



Glow-worm

206878/9/88

Installation and Servicing Instructions

To be left with user

SPACESAVER 20-30F

G.C. No. 41 313 71

SPACESAVER 30-40F

G.C. No. 41 313 68

SPACESAVER 40-50F

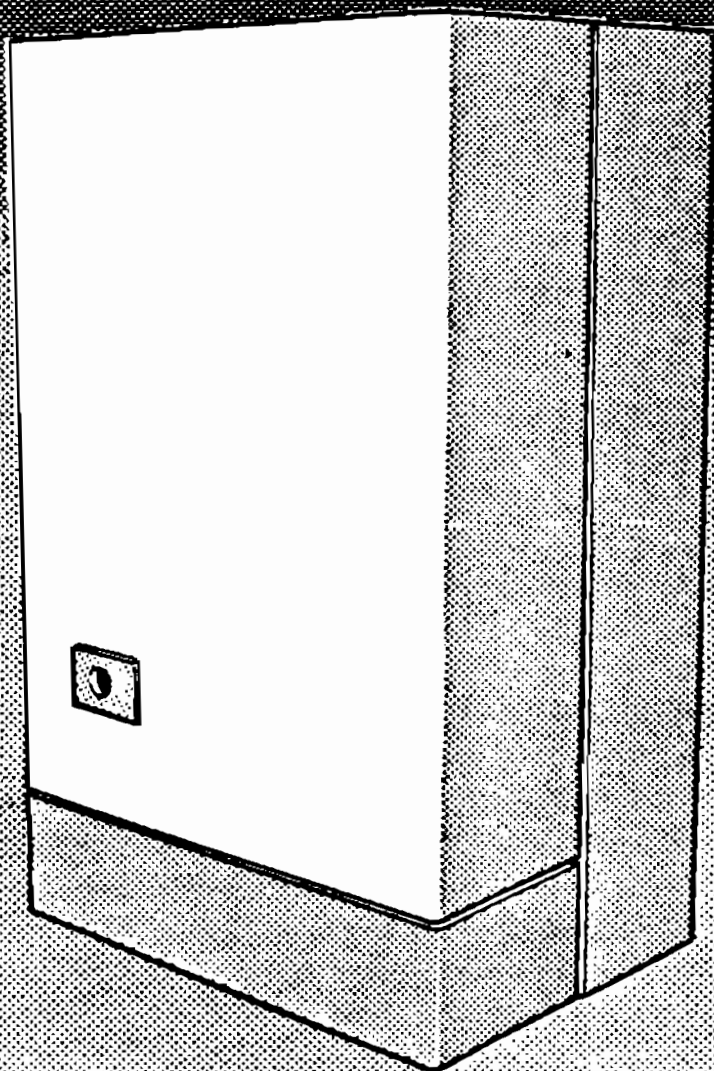
G.C. No. 41 313 70

SPACESAVER 50-60F

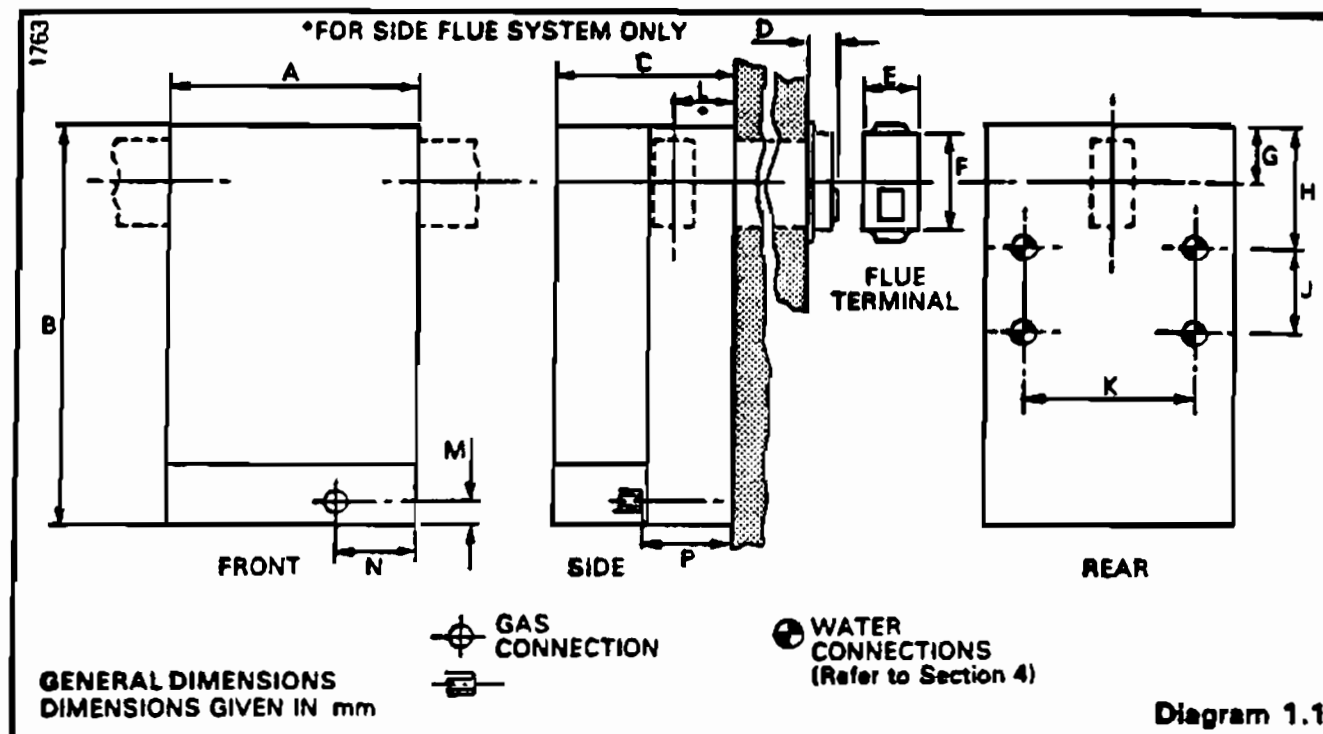
G.C. No. 41 313 69

Fanned Flue Boilers

2221



1 GENERAL



MODEL	A	B	C	D	E	F	G	H	J	K	L*	M	N	P	
SS20-30F SS30-40F	480	788	343	55	109	169	110	244	168	265	119	36	248	184	1764
SS40-60F SS50-60F						136				328			217		

1 GENERAL NOTES AND INFORMATION

It is essential that the boiler is installed strictly in accordance with the instructions 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 UNDERTAKING 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

BOILER DATA			2218
MODEL	SS20-30F SS30-40F	SS40-50F SS50-60F	
BOILER WEIGHT	56.3 kg (124 lb)	67.2 kg (148 lb)	
WATER CONTENT	5.6 litres (1.2 gal)	6.4 litres (1.4 gal)	
GAS CONNECTION	Rc 1/2, (1/2 in. BSPT)		
WATER CONNECTIONS	4 x Rc 1, (1 in. BSPT)		
ELECTRICITY SUPPLY	240V~, 50 Hz, fused 3A max.		
POWER RATING	65W		
DATA BADGE	On top of the electrical drawer cover at the lower left of the boiler		

1.3 RANGE RATING

The boiler is range rated and is factory pre-set to maximum, but may be adjusted to suit the individual system requirements. Table 1 gives the rating and settings.

1.4 B.S.I. CERTIFICATION

The boiler is certified to British Standard 6332 Part 1: 1983, invoking BS528 Part 1: 1986 for performance and safety. It is, therefore, important that no alteration is made to the boiler without permission, in writing, from Glow-worm Ltd.

Any alteration that is not approved by Glow-worm 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, preferably, positioned close to the boiler, see also section 1.11.

Wiring external to the boiler must be to BS6500 Table 9 not less than 0.75mm² (24/0.20mm).

TABLE 1 SPACE SAVER 20-30F RANGE RATING				SPACE SAVER 40-50F RANGE RATING			
RANGE RATING	Min.	Medium	Max	RANGE RATING	Min.	Medium	Max
NOMINAL kW	8.26	10.08	11.90	NOMINAL kW	16.30	18.05	19.82
HEAT INPUT Btu/h	28200	34400	40600	HEAT INPUT Btu/h	55600	61800	67600
NOMINAL kW	5.86	7.33	8.79	NOMINAL kW	11.72	13.19	14.65
HEAT OUTPUT Btu/h	20000	25000	30000	HEAT OUTPUT Btu/h	40000	45000	50000
BURNER SETTING m bar	3.4	5.6	8.3	BURNER SETTING m bar	8.9	11.3	13.5
PRESSURE in.wg	1.4	2.2	3.3	PRESSURE in.wg	3.6	4.5	5.4
APPROX. m ³ /h	0.8	1.0	1.2	APPROX. m ³ /h	1.6	1.75	1.9
GAS RATE ft ³ /h	29	35	41	GAS RATE ft ³ /h	56	62	68
BURNER INJECTOR MARKING FF2029 PILOT INJECTOR MARKING 4212				BURNER INJECTOR MARKING 203051 PILOT INJECTOR MARKING 4212			
SPACE SAVER 30-40F RANGE RATING				SPACE SAVER 50-60F RANGE RATING			
RANGE RATING	Min.	Medium	Max	RANGE RATING	Min.	Medium	Max.
NOMINAL kW	8.79	10.26	11.72	NOMINAL kW	19.82	21.48	23.15
HEAT INPUT Btu/h	30000	35000	40000	HEAT INPUT Btu/h	67600	73300	79000
NOMINAL kW	11.90	13.34	15.32	NOMINAL kW	14.65	16.12	17.59
HEAT OUTPUT Btu/h	40600	45500	52300	HEAT OUTPUT Btu/h	50000	55000	60000
BURNER SETTING m bar	8.3	10.4	13.7	BURNER SETTING m bar	9.9	11.6	13.5
PRESSURE in.wg	3.3	4.2	5.5	PRESSURE in.wg	4.0	4.7	5.4
APPROX. m ³ /h	1.2	1.3	1.5	APPROX. m ³ /h	1.9	2.05	2.2
GAS RATE ft ³ /h	41	46	53	GAS RATE ft ³ /h	68	73.5	79
BURNER INJECTOR MARKING FF2029 PILOT INJECTOR MARKING 4212				BURNER INJECTOR MARKING 203051 PILOT INJECTOR MARKING 4212			

1 GENERAL

1.7 CONTENTS OF PACKAGING

The boiler is delivered in one pack which contains:-

- Boiler with outer case and wall frame.
- Burner.
- Combustion chamber shield.
- Side panels.
- Flue terminal
- Flue and air ducts.
- Wall seal plate.
- Wall template.
- Instructions for Use.
- Loose items pack - with check list.

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 tank, having a head between 1m (3ft 3in) minimum and 27m (90ft) maximum.

1.9 DRAINING TAP

A draining tap must be provided at the lowest point of the system which will allow the entire system, the boiler and hot water cylinder to be drained.

Draining taps shall be to BS2879, type 1.

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 BS6759 Part 1.

1.11 LOCATION

The 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 utilizing 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.

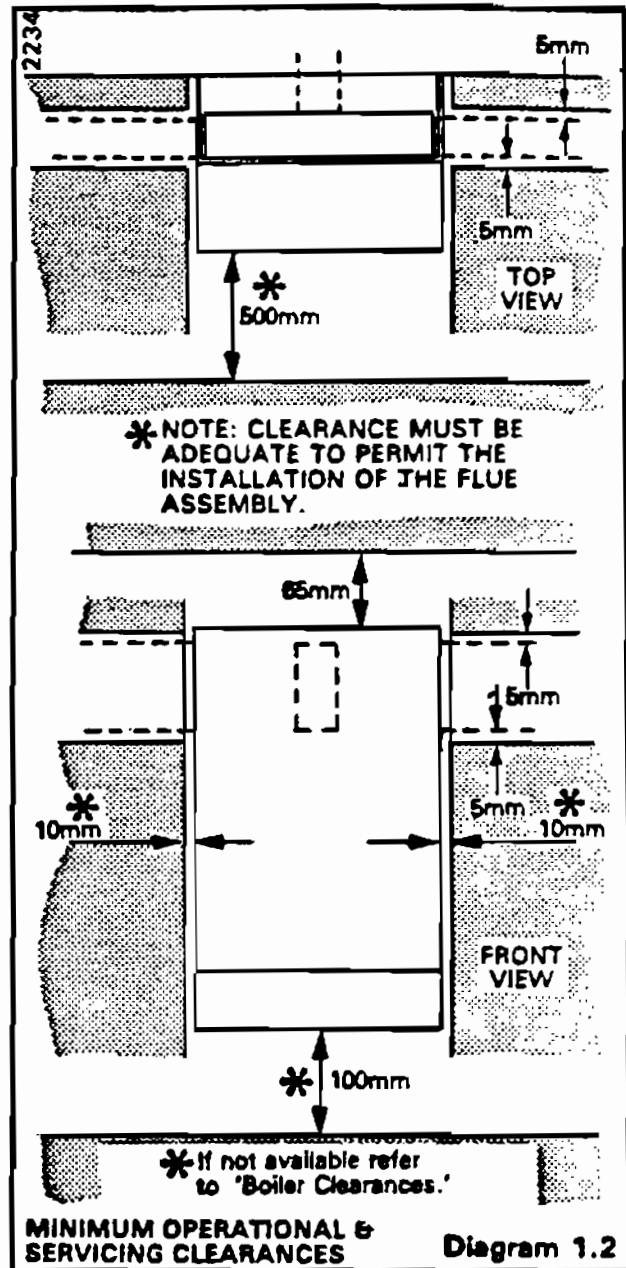
1.12 BOILER CLEARANCES

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.



At least 100mm clearance is required beneath the boiler to make the gas connection. Connection can however be made with less clearance, 15 to 100mm (5/8 to 4in), by using the gas supply kit, available to special order from Glow-worm Ltd. (Kit Part No. 419027).

2.1 FLUE

The flue must be installed in accordance with the current issue of BS5440: Part 1.

2.2 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 600mm (24in) below plastic guttering an aluminium shield 1500mm (5ft) long should be fitted to the underside and immediately beneath the guttering/eaves.

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

2.3 TERMINAL PROTECTION

Where the terminal is less than 2m (6ft 6in) above the level of any ground, balcony, flat roof etc., to which any person has access and which adjoins the wall in which the terminal is situated, the terminal must be protected by a guard of durable material. Guards are available from: Tower Flue Components Ltd., Tonbridge TN11 5SS, quoting reference type 'H' or Quinell, Barrett and Quinell Ltd., 884 Old Kent Road, London, SE15, quoting reference type 'C32'.

2.4 WALL THICKNESS

Refer to diagrams 2.2 to 2.5.

2.5 CUPBOARD/COMPARTMENT VENTILATION

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

The compartment, whether modified or specially built, should meet the following requirements:

Have a half hour fire resistance from internal fire. The door must have equal fire resistance.

