

Installation and Servicing Instructions

To be left with user

SPACE SAVER

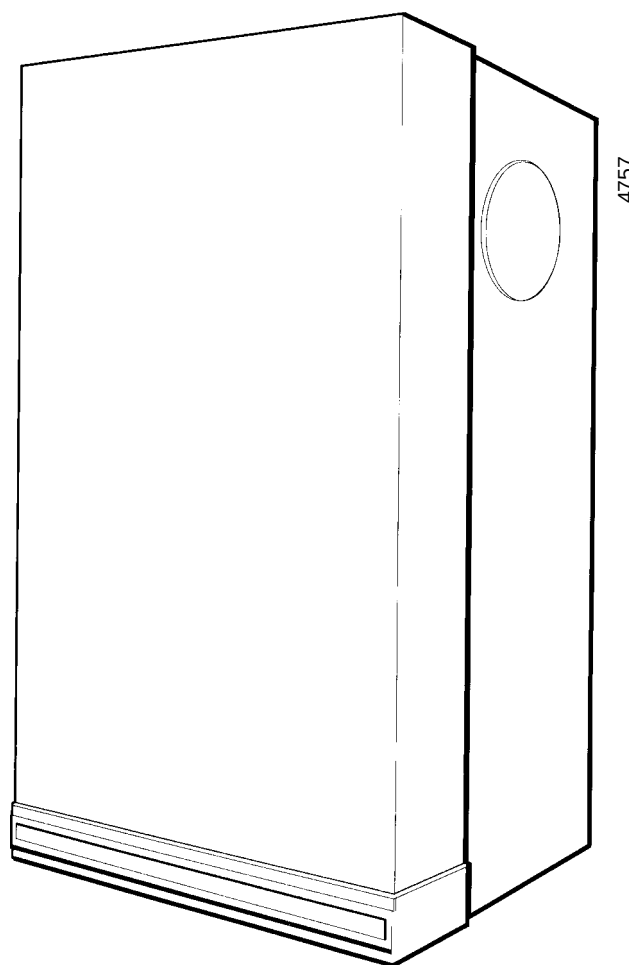
K · F · B

60 GC 41 319 11

70 GC 41 319 12

Fanned Flue
Boiler

Fully Pumped system.
Open Vented or Sealed.



This is a Cat I_{2H} Appliance



HEATCALL

Customer Services:

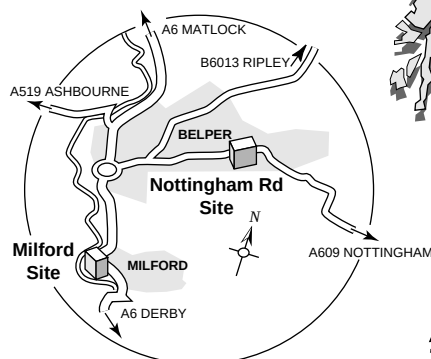
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Hepworth Heating Ltd.,
Nottingham Road, Belper, Derbyshire. DE56 1JT
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**Belper and Milford
Factory Sites**



2890

Control of Substances Hazardous to Health

Information for the Installer and Service Engineer

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

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

Insulation and Seals

Ceramic fibre and glass fibre used in insulation panels, rope and gaskets.

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

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

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

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

Thermostat

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

If swallowed drink plenty of water and seek medical attention.

Cut-Off Devices

These contain activated charcoal and a very small amount of chlorodifluormethane in the sealed phial and capillary.

If broken, under normal circumstances the fluid does not cause a problem.

If there is irritation to the eyes or skin then seek medical attention.

The instructions consist of two parts, Installation and Servicing Instructions and Instructions for Use, which includes the Guarantee Registration Card. The instructions are an integral part of the appliance and must, to comply with the current issue of the Gas Safety (Installations and Use) Regulations, be handed to the user on completion of the installation.

Important Notices

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

Wherever possible, all materials, appliances and components to be used shall comply with the requirements of applicable British Standards.

Where no British Standard exists, materials and equipment should be fit for their purpose and of suitable quality and workmanship.

This boiler must have fully pumped circuits, but is suitable for use with open vented or sealed water systems.

This boiler is not suitable for outdoor locations.

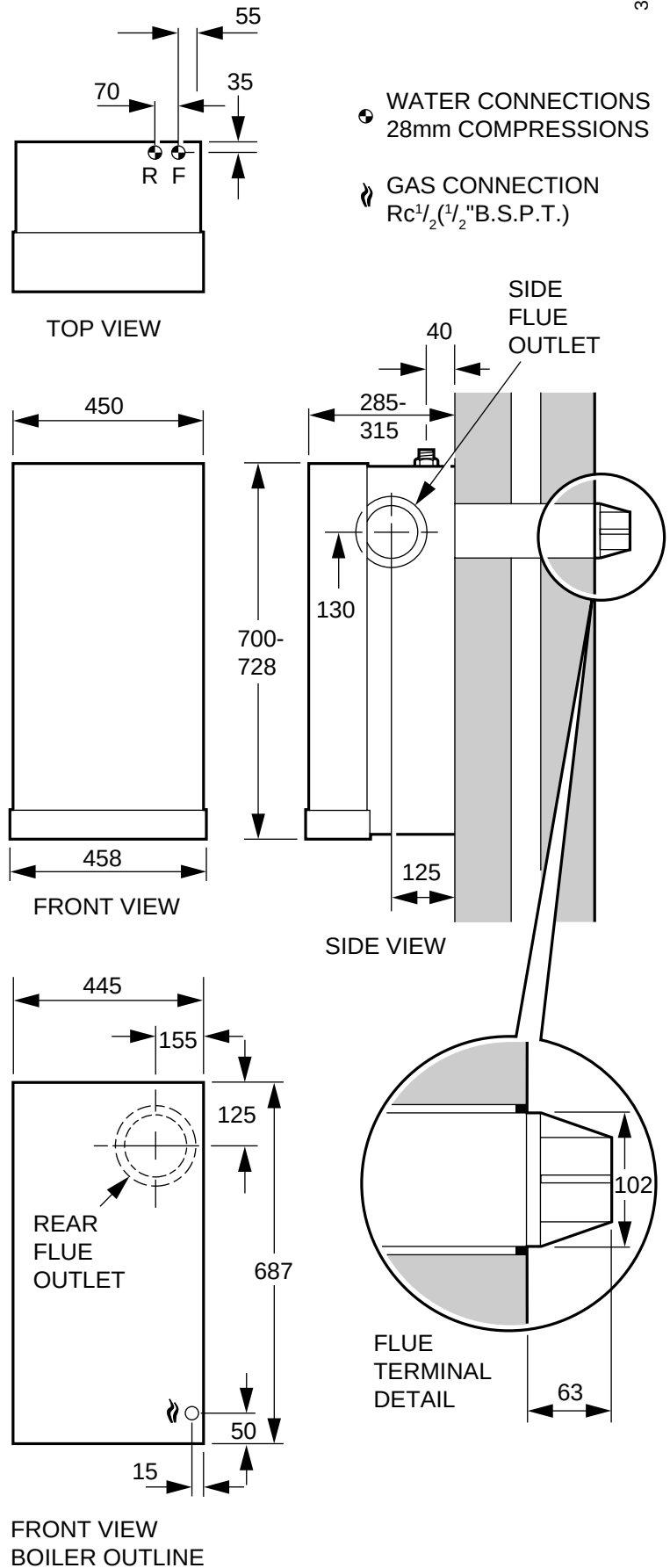
Sheet Metal Parts

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

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:

Manufacturer's instructions supplied.



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

Detailed recommendations are contained in the current issue of the following British Standards and Codes of Practice, BS6798, BS5440 Part 1 and 2, BS6700, BS5449, BS6891, BS4814, BS7074 Part 1 and 2, BS5446, BS7478, BS7593, BS7671.

Manufacturer's notes must not be taken as overriding statutory requirements.

B.S.I. Certification

The boiler is certificated to the current issue of BS6332 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 Hepworth Heating Ltd.

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

CE Mark

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

The CE Mark on this appliance shows compliance with Directive 73/23/EEC on the harmonization of the Laws of the Member States relating to electrical equipment designed for use within certain voltage limits.

Range Rating

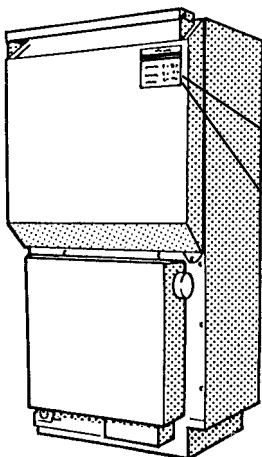
The boiler is range rated and may be adjusted to suit individual system requirements, refer to the relevant column of the table.

Range Rating			Space Saver K.F.B 60	Space Saver K.F.B 70
Nominal	min	Btu/h	64935	78947
		kW	19.03	23.14
Heat	med	Btu/h	70064	84416
		kW	20.54	24.74
Input (Gross)	max	Btu/h	75000	89709
		kW	21.98	26.29
Nominal	min	Btu/h	50000	60000
		kW	14.66	17.59
Heat	med	Btu/h	55000	65000
		kW	16.12	19.05
Output	max	Btu/h	60000	70000
		kW	17.59	20.52
Burner	min	in wg	4.2	4.6
		mbar	10.6	11.4
Setting	med	in wg	4.9	5.2
		mbar	12.2	13.0
Pressure	max	in wg	5.6	5.9
		mbar	14.0	14.6

Data Table

Model	Space Saver K.F.B 60	Space Saver K.F.B 70
Lifting Weight	32.4kg (71.4lb)	32.4kg (71.4lb)
Total Weight (dry)*	46.1kg (101.6lb)	46.1kg (101.6lb)
Water Content	2.13 litres (0.47 gal)	2.13 litres (0.47 gal)
Gas Connection	Rc ¹ / ₂ (¹ / ₂ " BSPT)	Rc ¹ / ₂ (¹ / ₂ " BSPT)
Water Connection	28mm Compression	28mm Compression
Electrical supply	240V~50Hz fused 3A max	
Internal Fuse Rating	Fuse to BS4265 sheet 2. Type F1A	
Power rating	55W	

Data Label Position



3038

* **Note:** The weight of the water is negligible

Space Saver K.F.B 60
G.C. Number 41 319 11

Space Saver K.F.B 70
G.C. Number 41 319 12

Gas Supply

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

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

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

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 BS7671 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 3A maximum. The method of connection should be, preferably, an unswitched shuttered socket outlet and 3 pin plug, both to the current issue of BS1363.

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 6, Electrical Connection and System Controls.

Wiring to the boiler must be to the current issue of BS6500 Table 16, not less than 0.75mm² (24/0.20mm).

Draining Tap

The boiler is provided with a draining tap at the lower right hand side for draining the heat exchanger in the event of the boiler being out of use during freezing conditions.

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

Draining taps shall be to the current issue of BS2879.

Safety Valve

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

Notes: Open Vented and Sealed Water Systems

Pump

See chart for pressure drop of the boiler.

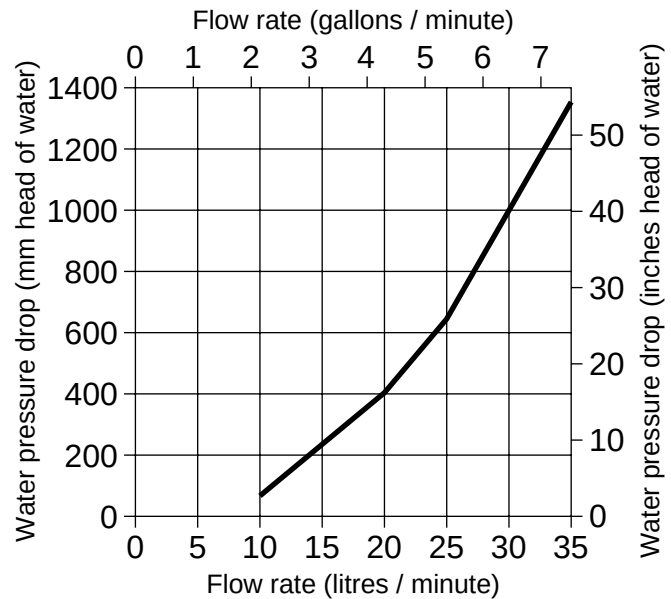
The pump should be fitted in the flow pipe from the boiler and have isolating valves each side, integral if possible.

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

High resistance microbore systems may require a higher duty pump.

WATER FLOW RATE
At 11°C (20°F) differential

UNIT	HEAT SETTING			
	Min.		Max.	
	60	70	60	70
litre / min.	19.1	22.9	22.9	26.7
gal / min.	4.2	5.0	5.0	5.9



PRESSURE DROP OF BOILER

Bypass

A BYPASS MUST BE FITTED, see also Section 7.

The flow through the boiler must not be allowed to fall below.....

Space Saver K.F.B 60 - 12.6 litres/min (2.8 galls/min)

Space Saver K.F.B 70 - 14.76 litres/min (3.2 galls/min)

Where the water system can allow the boiler and pump to operate on bypass only, the bypass must be at least 2.0metres away from the boiler.

Inhibitor

If an inhibitor is to be used refer to the current issue of BS5449 and BS7593, contact a manufacturer for their recommendations as to the best product to use.

When using in an existing system take special care to drain the entire system, including the radiators, then thoroughly cleaning out before fitting the boiler whether or not adding an inhibitor

Open (Vented) Water System

For an open (vented) system the boiler must be supplied from an unrestricted water supply taken from a feed and expansion cistern situated at a maximum height of 27.5 metres (90ft) above the boiler.

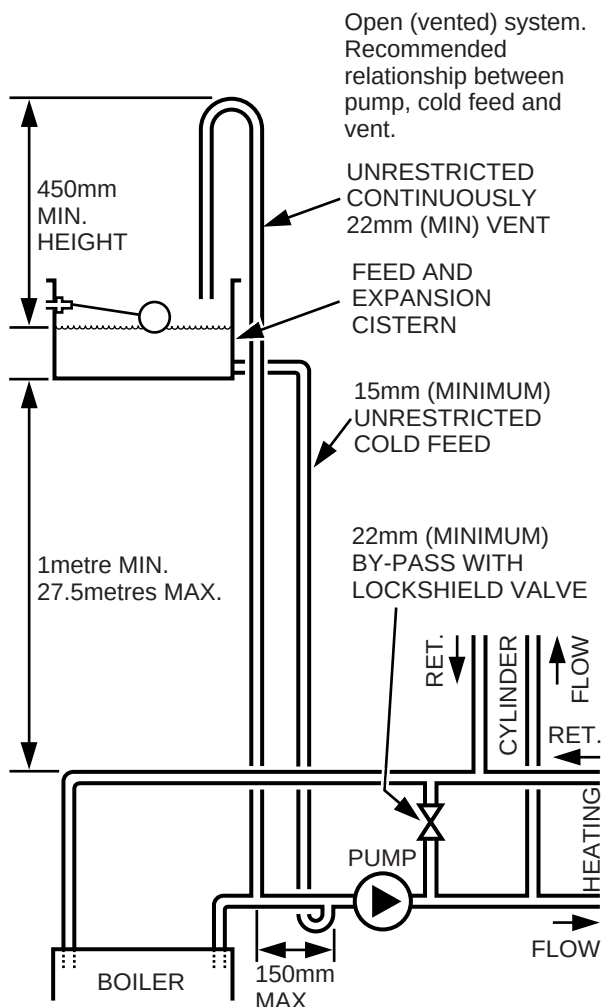
The cold feed supply must be 15mm minimum size.

The vent must rise continuously and be unrestricted.

It is important that the relative positions of the pump, cold feed and open vent are as shown.

Domestic Hot Water Cylinder

The hot water cylinder must be of the double feed fully indirect type. Not the self priming type.



Sealed Water Systems

The installation must comply with the appropriate requirements of the current issue of BS5449, BS6798, BS4814 and BS7074 Part 1 and 2.

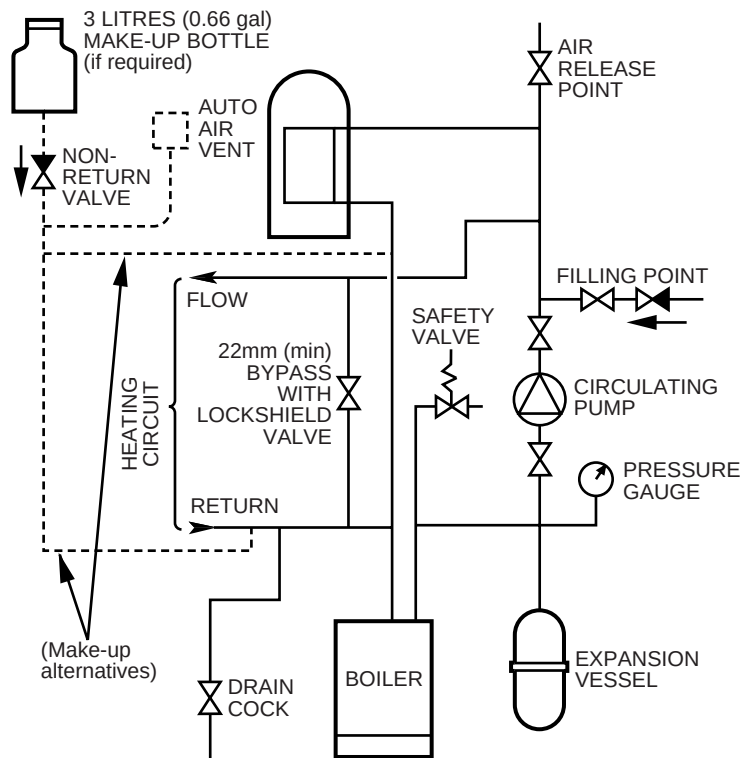
See the diagrammatic layout.

Safety Valve

A safety valve must be fitted to a sealed system.

It shall be preset, non-adjustable with a lift pressure of 3bar, incorporating seating of a resilient material, a test device and a connection for drain.

The drain from the safety valve must be routed clear of any electrical fittings and positioned so that any discharge can be seen.



Expansion Vessel

A diaphragm type expansion vessel, conforming to the current issue of BS4814 (see also BS7074 Part 1 and 2) must be connected at a point close to the inlet side of the circulating pump, see the diagrammatic layout, unless laid down differently by the manufacturer.

The expansion vessel volume depends on the total water system volume and the initial system design pressure. For any system an accurate calculation of vessel size is given in the current issue of BS7074 Part 1.

Example: For an initial system design pressure of 0.7bar, the minimum total vessel volume required is $0.063 \times \text{Total System volume}$.

Note. A higher initial design pressure requires a larger volume expansion vessel.

Guidance on vessel sizing is also given in the current issue of BS5449 and BS7074 Part 1.

The charge pressure must not be less than the static head of the system, that is, the height of the highest point of the system above the expansion vessel.

The water capacity of the boiler is given in the Data Table.

Pressure Gauge

A pressure gauge with a set pointer and covering at least 0 to 4bar (0 to 60lb in²) shall be fitted permanently to the system in a position where it can be seen when filling the system.

Domestic Hot Water Cylinder

SINGLE FEED INDIRECT CYLINDERS ARE NOT SUITABLE

The hot water cylinder must be of the indirect coil type. It must be suitable for working at a gauge pressure of 0.35bar above the safety valve setting.

