that all these joints are watertight before fixing as they will not be directly accessible after the boiler is fixed.



CONTROLS COVER & OUTER CASE REMOVAL Diagram 4.1



SECURE BOILER TO WALL FRAME Diagram 4.2



SUPPORTING THE BOILER Diagram 4.3

4.3 Mounting The Boiler

Lift the boiler and position onto the wall frame so that the tags on the boiler body locate on the cross member of the wall frame, see diagram 4.5. Fasten the boiler to the wall frame, using the screws previously removed.

If the flue assembly passes through a cavity wall then seal the gap between the air duct and the internal wall face with cement. If there is insufficient access around the boiler to effectively make good, access to fill this gap is achieved from outside via the hole cut through the brickwork.

4.4 Water Circulation System

Complete the water connections to the boiler pipework, using compression fittings.

Fill, vent and cold flush the system as recommended in the current issue of BS6798.

Visually check for and rectify any water leaks.

4.5 Gas Connection

Make the gas connection to the flanged Rc$^1/_2$ gas service cock.

4.6 Flue System

For wall thicknesses greater than 310mm (12$^1/_4$in) a flue extension kit is required. The components in this kit must be fitted before the balance flue terminal assembly is. (Refer to assembly instructions supplied with the kit).

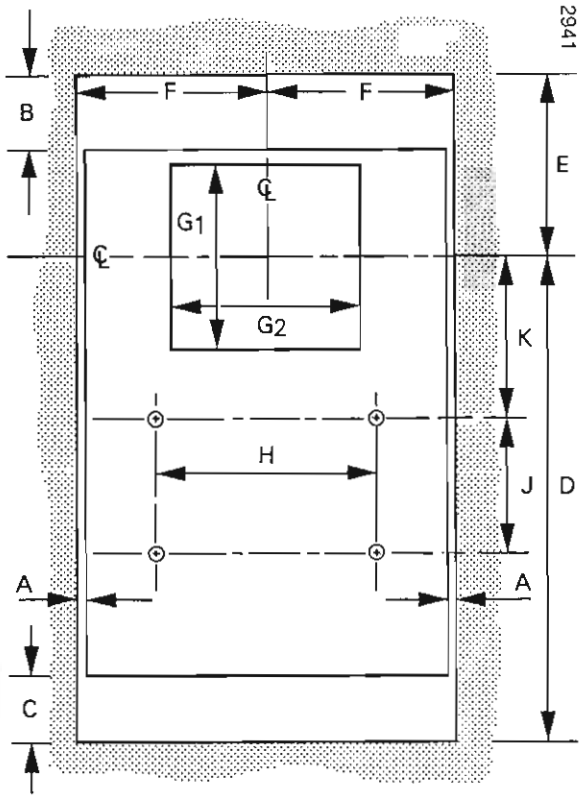
Unpack the balanced flue assembly and jointing compound.

Remove the four screws "F" and the outer baffle "E", see diagram 4.6. Remove the four outer wire guards "D" then pull off the flue duct assembly "C" and remove the four inner guards "B".

Place the air duct assembly "A" into the prepared hole, from the outside, engaging it over the boiler air duct. Slide it in until the wall plate is about 10mm from the wall face, seal this gap to make a weatherproof seal to the wall face. Seal the air duct joint on the inside using the jointing compound provided. Make sure the jointing compound fills the gap between the two air ducts and that a good seal is made at the corners.

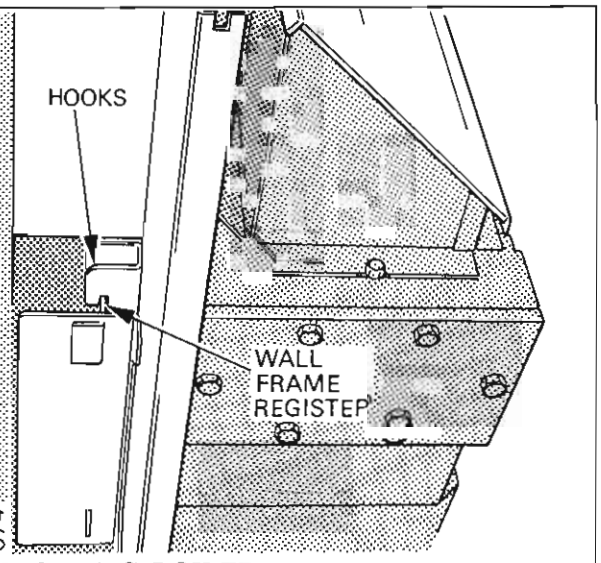
Refit the four inner wire guards "B".

Refit the flue duct assembly "C" inside the boiler flue duct and slide it in until it contacts the wire guards.