For good acoustic insulation, should be built of brick or clinker block, plastered on at least one side and supplied with a well fitting door.

Be of sufficient size for access for inspection and servicing. It must not be used for storage.

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

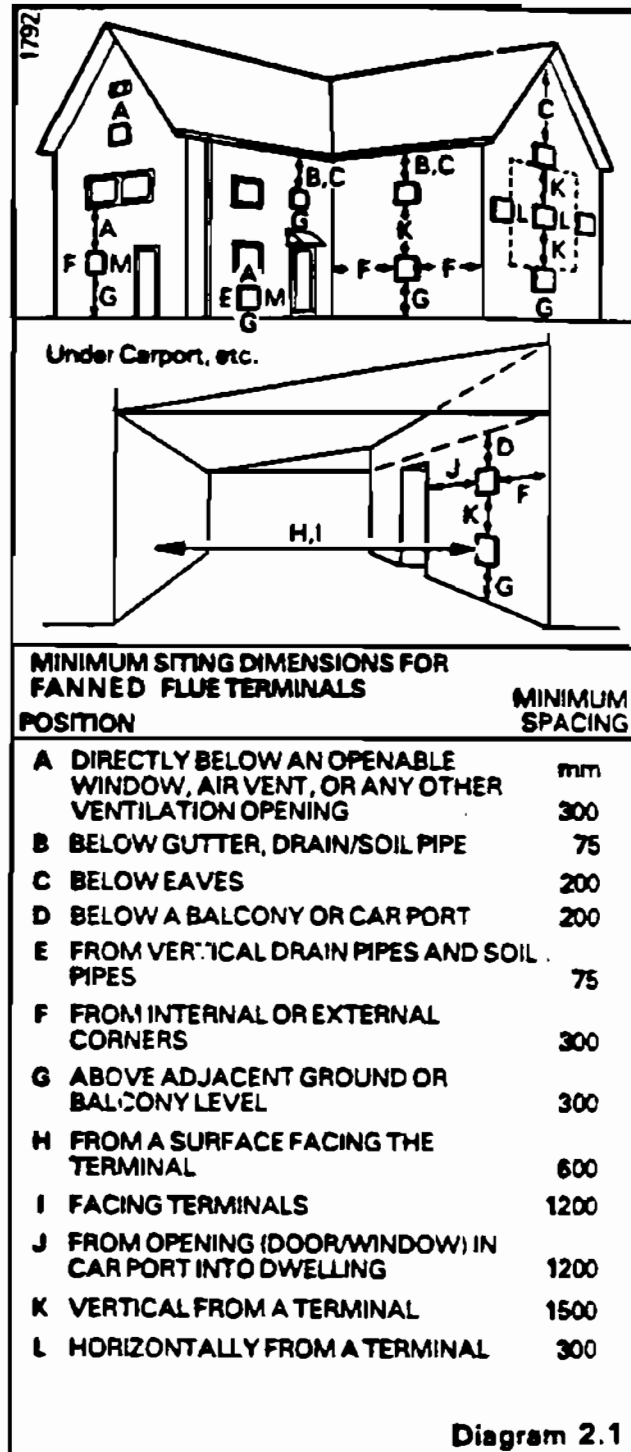


Diagram 2.1

2.6 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 Glow-worm Ltd.

2 FLUE AND VENTILATION

**SPACE SAVER F TABLE 2
COMPARTMENT AIR VENTS**

2343

SPACE SAVER 20-30F

VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA		LOW LEVEL VENT AREA	
FROM ROOM OR SPACE	107 cm ²	(16.5 in ²)	107 cm ²	(16.5 in ²)
FROM OUTSIDE	54 cm ²	(8.25 in ²)	54 cm ²	(8.25 in ²)

SPACE SAVER 30-40F

VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA		LOW LEVEL VENT AREA	
FROM ROOM OR SPACE	138 cm ²	(22 in ²)	138 cm ²	(22 in ²)
FROM OUTSIDE	69 cm ²	(11 in ²)	69 cm ²	(11 in ²)

SPACE SAVER 40-50F

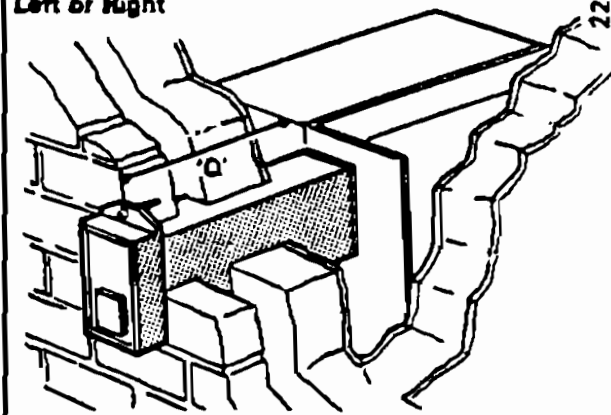
VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA		LOW LEVEL VENT AREA	
FROM ROOM OR SPACE	180 cm ²	(28 in ²)	180 cm ²	(28 in ²)
FROM OUTSIDE	90 cm ²	(14 in ²)	90 cm ²	(14 in ²)

SPACE SAVER 50-60F

VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA		LOW LEVEL VENT AREA	
FROM ROOM OR SPACE	210 cm ²	(32 in ²)	210 cm ²	(32 in ²)
FROM OUTSIDE	105 cm ²	(16 in ²)	105 cm ²	(16 in ²)

SIDE FLUE—STANDARD
Left or Right

2233

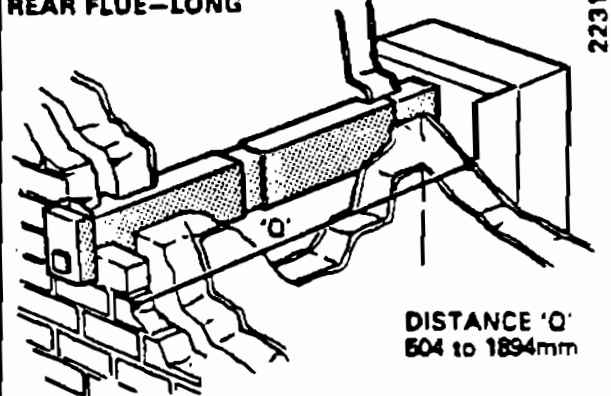


DISTANCE 'Q'
75 to 570mm

Diagram 2.3

REAR FLUE—LONG

2231



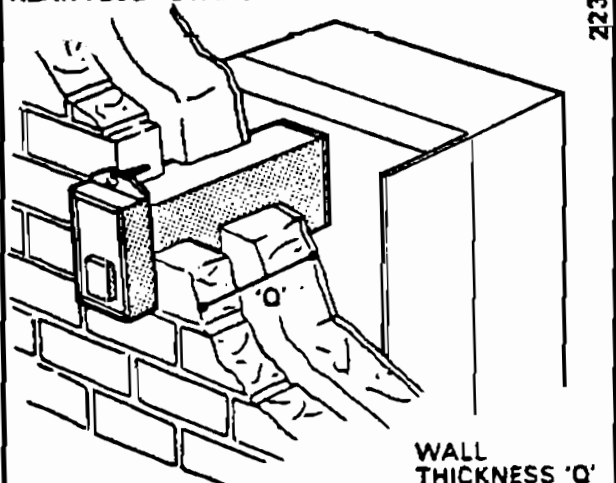
DISTANCE 'Q'
504 to 1894mm

MODEL	LONG KIT
SS20-30F SS30-40F	No. 419607
SS40-50F SS50-60F	No. 419046

Diagram 2.4

REAR FLUE—STANDARD

2232

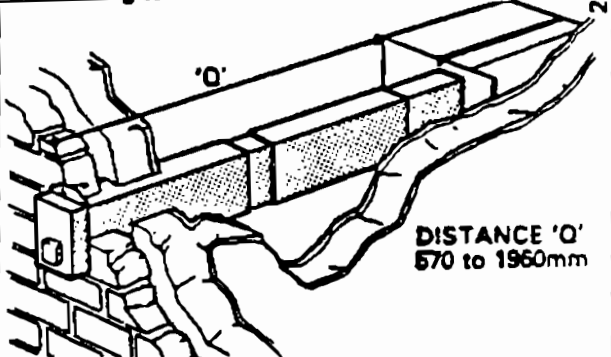


WALL
THICKNESS 'Q'
75 to 504mm

Diagram 2.2

SIDE FLUE—LONG
Left or Right

2430



DISTANCE 'Q'
570 to 1960mm

MODEL	LONG KIT
SS20-30F SS30-40F	No. 419607
SS40-50F SS50-60F	No. 419046

Diagram 2.5

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 arrangements shown in diagram 3.1 are adopted when gravity domestic hot water connections are being prepared. The domestic flow and return must be both on the same side. The heating flow and return are taken from the other side.

3 PUMPED HEATING AND HOT WATER

It is important that all connections are made as shown in diagram 3.2. The connections may be fitted on the opposite side to that shown, but always in the same relative positions.

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 approximately 82°C (180°F). The resistance through the boiler can be found from Table 3.

3.5 CORROSION INHIBITOR

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

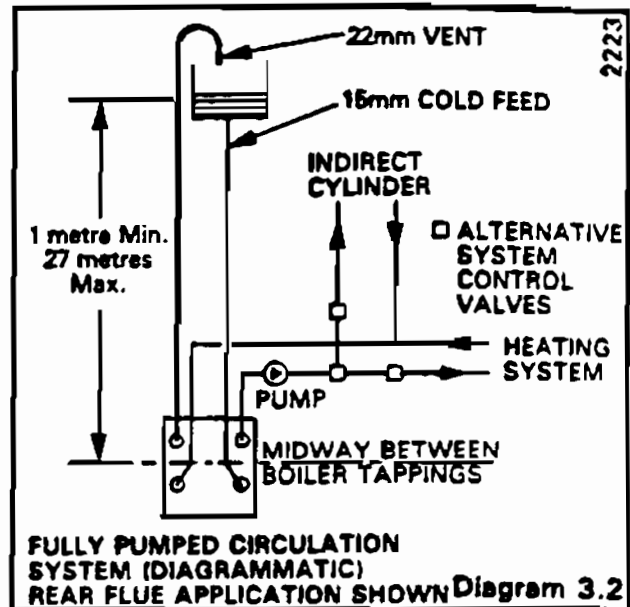
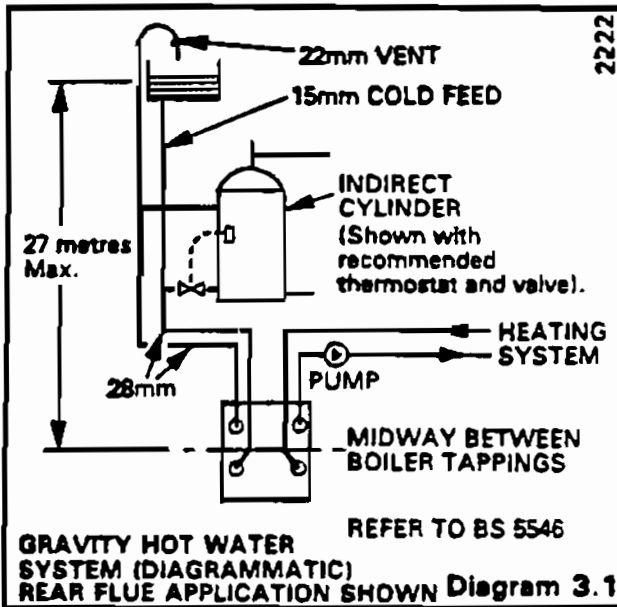
When installing the boiler into an existing system, special care should be taken to drain the entire system, including radiators, then thoroughly flush before installing the boiler and adding the inhibitor.

3.6 FROST PROTECTION

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

SPACE SAVER F TABLE 3 WATER FLOW RATE At 11°C, (20°F), differential				2342
SPACE SAVER 20-30F				
UNIT	HEAT SETTING			
	Min	Medium	Max.	
litre/min.	7.6	9.5	11.4	
gal./min.	1.7	2.1	2.5	
SPACE SAVER 30-40F				
UNIT	HEAT SETTING			
	Min	Medium	Max.	
litre/min.	11.4	13.3	15.2	
gal./min.	2.5	2.9	3.3	
SPACE SAVER 40-50F				
UNIT	HEAT SETTING			
	Min	Medium	Max.	
litre/min.	15.2	17.1	18.9	
gal./min.	3.3	3.8	4.2	
SPACE SAVER 50-60F				
UNIT	HEAT SETTING			
	Min	Medium	Max.	
litre/min.	18.9	20.8	22.7	
gal./min.	4.2	4.6	5	
Flow rate (gallons/minute) 0 1 2 3 4 5 6 120 100 80 60 40 20 0 Water pressure loss (mm head of water) 0 5 10 15 20 25 30 Flow rate (litres/minute) 4 3 2 1 0 Water pressure loss (inches head of water) HEAT SETTING (kW) To give a water flow rate differential of 11°C (20°F) PRESSURE LOSS OF BOILER				

3 WATER SYSTEM



4 UNPACKING & PREPARATION

4.1 UNPACKING

Remove the carton wrap, foam protection sheet and end cardboard pad. Leave the polystyrene packaging in position, see diagram 4.1.

Packed separately in the base carton are the combustion chamber shield, side panels, flue and air ducts, flue terminal, wall plate and bag of loose items.

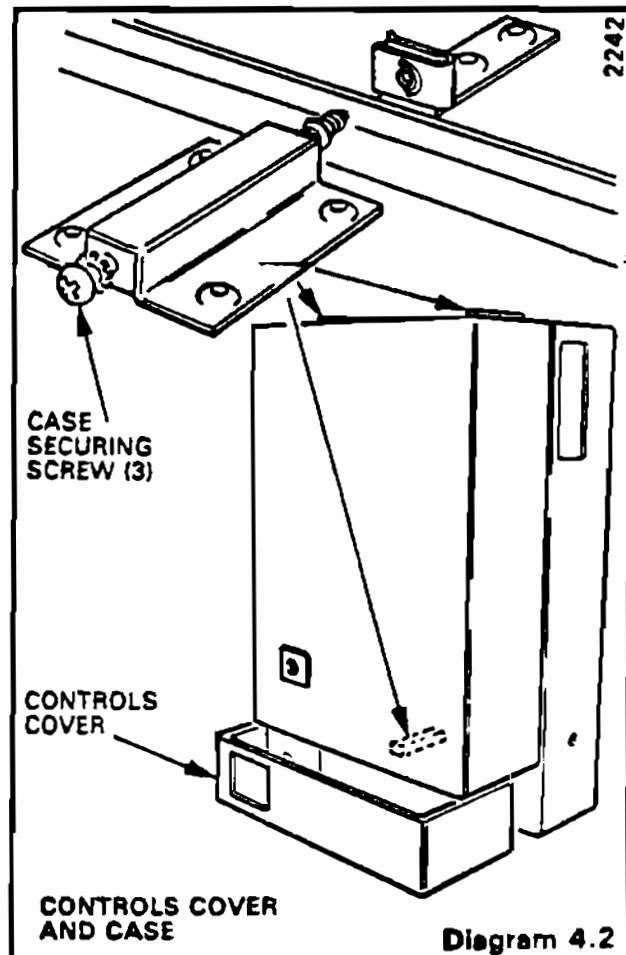
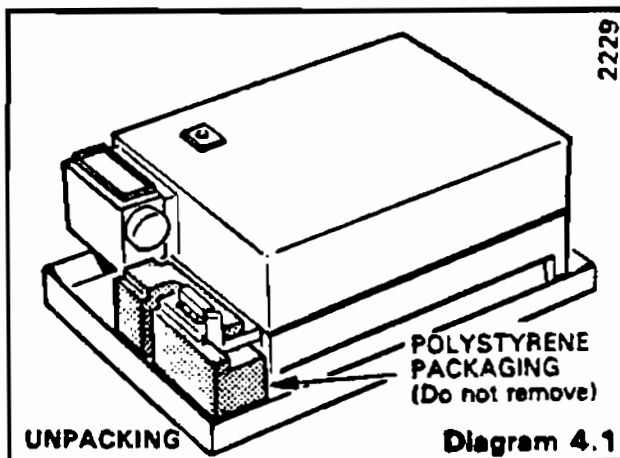
4.2 BOILER PREPARATION

Slide the controls cover forwards from the runners on the case, see diagram 4.2. Put the cover in a safe place.