UNVENTED

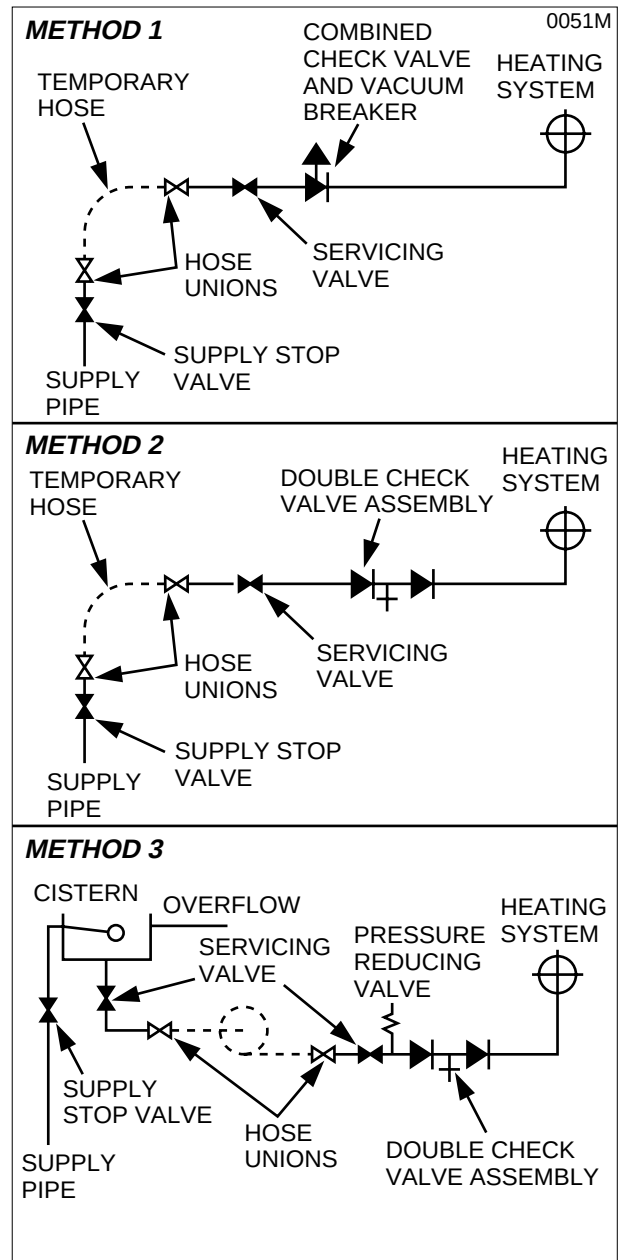
Where a storage system will not have a vent to atmosphere the installation must comply with the Building Regulations and the local Water Company bylaws, see also the current issue of BS5546 and BS6700.

If fitting into an existing system the local authority must be informed.

Water Make Up

Provision should be made for replacing water loss from the system using a filling loop or a make up bottle mounted in a position higher than the top point of the system, connected through a non-return valve to the return side of either the heating circuit or the hot water cylinder.

Alternatively, provision for make up can be made by pre-pressurisation of the circuit.



Filling Sealed Water Systems

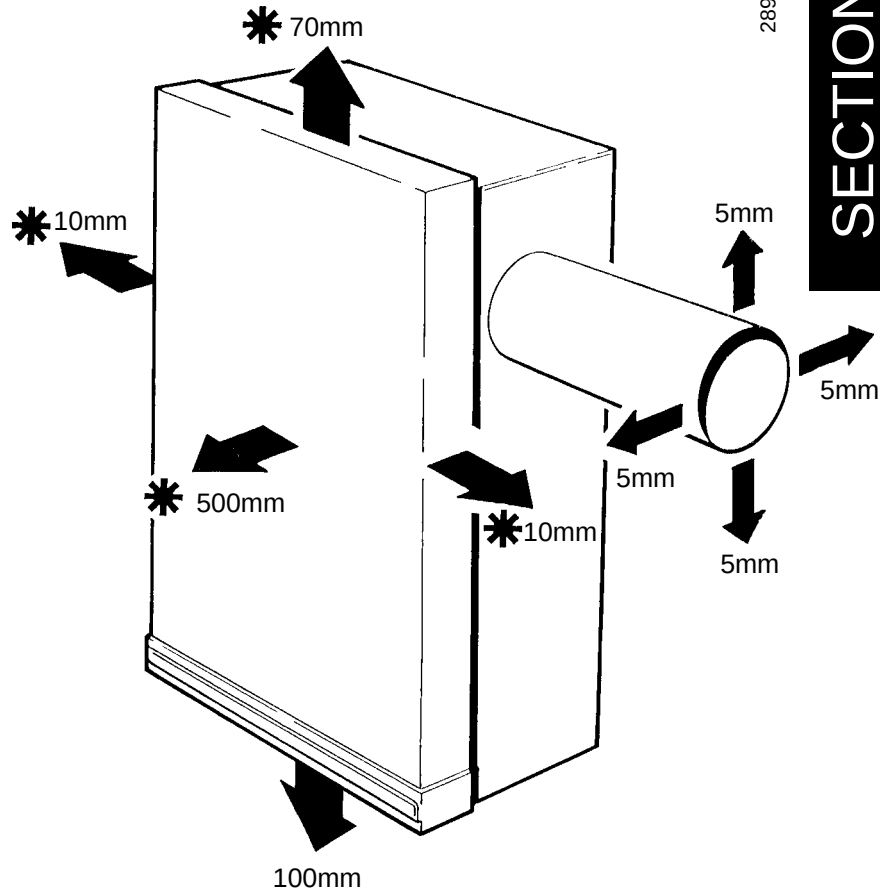
Provision for filling the system at low level must be made. Three methods are shown in the diagram. There must be no permanent connection to the mains water supply, even through a non-return valve.

The boiler may be installed in any room although particular attention is drawn to the requirements of the current issue of BS7671 with respect to the installation of a boiler in a room containing a bath or shower. Any electrical switch or boiler control using mains electricity should be 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 complete weight, see Data Table.

Boiler Clearances

The boiler must be positioned so that at least the minimum operational and servicing spaces are as shown.



Timber Frame Buildings

Cupboard or 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 the Table.

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.

An existing cupboard or compartment modified for the purpose may be used. Refer to the current issue of BS6798 for guidance.

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

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

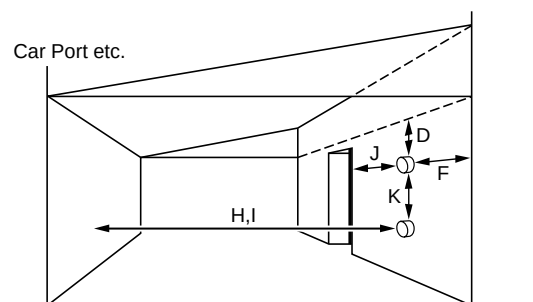
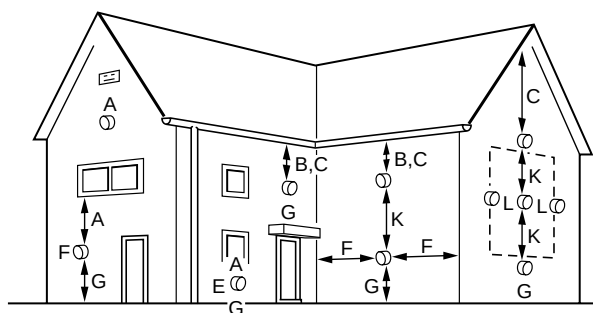
SPACE SAVER K.F.B 60

VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA	LOW LEVEL VENT AREA
FROM ROOM OR SPACE	198cm ² (30in ²)	198cm ² (30in ²)
FROM OUTSIDE	99cm ² (15in ²)	99cm ² (15in ²)

SPACE SAVER K.F.B 70

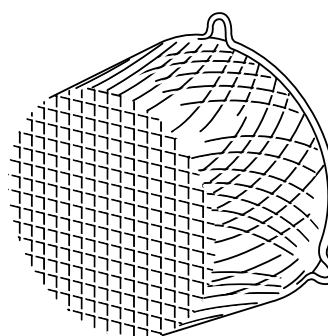
VENTILATION REQUIREMENTS	HIGH LEVEL VENT AREA	LOW LEVEL VENT AREA
FROM ROOM OR SPACE	237cm ² (36in ²)	237cm ² (36in ²)
FROM OUTSIDE	119cm ² (18in ²)	119cm ² (18in ²)

0103M



MINIMUM SITING DIMENSIONS FOR FLUE TERMINALS		MIN. SPACING (mm)
A	DIRECTLY BELOW AN OPENABLE WINDOW, AIR VENT, OR ANY OTHER VENTILATION OPENING	300
B	BELOW GUTTER, DRAIN/SOIL PIPE	75
C	BELOW EAVES	200
D	BELOW A BALCONY OR CAR PORT	200
E	FROM VERTICAL DRAIN PIPES AND SOIL PIPES	75
F	FROM INTERNAL OR EXTERNAL CORNERS	300
G	ABOVE ADJACENT GROUND OR BALCONY LEVEL	300
H	FROM A SURFACE FACING THE TERMINAL	600
I	FACING TERMINALS	1200
J	FROM OPENING (DOOR/WINDOW) IN CARPORT INTO DWELLING	1200
K	VERTICAL FROM A TERMINAL	1500
L	HORIZONTALLY FROM A TERMINAL	300

4783



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

The boiler must be installed so that the terminal is exposed to the external air.

It is important that the position of the terminal allows the free passage of air across it at all times.

Terminal Position

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

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 or eaves.

Where the terminal is fitted within 450mm (18in) below eaves or painted guttering an aluminium shield 750mm (2ft6in) long should be fitted to the underside and immediately beneath the guttering or eaves.

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.

A suitable terminal guard can be bought from,

Tower Flue Components Ltd.,
Morley Road,
Tonbridge,
Kent.
TN9 1RA
their reference K3.

Flue Position and Length

Note. If a longer flue duct is required DO NOT extend the ducting. A special long flue system and terminal can be supplied and MUST be used.

DETERMINE FLUE APPLICATION, LENGTH, AND TERMINAL POSITION BEFORE PROCEEDING.

Refer to the relevant diagrams in Section 4.

For wall thickness of less than 300mm the boiler can be fully installed from inside.

For a wall thickness of over 300mm the cut hole will need to be made good from the outside.

The rear and side flue assemblies are designed for internal installation, but should it be necessary due to insufficient clearances or boiler location they can be installed from the outside.

REAR FLUE APPLICATION
FOLLOW
FLUE INSTALLATION

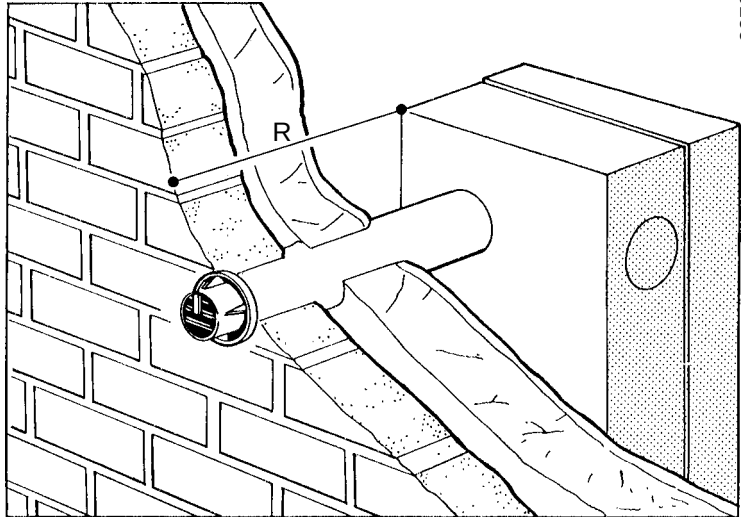
step
1 to **step**
5

&

step
11 to **step**
16

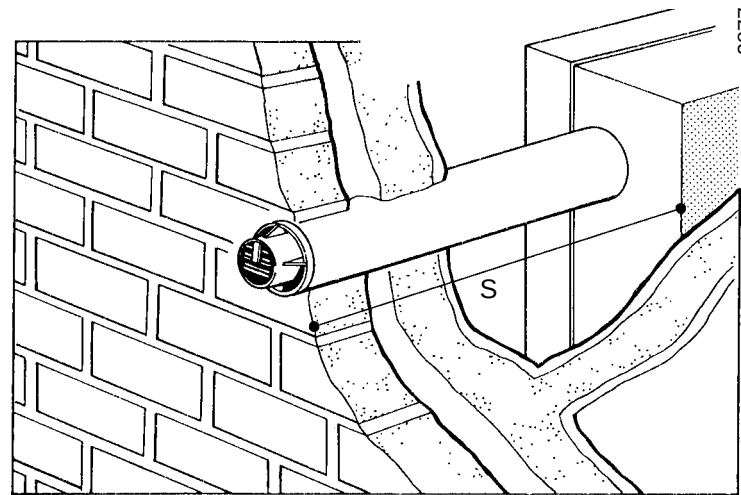
SIDE FLUE APPLICATION
FOLLOW
FLUE INSTALLATION

step
6 to **step**
16



2876

Rear Flue Lengths	
	Distance 'R'
STD	75mm to 692mm
1m	692mm to 1022mm
2m	1022mm to 2022mm



2877

Side Flue Lengths	
	Distance 'S'
STD	75mm to 692mm
1m	692mm to 1022mm
2m	1022mm to 2022mm

Rear Flue Application

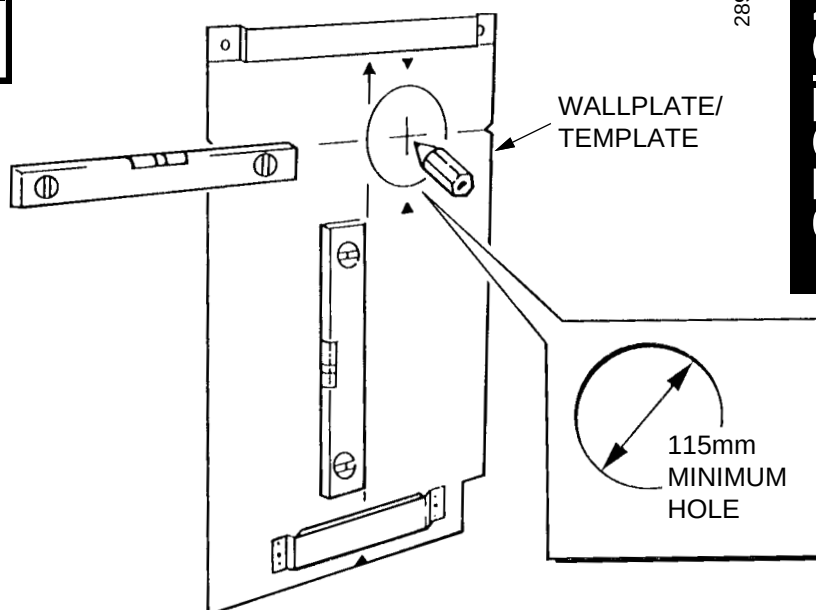
step

1

Having selected the boiler location with due regard to the terminal position;

Using an adhesive tape temporarily position the wallplate/template on the wall.

Mark out the centre and cut the hole for the flue using, preferably, a 115mm minimum core drill.



If the wall thickness "Q" is less than 300mm cut the wall sleeve to the required length.

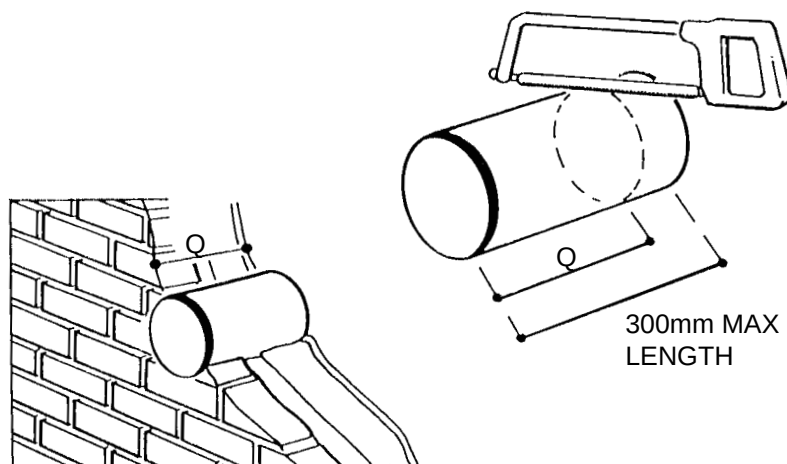
step

2

Fit the wall sleeve.

Make good around the wall sleeve at both internal and external wall faces (through the wall sleeve if internal access only is available).

If the wall thickness "Q" is greater than 300mm the wall sleeve must be fitted flush with the INSIDE wall face. If the inner end of the sleeve sticks out into a cavity then, if desired, the wall sleeve can be trimmed back to the depth of the inner skin of the brickwork. Make good at the internal wall face, leave the external wall face until later.

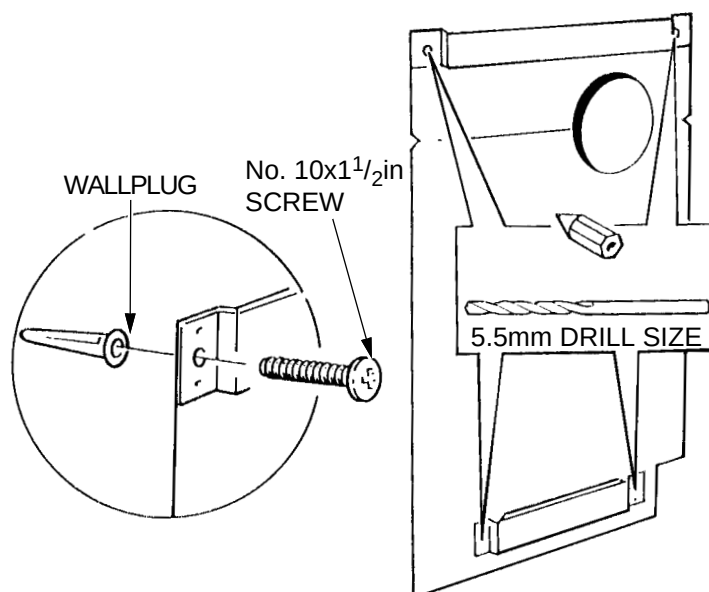


Reposition the wallplate/template ensuring alignment with the flue hole. Mark the top and bottom boiler mounting hole positions.

step

3

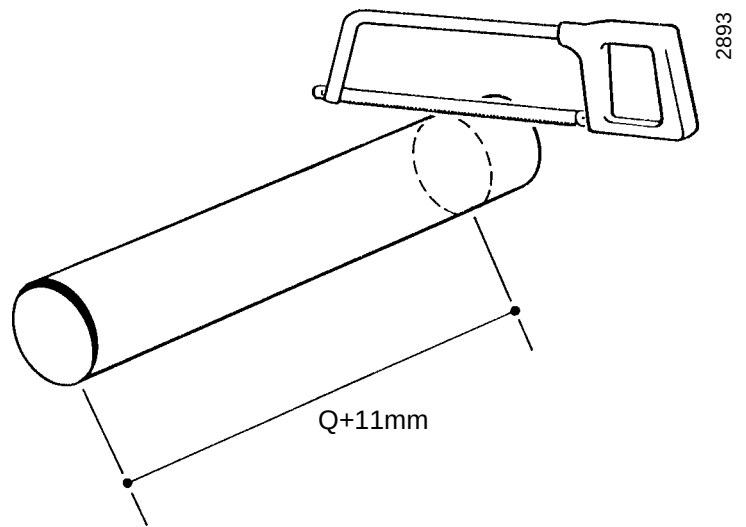
Remove wallplate/template, drill holes and then secure wallplate/template to the wall with the fittings provided in the loose items pack.



Flue Duct (Standard or Long)

step
4

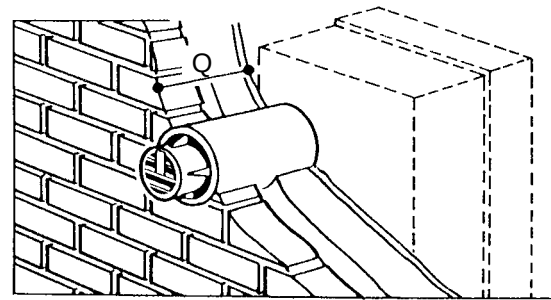
Mark the duct to the length “Q”+11mm then cut square and remove any burrs.



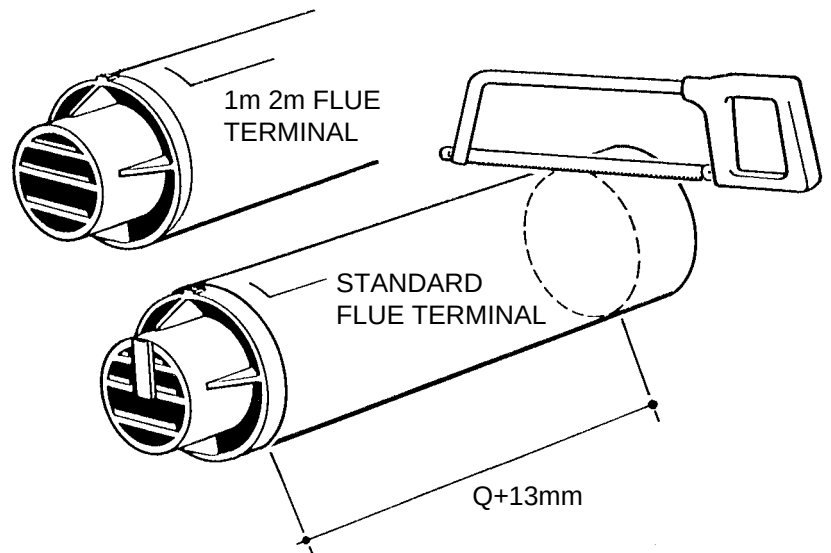
Air Duct/Terminal (Standard or Long)

step
5

Mark the duct to the length “Q”+13mm then cut square and remove any burrs.