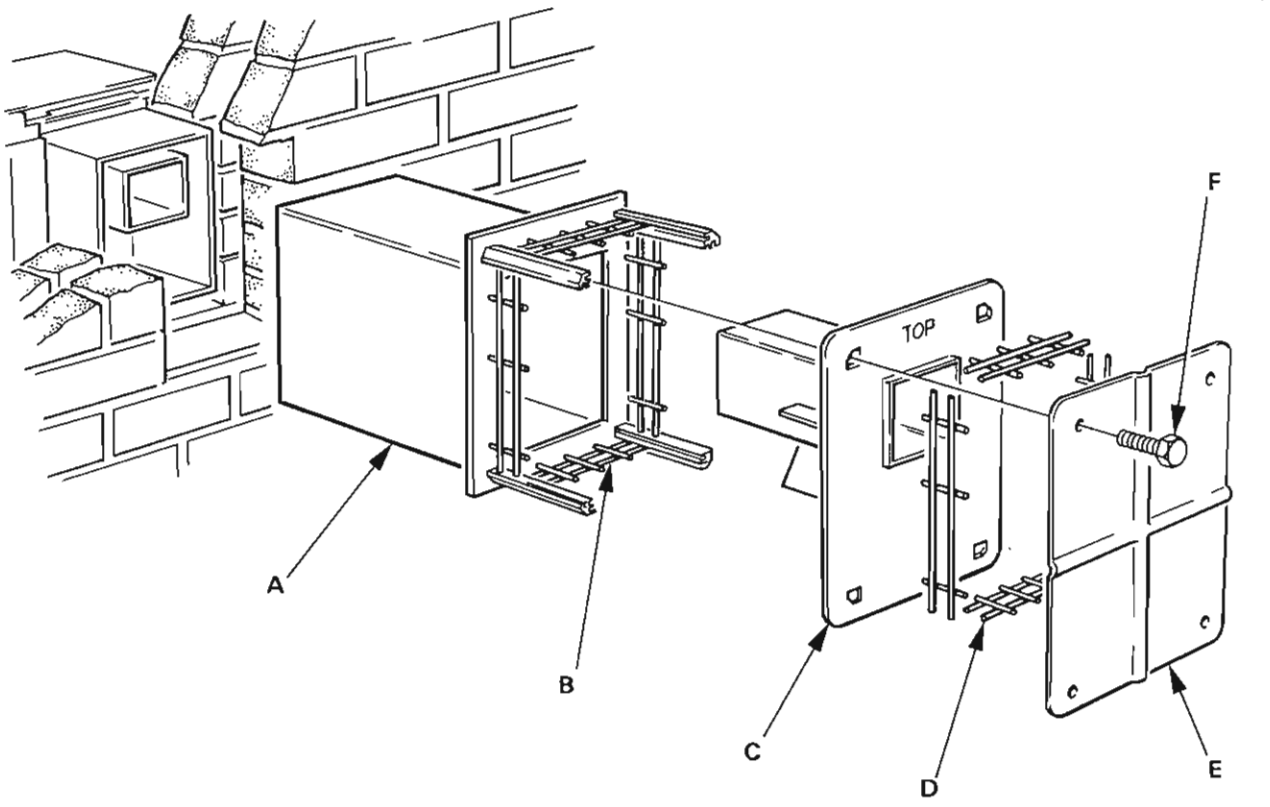


MODEL 500 SERIES		30/40B	50B
A	L.H. and R.H. side of casing	6	6
B	Top of casing	65	65
C	Bottom of casing	64	64
D	℄ to floor—for low fixing	687	661
E	℄ to ceiling—for high fixing	222	248
F	℄ to L.H. and R.H. wall face	278	341
G1	Balanced flue opening	284	330
G2	in wall	Square	Square
H	Fixing holes centres	331	457
J	Fixing holes	210	210
K	℄ to Top fixing holes	217	190

FIXING HOLE POSITIONS Diagram 4.4



SECURING BOILER TO WALL FRAME Diagram 4.5



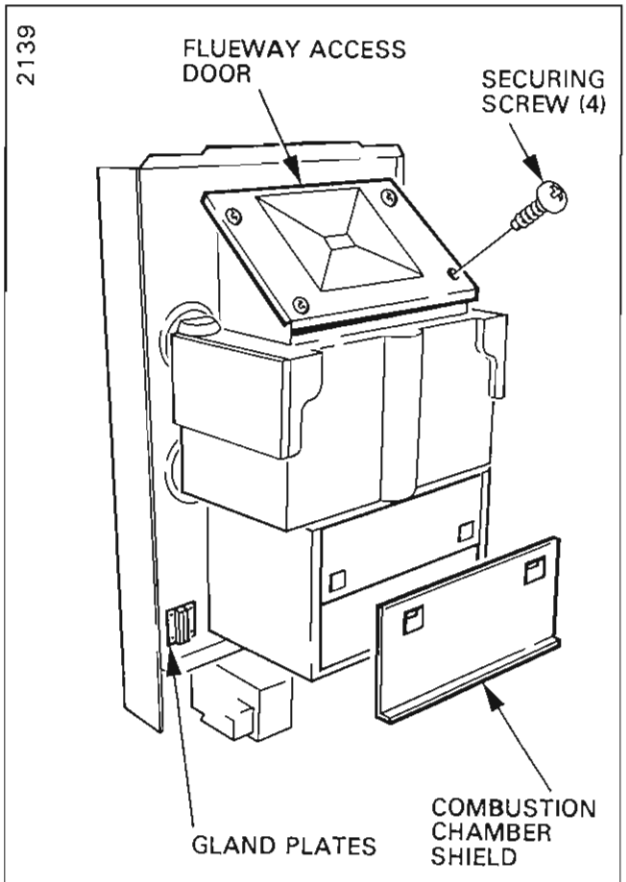
TERMINAL ASSEMBLY Diagram 4.6

Remove the flueway access door, see diagram 4.7 and seal the flue duct joint on the inside using the jointing compound provided. **Make sure the jointing compound fills the gap between the two flue ducts and that a good seal is made at the corners.**

NB. It may be found easier to seal the flue duct joint from outside if the integral baffle on the 30B is too restrictive.

Refit door.

Refit the wire guards "D" and outer baffle "E" and secure with the screws "F" previously removed.



FLUEWAY ACCESS DOOR Diagram 4.7

5.1 Control Box Removal

Remove electrical control box securing screws, see diagram 5.1. Slide the box backward to release the rear location hook, temporarily hook it into the front slot, provided, see diagram 5.2.

5.2 CABLE CONNECTION

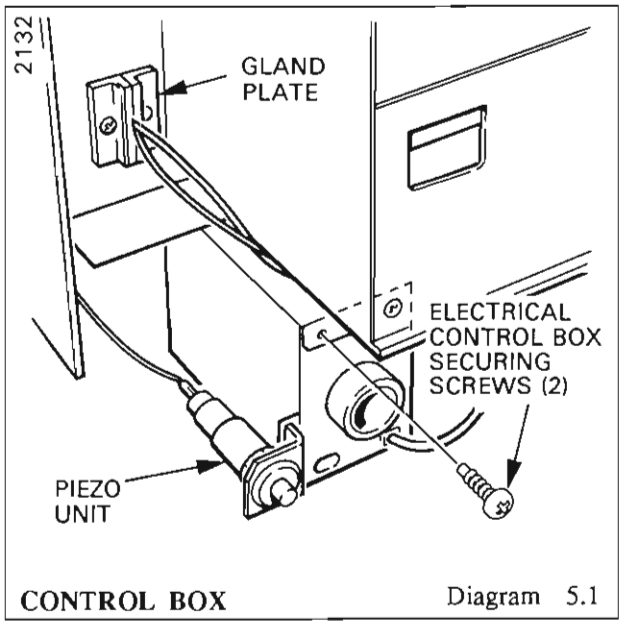
Thread the power supply cord through the clamp at the rear of the control box, as shown in diagram 5.2. The earth conductor must be of a greater length so that if the cable is strained the earth conductor is the last to become disconnected.

Connect to the terminal strip, as shown in diagram 5.2 & 5.3. Secure the cable into the clamp, as shown in diagram 5.2. Ensure that there is sufficient cable to allow the control box to be temporarily hooked into the front slot, to allow for servicing.

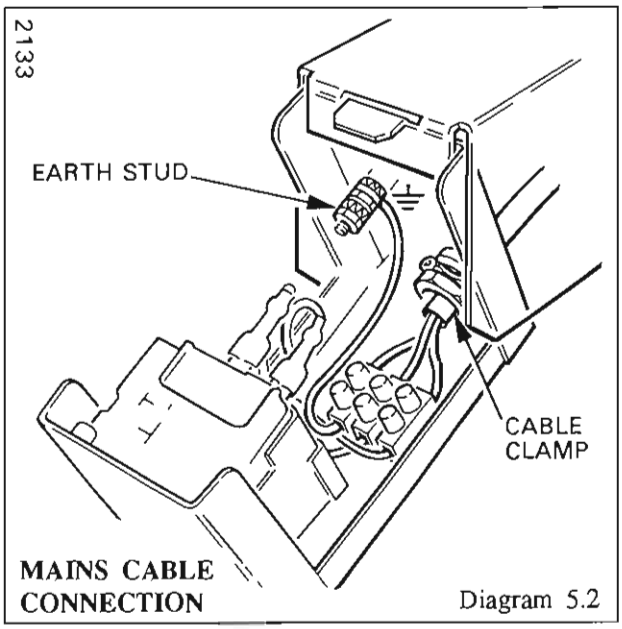
Replace the control box by reversing the information given above in Section 5.1. Take care not to trap the thermostat capillary at the rear of the control box also ensure the rear location hook is correctly engaged.