Remove the case, secured by one lower and two upper screws. Put the case in a safe place.

Disconnect the electrical connectors at the fan, see diagram 4.3, and remove the flue and fan assembly, secured by a screw and washer at each side. Take care not to damage the seal between the fan and the flue cover plate.

Remove the flue cover plate, taking care not to damage the seal, do not discard the screws.



Remove the main burner by loosening the locking screw at the left-hand side. 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, taking care not to damage the pilot burner and electrode assembly. Bring the right-hand end of the burner through the opening first, see diagram 10.2.

Remove the two screws that secure the wall frame to the boiler, do not discard, see diagram 4.4.

Remove boiler from the base carton, leaving the wall frame behind.

Turn the boiler on to its front, supporting at the casing and combustion chamber. This is necessary to prevent damage to the electrical drawer.

4.3 PIPEWORK PREPARATION

The flow and return pipework will need to be routed to suit the requirements of the particular installation.

Fit suitable fittings with Rc 1in. (BSPT) threads into the appropriate boiler tappings, refer to section 3 'Water Systems'. Tighten to final position to suit the pipework route for the particular installation.

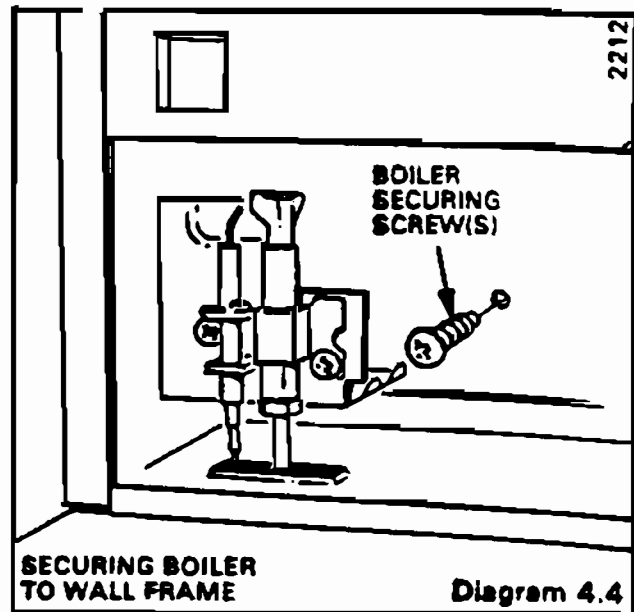
Fit suitable short lengths of tube into the fittings which will terminate in a accessible position when the boiler is fixed.

Remove the wall frame from the carton and offer it up to the boiler to ensure that the fittings and pipework will not foul the frame when the boiler is wall mounted, see diagram 4.5.

NOTE: It is important to ensure that all these joints are watertight at this stage as they will not be in an accessible position when the boiler is fixed.

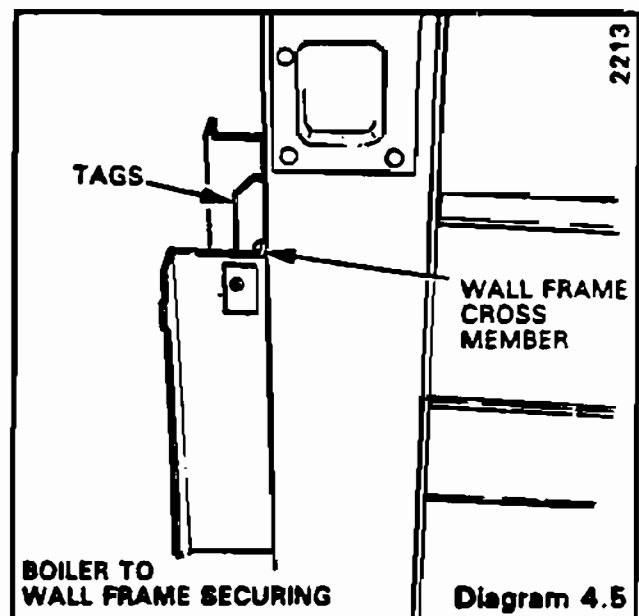
If all the pipework runs are downwards, an air vent must be fitted to reduce the risk of air locks when the boiler and system are filled. Ensure that the gas supply connection is not obstructed.

If all the pipework runs are upward, a draining tap must be fitted in an accessible position to enable the boiler to be drained.



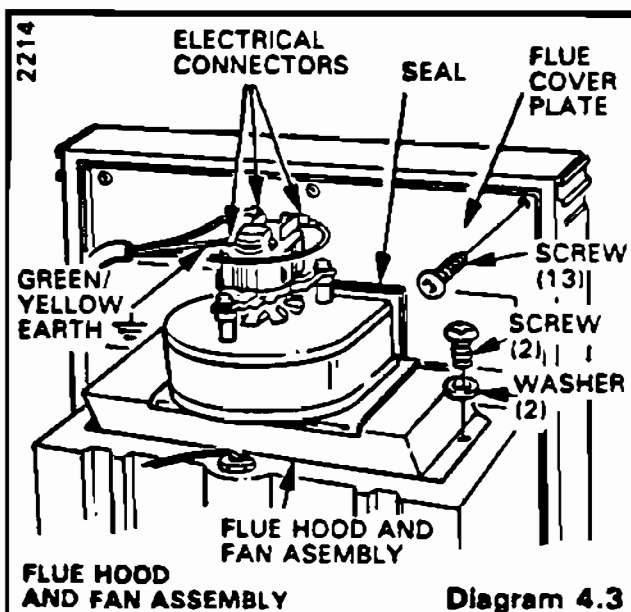
SECURING BOILER TO WALL FRAME

Diagram 4.4



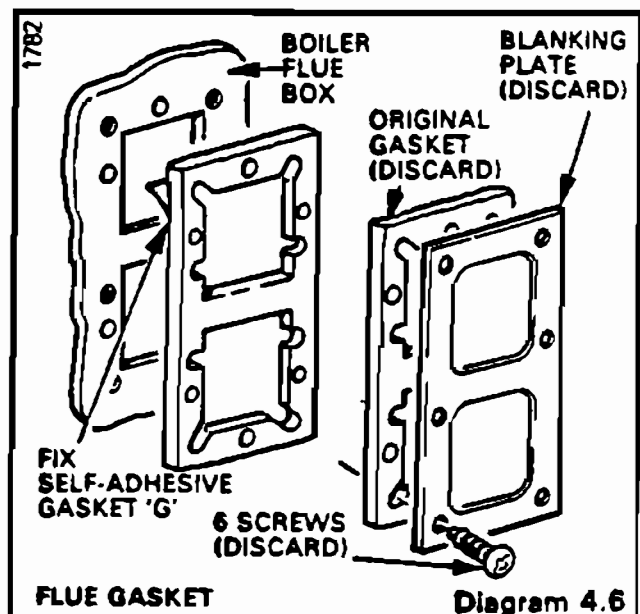
BOILER TO WALL FRAME SECURING

Diagram 4.5



FLUE HOOD AND FAN ASSEMBLY

Diagram 4.3



FLUE GASKET

Diagram 4.6

4 UNPACKING & PREPARATION

4.4 FLUE PREPARATION

If a rear flue system is to be connected, remove and discard the rear flue blanking plate and gasket from the flue box, see diagram 4.6.

If a side flue system is to be connected, remove and discard the flue blanking plate and gasket from the appropriate side of the flue box.

Fix one of the self-adhesive gaskets 'G' provided in the loose items pack, to the boiler where the flue blanking plate has been removed. Remove the backing paper and fix, take care that the screw holes are in line.

5 BOILER FIXING

5.1 REAR FLUE APPLICATION

Having selected the boiler location, with due regards to the terminal position, refer to section 2 'Flue and Ventilation'. Place template No. 1 on the wall, ensure it is level, then mark the wall seal plate fixing points 'A', the boiler fixing points 'B' and the rectangular flue hole positions. Dimensions are also given in diagram 5.1. The tabs on the side of the template, when against the wall or fixture, will give the minimum operational clearance. (Template No. 2 can be discarded).

Cut the hole in the wall with sufficient clearance to accept the air duct. Make good the internal and external wall faces as neatly and accurately as possible, see diagram 5.1.

Drill the four holes 'A' to suit the No.10 wall plugs provided in the loose items pack and insert the plugs.

Drill the four holes 'B' to suit the No.12 wall plugs provided in the loose items pack and insert the plugs.

Secure the wall seal plate with the 40mm long screws provided in the loose items pack, the seal to be in contact with the wall surface, see diagram 5.2.

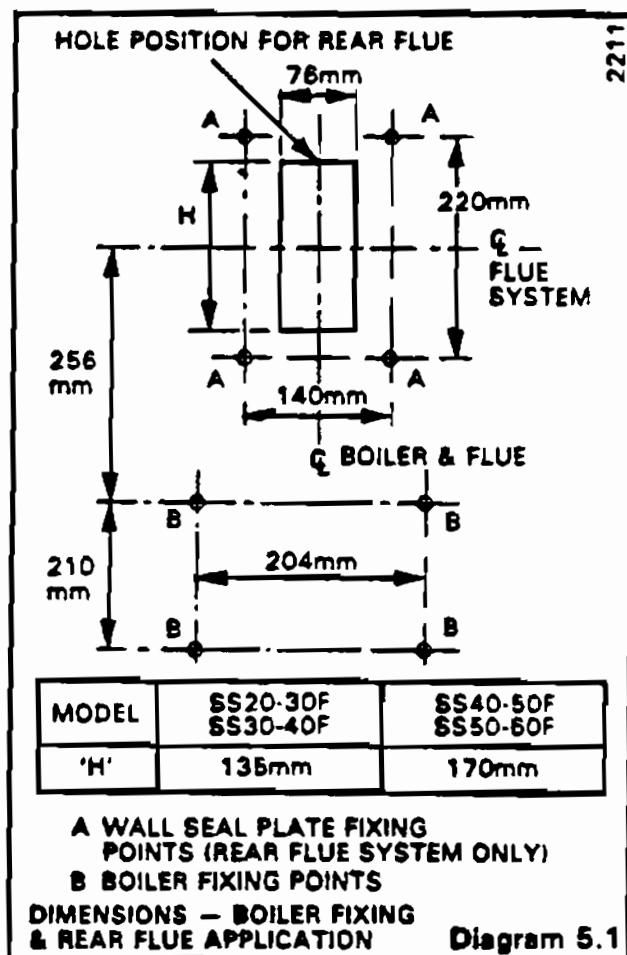
5.2 SIDE FLUE APPLICATION

Having selected the boiler location, with due regards to the terminal position, refer to section 2 'Flue and Ventilation'. Place template No.1 on the wall, ensure it is level, then mark the boiler fixing points 'B' and the flue horizontal centre line, see diagram 5.3. The tabs on the side of the template, when against the wall or fixture, will give the minimum operational clearance.

Extend the flue centre line horizontally left or right to the internal corner where the flue is required to exit to the outside.

Using template No.2, positioned in the corner on the flue exit wall, in line with the marked flue centre line, mark the position of the rectangular flue hole and wall seal fixing points 'A'. Dimensions are also given in diagram 5.4.

Cut the hole in the wall with sufficient clearance to accept the air duct. Make good the internal and external wall faces as neatly and accurately as possible, see diagram 5.4.



Drill the four holes 'A' to suit the No.10 wall plugs and secure the wall seal plate with the 40mm long screws and wall plugs provided in the loose items pack.

Drill the four holes 'B' in the other wall to suit the No.12 wall plugs provided in the loose items pack and insert the plugs, see diagram 5.1.

5.3 BOILER MOUNTING

Fit wall frame to the wall with the No.12 x 30mm screws provided in the loose items pack, see diagram 4.5.

Remove the boiler side panels from the base carton and fit if required, to each side of the boiler. Remove knock out panel from the appropriate side panel as necessary. Hook the top of the side panel over the upper bracket on the main panel and secure at the bottom with the No.6 x 6 mm screws provided in the loose items pack. **NOTE:** If side access is available, the side panels can be fitted after the boiler is mounted to the wall frame.

Raise the boiler into the vertical position, resting on the polystyrene packaging piece to prevent damage to the boiler controls.

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. Take care not to damage the pilot/electrode assembly.

Check that the water connections to the system are accessible, then remove the polystyrene packaging piece, by breaking up if necessary.

5.4 FLUE SYSTEM

From outside, measure the distance 'X' from the boiler where the blanking plate has been removed to the outside wall face, see diagram 5.5.

If a long flue kit is required, refer to the separate instructions supplied with the kit.

Remove the flue duct and air ducts from the base carton. Remove and discard the two transit screws that secure the flanged air duct to the flue duct.

Assemble air ducts 'D' and 'K' to a length of (X+6mm). Tape the ducts together with the yellow tape 'J' provided in the loose items pack.

When the distance 'X' measures 6mm less than the length of duct 'D', the air duct 'K' can be discarded. The flanged duct 'D' will require cutting to maintain the length of (X+6mm).