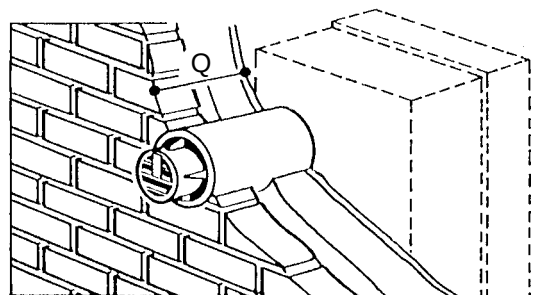


STANDARD, 1 METRE AND 2 METRE FLUE TERMINAL KFB 70 ONLY.
1 METRE AND 2 METRE FLUE TERMINAL KFB 60 ONLY



Continue at

step
11



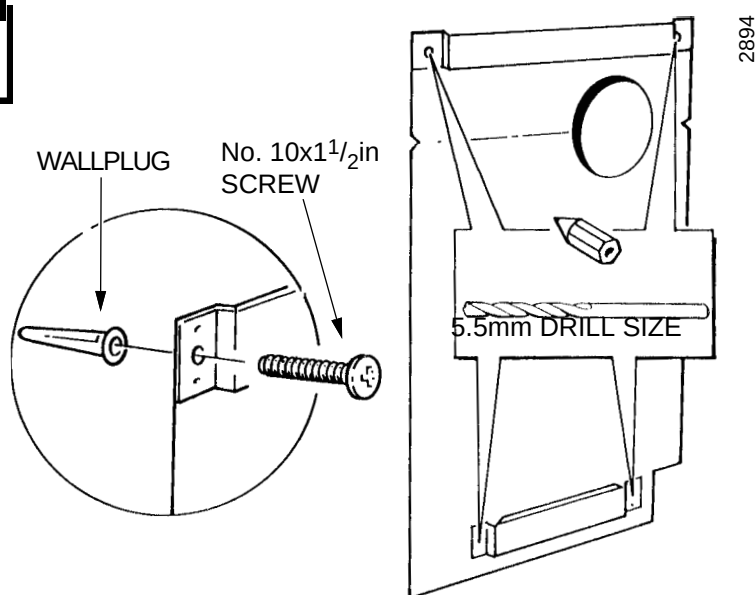
Side Flue Application step

6

Having selected the boiler location, with due regard to boiler clearances and the terminal position.

Position the wallplate/template on the wall. Mark the top and bottom boiler mounting hole positions.

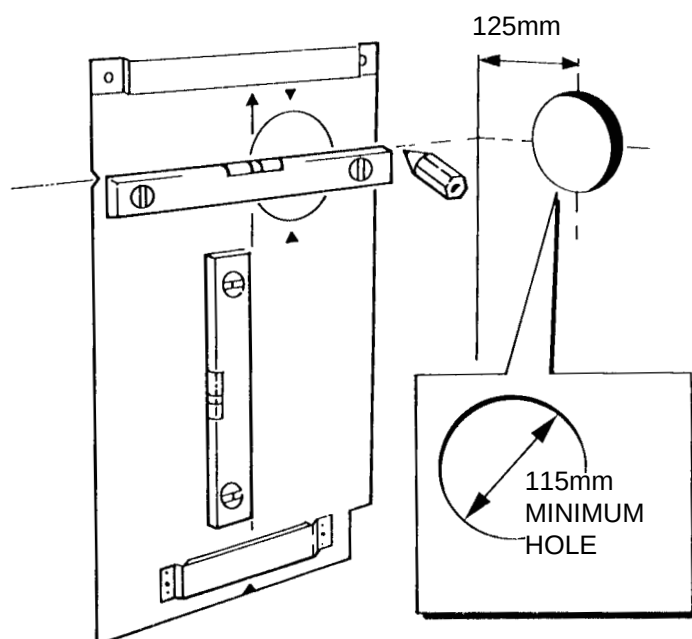
Remove the wallplate/template, drill the holes and then secure the wallplate/template with the fittings provided.



Mark and extend the flue horizontal centre line to the corner of the adjacent surface.

step
7

Mark out and cut the hole for the flue using, preferably, a 115mm minimum core drill.



If the wall thickness “Q” is less than 300mm cut the wall sleeve to the required length.

Fit the wall sleeve.

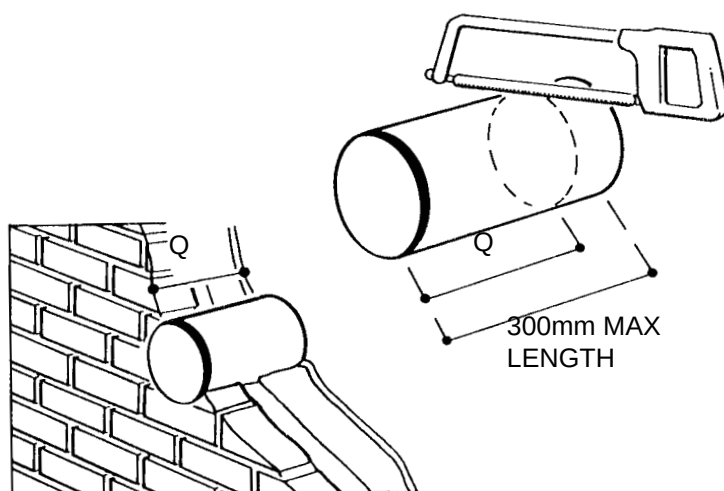
Make good around the wall sleeve at both the internal and external wall faces (through the wall sleeve if internal access only is available).

step
8

If the wall thickness “Q” is greater than 300mm the wall sleeve must be fitted flush with the internal wall face.

Make good at the internal wall face, leave the external wall face until later.

If the inner end of the sleeve sticks out into the cavity then, if desired, the wall sleeve can be trimmed back to the depth of the inner skin of the brickwork.

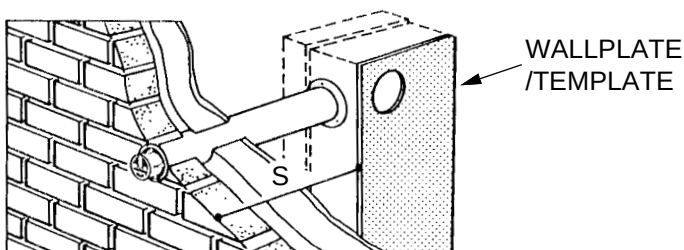
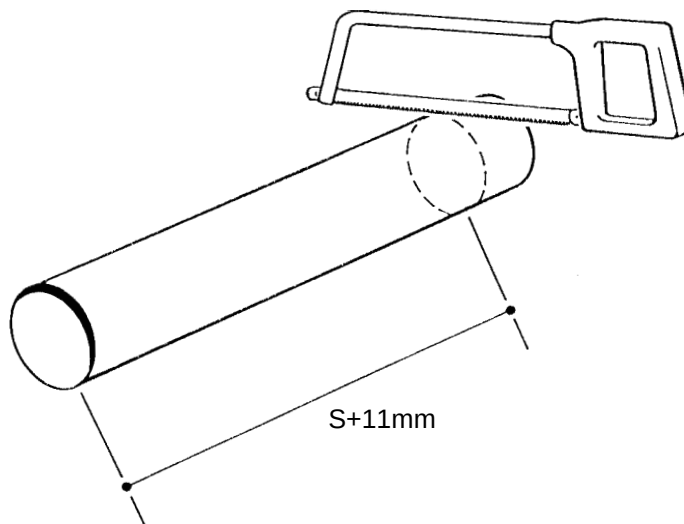


Flue Duct (Standard or Long)

step

9

Mark the duct to length "S"+11mm then cut square and remove any burrs.



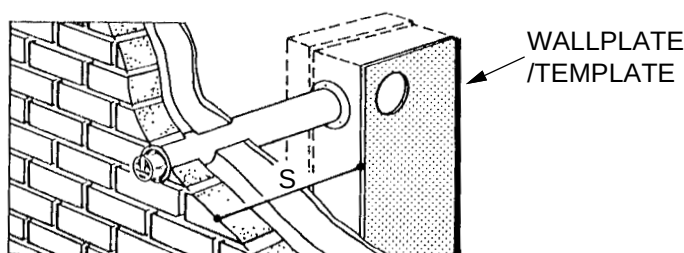
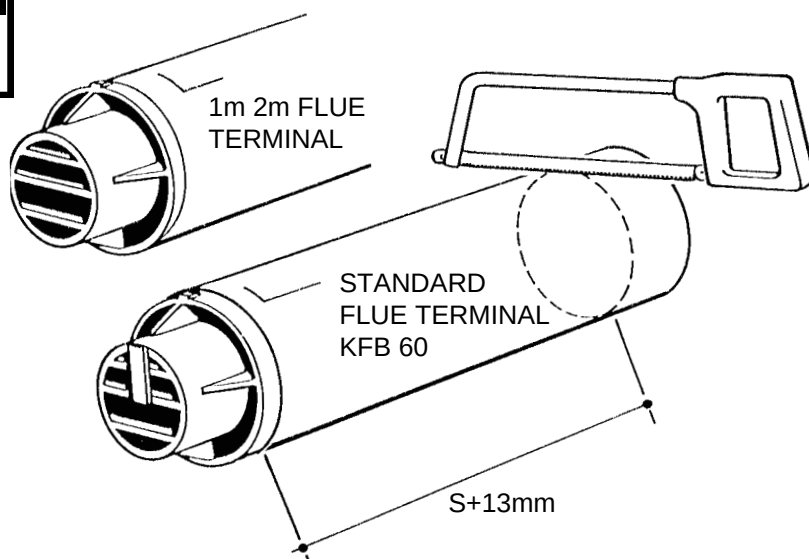
STANDARD 1METRE AND 2 METRE FLUE
TERMINAL KFB 70 ONLY.
1 METRE AND 2 METRE FLUE TERMINAL
KFB 60 ONLY

Terminal/Air Duct (Standard or Long)

step

10

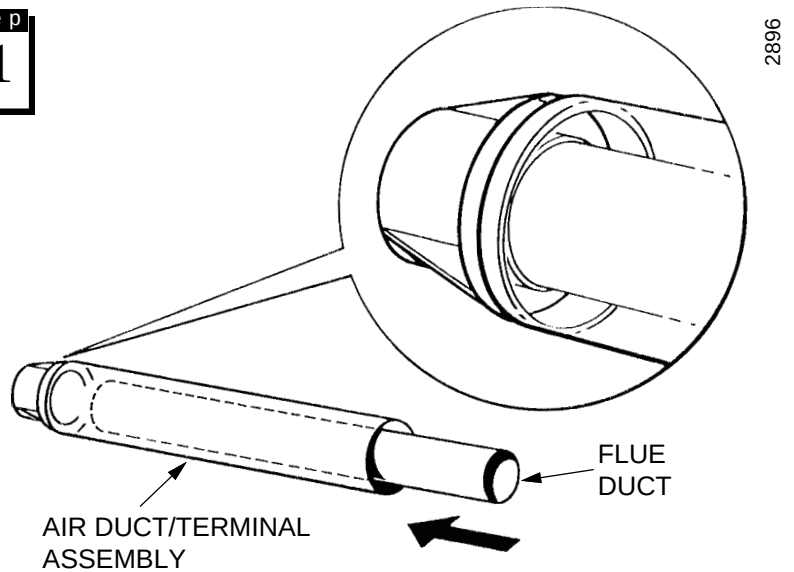
Mark the duct to the length "S"+13mm then cut square and remove any burrs.



Air Duct/Terminal and Flue Duct Assembly

step
11

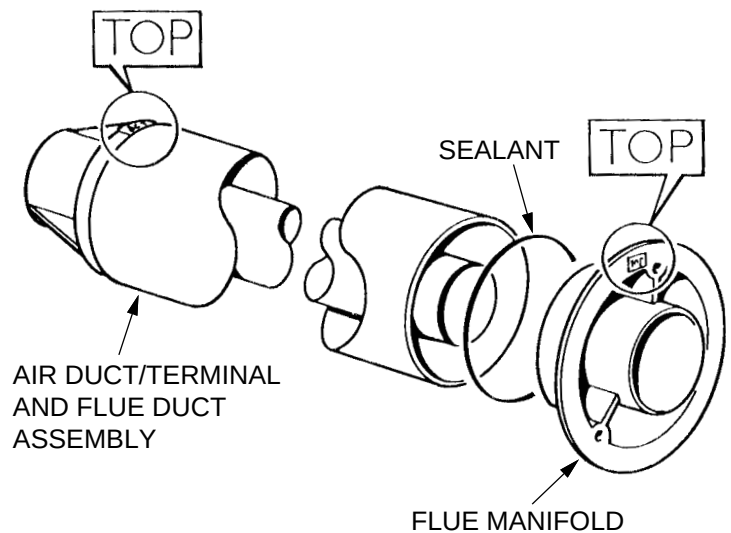
Locate the flue duct into the air duct/terminal.



Place the sealant from the loose items pack onto the flue manifold.

step
12

Fully locate the flue manifold into the air duct/terminal and flue duct assembly as shown, ensuring correct alignment of the “TOP”s.

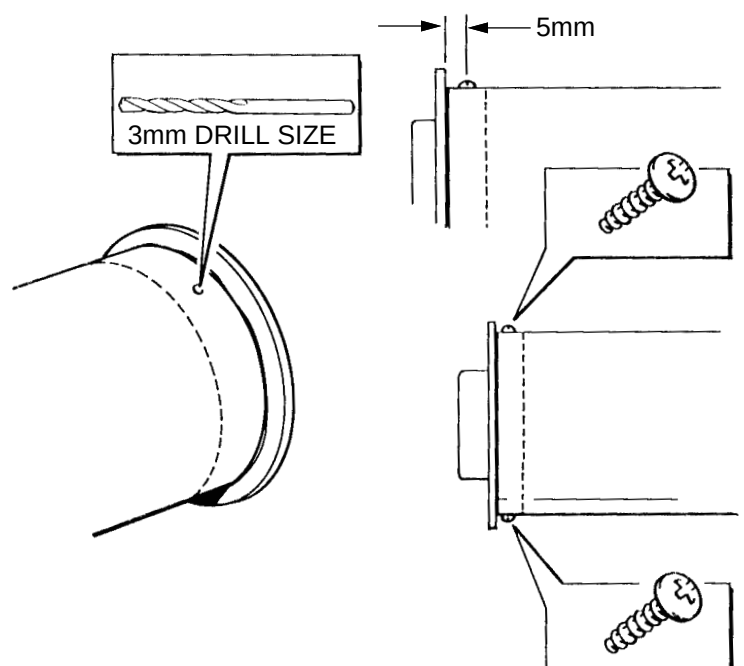


Drill two 3mm diameter holes through the air duct/terminal and flue manifold.

step
13

Secure the air duct/terminal to the flue manifold with the two self tapping screws supplied in the loose items pack.

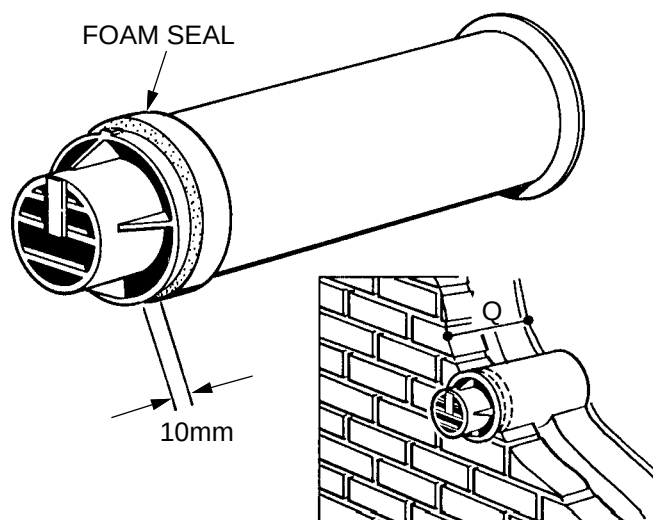
It should now not be possible to remove the manifold.



Wall Thickness up to 300mm

step
14

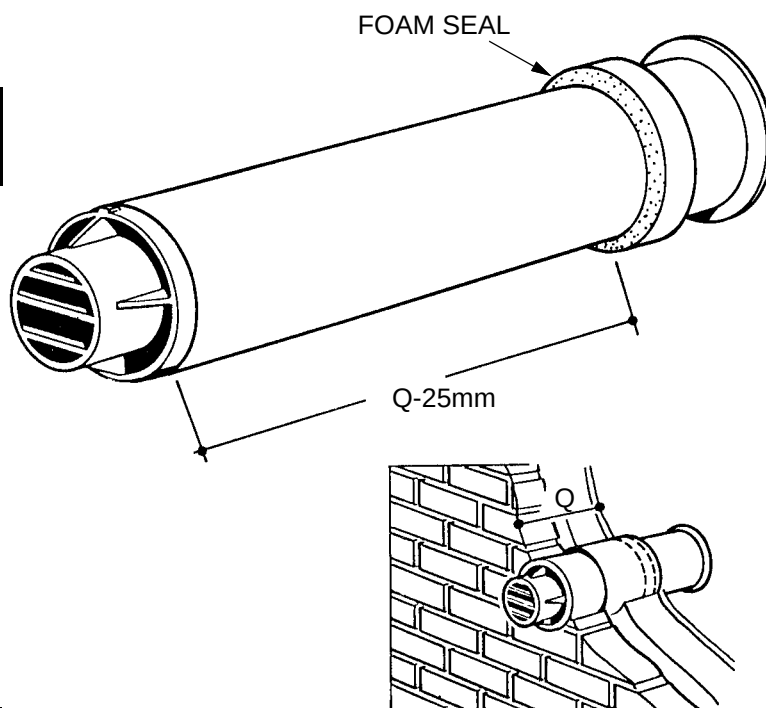
Fit the self adhesive foam seal provided in the loose items pack around the air duct/terminal at the position shown.



Wall Thickness over 300mm

step
15

Fix the self adhesive foam seal around the air duct/terminal such that, when installed, the seal will be within the wall sleeve.

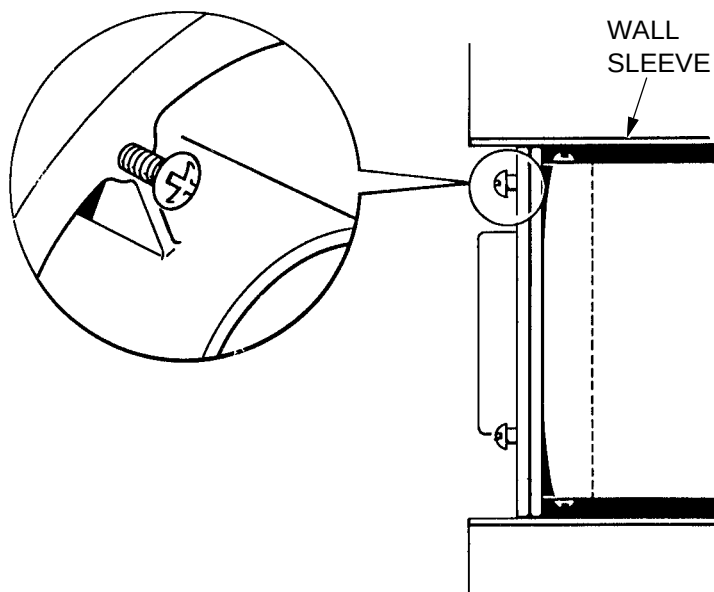


If the boiler is not to be fitted for sometime cover the hole in the wall.

step
16

On all installations push the flue assembly into and through the wall sleeve and hole such that it is within the wall sleeve and does not stick out into the room. Do not push the flue assembly too far into the hole as it has to be pulled back into the boiler and secured to the keyhole fixings.

Note: That the foam seal is a tight fit in the wall sleeve, so either the wall sleeve will need to be rigidly fixed in the wall, that is, the cement has fully set or it can be held from the other side whilst inserting the flue assembly.