5.3 Testing

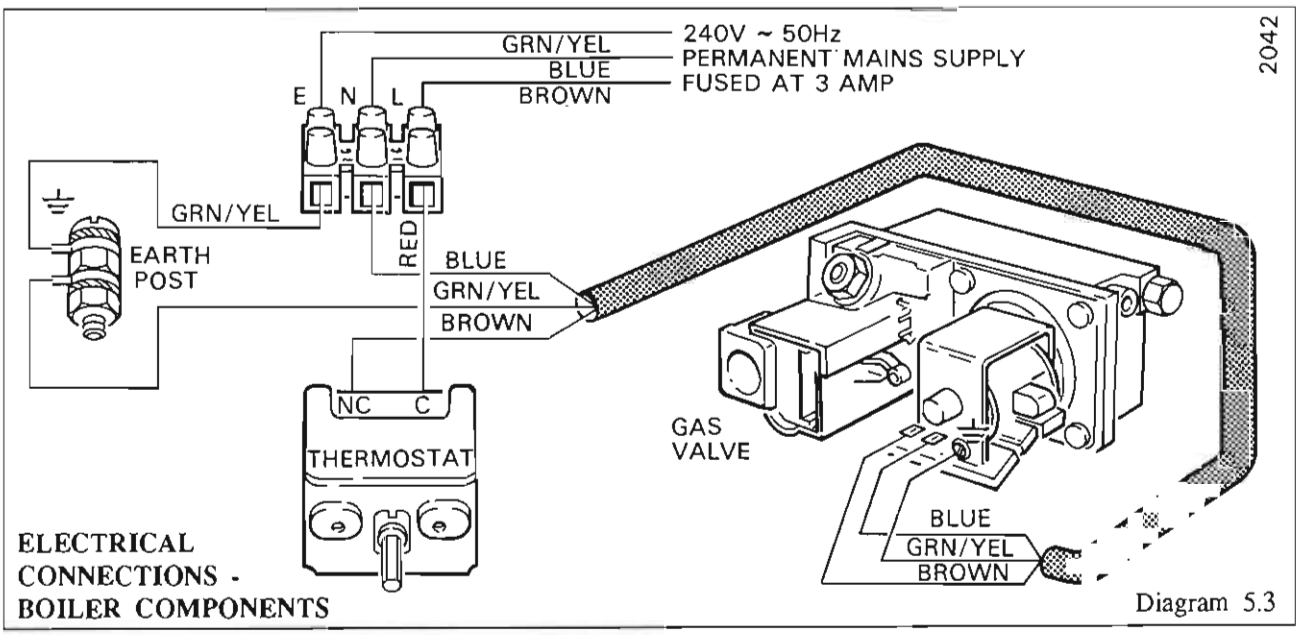
Checks to ensure electrical safety should be carried out by a competent person. It is essential that the polarity is correct. In the event of an electrical fault after installation of the system, the preliminary electrical system checks, as described in a multimeter Instruction Book, are the first checks to be carried out.



CONTROL BOX Diagram 5.1



MAINS CABLE CONNECTION Diagram 5.2



ELECTRICAL CONNECTIONS - BOILER COMPONENTS Diagram 5.3

6.1 Testing, Initial Lighting and Adjustment

Pressure test the complete gas installation for soundness and purge in accordance with the current issue of BS6891.

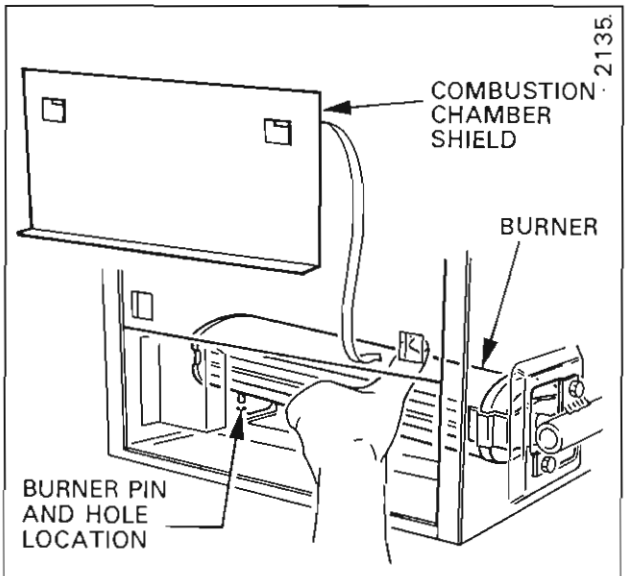
Refer to diagram 6.1 to fit the burner.

Identify the controls by reference to diagram 6.2.

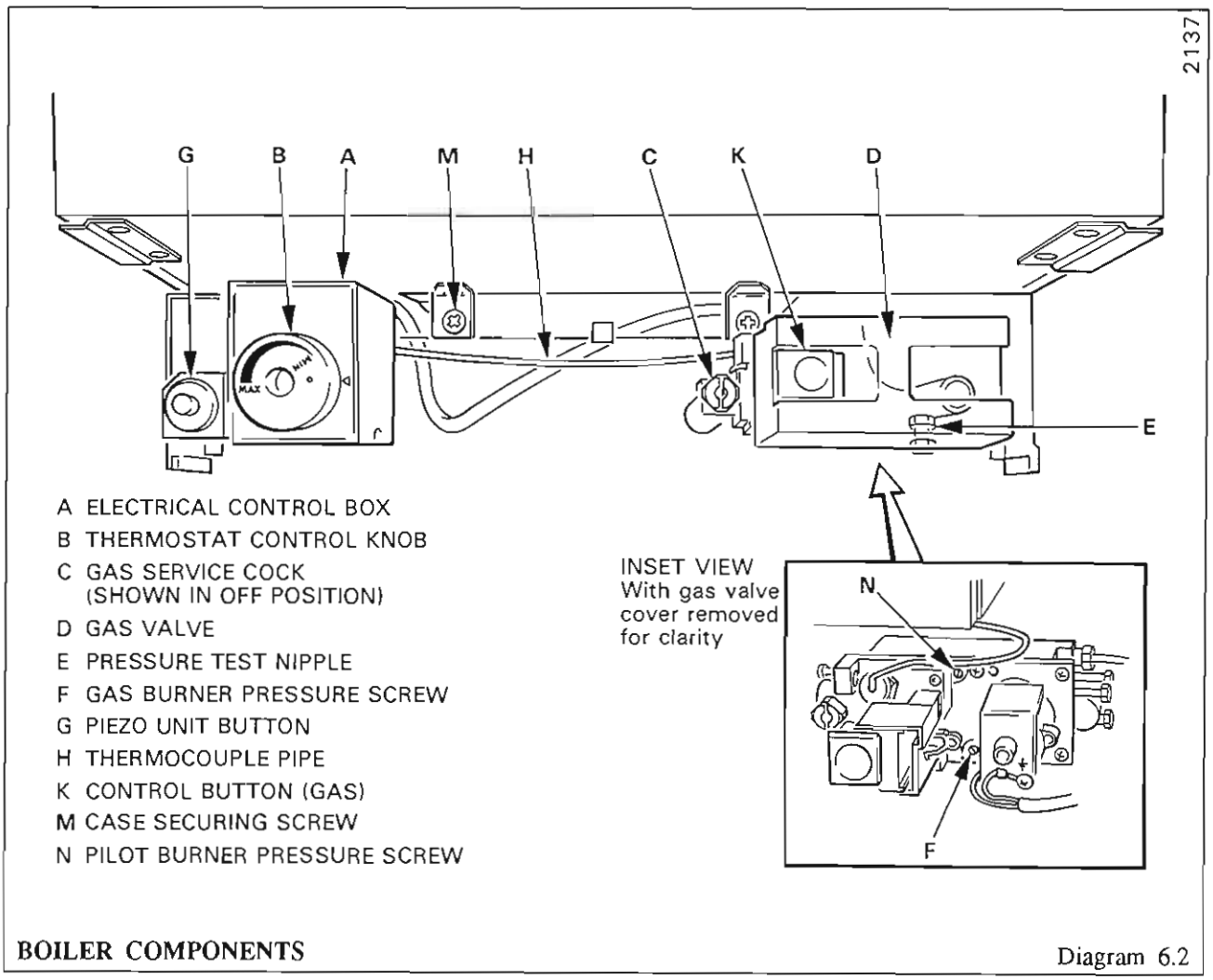
Check that the gas service cock "C" is off, That is, indicator vertical.