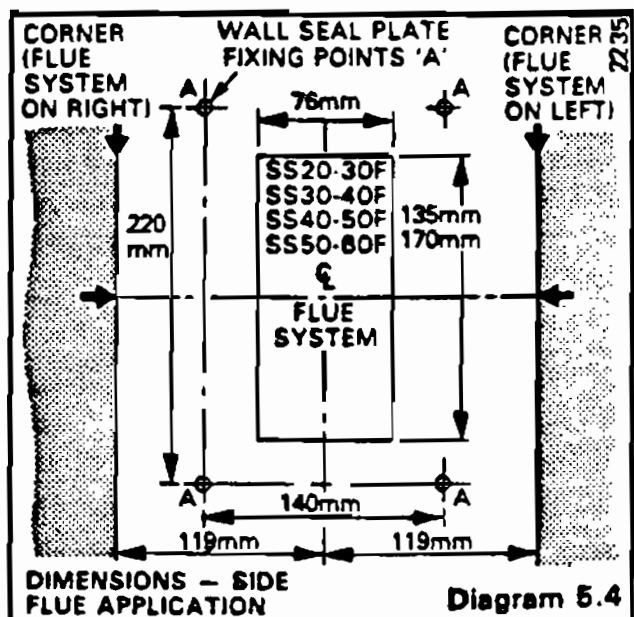
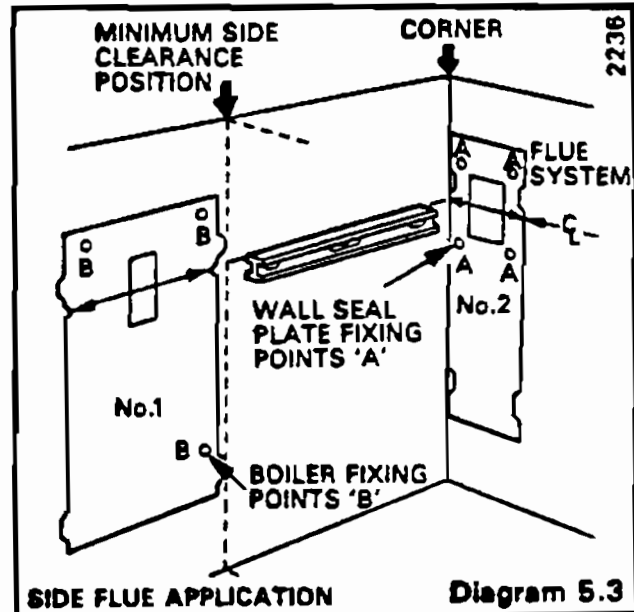
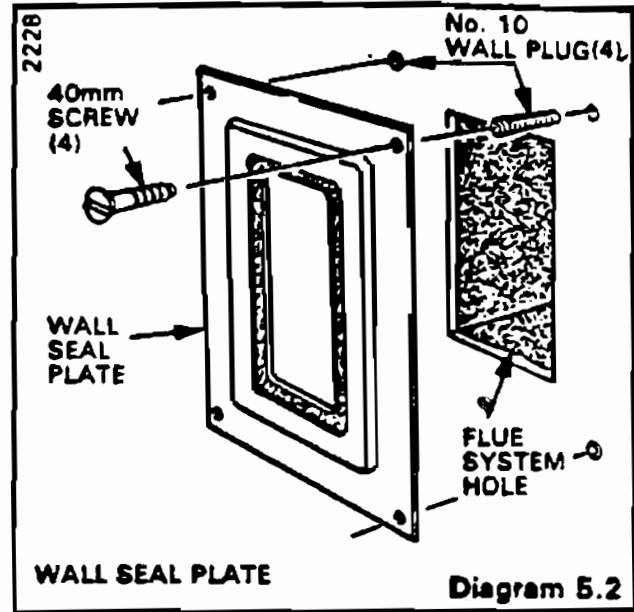
Cut flue duct 'C' to length (X+25mm), measured from the flanged end.

If a side flue system is being connected and the side panel is to be fitted on that side, make sure that the panel is fixed and the knock out panel removed before connecting the flue system.

Slide one of the self-adhesive gaskets 'G', provided in the loose items pack, along the flue duct as shown in diagram 5.6. Remove the backing paper and fix it to the flange on flue duct 'C', taking care that the screw holes are in line.

Insert the flue duct into the air duct assembly and pass these through the wall from outside, flanged ends first. The flue duct must be in the lower half of the system.

Secure the flue and air ducts to the boiler with the six No.6 x 19mm 'F' long screws provided in the loose items pack, screwing into the captive nuts on the flanged air duct 'D', see diagram 5.6.



5 BOILER FIXING

5.5 TERMINAL

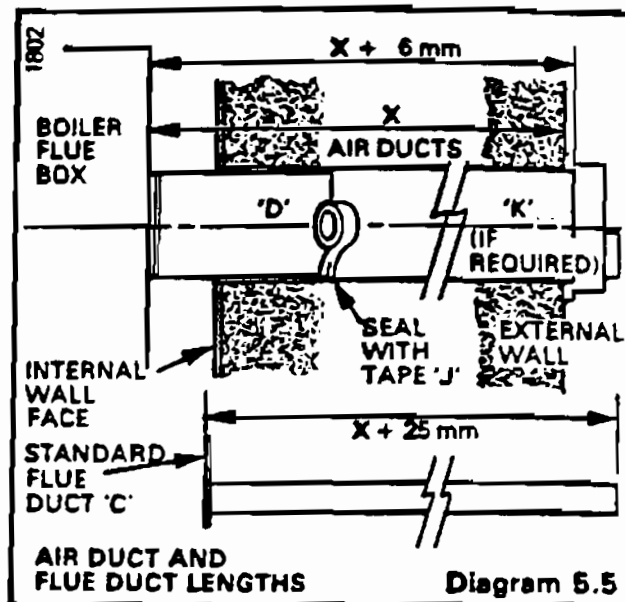
Remove the terminal from the base carton and affix the self-adhesive sealing strip 'H', provided in the loose items pack to the rear face of the terminal, see diagram 5.6.

Locate the terminal onto the flue and air ducts and mark the two screw positions.

Remove the terminal and drill holes suitable for the No.10 wall plugs provided in the loose items pack and insert the plugs.

Secure the terminal with the two No.10 x 37mm stainless screws provided in the loose items pack.

If a terminal guard is to be fitted, refer to section 2.3. 'Terminal Protection', ensure that the guard is positioned the correct way up and central over the terminal.



5.6 WATER CONNECTION

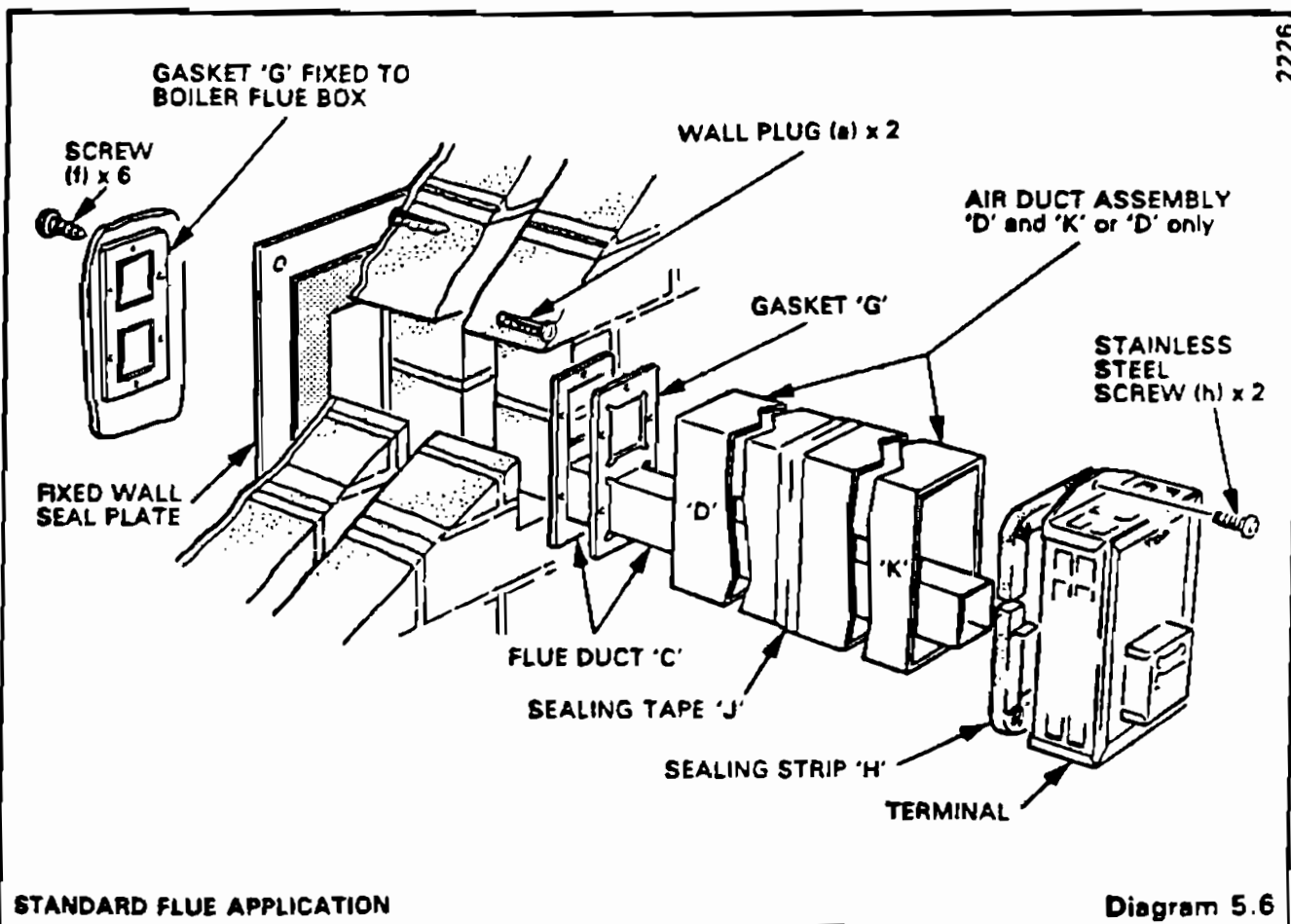
Make the connections between the water system and the prepared pipework using compression fittings.

5.7 GAS CONNECTION

Make the gas connection to the gas service cock. Do not subject the service cock or gas valve to heat from soldering as damage may result.

If making the gas connection with less than 100mm bottom clearance, we advise the use of the gas supply kit, refer to section 1.12 'Boiler Clearances'.

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



6.1 SYSTEMS CONTROLS

Electrical installation must comply with the current issue of the I.E.E. Wiring Regulations and any local regulations which apply.

All controls and connections must be of the approved type.

6.2 CABLE CONNECTION

Release the electrical drawer by removing the two securing screws at the top and slide the drawer forwards to the stops.

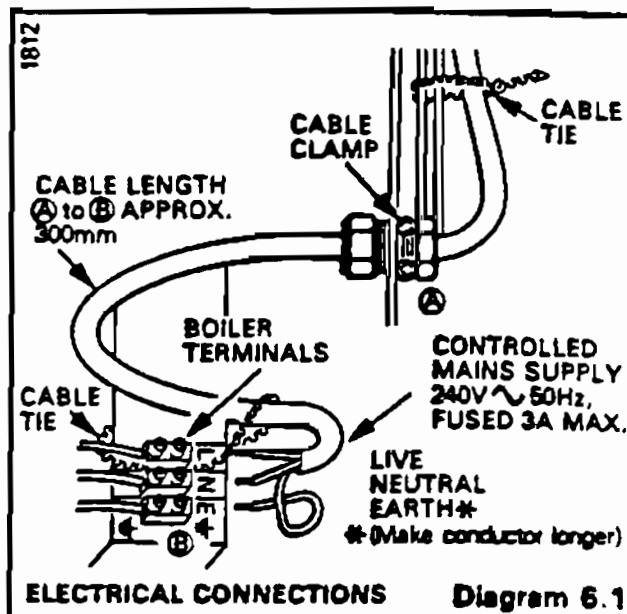
Slacken the cable clamp, pass the cable through the grommet and connect to the terminals as shown in diagram 6.1. Use heat resistant flexible cable with a rating as stated in section 1.6 'Electrical Supply'. Make the earth conductor longer so that it would be the last to be disconnected if the cable is strained. **THE BOILER MUST BE EARTHED.**

It is essential that the polarity is correct.

Secure the cable with the cable clamp, making sure that there is sufficient cable to allow the electrical drawer to slide forward to the stops and be released when necessary for servicing requirements. A cable length of approximately 300mm is recommended between the terminals and the cable clamp.

Secure the cable with the two cable ties, one fitted inside the electrical drawer and one fitted outside it, at the right.

Slide the electrical drawer back and secure with the screws previously removed.



6.3 TESTING

Checks to ensure electrical safety should be carried out by a competent person.

In the event of an electrical fault after installation of the system the preliminary electrical system checks, (as contained in the British Gas Multimeter instruction book or equal), are the first checks to be carried out.

COMPLETION AND COMMISSIONING 7

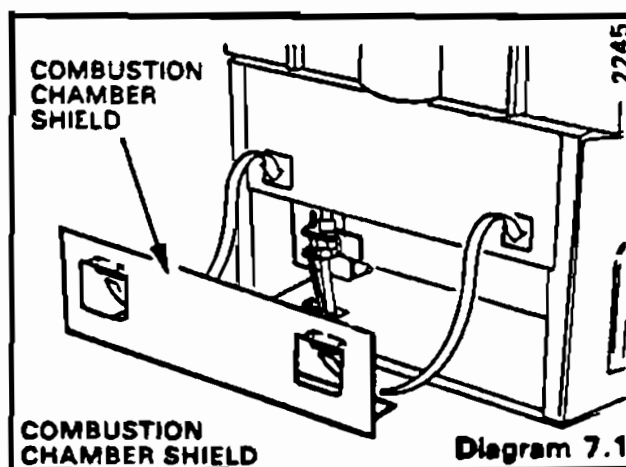
7.1 BOILER ASSEMBLY

Replace main burner making sure that the locating pin fits into the hole in the pilot bracket and the burner rests on the tabs, see diagram 10.2. secure burner by re-tightening the locking screw.

Hook the combustion chamber shield which is supplied in the boiler carton, on to the front of the combustion chamber, making sure it is flush with the combustion chamber front and horizontal, see diagram 7.1.

Fit the flue cover plate to the flue box of the boiler and secure with the thirteen screws previously removed, see diagram 4.3. Ensure that the screws pass through the gasket and that the gasket is not misplaced. Tighten evenly to make a good seal.

Fit the flue hood and fan assembly, making sure that the rear seal is fitted. Loosely fit the two screws and washers then push the assembly back as the screws are tightened to make a good seal at the rear. Do not trap the thermostat capillary.



Fit the electrical connectors to the fan, the green and yellow earth to the connector marked . The polarity of the other connectors is not important.

7.2 SYSTEM COMMISSIONING

Carry out the flushing, venting and filling of the system as recommended in the current issue of BS6798.

Visually check for any water leaks at all joints after flushing, venting and filling.

7.3 INITIAL LIGHTING, TESTING AND ADJUSTMENT

Check that the boiler is isolated from the electricity supply.

Make sure that the boiler thermostat is turned to 'O', the OFF position.

Turn the gas service cock ON, the indicator slot is horizontal for ON.

Test the pilot supply tube and its connections for gas soundness as follows. Remove the terminal cover from the gas valve, see diagram 7.2. Temporarily disconnect the black lead from the main valve solenoid. Refit the terminal cover temporarily.