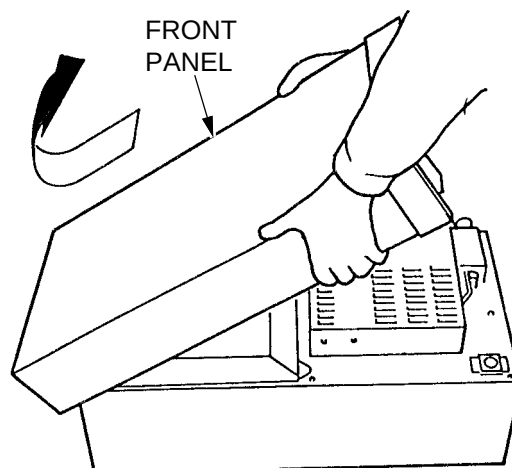
Boiler Preparation

step

1

Remove the front panel and place it on one side until required.

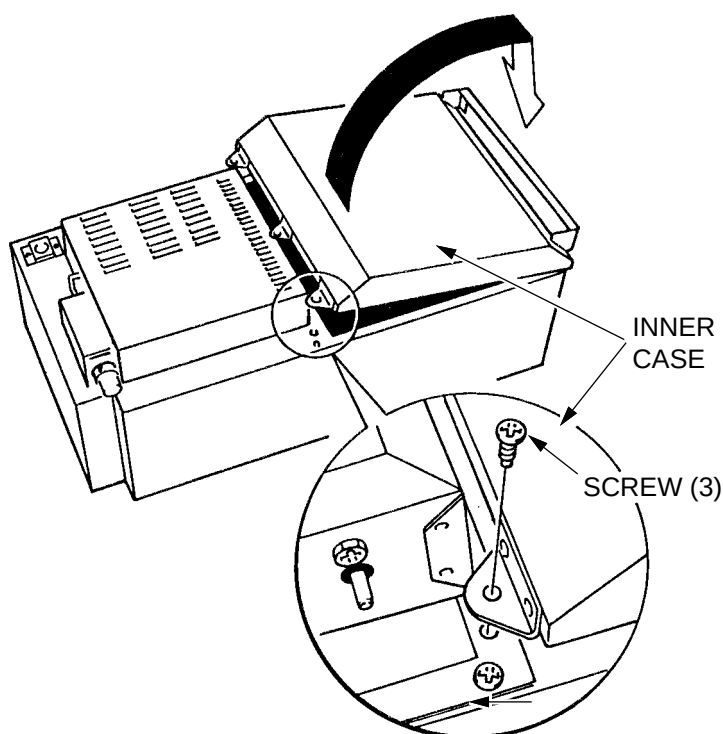
Remove and discard internal packing piece.



Remove the inner case by releasing the screws at the bottom and unhooking at the top, place on one side until required.

step

2



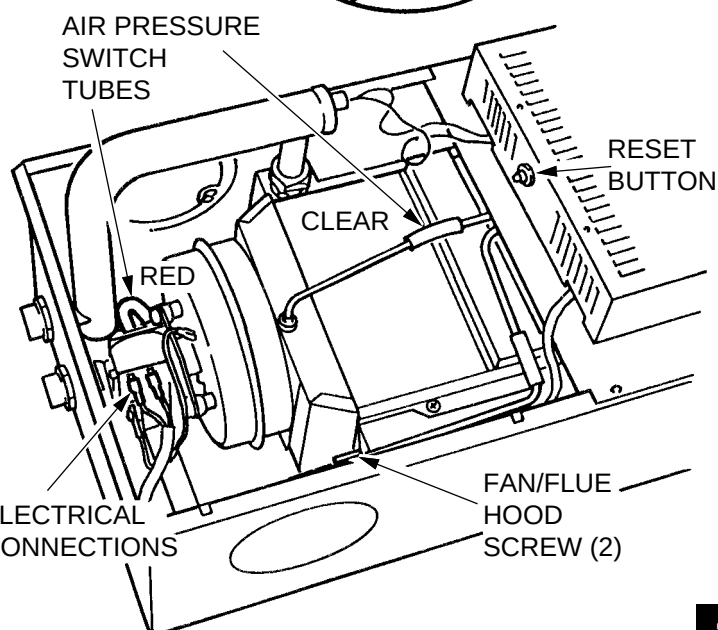
Remove the violet and red electrical connections from the fan.

Break the air pressure switch tubes connections.

Remove the fan/flue hood assembly by removing the two screws one at each side.

step

3



WHEN FITTING A REAR FLUE
FOLLOW STEPS

step 4 to step 8 & step 17 to step 21

WHEN FITTING A SIDE FLUE
FOLLOW STEPS

step 9 to step 21

Rear Flue Boiler Installation

THE BOILER IS SUPPLIED FOR REAR FLUE OUTLET.

Note: To reduce the total lifting weight remove the electrical control box and combustion chamber assembly by following the instructions in Section 6, step 18 and Section 10, steps 3,5,6,7,8 and 9.

Lift the boiler into position above the top mounting bracket, allow the boiler to slide down the wall onto the top and bottom wall mounting brackets.

Check the engagement by pulling the boiler forward at its base, there should be no forward movement.

When the boiler is correctly located secure it with the two screws.

Secure the flue assembly to the boiler, using the previously fitted dogpoint screws noting that these are keyhole fixings.

Make sure of the correct location of the flue to the boiler.

step

4

TOP
MOUNTING
BRACKET

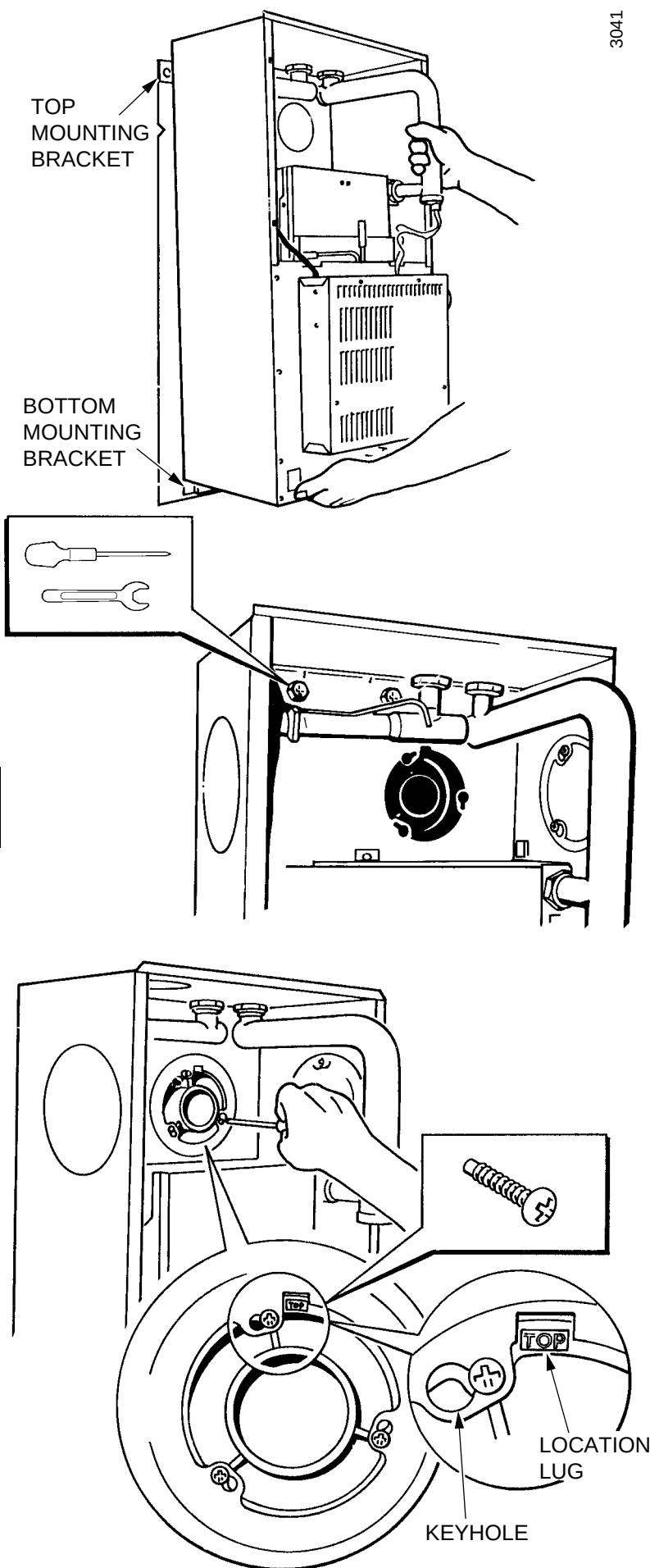
BOTTOM
MOUNTING
BRACKET

step

5

step

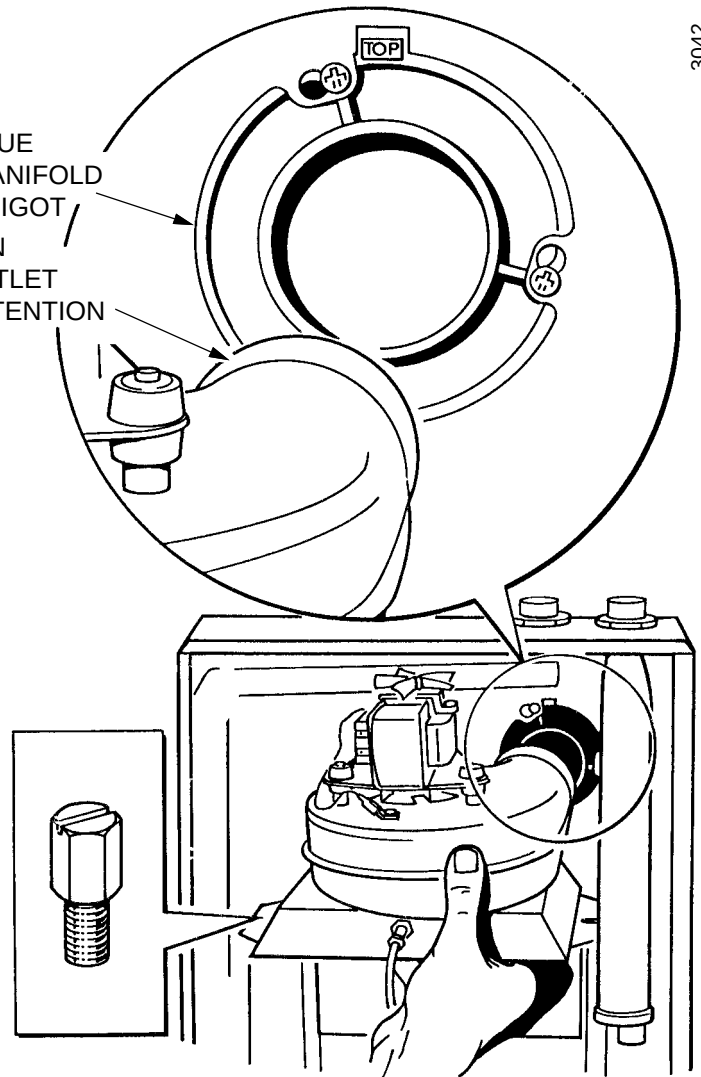
6



Fit fan/fluehood assembly by engaging the fan outlet extension over the flue manifold spigot.

step
7

FLUE
MANIFOLD
SPIGOT
FAN
OUTLET
EXTENTION



Secure the fluehood assembly to the heat exchanger with the screws previously removed.

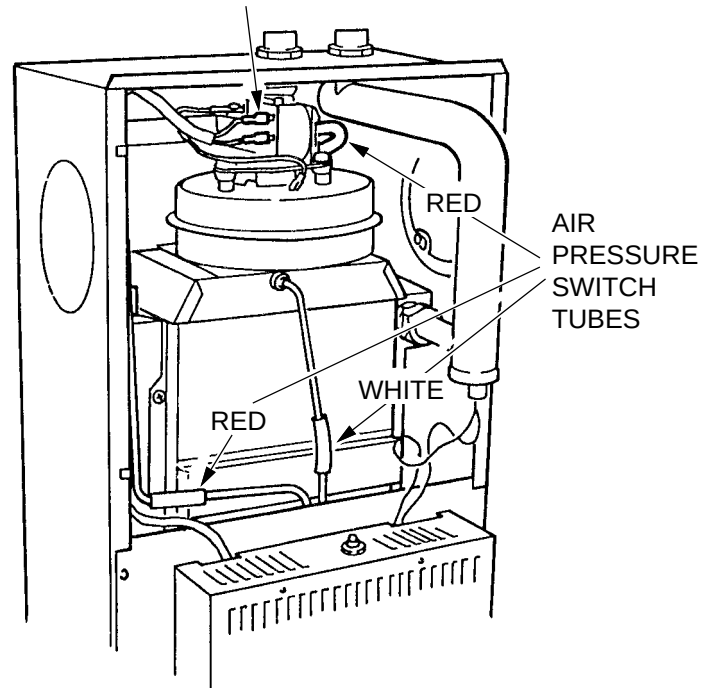
If removed, refit the control box/ combustion chamber by reversing the instructions in Section 6, step 18 and Section 10, steps 3,5,6,7,8 and 9.

step
8

Reconnect the violet and red electrical connections to the fan, the polarity of the connections is not important.

Reconnect the air pressure switch tubes as shown.

ELECTRICAL CONNECTIONS



Continue at

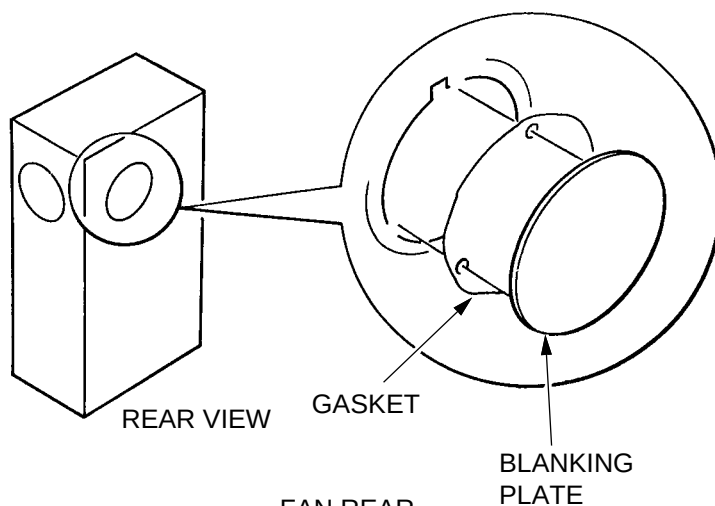
step
17

Side Flue Boiler Installation

step

9

Remove the appropriate blanking plate on the casing and fit it to the rear flue outlet.



Remove the fan assembly from the fluehood assembly, by removing the two screws.

step

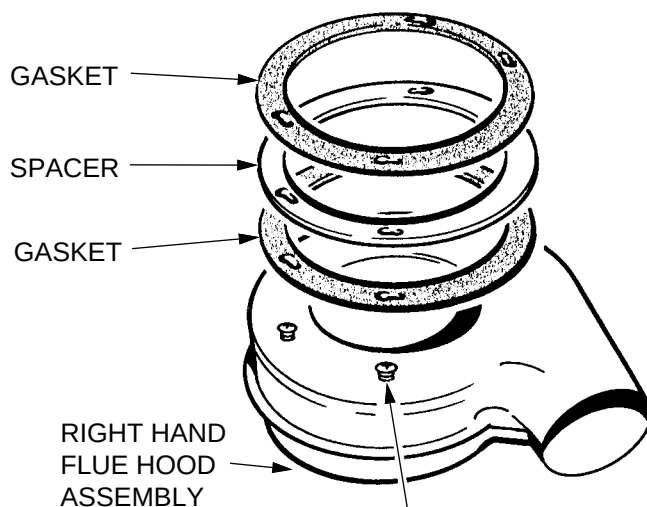
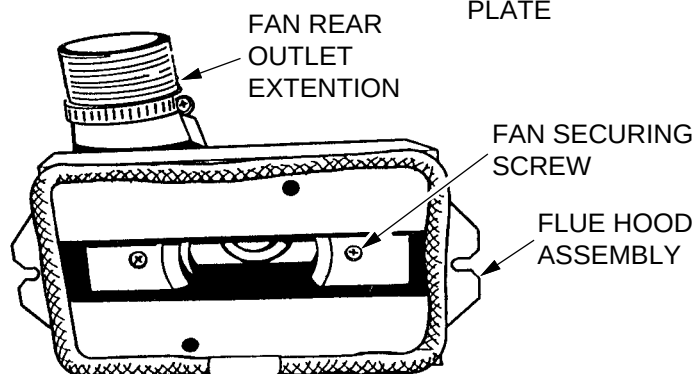
10

Partially refit the securing screws into the fan.

Turn the fan assembly to the required flue outlet direction.

Fit the flue hood over the partially fitted securing screws in the special key hole slot sandwiching the gaskets and spacer between, take care not to damage the gaskets.

Turn the flue hood in the direction shown.



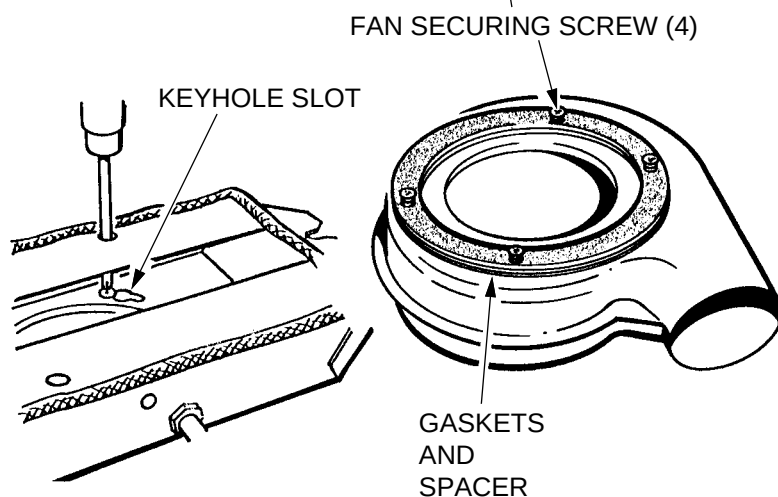
Remove and discard the fan rear outlet extension from the fan by releasing the clip.

step

11

Fit the fan side outlet extension, supplied in the loose items pack.

Secure with the clip previously removed.

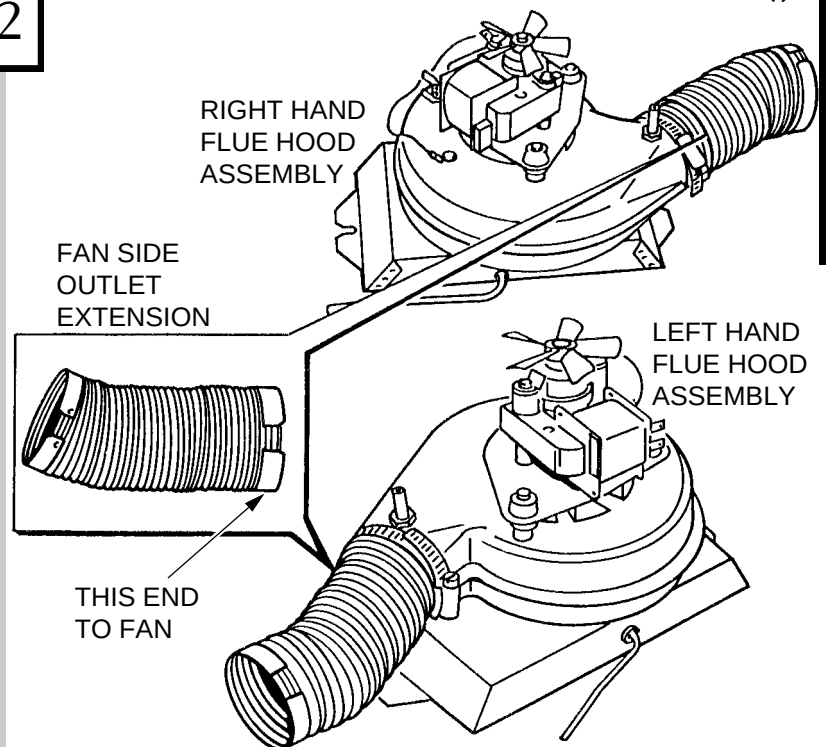


Note: To reduce the total lifting weight remove the electrical control box and combustion chamber assembly by following the instructions in Section 6, step 18 and Section 10, steps 3,5,6,7,8 and 9.

Lift the boiler into position above the top mounting bracket, allow the boiler to slide down the wall onto the top and bottom wall mounting brackets.