Check that the mains electrical supply to the boiler is off. Set the thermostat control knob "B" to "O" - the off position.

Remove the gas pressure test nipple screw "E" and fit a suitable pressure gauge.



BURNER LOCATION Diagram 6.1



BOILER COMPONENTS Diagram 6.2

Open gas service cock "C". Depress control button "K", keep pressed in and at the same time operate the piezo unit button "G" until the pilot burner lights. After the pilot burner lights keep the button "K" depressed for approximately 15 seconds. If the pilot burner fails to light or stay alight a safety device in the gas valve prevents immediate relighting. **Do not attempt to relight until the safety device has reset.** Check the length of the pilot flame, it should envelop the thermocouple tip as shown in diagram 6.3. The pilot rate can be adjusted, if necessary by turning the pilot burner adjustment screw "N", having first removed the gas valve cover by releasing the screw, see diagram 6.4. Test pilot supply connections for gas soundness, using a suitable leak detection fluid.

Hook the combustion chamber shield onto the front of the combustion chamber, making sure that it is flush and horizontal with the combustion chamber front, see diagram 6.1.

Fit the outer case, ensuring that the lower part clears the pilot supply tube. Secure with the four screws previously removed.

Make sure that the pilot is alight and stable by viewing through the window in the casing.

Switch on the electrical supply to the boiler and turn on all external controls.

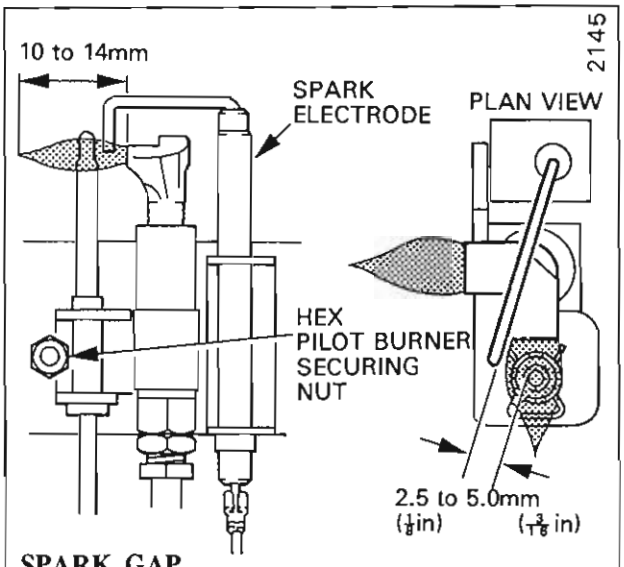
Set the thermostat knob "B" between "MIN" and "MAX" and check that the main burner cross lights smoothly from the pilot. Whilst the boiler is operating test gas valve and gas connections for gas soundness using a suitable leak detection fluid.

To set the burner pressure, operate the boiler for 10 minutes, remove the gas valve cover, if not already removed, as above. Adjust the gas burner pressure via screw "F" until the required pressure is obtained, see the relevant Table 1 for setting pressures.

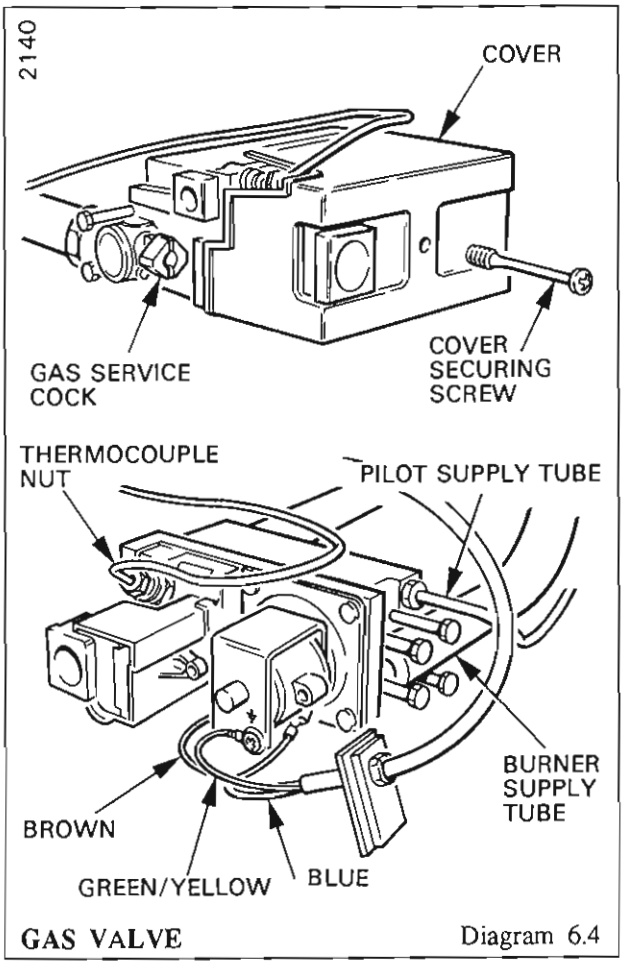
Align and attach the self adhesive arrow from the loose items pack, in the appropriate space beneath the 'MIN' or 'MAX' column on the data badge.

Should any doubt exist about the gas rate this should be checked at the meter, using a stop watch to time at least a cubic foot of gas consumption.

Replace the gas valve cover.



SPARK GAP AND FLAME DIMENSION Diagram 6.3



GAS VALVE Diagram 6.4

Check the operation of the flame failure device, with the burner alight, as follows:- slide the control button "K" inward and release, the main burner and pilot will go out. Check that the flame failure device has operated, indicated by a "click" within 60 seconds, from the valve. The gas valve incorporates a safety device. Do not attempt to relight until it has reset, in approximately 3 minutes. Remove the pressure gauge and refit the screw "E", ensuring that a gas tight seal is made.

Set the thermostat knob "B" to "O" (the off position) and relight the pilot, as above.

Check that the boiler thermostat and all external controls are operating as required.