Temporarily attach rubber tubing over the open end of the tube at the lower left corner of the boiler.

Switch ON/CONNECT the electricity supply to the boiler and heating system. Make sure that any time control, room or cylinder thermostats are calling for heat.

WARNING: THE GAS VALVE AND FAN OPERATE ON MAINS VOLTAGE, TERMINALS WILL BECOME 'LIVE'. Turn the boiler thermostat knob fully clockwise and the fan will operate. Gently suck on the rubber tubing to operate the air flow pressure switch, a click will indicate its operation, then pinch and seal the tube to maintain the switch position. Sparks will be generated and the pilot flame will ignite.

To complete this test it is necessary to operate the boiler without its case, but **UNDER ALL OTHER CIRCUMSTANCES** the case should be correctly fitted and sealed.

The pilot gas rate is pre-set and no adjustment is provided, see diagram 7.3 for correct pilot flame length.

Turn the thermostat knob to 'O' and **ISOLATE** the boiler from the electricity supply.

Remove the terminal cover, re-connect the black lead ensuring that the insulating boot is fitted to the main valve solenoid, see diagram 7.2, then re-fit the terminal cover to the valve.

Attach the self-adhesive arrow indicator to the data badge, against the rating that the boiler is adjusted to, for future reference. The arrow is provided in the loose items pack.

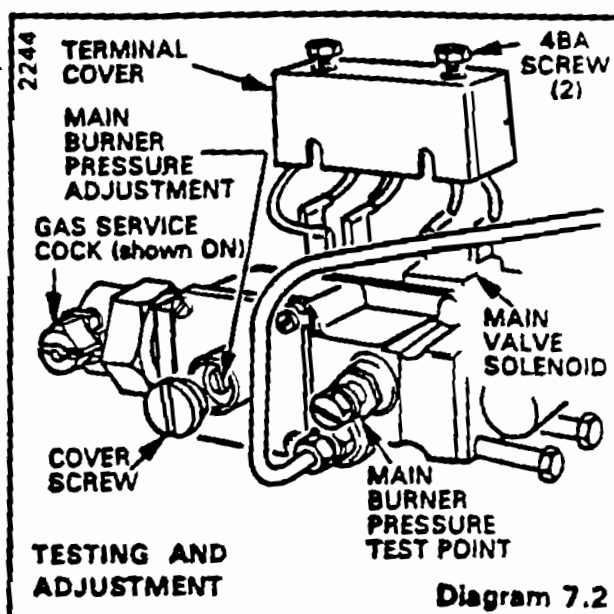
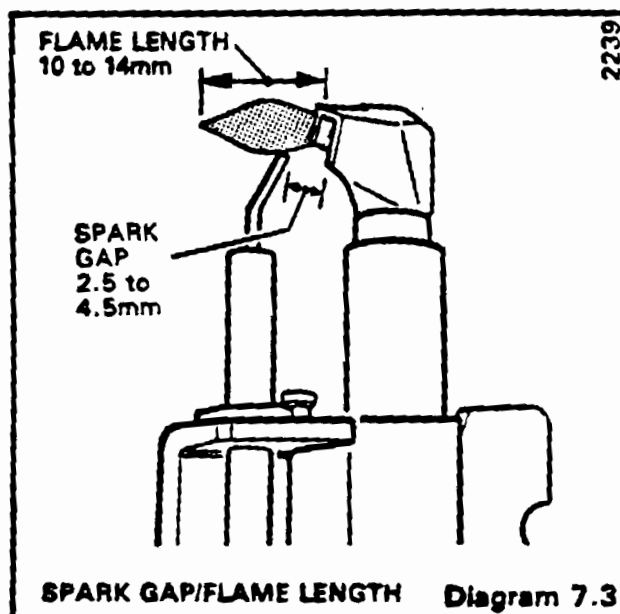


Diagram 7.2



SPARK GAP/FLAME LENGTH Diagram 7.3

Fit the case and secure with the three screws, ensuring that a good seal is made with the sealing strip on the boiler.

Remove the main burner pressure test point screw and connect a suitable pressure gauge, see diagram 7.2.

Make sure that any time control, room or cylinder thermostats are calling for duty.

Switch ON/CONNECT the electricity supply to the boiler and heating system.

Turn the boiler thermostat knob fully clockwise to the maximum setting. After a period of time the main burner will light.

The lighting sequence is fully automatic as follows:

- The fan operates.
- The spark ignition system operates.
- The pilot solenoid valve opens.
- The pilot burner lights.
- The ignition spark stops.
- The main solenoid valve opens.
- The main burner lights.

The main burner will remain alight until switched off, either by the boiler thermostat or a remote system control.

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

Check the main burner pressure at least 10 minutes after the boiler has lit, refer to Table 1 'Range Rating'.

If the gas pressure requires adjustment, remove the cover screw for access to the main burner pressure adjustment screw, see diagram 7.2. Adjust the gas pressure to obtain the required setting, (turning clockwise decreases the pressure).

Should any doubt exist about the gas rate, check the rate using the gas meter test dial and stop watch, at least 10 minutes after the boiler has lit. The gas rates quoted in Table 1 'Range Rating' are only approximate for guidance purposes.

Turn the boiler thermostat knob to '0'. Disconnect the pressure gauge from the test point and re-fit the screw previously removed, ensuring that a gas tight seal is made.

When the boiler switches OFF, both pilot and main burners are extinguished. The automatic lighting sequence will operate when heat is required again.

When the boiler thermostat knob is turned to '0', the OFF position, wait for at least 30 seconds before turning ON again.

There may be an initial smell given off from the boiler when new, but this is normal and will disappear after a period of time.

Re-fit the controls cover by sliding it onto the runners on the case.

7.4 SYSTEM ADJUSTMENT

Make adjustments to the pump and heat emitters to obtain the design temperature difference of 11°C, (20°F), across the system.

Set any system controls and the boiler thermostat at the desired settings.

Operate the system, checking that any system controls operate correctly.

7.5 USER INFORMATION

Hand the Information for Use instructions to the user or purchaser for their retention. Instruct and demonstrate the efficient and safe operation of the boiler, the heating system and, if installed, the hot water system.

Advise the user of the precautions necessary to prevent damage to the system unit and building in the event of the heating system being inoperative during frost and freezing conditions.

Advise the user that, for continued safe and efficient operation of the boiler, servicing should take place at least once a year, preferably at the end of the heating season or as recommended by the local gas undertaking.

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

8.1 IMPORTANT

THIS BOILER MUST BE SERVICED ONLY BY A SERVICE ENGINEER.

AFTER COMPLETING ANY SERVICING OR REPLACEMENT OF GAS CARRYING COMPONENTS, ALWAYS TEST FOR GAS SOUNDNESS AND CARRY OUT FUNCTIONAL CHECKS OF CONTROLS.

8.2 ISOLATE

BEFORE COMMENCING ANY SERVICING, ISOLATE THE BOILER FROM THE ELECTRICITY SUPPLY AND TURN OFF THE GAS SUPPLY AT THE GAS SERVICE COCK. (Indicator slot is vertical for OFF).

8.3 ACCESS

Gain access to the boiler by sliding the controls cover forward from the runners on the case. Remove the case by one lower and two upper screws, see diagram 4.2.

Remove the combustion chamber shield by unhooking it, see diagram 7.1.

Remove the main burner by loosening the locking screw at the left-hand side. 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, taking care not to damage the pilot burner and electrode assembly. Bring the right-hand end of the burner through the opening first, see diagram 10.2.

Disconnect the electrical connectors at the fan and remove the flue hood and fan assembly secured by a screw and washer at each side. Take care not to damage the seal between the fan and the flue cover plate, see diagram 10.9.

8.4 CLEANING HEAT EXCHANGER

Cover the injector and pilot burner assembly prior to cleaning the flueways. Brush through the individual flueways in the heat exchanger to remove any deposits. Clean any debris from the combustion chamber base and remove the temporary covering used.

8.5 CLEANING MAIN BURNER

Use a vacuum cleaner or suitable brush to clean the burner thoroughly, ensure that all of the flame ports are clean and unobstructed.

8.6 CLEANING PILOT INJECTOR

Disconnect the pilot supply tube by unscrewing the pilot tubing nut, holding the pilot injector hexagon with another spanner, see diagram 10.3. Ease the supply tube from the injector.

Remove the pilot injector by unscrewing from the pilot burner assembly.

Inspect and clean or re-new as necessary. Clean by blowing clear only, do not use wire or sharp instrument.

8.7 SERVICE CHECKS

Inspect the pilot burner and spark electrode, clean or re-new as necessary. If replacement is necessary, refer to section 10.6 'Pilot Burner and Electrode Assembly'.

Check that the spark gap between the pilot burner and spark electrode is correct, see diagram 7.3.

Remove and inspect the main burner injector, clean or re-new as necessary. Clean by blowing clear only, do not use wire or sharp instruments.

Check the condition of all seals and gaskets before re-tightening any component, re-new if necessary.

8.8 RE-ASSEMBLY

Re-assemble components in the reverse order to dismantling.

Make sure that the main burner locating pin fits into the hole in the pilot bracket and the burner rests on the tabs. Secure burner by re-tightening the locking screw, see diagram 10.2.

Make sure that the combustion chamber shield is fitted correctly, i.e. hooked to the combustion chamber, positioned flush and horizontal, see diagram 7.1.

Fit the flue hood and fan assembly, ensuring that the rear seal is fitted, see diagram 10.9. Loosely fit the two screws and washers previously removed, then push the assembly back as the screws are tightened to make a good seal at the rear. Take care not to trap the thermostat capillary.

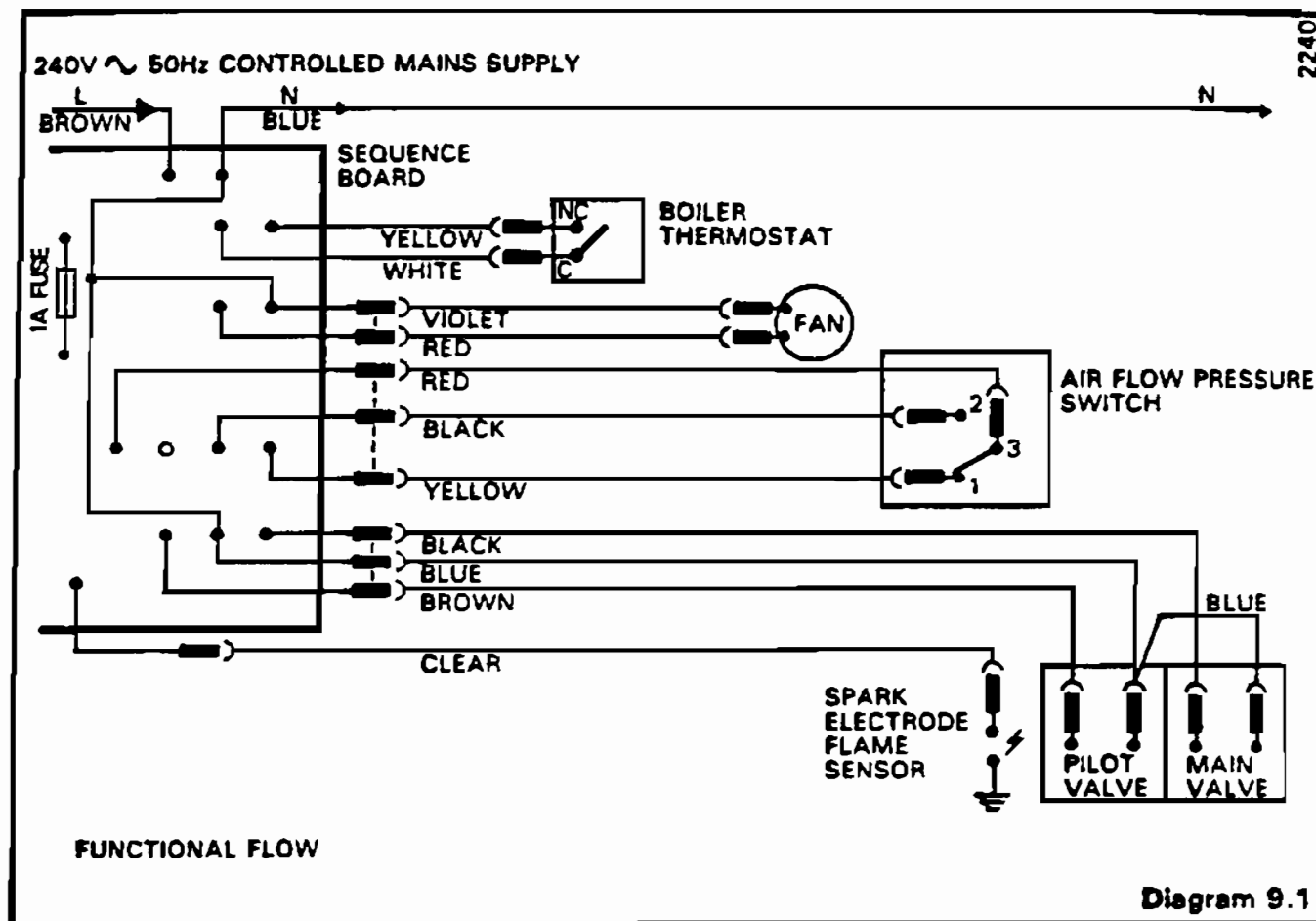
Fit the electrical connectors to the fan, the green and yellow earth to the connector marked . The polarity of the other connectors is not important.

Test all gas joints for gas soundness, using a suitable leak detection fluid, refer to section 7 'Completion and Commissioning'.

8.9 OPERATIONAL CHECKS

Operate the boiler to carry out the operational checks and any necessary adjustments, as described in section 7.3 'Initial Lighting, Testing and Adjustment'.

The arrow on the data badge indicates the rating requirement of the system.



9.1 INITIAL CHECKS

If the boiler fails to operate, first check the following:

Is the electricity supply to the boiler and heating system on and available at the boiler?

Are the electricity supply fuses in order?

Are all remote heating and hot water controls, if fitted, calling for heat?

Is the gas supply on and available at the boiler?

If the answer to all the above questions is yes, then proceed as follows in this section.

9.2 ELECTRICAL

The preliminary electrical system checks, (as contained in the British Gas. Multimeter Instruction book or equal), are the first checks to be carried out during a fault finding procedure.

On completion of the fault finding task which has required the disconnection and making of electrical connections, then the checks 'A' Earth continuity, 'C' Polarity and 'D' Resistance to Earth must be carried out.

Isolate the boiler and heating system from the electrical supply.

Gain access to the electrical controls by sliding the controls cover forwards from the runners on the case then release the control drawer by removing the two screws at the top and slide the drawer forward to the stops.

Physically check all cables and connectors.

Check the sequence board fuse. A spare fuse is provided in the front of the controls drawer. The fuse is FIAMP 250V to BS4263.