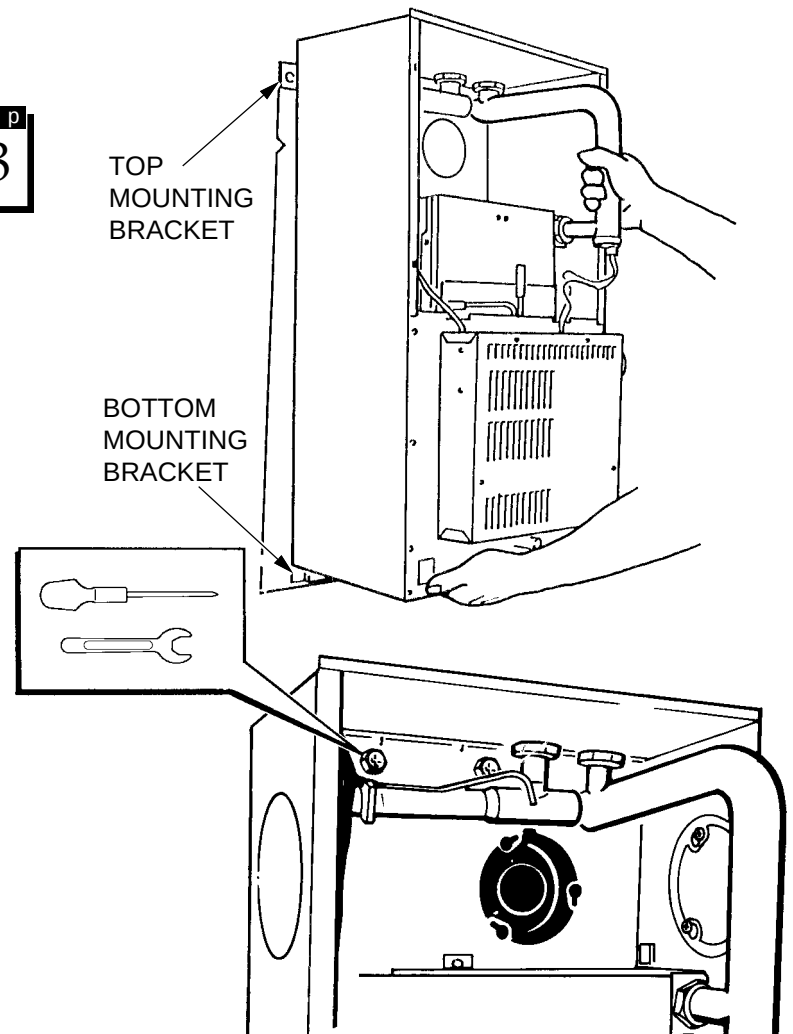
Check the engagement by pulling the boiler forwards at its base, there should be no forwards movement.

step
12



When the boiler is correctly located secure it with the two screws.

step
13



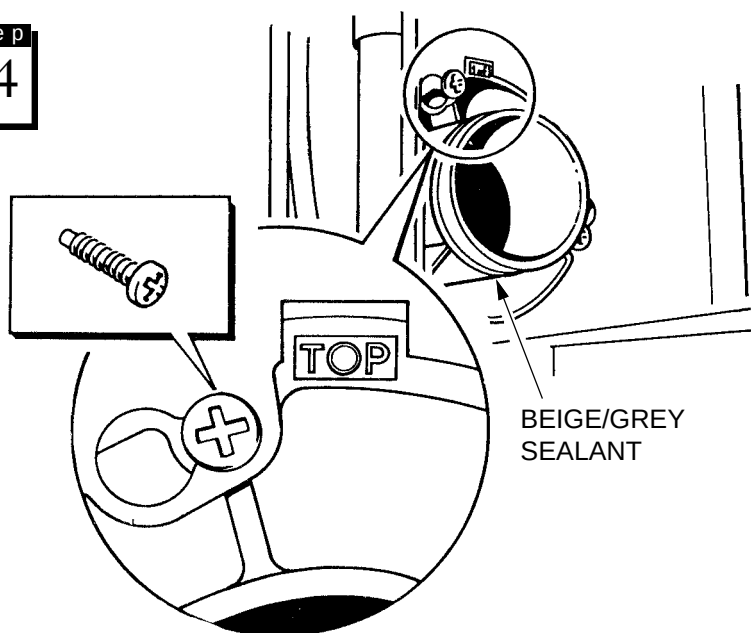
Secure the flue assembly to the boiler, using the previously fitted dogpoint screws noting that these are keyhole fixings.

step
14

Take the beige/grey sealant from the loose items pack and place firmly around the internal spigot of the flue manifold.

Make sure of the correct location of the flue and boiler.

If removed, refit the control box/combustion chamber by reversing the instructions in Section 6, step 18 and Section 10, steps 3,5,6,7,8 and 9.

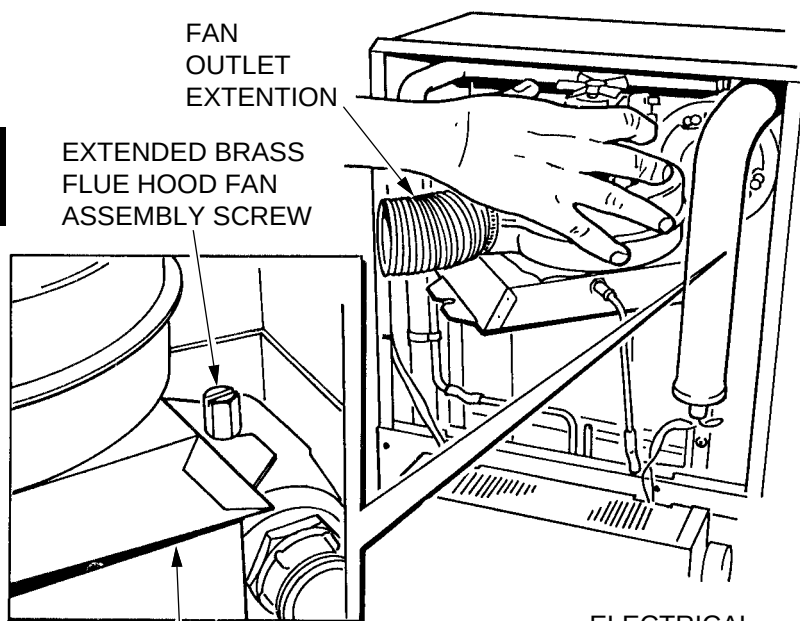


Loosely fit one extended brass fluehood/fan assembly screw to the heat exchanger on the side that the flue exits. Slide the fluehood/fan assembly flange under this extended brass screw whilst turning the assembly to enable engagement of the fan outlet extension onto the flue manifold spigot.

step
15

After fitting the fan outlet extension to the spigot smooth the sealant over the joint.

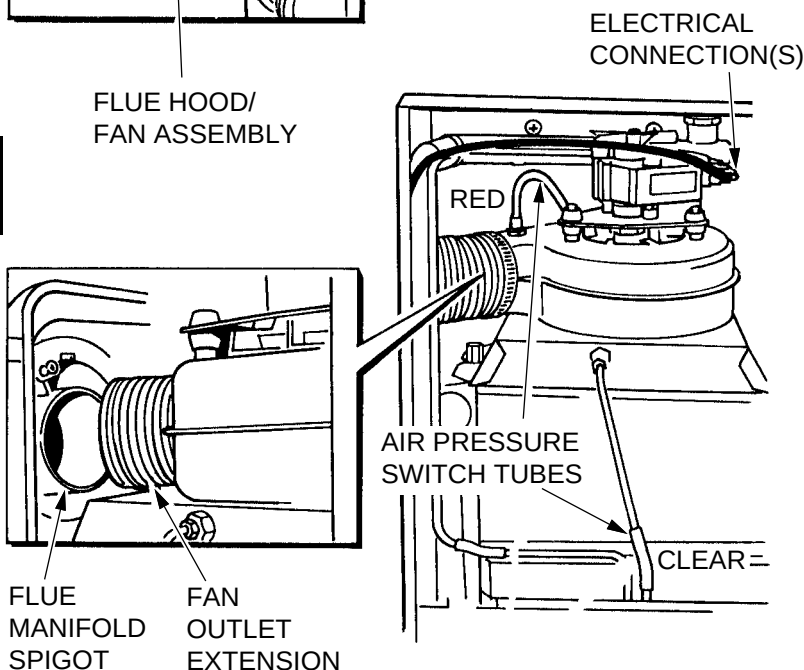
When correctly located, secure the assembly by fitting the other extended brass screw and tighten both down.



Reconnect the violet and red electrical connections to the fan, the polarity of the connections is not important.

step
16

Reconnect the air pressure switch tubes.

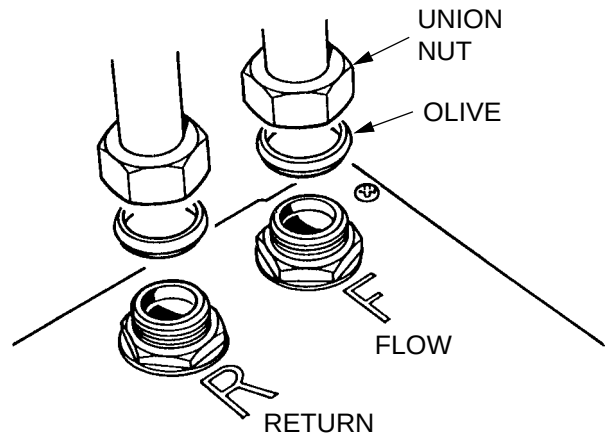


Water System Connection

step
17

Connect the boiler to the water system using the fittings provided in the loose items pack.

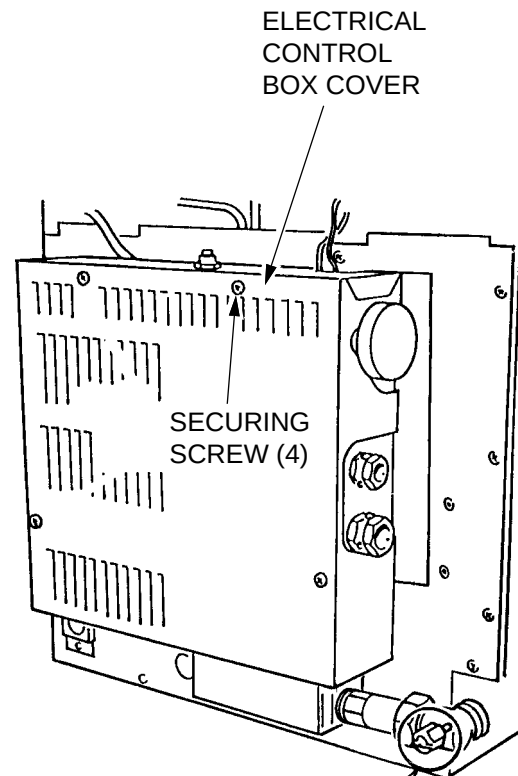
The flow connection is on the right.



Gas Supply Connection

step
18

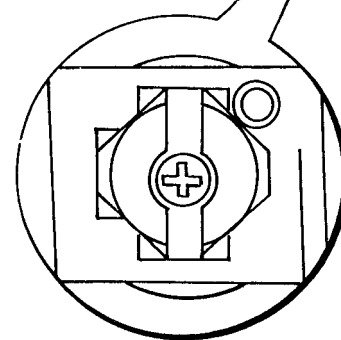
Remove the electrical controls box cover.



Connect the gas supply to the gas service cock on the boiler making sure it is turned off.

Check for gas soundness up to the cock, in accordance with the current issue of BS6891.

step
19



Electrical Connection and System Controls

The electrical installation must comply with the current issue of BS7671 and any local regulations which apply.

All controls and connections must be of the approved type.

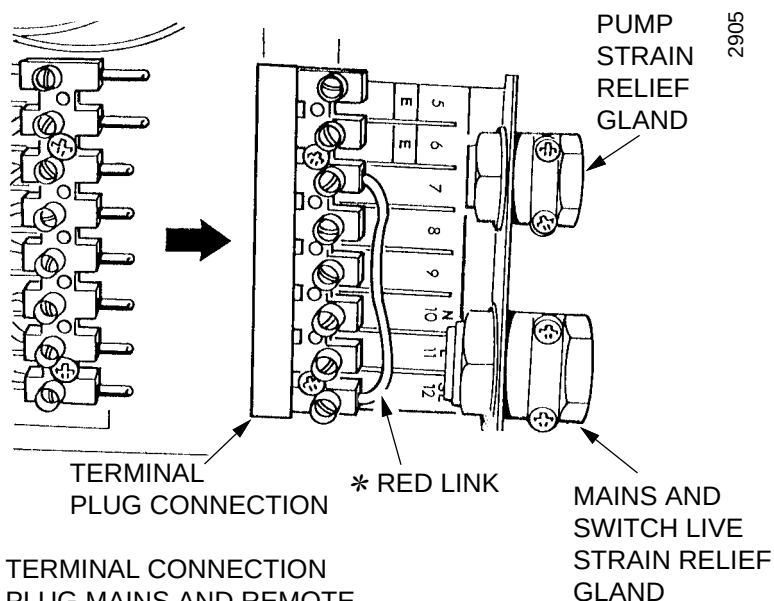
Cable Connection

step
20

The boiler must be earthed.

The incoming cables should be routed from the right hand side of the boiler.

Remove the terminal connection plug as shown.



2905

Connect the incoming supply and remote controls cables through the restraining glands.

The earth conductor must be of a greater length so that if the cable is strained the earth is the last to become disconnected.

Test the insulation resistance of the mains cable to earth.

Test for polarity of the mains cables.

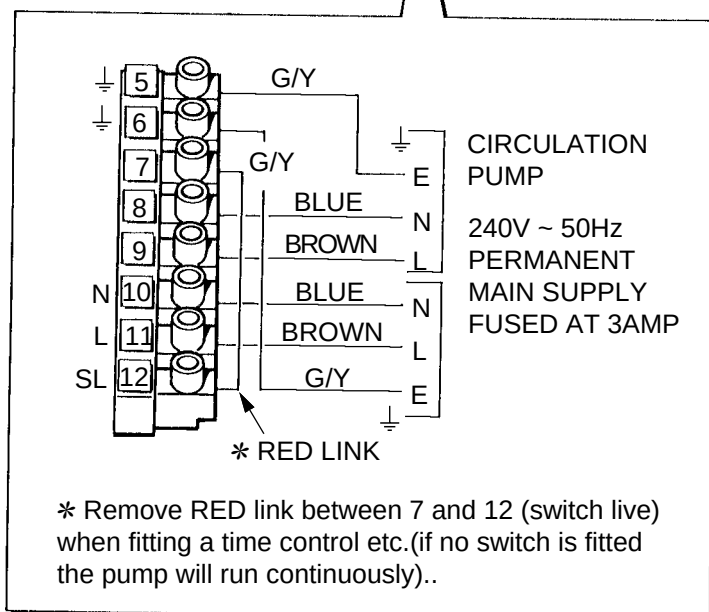
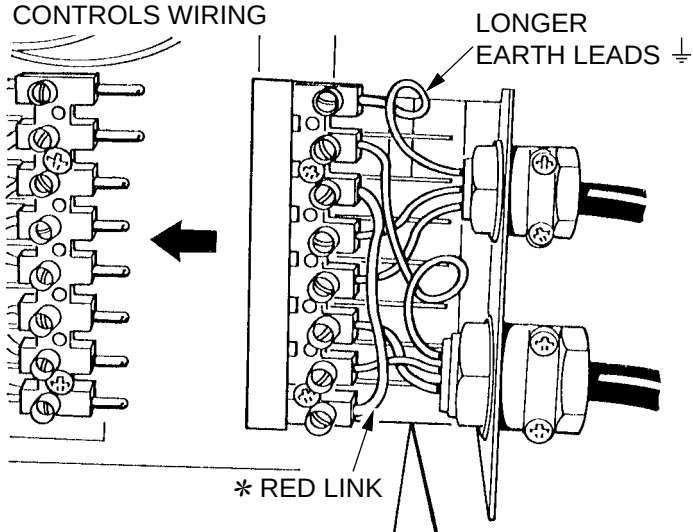
Check earth continuity and short circuit of cables.

Replace the terminal connection plug.

Secure the cables in the plastic clips.

step
21

TERMINAL CONNECTION
PLUG MAINS AND REMOTE
CONTROLS WIRING



System Commissioning - All Systems

Commissioning should be carried out by a competent person in accordance with the current issue of BS6798. Make sure that the system has been thoroughly flushed out with cold water without the pump in place. Refit the pump, fill the system with water, making sure that all air is properly vented from the system and pump. Clear any airlocks and check for water soundness.

Sealed Water Systems Only

Flush the whole system without the pump in place. Refit the pump and fill the system until the pressure gauge registers 1.5bar (21.5lbf/in²). Clear any airlocks and check for water soundness.

Check the operation of the safety valve, by allowing the water pressure to rise until the valve opens. The valve should open within ± 0.3 bar (± 4.3 lbf/in²) of 3bar (42.6lbf/in²). Where this is not possible conduct a manual check and test.

Release cold water to initial system design pressure.

The set pointer on the pressure gauge should be set to the initial design pressure.

If air is present in the system, this may, in certain circumstances, cause the overheat thermostat to trip. If this occurs advise the user to operate the control thermostat on a low setting until all air has been expelled.

Initial Lighting and Testing and Adjustment

Refit the inner case, by hooking it over at the top and securing with the screws previously removed, at the bottom.

Make sure that the case is correctly fitted and sealed.

Identify the controls by reference to the diagram.

Check that the boiler is isolated from the electrical supply.

Make sure that the boiler thermostat is turned to the "Off" position.

Turn the gas service cock "On", the indicator slot to be horizontal.

The pilot gas rate is preset and **MUST NOT** be adjusted, see Servicing, Step 15.

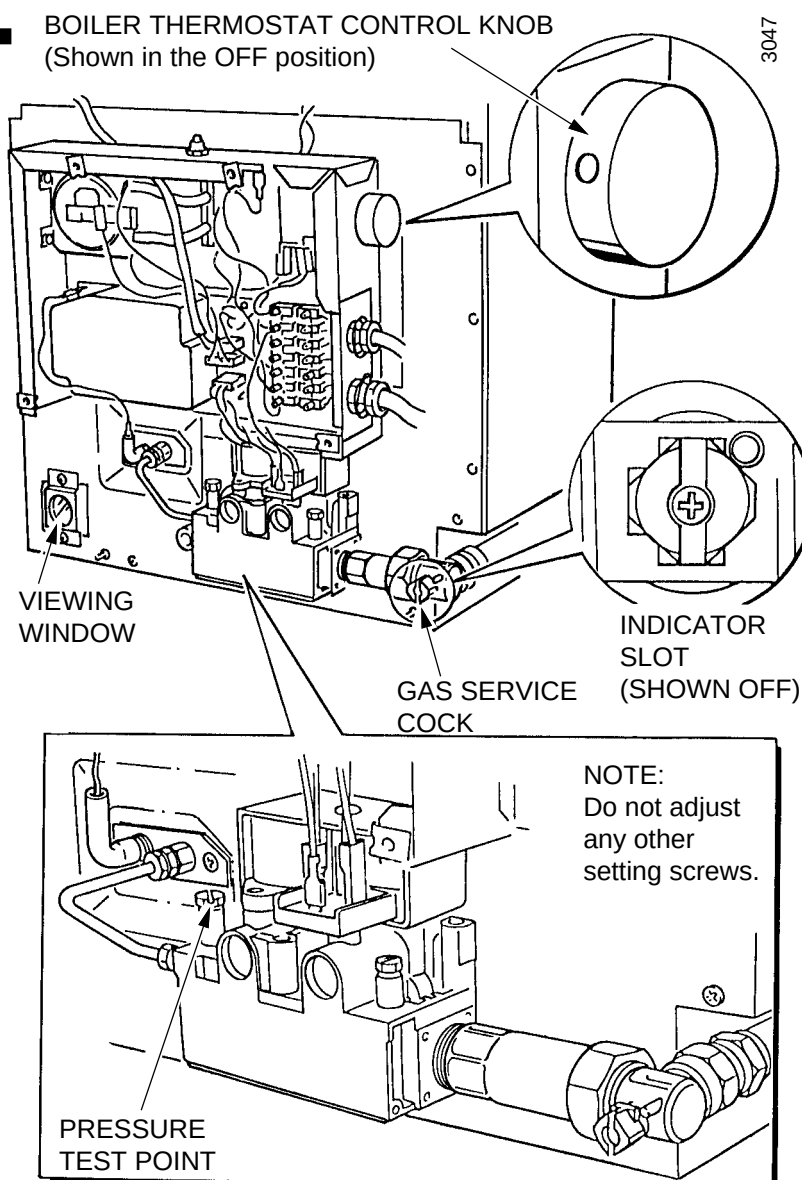
For future reference stick the self adhesive arrow indicator from the loose items pack, to the data label against the rating that the boiler is going to be set to.