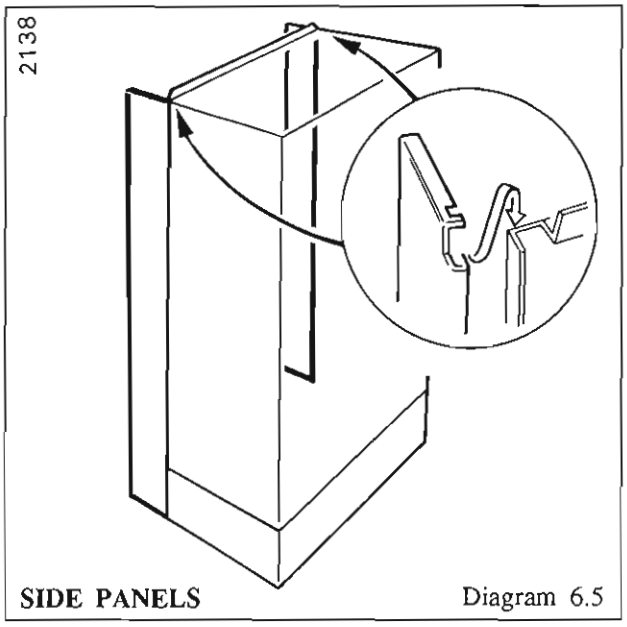
Relight the main burner and allow the system to warm up.

There should be no undue noise in the system and no pumping over or ingress of air at the open vent. Allow the system to reach maximum temperature and check for water soundness.

The burner should now be turned off and the system drained, as rapidly as possible, to complete the flushing process. Refill the system, heat up, vent and check again for water soundness.

If the side panels are to be fitted, remove the outer case, fit by locating the double bend to the main panel flange and sliding it down so that the top return stops at the top flange, see diagram 6.5.

Refit outer case and controls cover.



SIDE PANELS Diagram 6.5

USER INSTRUCTION 7

Hand the User Instruction to the user for their retention. Instruct and demonstrate the efficient and safe operation of the boiler, the heating system and if installed the domestic hot water system.

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

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

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

8 SERVICING AND REPLACEMENT OF PARTS

To ensure the continued efficient and safe operation of the boiler it is recommended that it is checked and serviced as necessary at regular intervals. The frequency of servicing will depend upon the particular installation conditions and usage, but in general once a year, preferably at the end of the heating season, should be enough.

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

BEFORE SERVICING OR REPLACING PARTS TURN OFF THE GAS SUPPLY AND ISOLATE THE ELECTRICAL SUPPLY TO THE BOILER.

AFTER COMPLETING A SERVICE OR REPLACEMENT OF GAS CARRYING COMPONENTS ALWAYS TEST FOR GAS SOUNDNESS AND CARRY OUT FUNCTIONAL CHECKS ON CONTROLS.

Unless stated otherwise, replacement of parts is in the reverse order to removal.

8.1 Access

Refer to diagrams 4.1, 4.2 and 6.1.

Slide the controls cover off. Undo the four screws and remove the outer case.

Lift the combustion chamber shield clear of the lugs and withdraw.

8.2 Main Burner

Refer to diagram 6.1.

Remove the main burner. Lift the left hand end of the burner to disengage the locating pin.

Slide the burner off the injector by moving it to the left, take care not to damage the pilot burner and electrode assembly. Bring the right-hand end of the burner through the opening first.

Service note, clean the burner thoroughly, making sure that all the flame ports are clear.

8.3 Boiler Flueway Cleaning

Gain access as Section 8.1. Remove burner as Section 8.2. Refer to diagram 4.7.

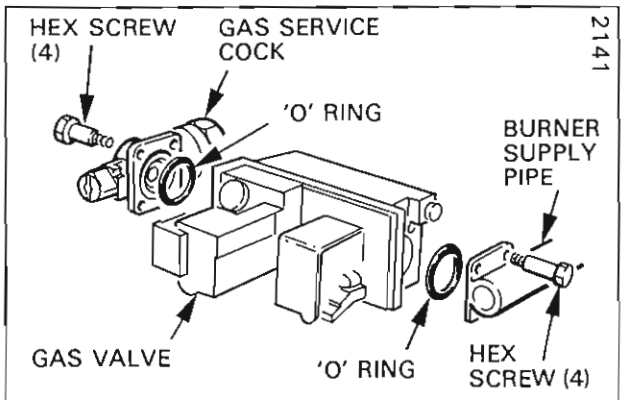
Undo the four screws and remove the flueway access door. Place a sheet of paper in the combustion chamber, covering the electrode/pilot assembly, to catch the flue debris.

Clean the boiler flueways and fins thoroughly with a suitable stiff brush.

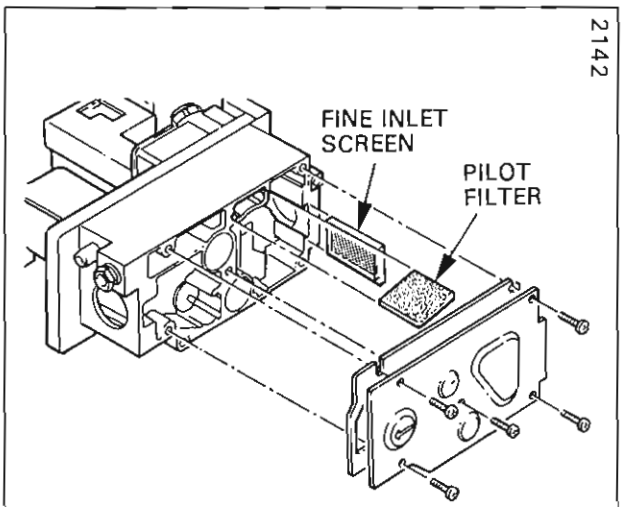
8.4 Gas Valve - Replacement

Gain access as Section 8.1. Refer to diagrams 5.3, 6.4, 8.1, 8.3.

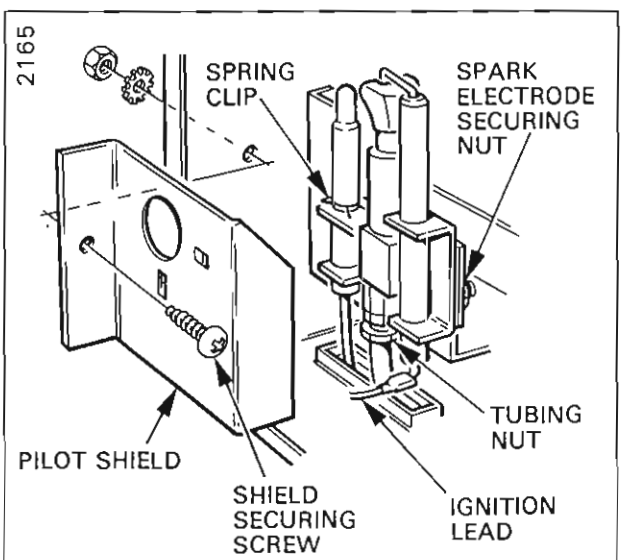
Remove screw to release gas valve cover.



GAS VALVE CONNECTIONS Diagram 8.1



GAS VALVE FILTERS Diagram 8.2



PILOT BURNER ASSEMBLY Diagram 8.3

Disconnect the electrical leads, thermocouple and pilot supply tube at the gas valve.

Remove pilot shield by undoing the retaining nut and screw.

Remove the electrode by undoing the retaining nut.

Disconnect the pilot supply tube at the pilot burner assembly and disengage pilot supply tube from gas valve.