Follow the functional flow diagram and fault finding procedure in diagram 9.1 and 9.2. The sequence of operation of the boiler components is shown from left to right.

ELECTRICAL FAULT FINDING

START

Determine that gas and electricity supplies are available and that the system is full of water. If any of the above are not in order, contact the relevant authority or rectify before proceeding. Check that the gas service cock is in the ON position. Isolate the boiler from the electricity supply. Remove the screws securing the electrical drawer, then withdraw it forward. Check all connections and cables. Rectify any that are faulty.

Restore electricity supply (240V ~ 50 Hz). Check that polarity is correct and the boiler is earthed.

Is there 216 to 240V ~ between boiler terminals L and N?

NO

Check that all remote controls are calling for duty. Check supply fuses and connections. Renew fuse or rectify faulty connection.

YES

Is there 216 to 240V ~ between white cable connection C on thermostat and boiler terminal N?

NO

Isolate and test continuity of fuse on sequence board. Is fuse in order?

NO

Renew fuse.

YES

Faulty sequence board, renew.

YES

Turn thermostat to max. setting (5). Is there 216 to 240V ~ between yellow cable connection NC on thermostat and boiler terminal N, with boiler cold?

NO

Faulty thermostat. Isolate and renew.

YES

Turn thermostat to 'O' (off). Is the voltage now zero between yellow cable connection NC on thermostat and boiler terminal N?

NO

YES

Turn thermostat to max. setting. Does fan run?

NO

Isolate and remove cover from the air pressure switch. Test continuity between terminals 1 and 3 on air pressure switch. Is there continuity?

YES

Isolate and remove case. Restore supply; is there 216 to 240V ~ between red and violet (N) cables at the fan connections?

YES

Faulty fan. Isolate and renew. Refit case.

NO

Faulty air pressure switch, renew.

NO

Faulty cable harness or connections. Isolate and rectify fault.

YES

Continued on next page.

From following page.

Diagram 9.2

2225

ELECTRICAL FAULT FINDING (CONT.)

Continued on previous page

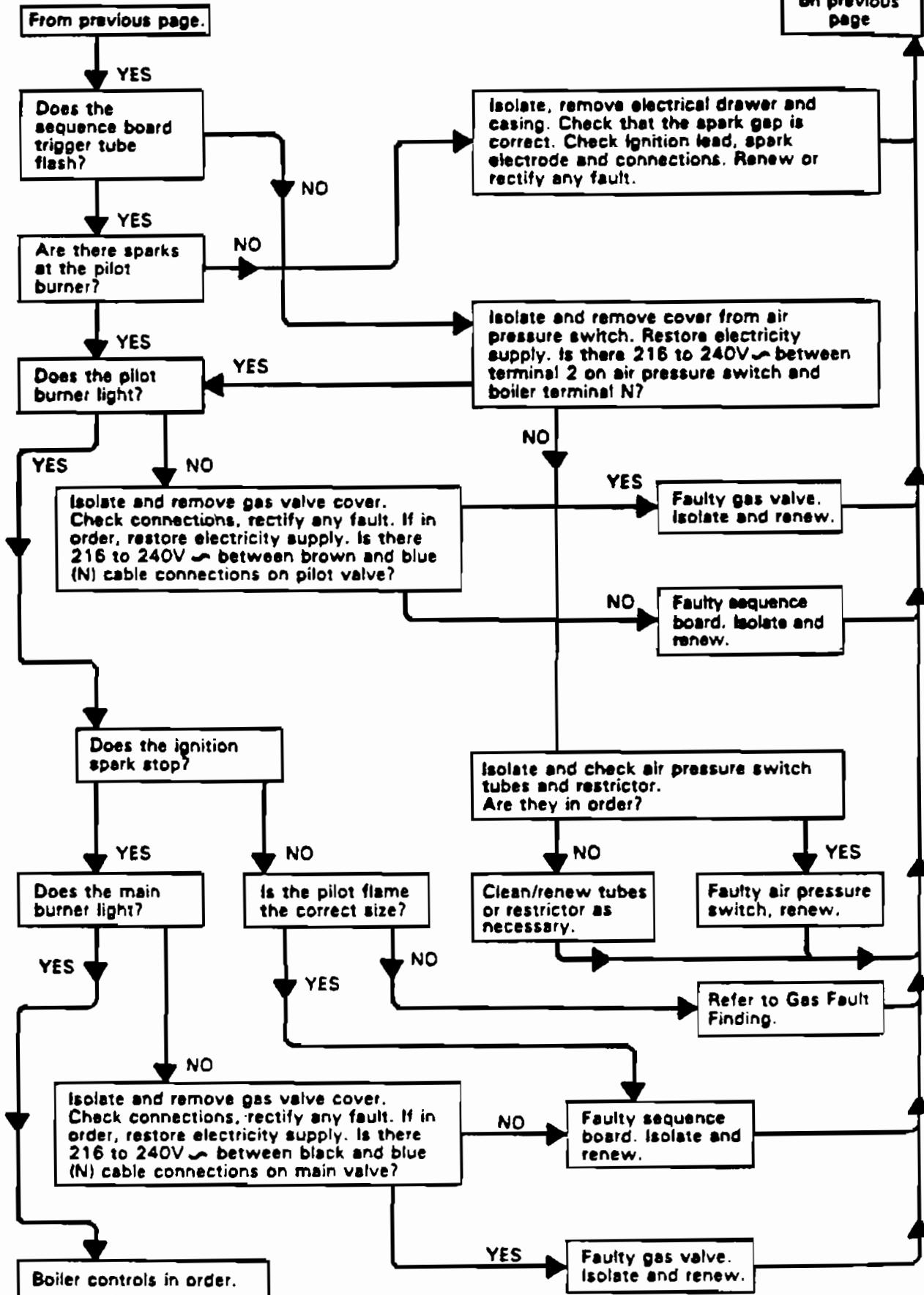


Diagram 9.2 cont.

GAS FAULT FINDING

Determine that the gas and electricity supplies are available and that the system is full of water. If any of the above are not in order, contact the relevant authority or rectify before proceeding. Check that the gas service cock is in the ON position and electricity is available at the boiler.

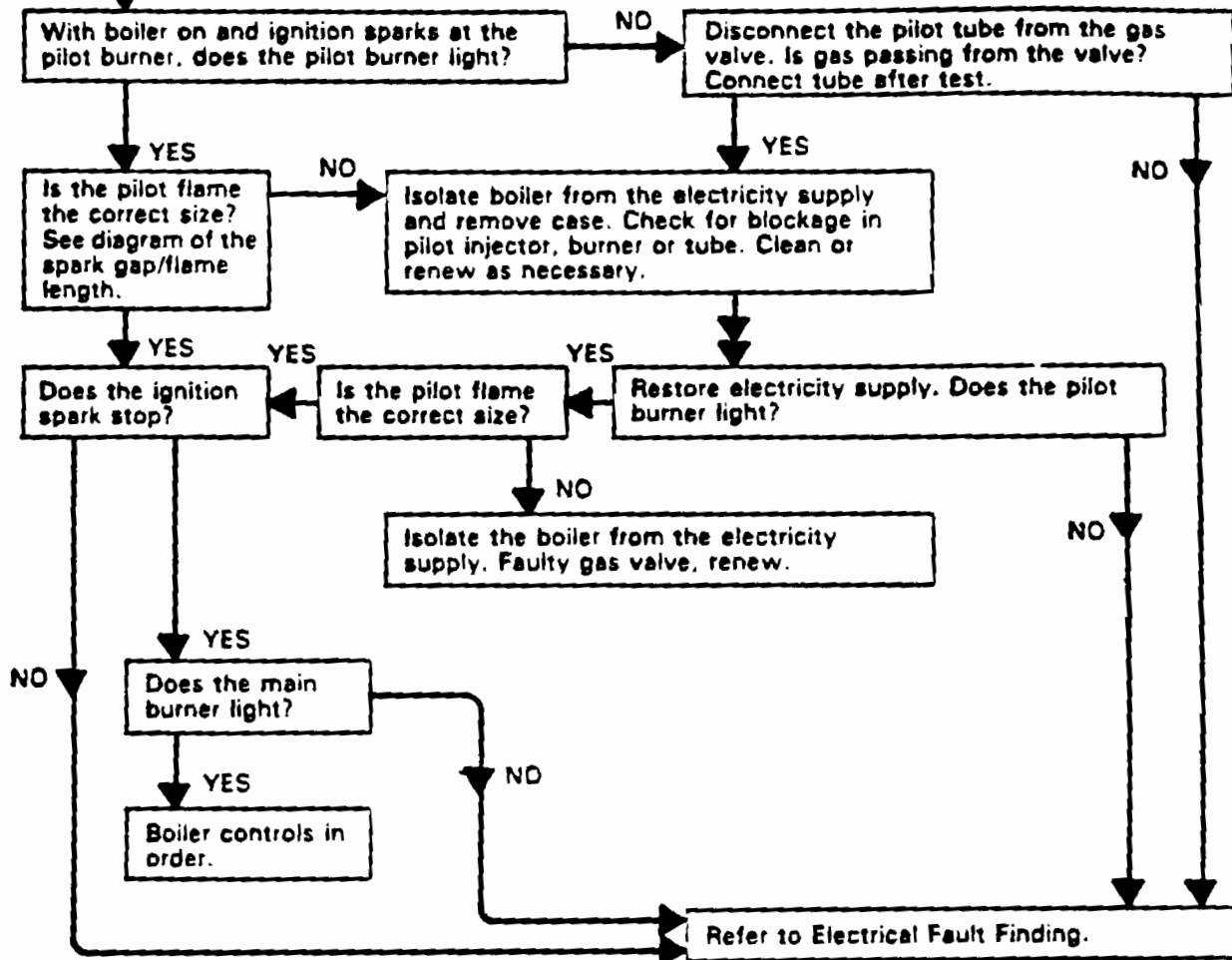


Diagram 9.3

9.3 GAS

Follow the fault finding procedure shown in diagram 9.3.

REMOVAL AND REPLACEMENT OF PARTS MUST BE CARRIED OUT BY A SERVICE ENGINEER.

BEFORE REMOVING ANY COMPONENTS, ISOLATE THE BOILER FROM THE ELECTRICITY SUPPLY AND ALSO TURN OFF THE GAS SUPPLY AT THE GAS SERVICE COCK. (Indicator slot is vertical for OFF).

FIT COMPONENTS IN THE REVERSE ORDER TO THAT OF REMOVAL, UNLESS STATED OTHERWISE.

AFTER COMPLETING THE REPLACEMENT OF ANY COMPONENT, ALWAYS TEST FOR GAS SOUNDNESS.

CARRY OUT FUNCTIONAL CHECKS OF CONTROLS. Refer to section 7 'Completion and Commissioning'.

10.1 CONTROLS COVER

Slide the controls cover forward from the runners on the case, see diagram 4.2.

10.2 CASE

Remove the case, secured by one lower and two upper screws, see diagram 4.2.

DO NOT NORMALLY OPERATE THE BOILER WITHOUT THE CASE FITTED AND SEALED TO THE SEALING STRIP ON THE BOILER.

10.3 ELECTRICAL DRAWER

Release the electrical drawer by removing the two screws at the top, then slide the drawer forwards to the stops. Release the cables from the cable tie inside the drawer.

Disconnect the three multi-pole plugs from the sequence board, see diagram 10.8. To release the drawer raise the front to enable the drawer to clear the drawer stops. Take care not to strain any of the cables by supporting the drawer, either resting it on a suitable surface or turning it anti-clockwise and inverting it to hook on the drawer runners, see diagram 10.1.

10.4 MAIN BURNER

Gain access to the main burner by removing the controls cover and case, refer to sections 10.1 and 10.2.

Remove the combustion chamber shield by unhooking it, see diagram 7.1.

Remove the main burner by loosening the locking screw at the left-hand side. 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, taking care not to damage the pilot burner and electrode assembly. Bring the right-hand end of the burner through the opening first, see diagram 10.1.

Re-assembly notes:

Make sure that the main burner locating pin fits into the hole in the pilot bracket and the burner rests on the tabs, see diagram 10.2. Secure burner by re-tightening the locking screw.

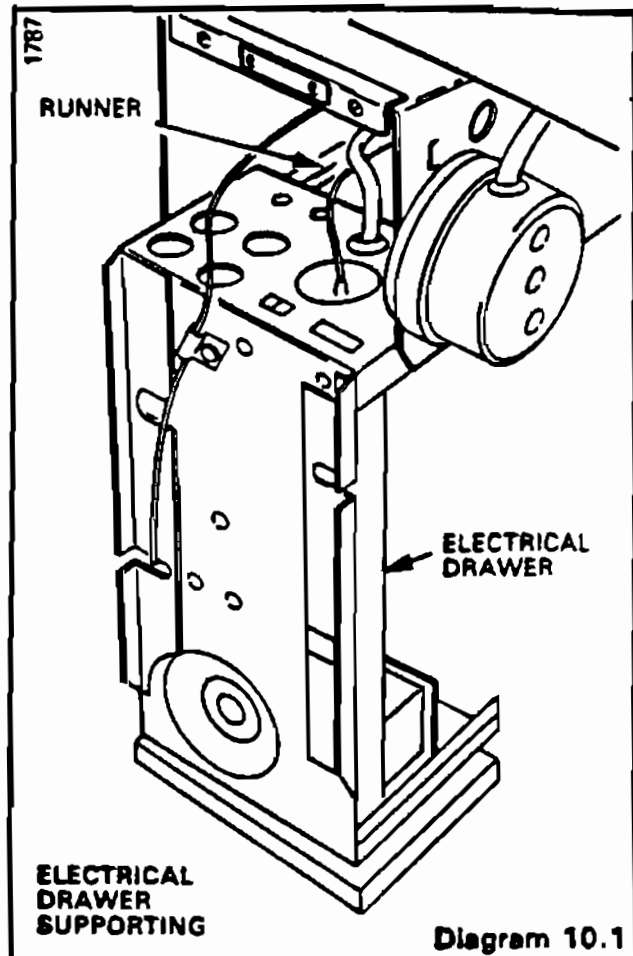


Diagram 10.1

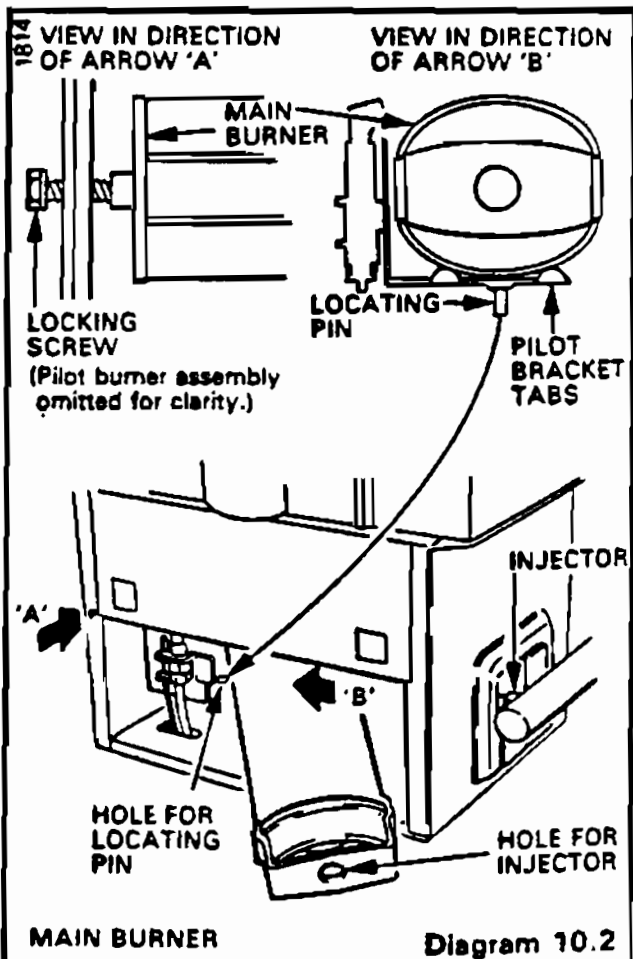


Diagram 10.2

10 REMOVAL AND REPLACEMENT OF PARTS

Make sure that the combustion chamber shield is fitted correctly, i.e. hooked to the front of the combustion chamber, positioned flush and horizontal, see diagram 7.1.