Loosen the main burner pressure test point screw and fit a suitable pressure gauge.

Make sure that any remote controls are calling for heat.

Switch on or connect the electrical supply to the boiler and heating system.

Warning. The gas valve and fan operate on MAINS voltage, terminals will become "LIVE".



Testing - Electrical

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, preliminary electrical system checks as below should be carried out.

1. Test insulation resistance to earth of mains cables.
2. Test the earth continuity and short circuit of all cables.
3. Switch on the electrical supply to the boiler and test the polarity of the mains supply.

Turn the boiler thermostat knob fully clockwise to the maximum setting.

The lighting sequence is automatic, as follows:

The fan operates

The spark ignition operates

The pilot solenoid opens

The pilot burner lights

The ignition spark stops

The main solenoid opens -

and after a short period of time the main burner will light, view through window.

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

(When the boiler switches “Off”, both the pilot and main burner go out. The automatic lighting sequence will operate again when heat is required).

Testing - Gas

With the boiler on proceed as follows:

Test for gas soundness around the boiler gas components using a suitable leak detection fluid, in accordance with the current issue of BS6891.

Check the main burner gas pressure at least 10 minutes after the burner has lit, refer to Data Label.

If necessary, adjust the gas pressure to obtain the required setting (screw at rear of the gas valve) turning anti-clockwise, viewed from the front, to decrease the pressure.

Should any doubt exist about the gas rate, check it using the gas meter test dial and a stop watch, at least 10 minutes after the burner has lit, making sure that all other gas burning appliances and pilot lights are off.

Space Saver K.F.B 60 Approx. Gas Rate

	min	med	max
m ³ /h	1.8	1.95	2.1
ft ³ /h	64	69	74

Space Saver K.F.B 70 Approx. Gas Rate

	min	med	max
m ³ /h	2.2	2.4	2.5
ft ³ /h	78	83	89

The gas rates are for guidance only, dependent on the heat setting.

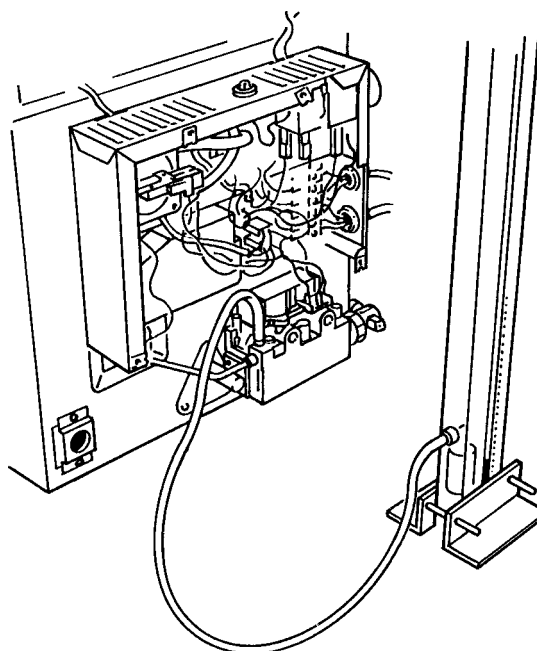
Turn the boiler thermostat knob fully anti-clockwise to "Off". Remove the pressure gauge from the test point and refit the screw, making sure that a gas tight seal is made.

When the boiler thermostat is turned to the "Off" position, by hand, wait at least 30 seconds before turning "On" again.

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

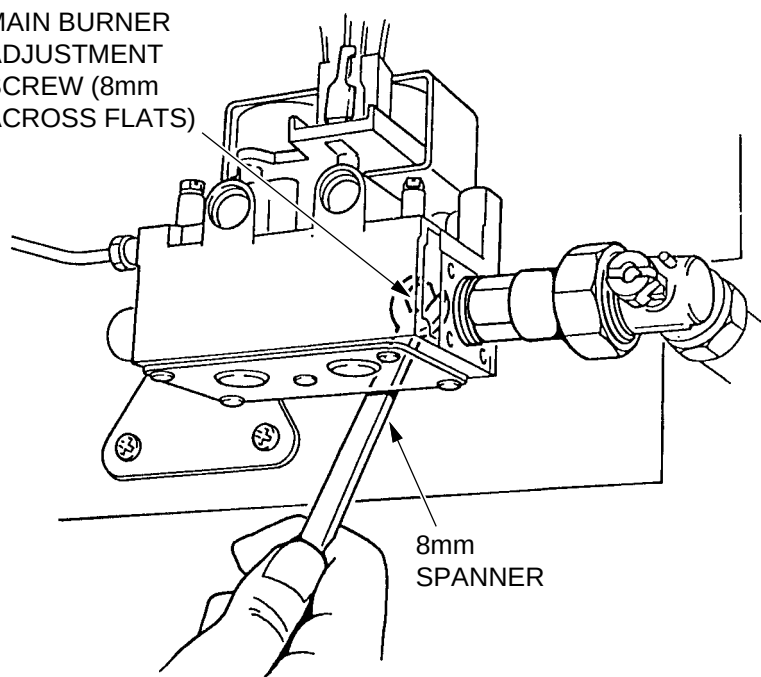
Refit the electrical controls box cover with the four screws previously removed.

Note: The neon indicator lights on the printed circuit board are an aid to fault finding, for details refer to Section 11.



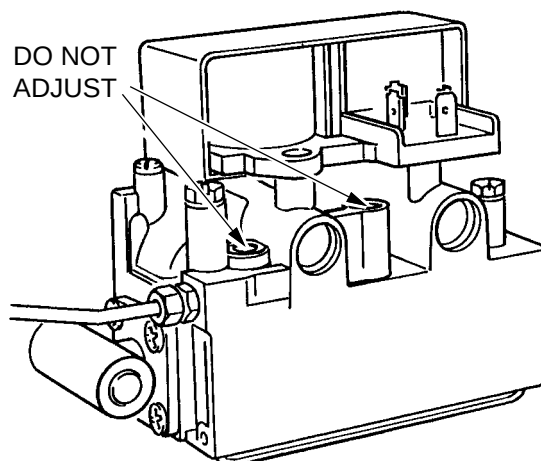
3048

MAIN BURNER
ADJUSTMENT
SCREW (8mm
ACROSS FLATS)



8mm
SPANNER

DO NOT
ADJUST



Heating System

Check that all remote controls are working as required.

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

Refill the system, vent and again check for water soundness.

For sealed systems adjust to initial design pressure. Any set pointer on the pressure gauge should be set to coincide with the indicating pointer.

The overrun thermostat will keep the pump running when the boiler shuts down, so long as the temperature within the boiler is above a predetermined level, providing the control thermostat is set at maximum.

When commissioning the system the boiler should be fired with the bypass fully closed on full service, that is, central heating and domestic hot water. The system should then be balanced, adjusting the pump and lockshield valve as necessary. Having achieved a satisfactory condition, operate the boiler with the bypass closed on minimum load, normally central heating only with one radiator operating in the main living area. The valve should be opened gradually to achieve the appropriate flow rate as quoted in Section 2. If necessary readjust the pump.

Under NO circumstances should this valve be left in the FULLY CLOSED position.

Operational Checks

Adjust the boiler thermostat and any system controls to their required settings.

Do not attempt to adjust the thermostat calibration.

Operate the boiler again on full service and check that the balancing is satisfactory, making further adjustments as necessary to the system, radiator valves and bypass.

On open vented systems there must be no pumping over of water or entry of air at the vent above the feed and expansion cistern.

If thermostatic radiator valves are fitted care must be taken to ensure that there is an adequate flow rate when the valves are closed. Refer to the current issue of BS7478 on the use of thermostatic radiator valves.

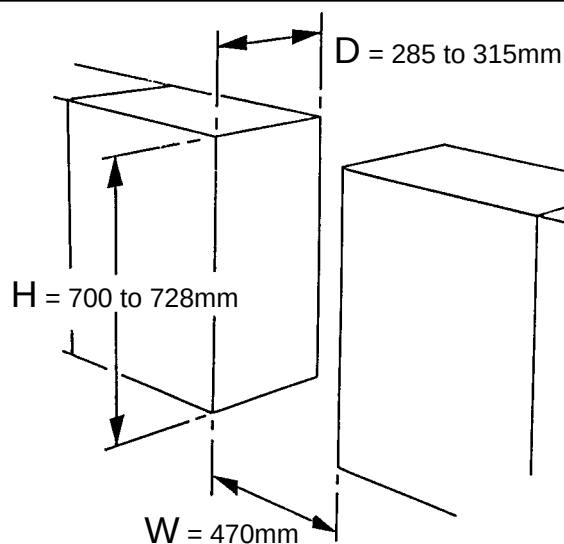
Note. The front panel assembly has been designed with a variable adjustment to suit a range of available kitchen furniture, 700mm-728mm high by 285mm-315mm deep and will also suit installations in a cupboard.

It is delivered preset to 700mm high by 285mm deep.

Measure the height of the cupboard or compartment, "H".

step

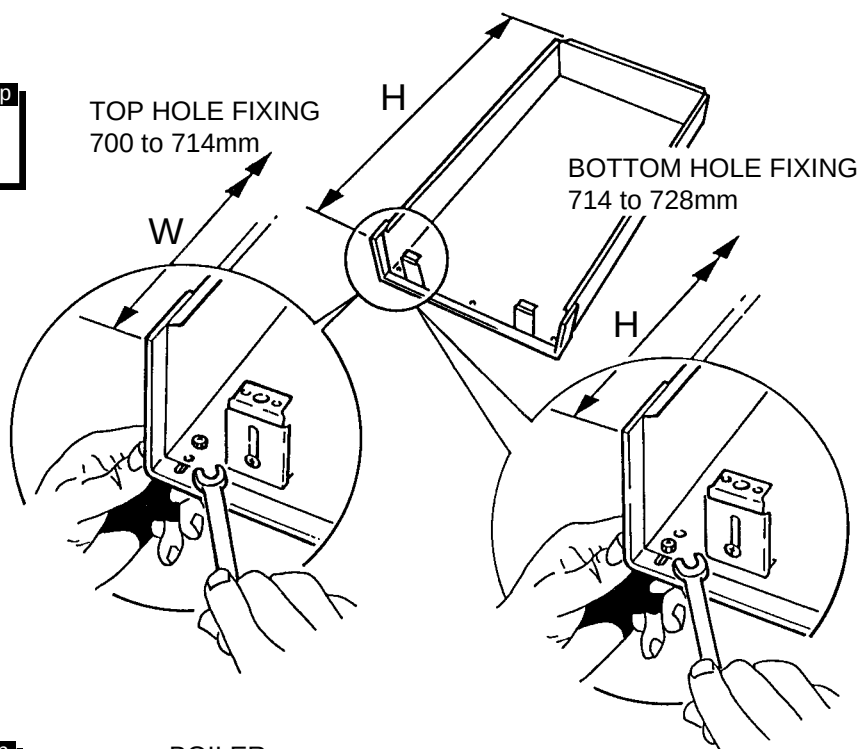
1



Adjust the front panel height "H" as necessary.

step

2



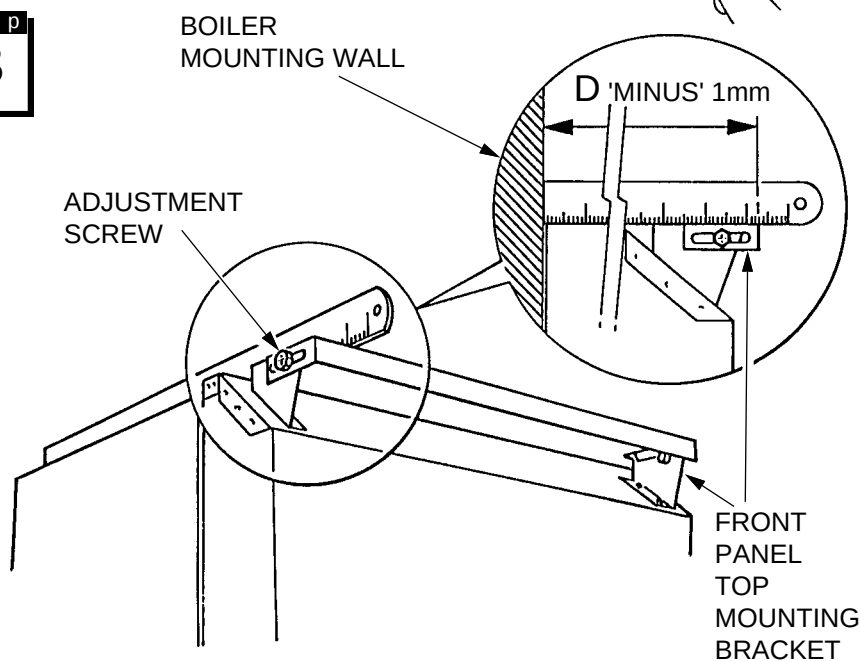
Measure the depth of the cupboard or compartment, "D".

Adjust the front panel top mounting bracket as necessary.

Slide the right hand side cover plate (supplied in the fittings pack) into position.

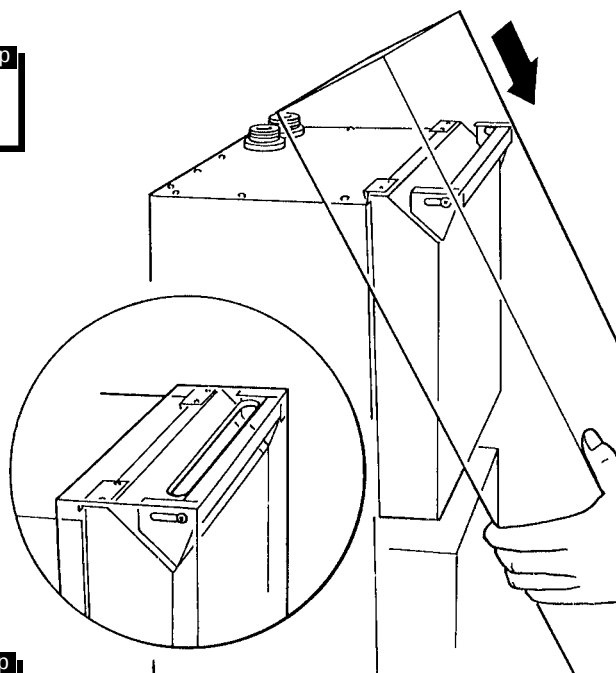
step

3



Locate the front panel assembly.

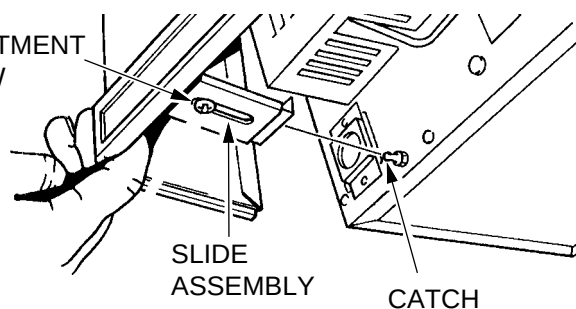
step
4



Engage the bottom front panel assembly slide/catch and adjust as necessary.

step
5

ADJUSTMENT
SCREW



User Information

User Information

Instruct and demonstrate the efficient and safe operation of the boiler, heating system and if fitted, the domestic hot water system.

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

Advise the user, 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 should be enough.

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

Draw attention, if applicable, to the current issue of the Gas Safety (Installation and Use) Regulations, Section 35, which imposes a duty of care on all persons who let out any property containing a gas appliance.

Reminder, leave these instructions with the user.

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 should be enough.

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

BEFORE STARTING A SERVICE REMOVE THE FRONT PANEL as shown, for Access, **ISOLATE THE BOILER FROM THE ELECTRICAL SUPPLY AND TURN THE GAS SUPPLY OFF AT THE GAS SERVICE COCK, INDICATOR SLOT TO BE VERTICAL.**

Unless stated otherwise, all parts are replaced in the reverse order to removal.

After completing any servicing always test for gas soundness and if necessary carry out functional checks of controls.

Access

Remove the electrical control box cover by removing the four screws.

Note: As an aid to Servicing the air pressure switch tube connection can be used to obtain a products of combustion reading.

Follow Steps 1, 2 and 4.

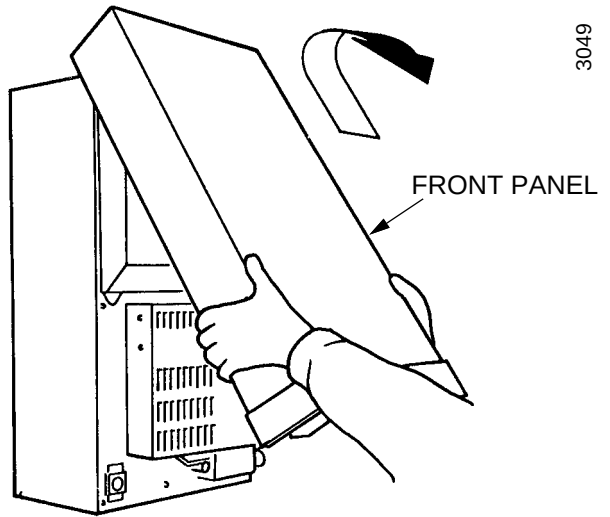
Remove the RED tube from the connection on the air pressure switch and insert the analyser probe into the tube.

Switch on the electrical supply to operate the fan and turn on the gas supply.

On completion of the test switch off the electrical and gas supplies and reconnect the red tube to the air pressure switch.

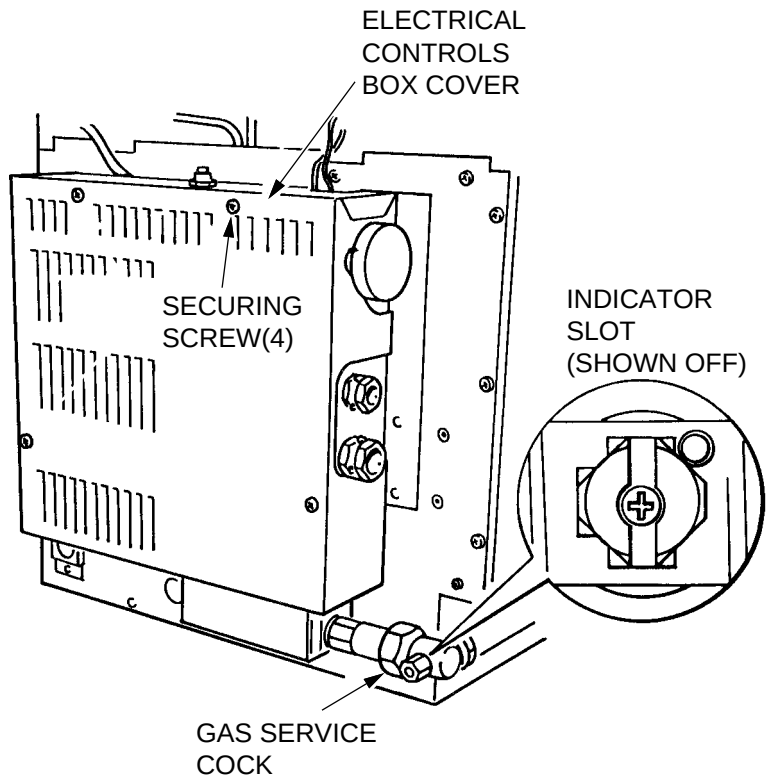
Remove the inner case, by unscrewing at the bottom and unhooking at the top.

step
1

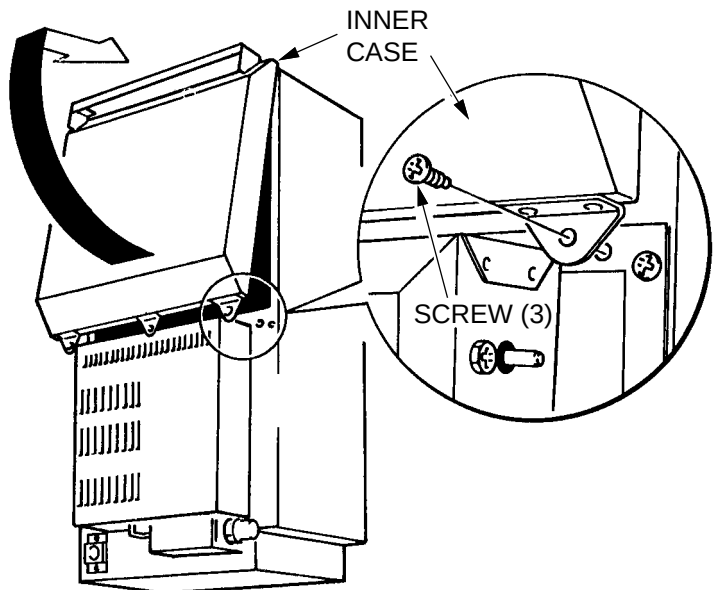


3049

step
2



step
4

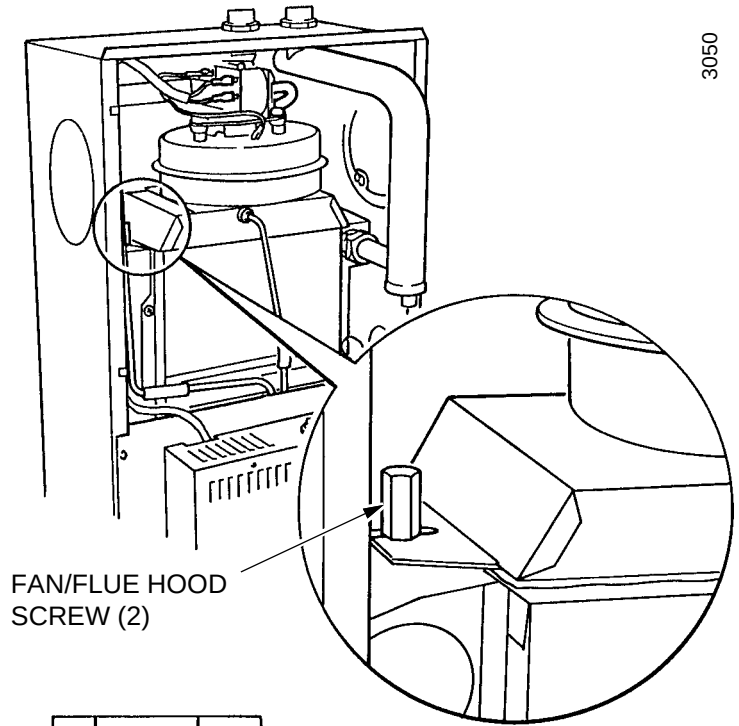


step
5

Cleaning the Heat Exchanger

Slacken the flue hood by loosening the extended brass screws at the left and right hand sides.