Undo the four screws each side of the gas valve to release the gas service cock and burner supply tube, take care not to damage the "O" rings.

Re-assembly note: When refitting the gas valve take care not to damage the "O" rings.

Remake electrical connections.

Do not tighten the thermocouple nut more than one quarter turn beyond finger tight.

When refitting the pilot shield ensure it is vertical by pushing the base of it into contact with the pilot burner assembly.

It will be necessary to purge the pipework and valve before re-lighting, refer to Commissioning.

8.5 Gas Valve - Servicing

Remove gas valve as 8.4 above. Refer to diagram 8.2. To inspect the inlet screen and replace the pilot filter remove the base of the gas valve by releasing the five screws.

When re-assembling take care not to damage the screen.

8.6 Main Burner Injector

Gain access as Section 8.1.

Remove main burner as Section 8.2.

Remove the main burner injector from the right-hand side of the combustion chamber.

Service notes:

Clean or replace as necessary. Do not clean with wire or a sharp instrument.

8.7 Electrode

Gain access as Section 8.1. Refer to diagram 8.3.

Remove the pilot shield by undoing the retaining nut and screw.

Disconnect the electrode lead and remove electrode by undoing the retaining nut.

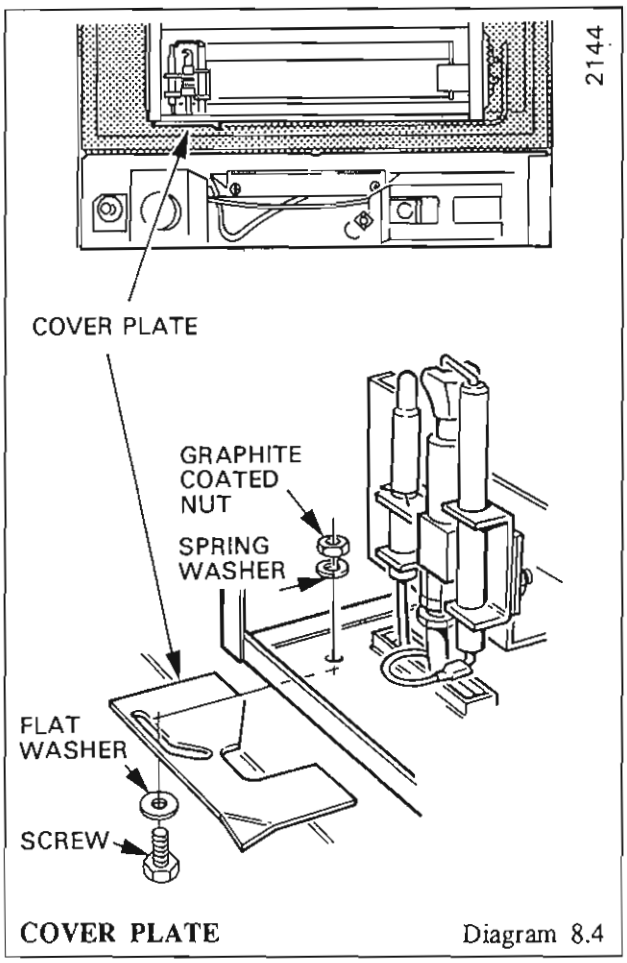
8.8 Pilot Burner Injector

Gain access as Section 8.1. Refer to diagram 8.3..

Remove the pilot shield and electrode as described in Section 8.4.

Disconnect the pilot supply tube by unscrewing the pilot tubing nut as shown.

Ease the supply tube from the pilot injector and unscrew the injector.



COVER PLATE Diagram 8.4

8.9 Thermocouple

Gain access as Section 8.1. Refer to diagram 5.1.

Remove the gas valve cover and pilot shield as described in Section 8.4.

Remove the two gland plates at the back of the boiler.

Disengage the thermocouple spring clip and remove the thermocouple.

Re-assembly note: When refitting do not tighten the thermocouple nut more than a quarter turn beyond finger tight.

8.10 Pilot Burner

Gain access as Section 8.1. Refer to diagrams 8.3, 8.4 and 6.8.

Remove the main burner as described in Section 8.2.

Remove the pilot shield and electrode as described in Section 8.4.

Release the cover plate, under the combustion chamber and swing it forward as shown. Disengage the thermocouple spring clip and carefully ease the thermocouple from the pilot burner.

Disconnect the pilot supply tube by unscrewing the pilot tubing nut.

Remove the pilot burner by unscrewing the fixing at the left hand side.

Re-assembly note:

When refitting, check that the spark gap is correct and ensure that the thermocouple tip will be enveloped as shown.

8.11 Thermostat

Gain access as Section 8.1. Refer to diagrams 8.5, 8.6 and 8.7.

Remove and temporarily support the electrical control box as described in Section 5.1.

Remove the control knob. Remove the two electrical connections from the thermostat body.

Release the thermostat body by unscrewing the two screws in the front of the control box.

Remove the fixings, securing the capillary clip to the underside of the control box. Remove the split pin and withdraw the thermostat phial from its pocket. Remove the two gland plates on the left hand side of the boiler. Release the capillary from its clips on the left hand side of the boiler. Remove the thermostat complete from the boiler.

Re-assembly note: When fitting the thermostat, ensure that the thermostat phial is fully inserted into the phial pocket and is secured with the location washer behind the retaining split pin. Remake electrical connections. Ensure that the capillary is neatly clipped, as prior to removal, with any excess being coiled up tidily at the rear of the control box. There must be no kinks or sharp bends in the capillary.

Ensure the sealing plates are replaced correctly.

8.12 Piezo Unit

Gain access as Section 8.1. Refer to diagram 8.6.

Remove piezo unit securing nut.

Service note, where the boiler has been installed at minimum clearances it will be necessary to remove and temporarily support the control box as described in Section 5.1.

8.13 Ignition Lead

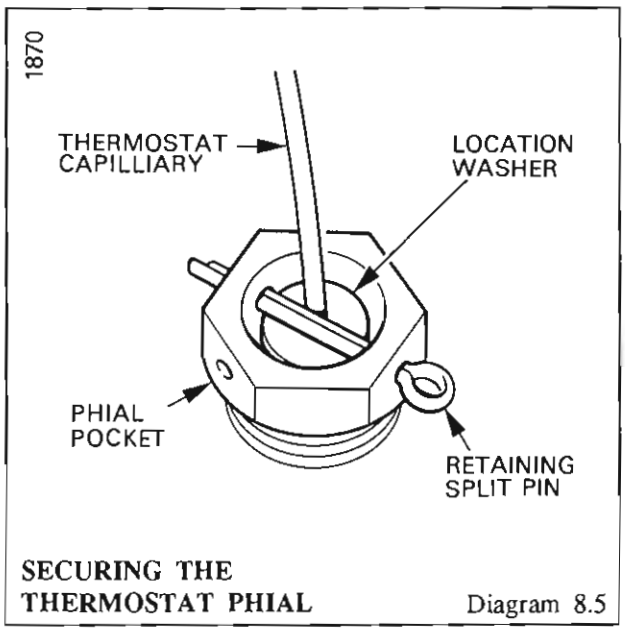
Gain access as Section 8.1.

Remove the two gland plates on the left-hand side of the boiler.