10.5 MAIN BURNER INJECTOR

Gain access to the burner injector by removing the controls cover, case, combustion chamber shield and main burner, refer to sections 10.1, 10.2 and 10.4.

Unscrew the injector from the manifold.

Re-assembly notes:

When re-fitting the injector, use a little thread sealant on the external thread only, to ensure gas soundness.

Make sure that the main burner locating pin fits into the hole in the pilot bracket and the burner rests on the tabs, see diagram 10.2. Secure burner by re-tightening the locking screw.

Make sure that the combustion chamber shield is fitted correctly, i.e. hooked to the front of the combustion chamber, positioned flush and horizontal, see diagram 7.1.

After assembly, test for gas soundness as described in section 7.3 'Initial Lighting, Testing and Adjustment'.

10.6 PILOT BURNER AND ELECTRODE ASSEMBLY

Gain access to the pilot burner and electrode by removing the controls cover, case, combustion chamber shield and main burner, refer to sections 10.1, 10.2 and 10.4.

Disconnect the spark ignition lead from the spark electrode, see diagram 10.3.

Disconnect the pilot supply by unscrewing the pilot tubing nut, holding the pilot injector hexagon with another spanner. Ease the supply tube from the pilot injector, see diagram 10.3.

Remove the pilot burner and electrode assembly by slackening the left-hand screw and nut and removing the right-hand screw and nut.

Re-assembly notes:

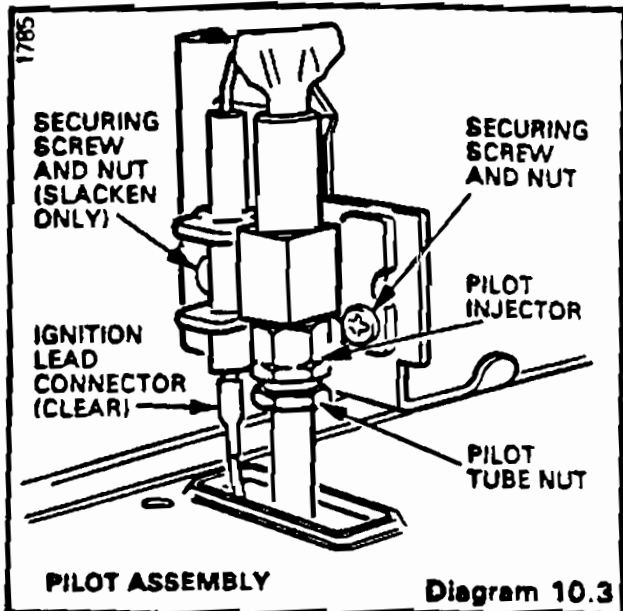
Check that the spark gap between the pilot burner and electrode is correct before re-fitting assembly, see diagram 10.4.

Make sure that the main burner locating pin fits into the hole in the pilot bracket and the burner rests on the tabs, see diagram 10.2. Secure burner by re-tightening the locking screw.

Make sure that the combustion chamber shield is fitted correctly, i.e. hooked to the front of the combustion chamber, positioned flush and horizontal, see diagram 7.1.

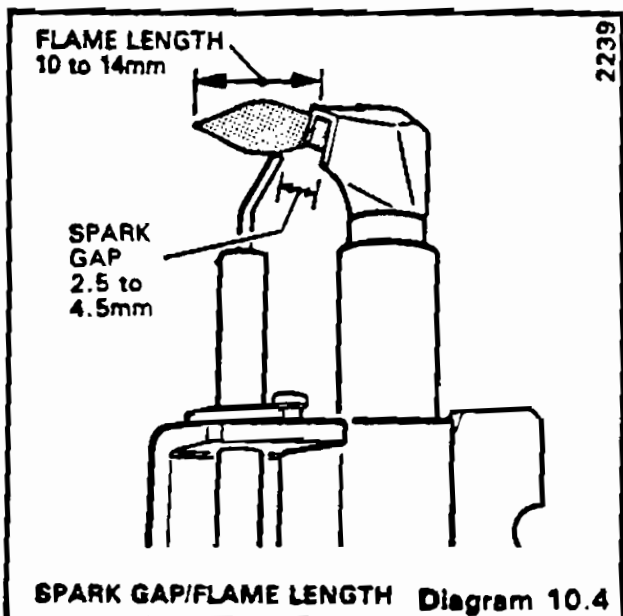
After assembly, test for gas soundness as described in section 7.3 'Initial Lighting, Testing and Adjustment'.

Check that the pilot flame length is as shown in diagram 10.4.



PILOT ASSEMBLY

Diagram 10.3



SPARK GAP/FLAME LENGTH

Diagram 10.4

10.7 PILOT BURNER INJECTOR

Gain access to the pilot burner injector by removing the controls cover, case, combustion chamber shield and main burner, refer to sections 10.1, 10.2 and 10.4.

Disconnect the pilot supply by unscrewing the pilot tubing nut, holding the pilot injector hexagon with another spanner. Ease the supply tube from the pilot injector, see diagram 10.3.

Remove the pilot injector from the pilot assembly by unscrewing it.

Re-assembly notes:

As re-assembly notes for section 10.6 'Pilot Burner and Electrode Assembly'.

10.8 SPARK IGNITION LEAD

Gain access to both ends of the spark ignition lead by removing the controls cover, case, combustion chamber shield and main burner, refer to sections 10.1, 10.2 and 10.4.

Release the electrical drawer by removing the two screws at the top, then slide the drawer forwards to the stops. Remove the electrical drawer from its housing by raising the front and withdrawing to clear the drawer stops. Take care not to strain any of the cables.

Where the electrical drawer cannot be rested on the floor or worktop, it should be supported by turning anti-clockwise and rested on the runners as shown in diagram 10.1.

Disconnect the spark ignition lead at the rear of the sequence board and at the spark electrode, see diagrams 10.8 and 10.3.

Remove one of the sealing plates in the lower left-hand corner of the boiler and withdraw the spark ignition lead.

Re-assembly notes:

When re-fitting the spark ignition lead, ensure that the clear insulated connector is fitted to the spark electrode.

Ensure all multi-pole plugs are correctly located on the sequence board.

Make sure that the combustion chamber shield is fitted correctly, i.e. hooked to the front of the combustion chamber, positioned flush and horizontal, see diagram 7.1.

10.9 GAS VALVE

Gain access to the gas valve by removing the controls cover and case, refer to sections 10.1 and 10.2.

Disconnect the pilot supply by unscrewing the tubing nut at the gas valve, holding the pilot supply adaptor with another spanner. Ease the supply tube from the pilot supply adaptor, see diagram 10.5.

Remove the terminal cover from the gas valve, secured by two 4BA screws. Disconnect the electrical connectors.

Support the gas valve, disconnect the union on the gas service cock then remove the four screws from the flanged connection at the right-hand side. Ease the flange and union apart to remove the valve.

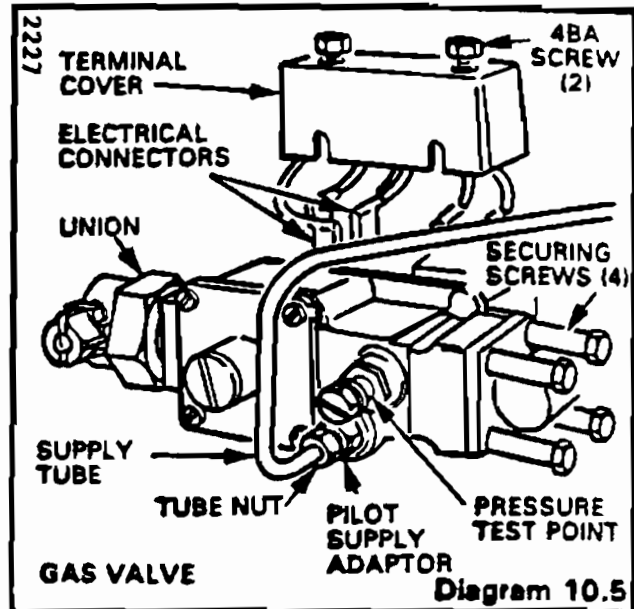
Transfer the half union of the gas service cock to the inlet of the replacement gas valve. Also transfer the pressure test point and pilot supply adaptor. Use a little thread sealant on the external threads to ensure gas soundness.

Remove and discard the original 'O' ring from the flanged connection and fit the new one supplied, into the recess, before fitting the replacement gas valve.

Re-assembly notes:

To re-connect the electrical leads to the valve, see diagram 10.6. Make sure that the insulation boot is fitted to the BLACK lead.

After assembly, test for gas soundness and adjust the gas valve to the rating required as described in section 7.3 'Initial Lighting, Testing and Adjustment'.



10.10 PILOT FILTER

The pilot filter is an integral part of the gas valve. The filter is of large capacity, designed to last the life of the gas valve under normal operating conditions.

If the pilot filter becomes completely blocked under normal operating conditions, it is recommended that the gas valve is renewed and the old valve returned to Glow-worm Ltd., marked 'Pilot Filter Blocked'. Provided that this is the only fault and the cause is substantiated, the replacement will be supplied free of charge.

10.11 THERMOSTAT

Gain access to the thermostat by removing the controls cover and case, refer to sections 10.1 and 10.2.

Pull the thermostat knob off the spindle and remove the two securing screws.

Release the electrical drawer by removing the two screws at the top, then slide the drawer forwards to the stops. Remove the electrical drawer from its housing by raising the front and withdrawing to clear the drawer stops. Take care not to strain any of the cables.

Where the electrical drawer cannot be rested on the floor or worktop, it should be supported by turning anti-clockwise and rested on the runners as shown in diagram 10.1.

Release the thermostat capillary from its securing clip on the drawer and disconnect the electrical leads at the thermostat.

Release the capillary from the clips at the left-hand side of the boiler.

Remove the two sealing plates in the lower left-hand corner where the capillary passes through the back panel.

Remove the retaining split pin from the phial pocket and remove the phial. Feed the capillary and phial through the hole in the back panel. Note the capillary route before removing.

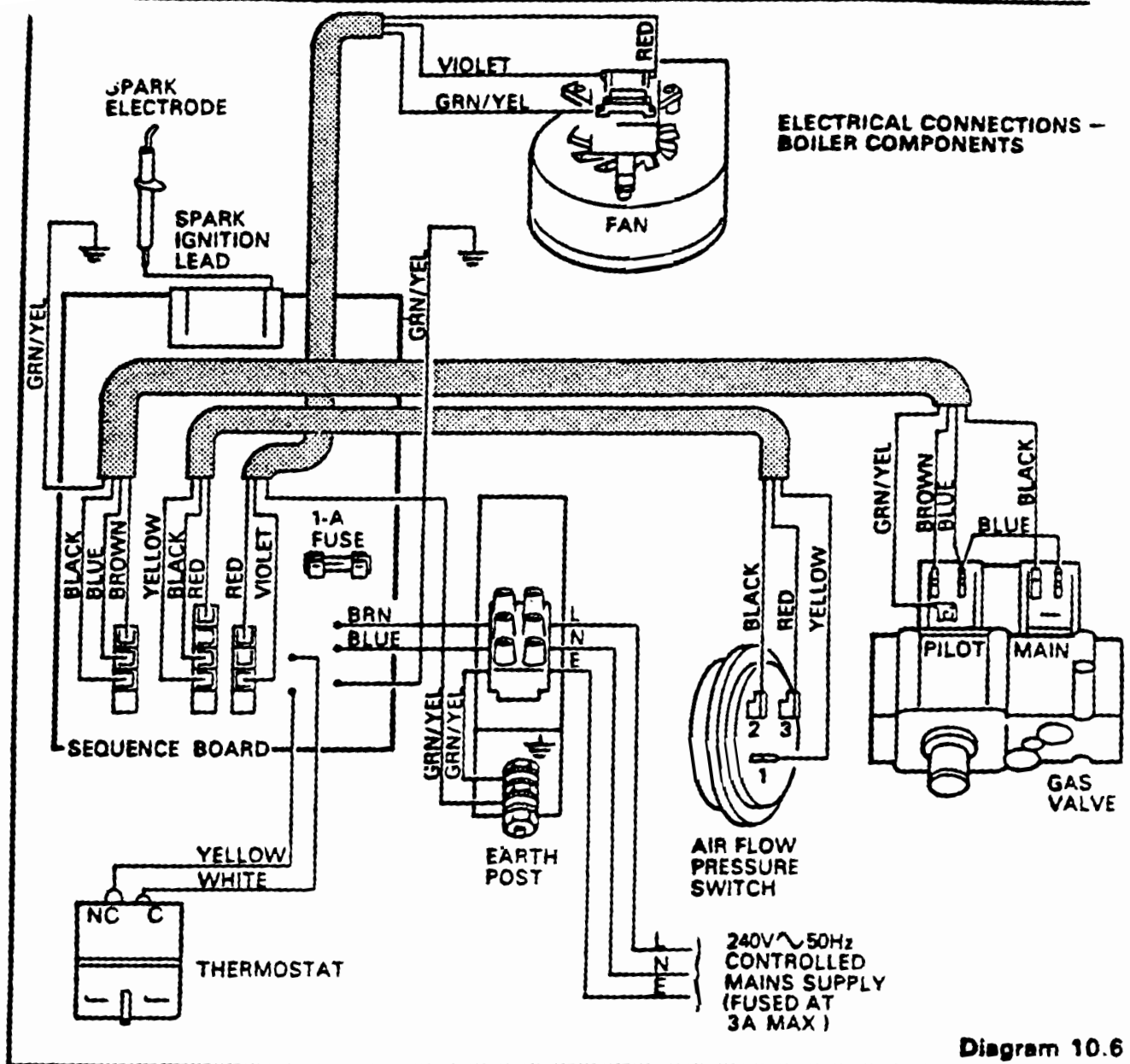


Diagram 10.6

Re-assembly notes:

Ensure the thermostat is re-fitted the correct way up in the electrical drawer, capillary at the bottom.