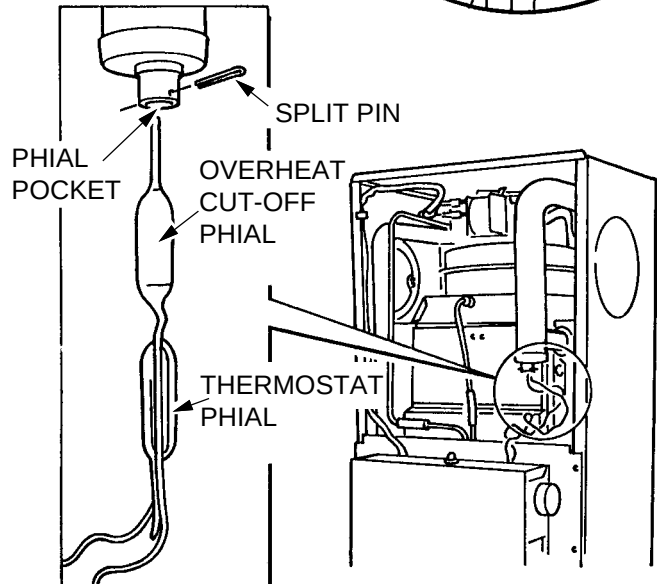
step
6



Remove the split pin and thermostat phials from the pocket, taking care not to kink the capillaries.

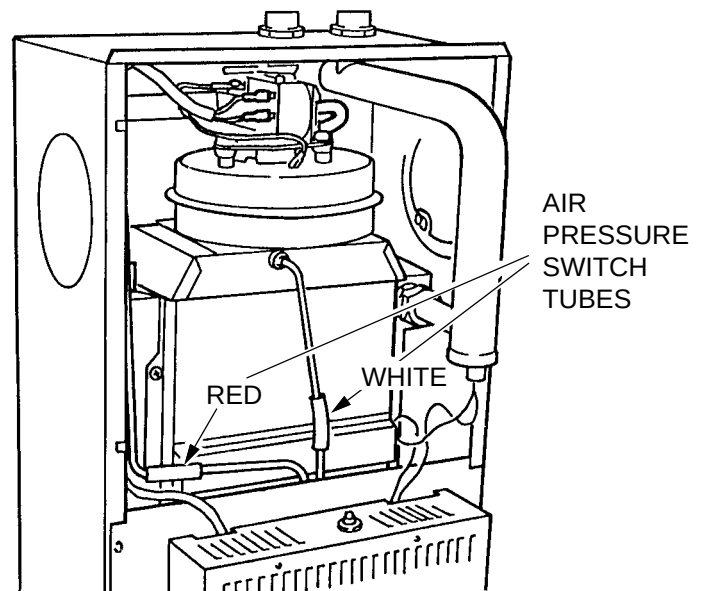
When replacing the phials make sure that they are still covered with heat sink compound.

step
7



Disconnect the air pressure switch tubes.

step
8



Disconnect the gas service cock at the union connection.

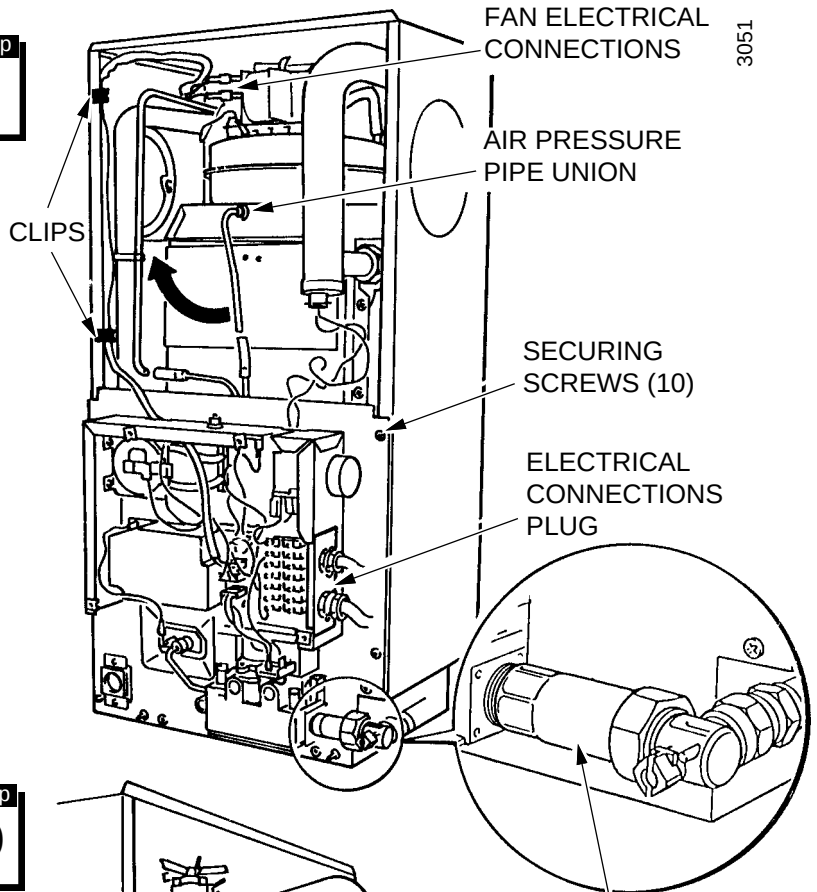
Disconnect the electrical connection plug by pulling it out from the right hand side of the control box.

Remove the violet and red electrical connections on the fan and cable from the securing clips.

Remove the electrical control box/ combustion chamber cover assembly by removing the ten securing screws, withdraw the complete assembly.

Slacken the air pressure pipe union and turn through 90o.

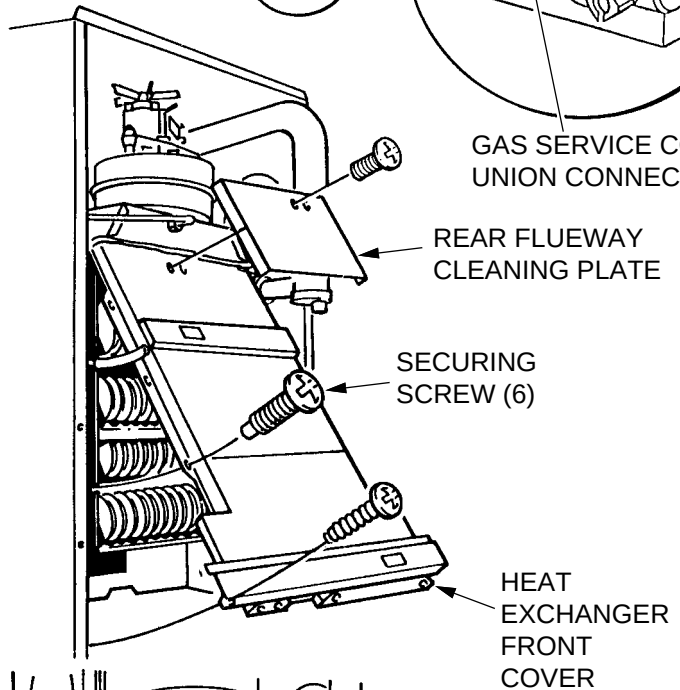
step
9



Remove the rear flueway cleaning plate.

Remove the heat exchanger front cover, by removing the eight securing screws.

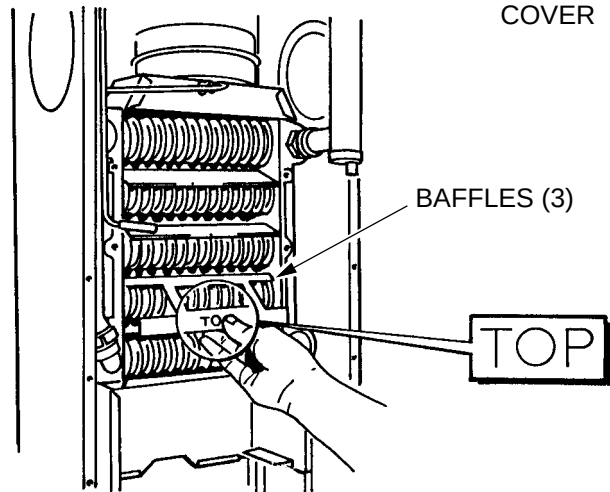
step
10



Place a sheet of paper in the base of the combustion chamber.

Remove the three baffles.

step
11



The heat exchanger can now be cleaned with a suitably sized semi-stiff brush, using the cleaning plate, as shown to protect the rear insulation panel.

DO NOT USE A BRUSH WITH METALLIC BRISTLES.

Remove the paper and debris from the combustion chamber.

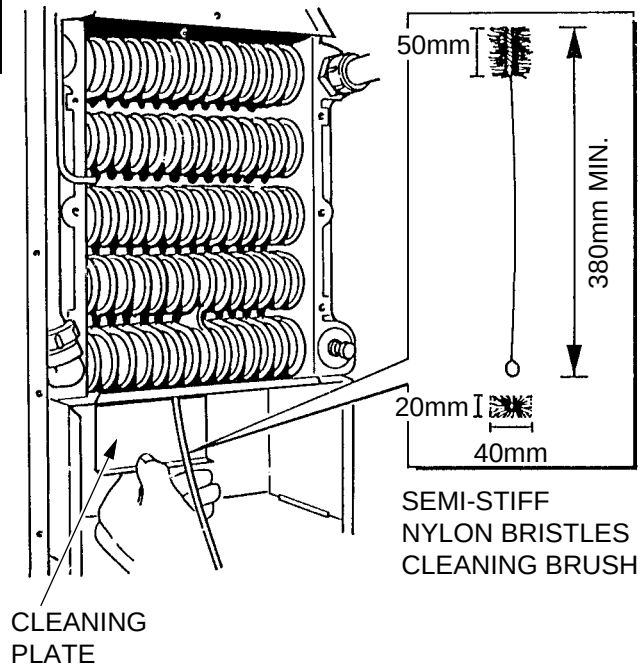
Correctly refit the baffles previously removed, each is marked TOP on its upper face.

Refit the heat exchanger front cover.

Tighten down the fan flue screws.

Refit the cleaning plate.

step
12



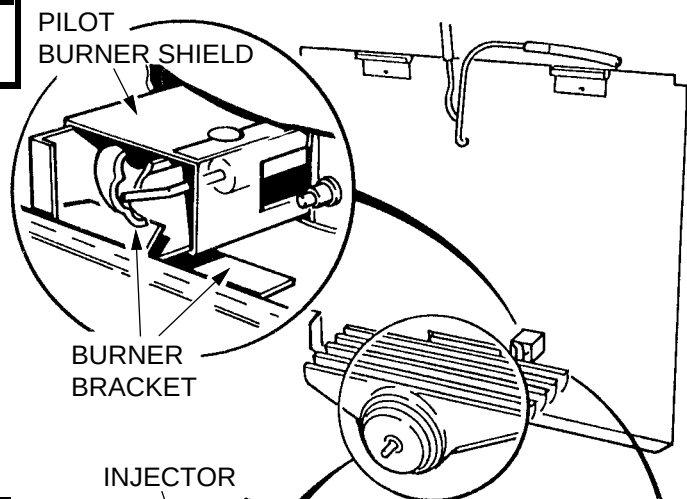
Main Burner

Remove the main burner by releasing the two securing nuts as shown. Brush or vacuum away any deposits, ensure that the flame ports are clean.

DO NOT USE A BRUSH WITH METALLIC BRISTLES.

Make sure that the pilot burner shield is located between the burner bracket as shown.

step
13

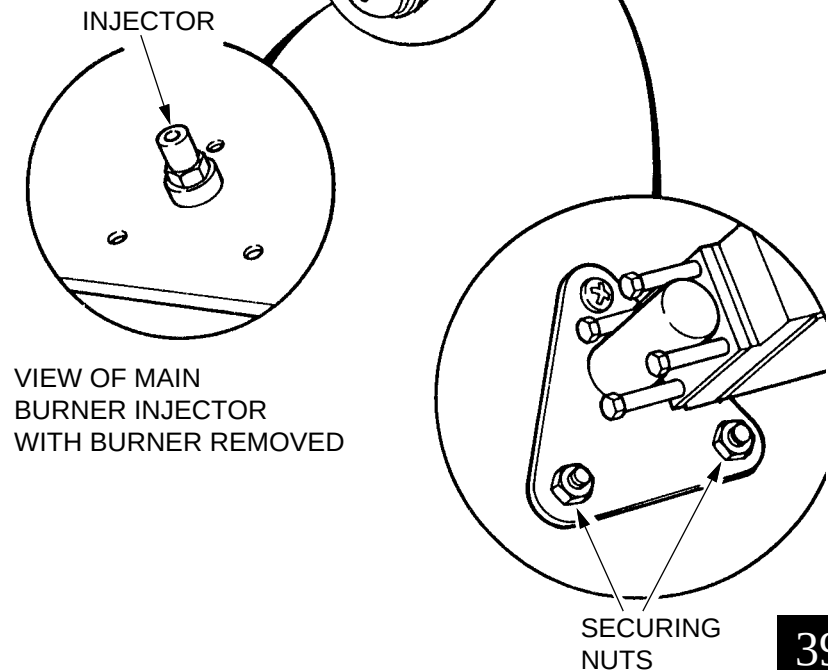


Main Injector

The main injector can be removed and cleaned.

When cleaning the injector do not use a wire or sharp instrument on the hole.

step
14



Pilot Burner, Ignition Electrode and Pilot Injector

step
15

Pull off the ignition lead at the electrode (covered with a silicone rubber sleeve).

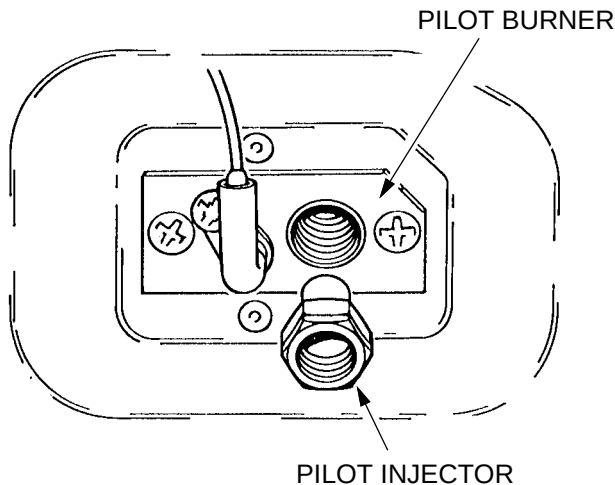
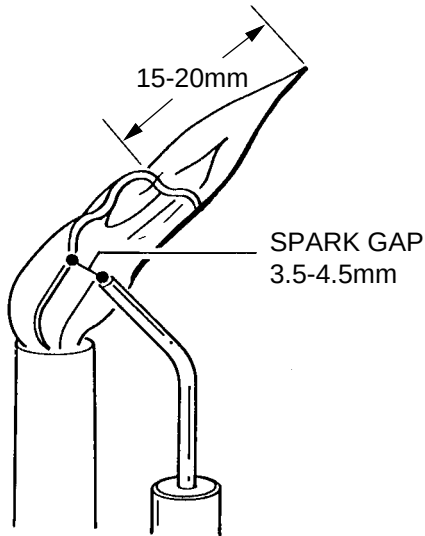
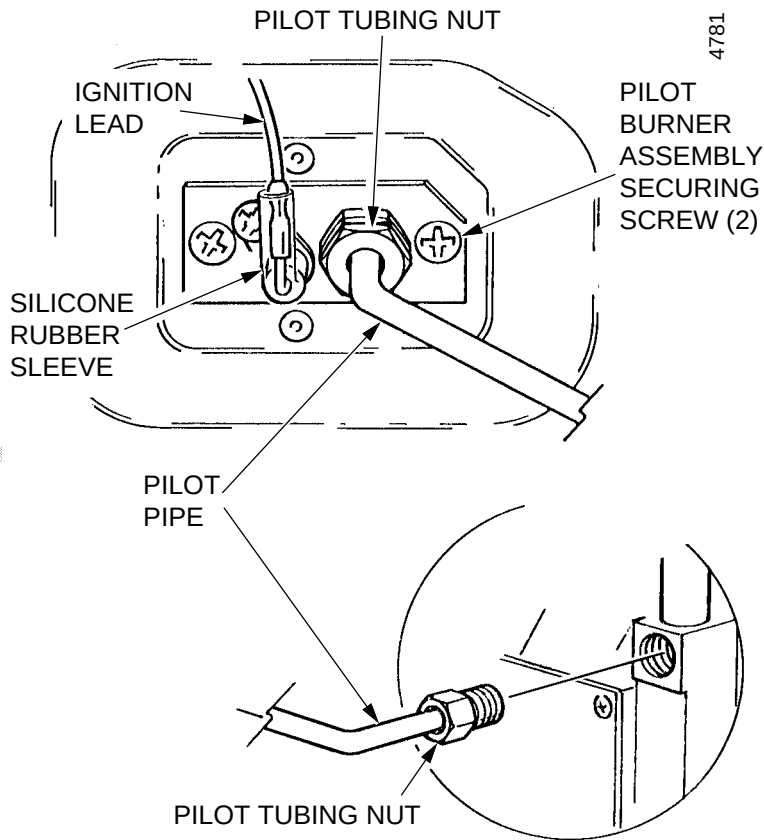
Unscrew the tubing nuts at both ends releasing the pilot pipe.

Remove the pilot burner securing screws to release the pilot burner and electrode assembly.

Clean the pilot burner and electrode.

Remove the pilot injector by unscrewing it from the pilot burner, clean it by blowing through it.

When refitting take care not to damage the electrode and check that the spark gap is as shown.