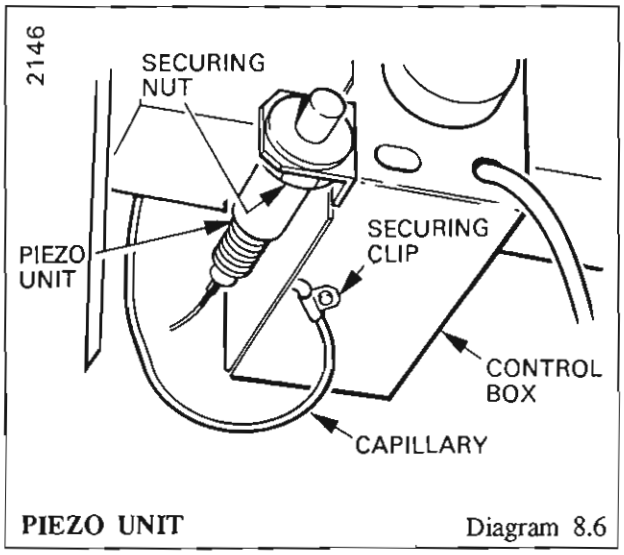
Disconnect the lead at both ends and remove.

Re-assembly note, when replacing, ensure the black end of the lead is attached to the piezo unit.

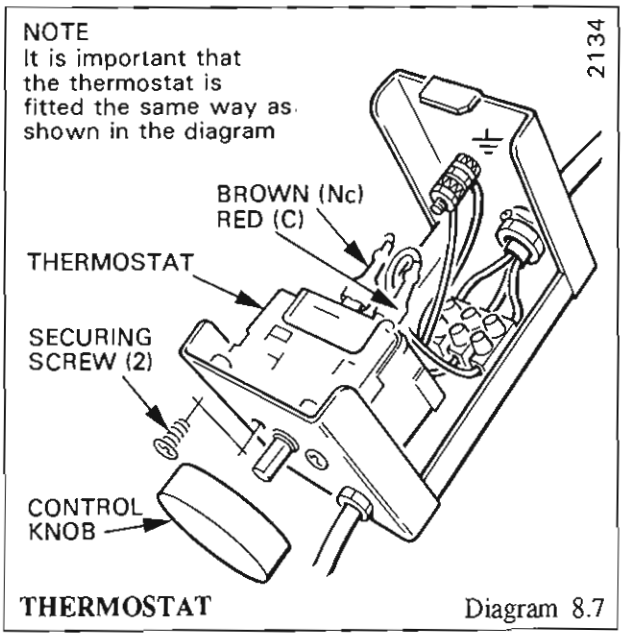
Ensure the gland plates are correctly refitted.



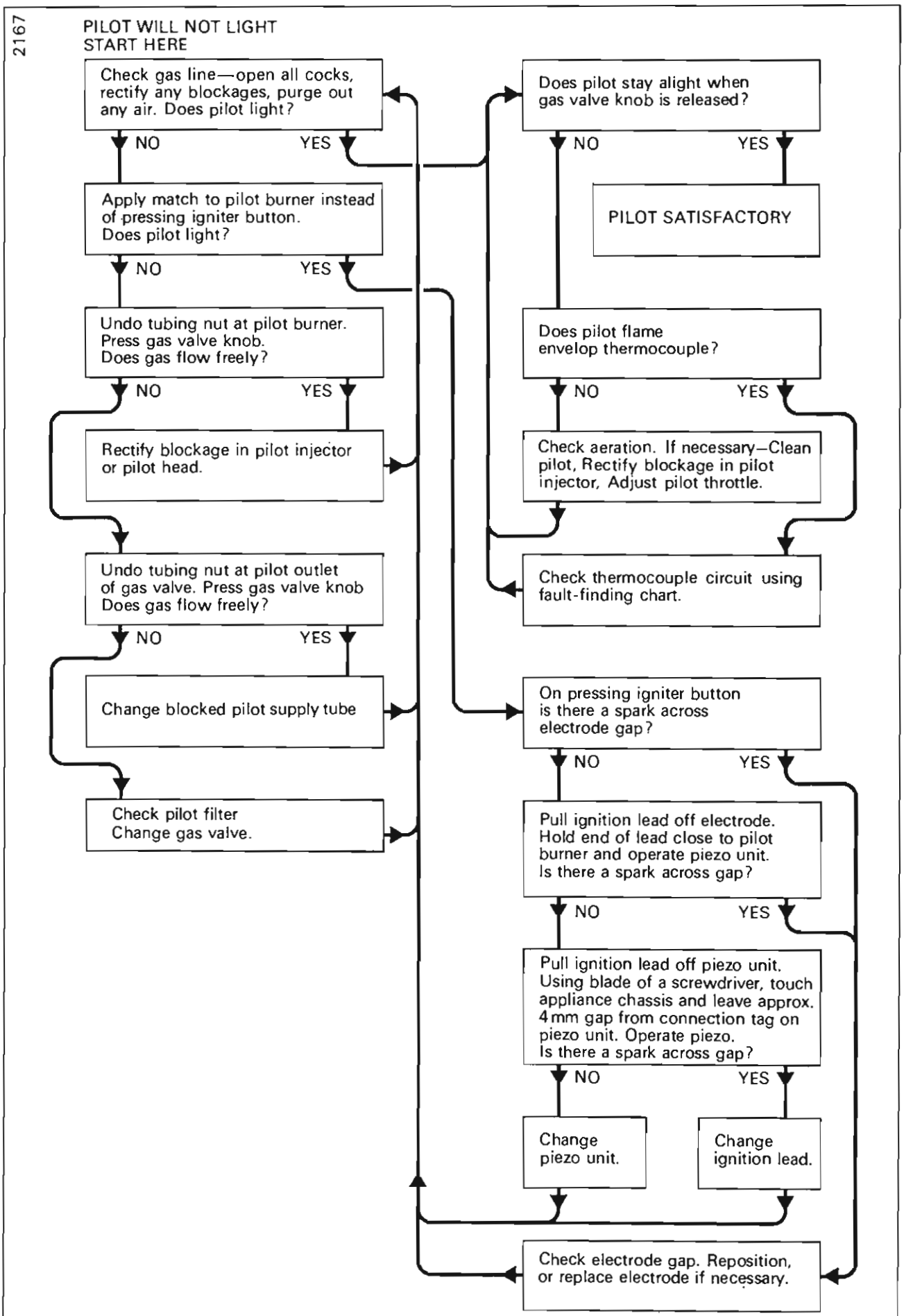
SECURING THE THERMOSTAT PHIAL Diagram 8.5



PIEZO UNIT Diagram 8.6



THERMOSTAT Diagram 8.7



BOILER PILOT FAULT-FINDING Diagram 9.1

9.1 Pilot

Refer to Chart 9.1.

9.2 Thermocouple

Refer to Chart 9.2.