Ensure that the thermostat phial is fully inserted into the phial pocket and is secured with the location washer behind the retaining split pin, see diagram 10.7.

Ensure that thermostat capillary is located in the clips at the left-hand side of the boiler, and also ensure correct re-fitting of the sealing plates, do not tighten until both are fitted.

To reconnect the electrical leads to the thermostat, see diagram 10.6.

Ensure all multi-pole plugs are correctly located on the sequence board.

When re-assembled, ensure that sufficient length of capillary is available to withdraw the electrical drawer.

10.12 SEQUENCE BOARD

Slide the control cover forwards from the runners on the case, see diagram 4.2.

Release the electrical drawer by removing the two screws at the top, then slide the drawer forwards to the stops.

Remove the cable tie securing the electrical leads and disconnect the three multi-pole plugs at the front, see diagram 10.8.

Disconnect the electrical leads at the thermostat and also the sequence board live and neutral leads at the terminal, (Brown and Blue).

Disconnect the sequence board earth lead at the rear of the electrical drawer, (Green-Yellow).

To remove the sequence board, ease the front of the board off the fixing studs and withdraw forward from the location tags and support posts and then disconnect the spark ignition lead.

Re-assembly notes:

Reconnect spark ignition lead prior to locating sequence board. Ensure that the board is located in the tags at the rear of the drawer and pushed onto the fixing studs at the front.

Reconnect all electrical leads, see diagram 10.6, ensuring that they are resecured with the cable tie previously removed.

10.13 FAN ASSEMBLY

Gain access to the fan by removing the controls cover and case, refer to sections 10.1 and 10.2.

Disconnect the electrical connectors at the fan, see diagram 10.9.

Remove the flue hood and fan assembly, secured by a screw and washer at each side. Take care not to damage the seal between the fan and the flue cover plate.

Remove the fan from the flue hood, secured by four screws.

Re-assembly notes:

When fitting the flue hood and fan assembly, ensure that the rear seal is fitted. Loosely fit the two screws and washers then push the assembly back as the screws are tightened, to make a good seal at the rear. Do not trap the thermostat capillary.

When fitting the electrical connectors to the fan, connect the green and yellow earth to the connector marked $\star$. The polarity of the other connectors is not important.

10.14 AIR FLOW PRESSURE SWITCH

Gain access to the air flow pressure switch by sliding the controls cover forward from the runners on the case, see diagram 4.2.

Release the electrical drawer by removing the two screws at the top, then slide the drawer forwards to the stops. Remove the electrical drawer from its housing by raising the front and withdrawing to clear the drawer stops. Take care not to strain any of the cables.

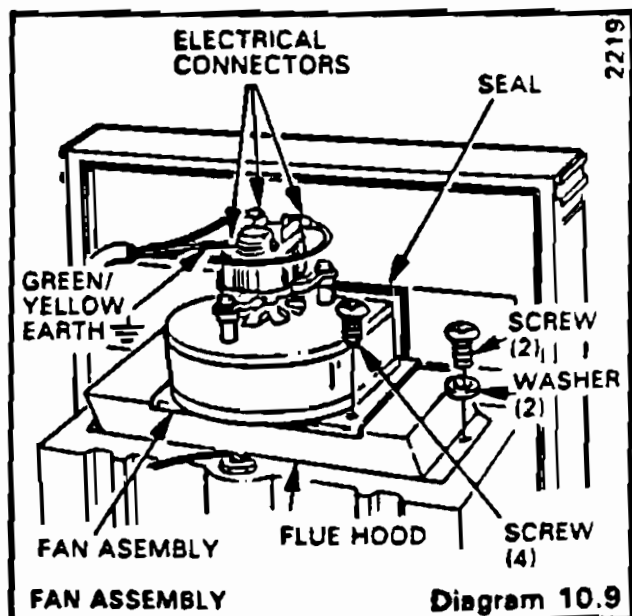
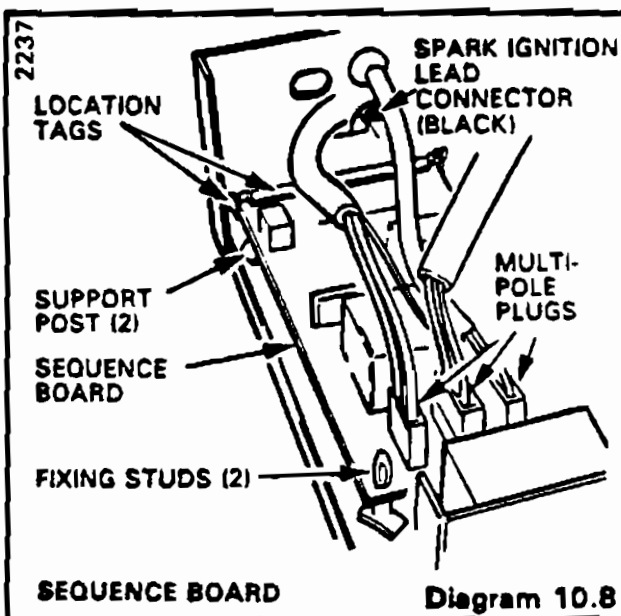
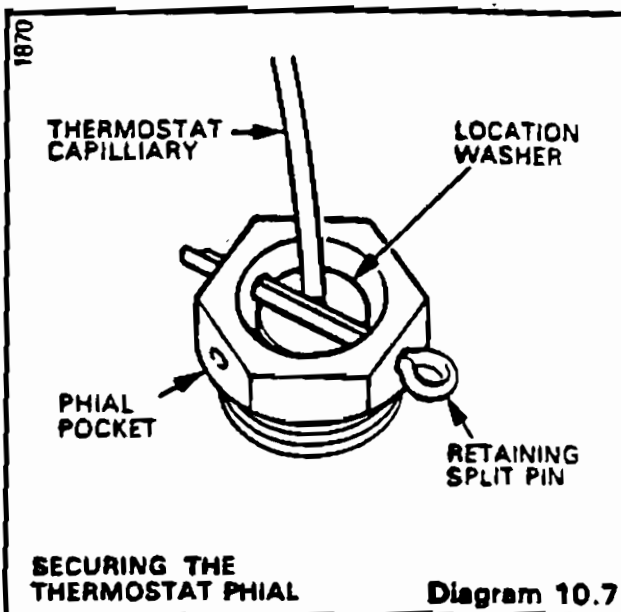
Where the electrical drawer cannot be rested on the floor or worktop, it should be supported by turning anti-clockwise and rested on the runners as shown in diagram 10.1.

Remove the air flow pressure switch cover, secured by two screws, see diagram 10.10.

Disconnect the electrical leads at the air flow pressure switch and remove the two screws which secure it to the electrical drawer housing.

Disconnect the air flow pressure switch from the flexible tubes at the rear. Take care not to lose the air flow restrictor in the connection on the right.

Transfer the air flow restrictor to the replacement air flow pressure switch connection on the right, (nearest to the electrical connectors).



Re-assembly notes:

Make sure that the flexible tubes are not crossed or kinked, when fitting the air flow pressure switch.

To reconnect the electrical leads to the air flow pressure switch, see diagram 10.6.

10.15 AIR FLOW RESTRICTOR

Gain access to the air flow pressure switch by sliding the controls cover forward from the runners on the case, see diagram 4.2.

Disconnect the flexible tube from the air flow pressure switch connection on the right, (nearest to the electrical connectors), see diagram 10.10.

Remove the air flow restrictor from the rear of the air pressure switch.

Re-assembly notes:

Make sure that the flexible tube is not kinked when re-fitting.

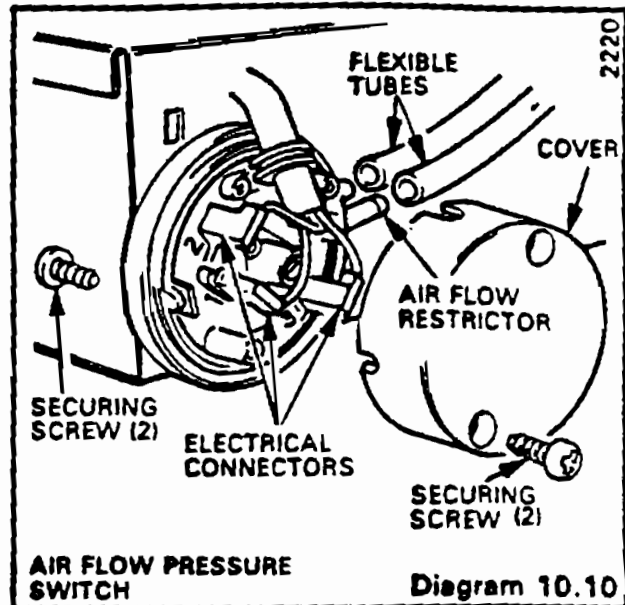


Diagram 10.10

10.16 COMBUSTION CHAMBER INSULATION

Gain access to the insulation by removing the controls cover, case, combustion chamber shield and main burner, refer to sections 10.1, 10.2 and 10.4.

Remove the appropriate section of combustion chamber insulation. Front section is secured by two screws and nuts. Rear section is secured by two screws only.

Re-assembly notes:

Make sure that the main burner locating pin fits into the hole in the pilot bracket and the burner rests on the tabs, see diagram 10.2. Secure burner by re-tightening the locking screw.

Make sure that the combustion chamber shield is fitted correctly, i.e. hooked to the front of the combustion chamber positioned flush and horizontal, see diagram 7.1.

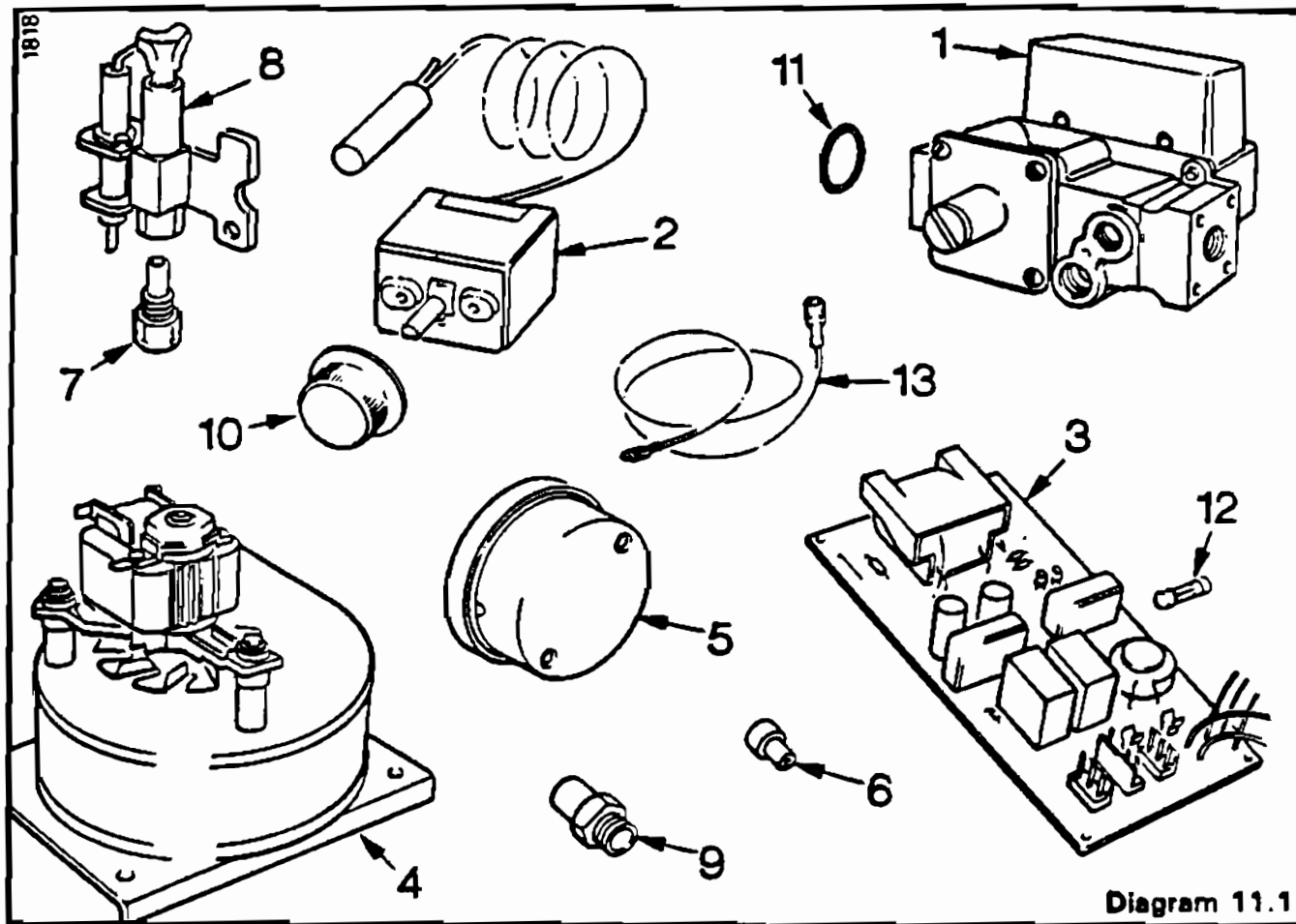


Diagram 11.1

11.1 PART IDENTIFICATION

The key number in diagram 11.1 and the first column of the list will help identify any part.

11.2 ORDERING

When ordering any spare part please quote the part number and description from the list, together with the information from the model.

If ordering from the local region of British Gas plc. quote the G.C. appliance number also on the data badge and the G.C. part number from the list. Remove the controls cover and the case for access to the data badge, refer to sections 10.1 and 10.2.

Key No.	Glow-worm Part No.	Description	G.C. Part No.
1	419069	Gas valve spares assembly (Including Key No. 11)	312 830
2	202519	Thermostat	381 798
3	202006	Sequence board (Including Key No. 12)	334 623
4	419070	Fan spares assembly	-
5	419623	Air pressure switch 20-30F, 30-40F	-
5	419078	Air pressure switch 40-50F, 50-60F	381 799
6	204803	Air restrictor - marked 'B'	-
7	203509	Injector - pilot burner - spares	394 163
8	203420	Pilot assembly (Including Key No. 7)	-
9	FF2029	Injector - main burner 20-30F, 30-40F	355 274
9	203031	Injector - main burner 40-50F, 50-60F	312 756
10	416144	Control knob assembly - thermostat	355 401
11	208040	'O' ring - gas valve	334 592
12	202015	Fuse - sequence board, 1A, 5 x 20mm, Type F, BS4265	334 750
13	WW4606	Ignition lead	

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Because of our constant endeavour for improvement, details may vary slightly from those quoted in these instructions.

Disc 1E