9.3 Electrical

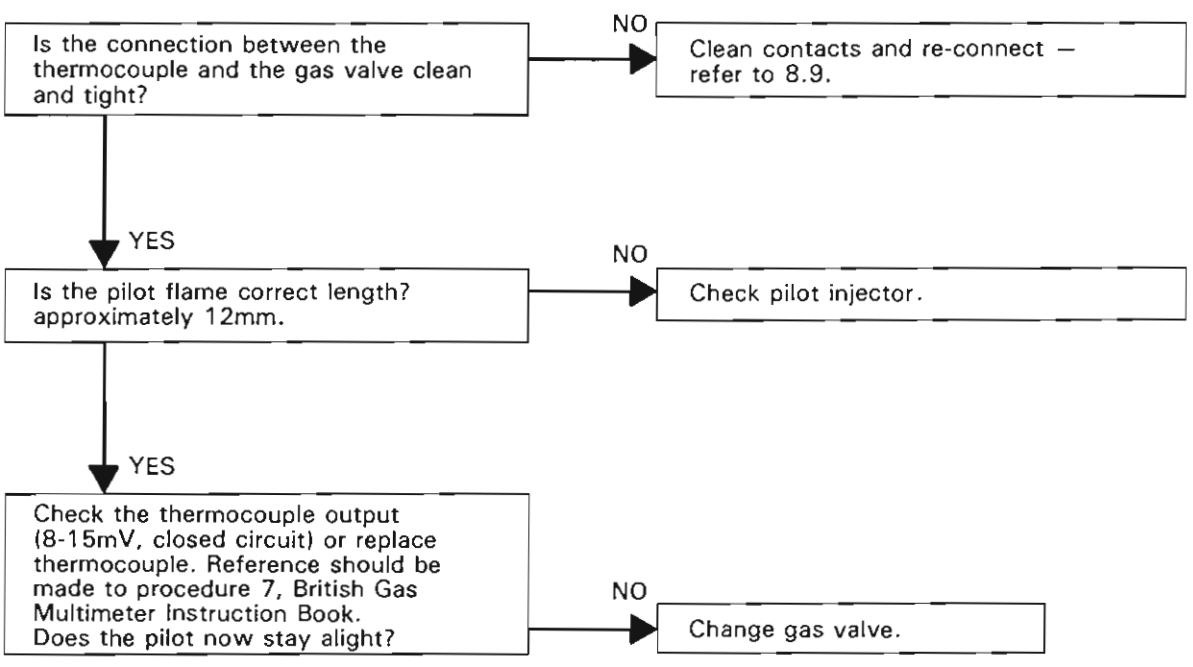
Refer to Chart 9.3 and 9.4.

IMPORTANT:

The preliminary electrical system checks as contained in a Multimeter instruction book are the first checks to be carried out during fault finding.

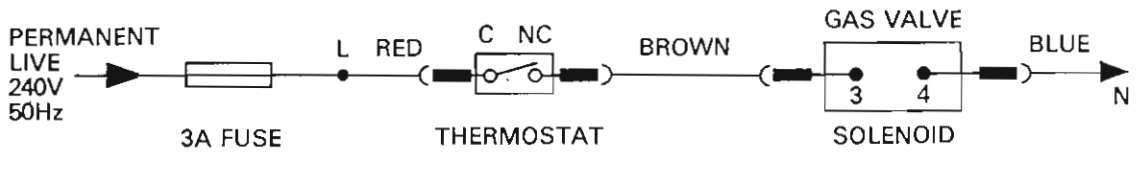
On completion of any fault finding task which has required the breaking and remaking of electrical connections then the checks, earth continuity, polarity and resistance to earth must be repeated.

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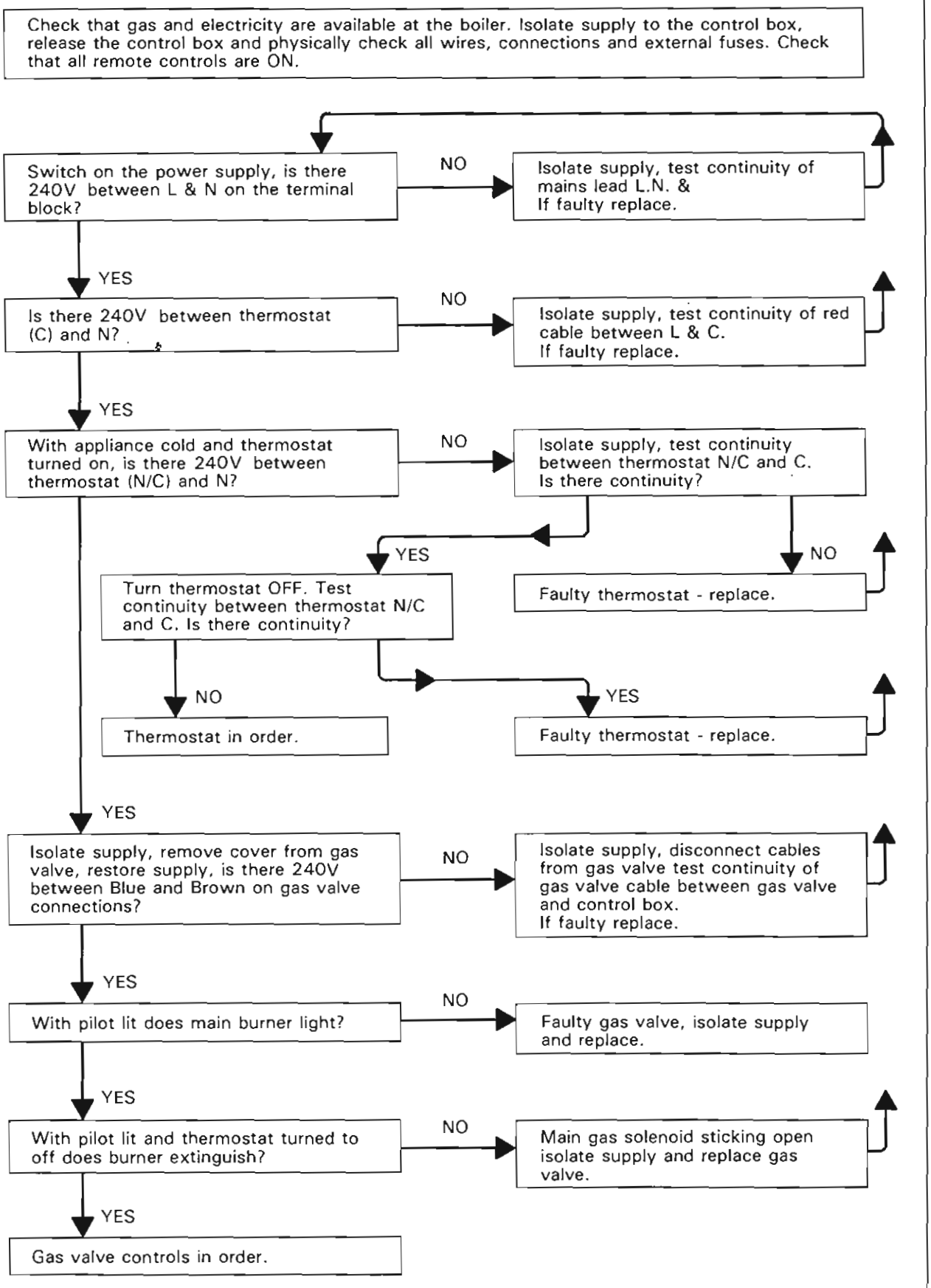
THERMOCOUPLE FAULT FINDING — Diagram 9.2

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FUNCTIONAL FLOW WIRING — Diagram 9.3

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FAULT FINDING Diagram 9.4