Electrical

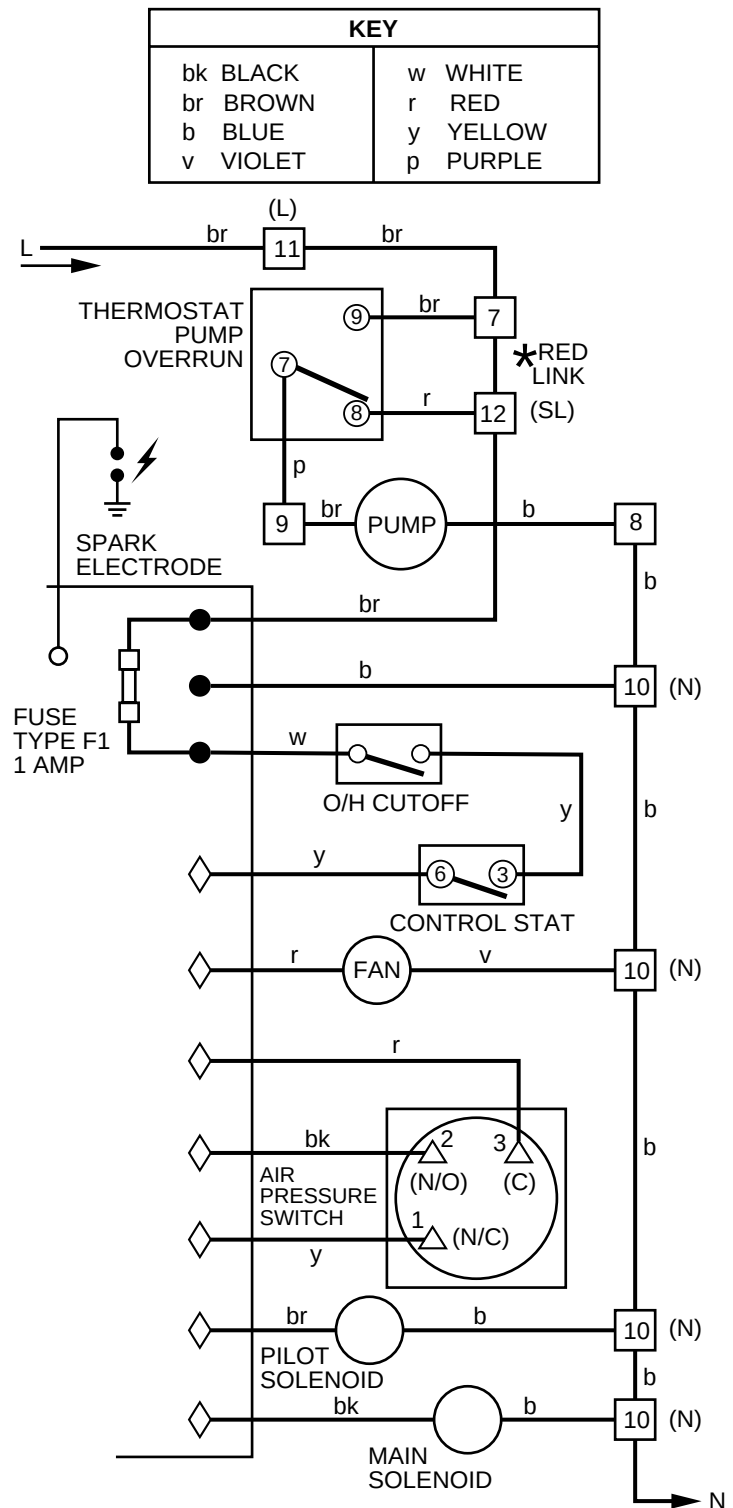
Important. On completion of the service/fault finding task which has required the breaking and remaking of the electrical connections the earth continuity, polarity, short circuit and resistance to earth checks must be repeated using a suitable multimeter.

Refer to Fault Finding, Wiring and Functional Flow diagrams.

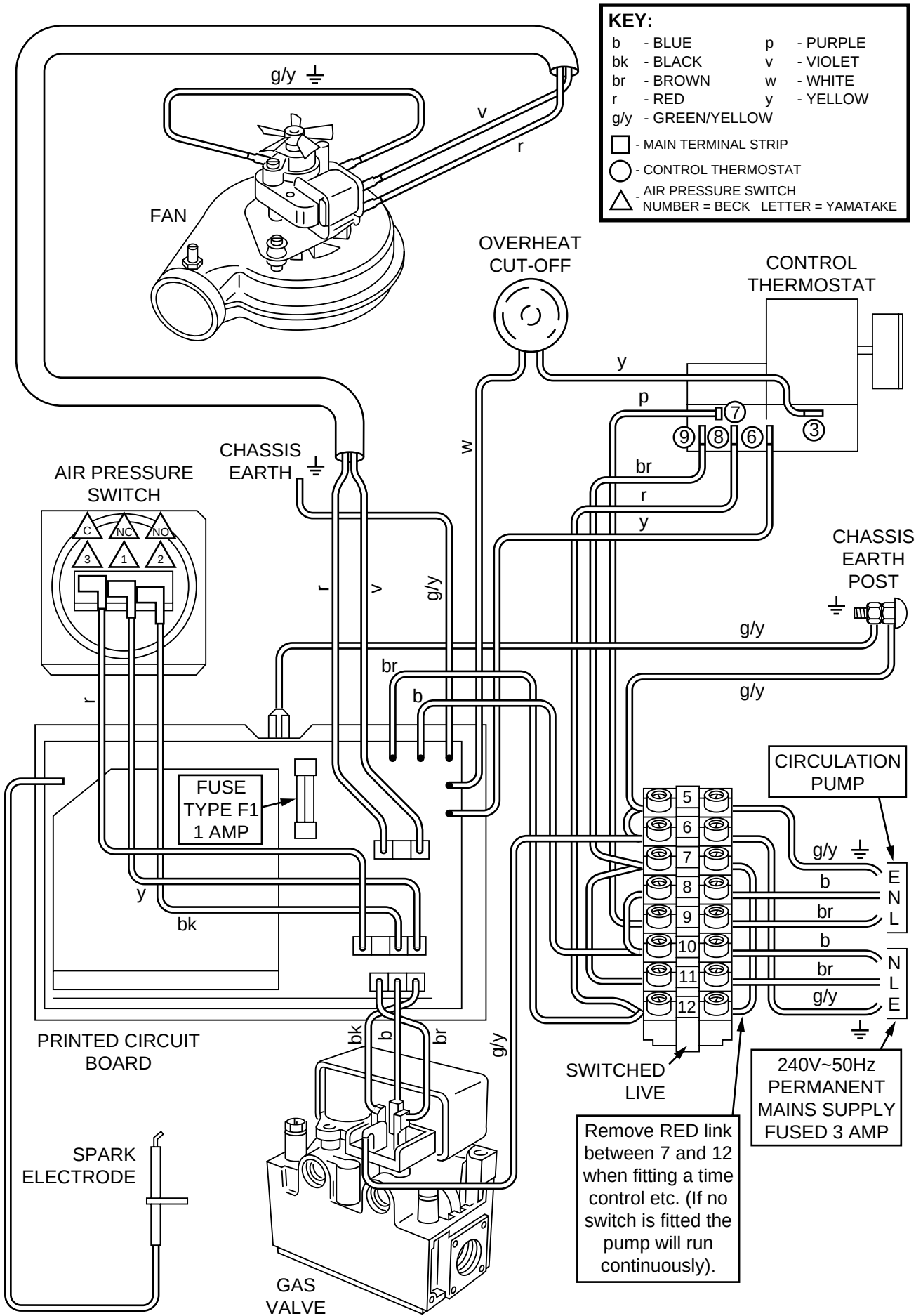
Electrical Supply Failure

Failure of the electrical supply will cause the burner to go out. Operation will normally resume on restoration of the electrical supply. If the boiler does not relight after an electrical supply failure the overheat device may need resetting.

Remove the front panel as Section 1, Step 1 and press the reset button on top of the electrical controls box cover, see diagram at Step 3. If the cut off operates at any other time press the reset button and the burner should relight. If the fault persists refer to Fault Finding Chart.



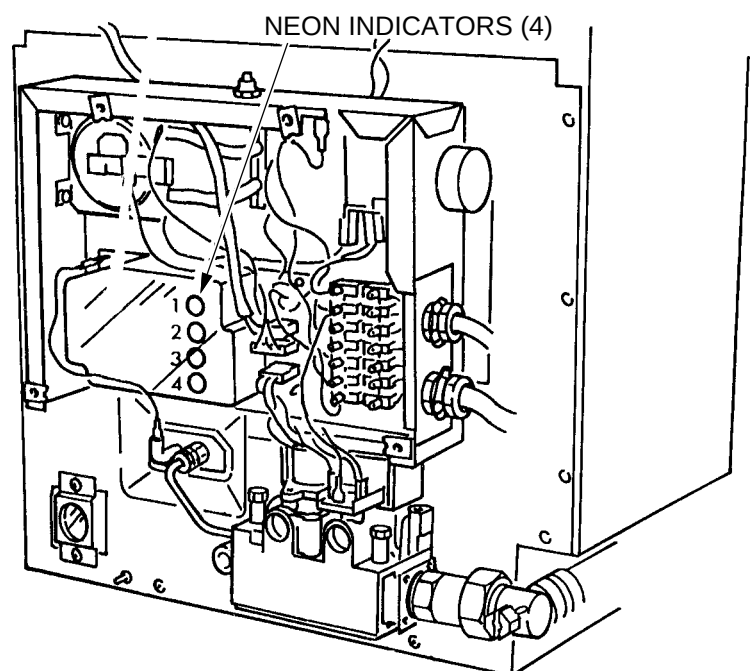
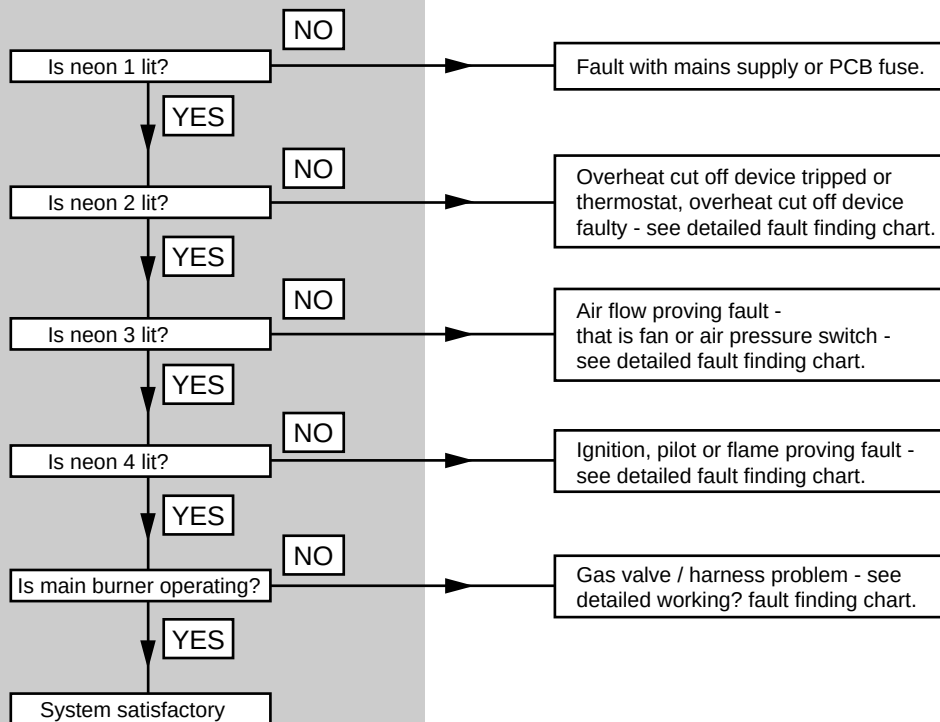
*RED LINK may have been removed to fit remote controls.



4754

Neon Indicators - An Aid to Fault Finding

THE NEON INDICATORS ARE AN AID TO FAULT FINDING ONLY. FAILURE OF ANY OF THE NEON INDICATORS DOES NOT WARRANT THE REPLACEMENT OF AN OTHERWISE SATISFACTORY PRINTED CIRCUIT BOARD (PCB)

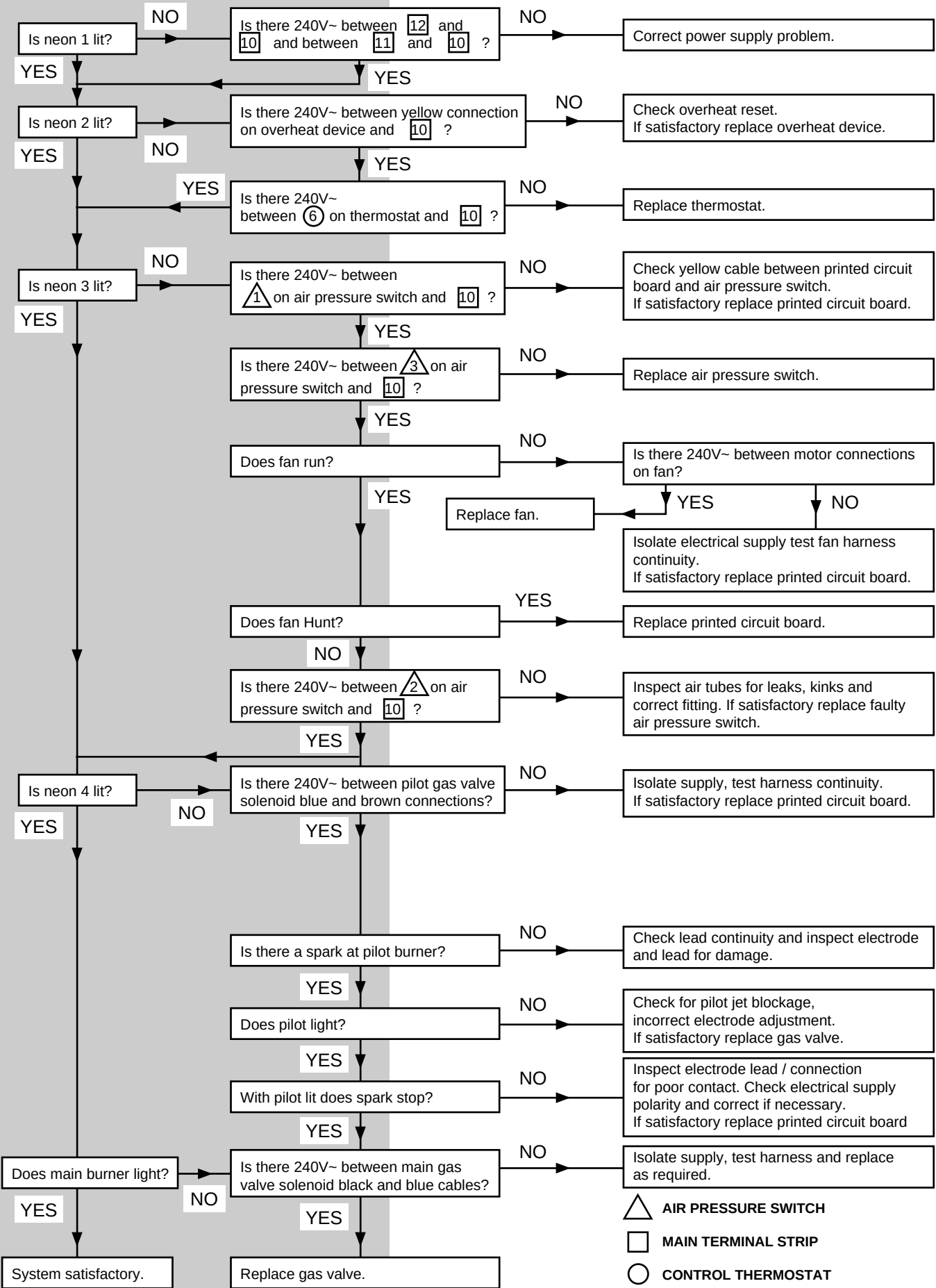


3054

Fault Finding

4780

Before detailed checking of electrical components ensure that remote controls are calling for heat. Check the gas supply is free of obstructions and purged of air. Check the overheat cutoff has not operated. Isolate the electrical supply and physically check ALL cables, connections and the printed circuit board fuse. Check the air tubes to the air pressure switch. Switch on the electrical supply and check for correct polarity. Turn the boiler thermostat to its maximum setting. Also check fuses.

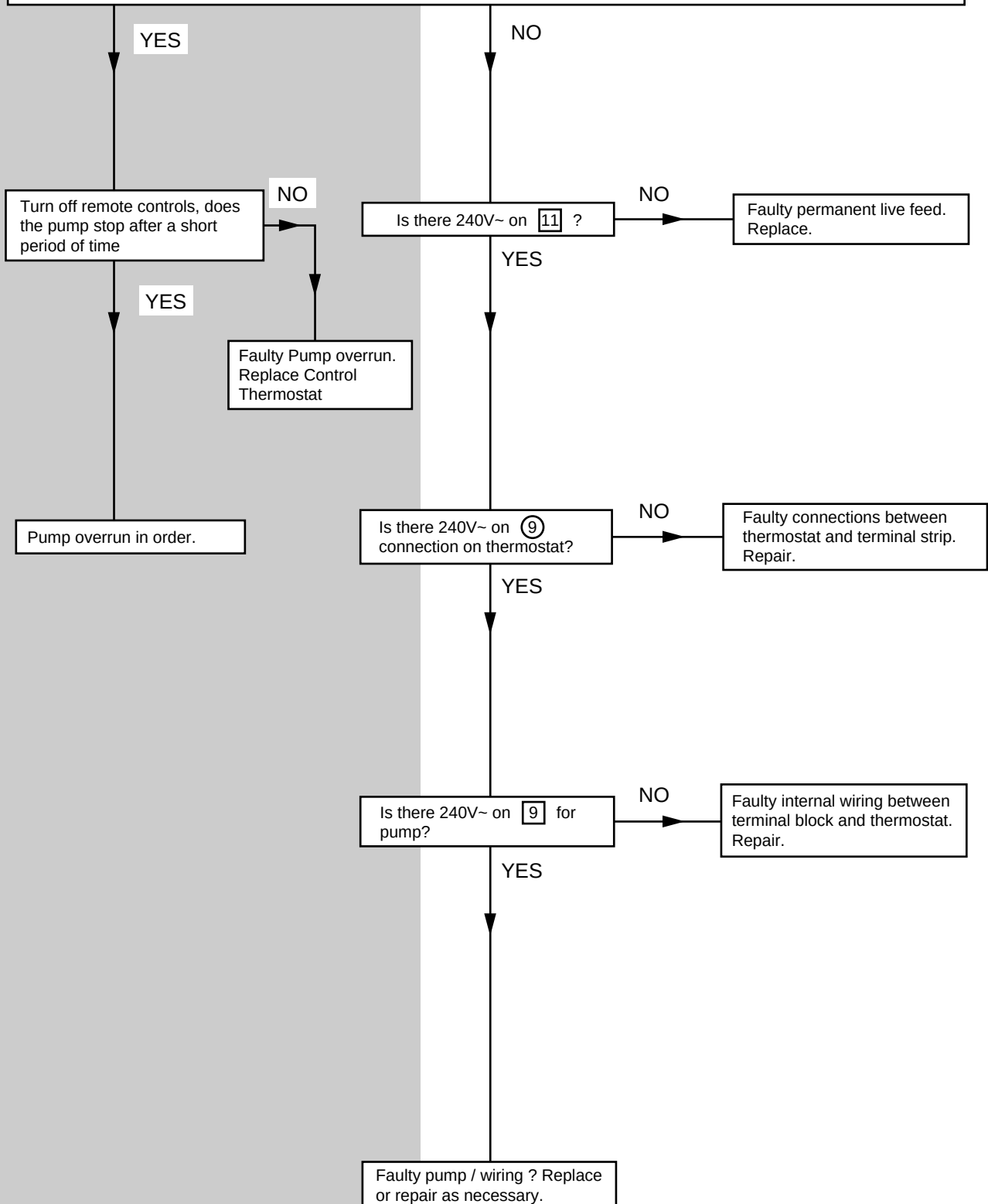


Pump overrun Operation

The Control Thermostat has a pump overrun facility built into it, when the Control Thermostat is set at maximum only, the pump overrun will keep the pump running to allow the boiler to cool down after which it will stop, providing the remote controls are NOT calling for heat.

Fault Finding

Turn boiler Control Thermostat to maximum, with the remote controls calling for heat, does the pump continue to run after the appliance has shut down on boiler control thermostat?



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

BEFORE REPLACING ANY PARTS ISOLATE THE BOILER FROM THE ELECTRICAL SUPPLY AND TURN THE GAS SUPPLY OFF AT THE GAS COCK INDICATOR SLOT TO BE VERTICAL.

Unless stated otherwise, all parts are replaced in the reverse order to removal.

After replacing any parts always test for gas soundness and if necessary carryout functional checks of controls.

Pilot Burner/Injector and Ignition Lead

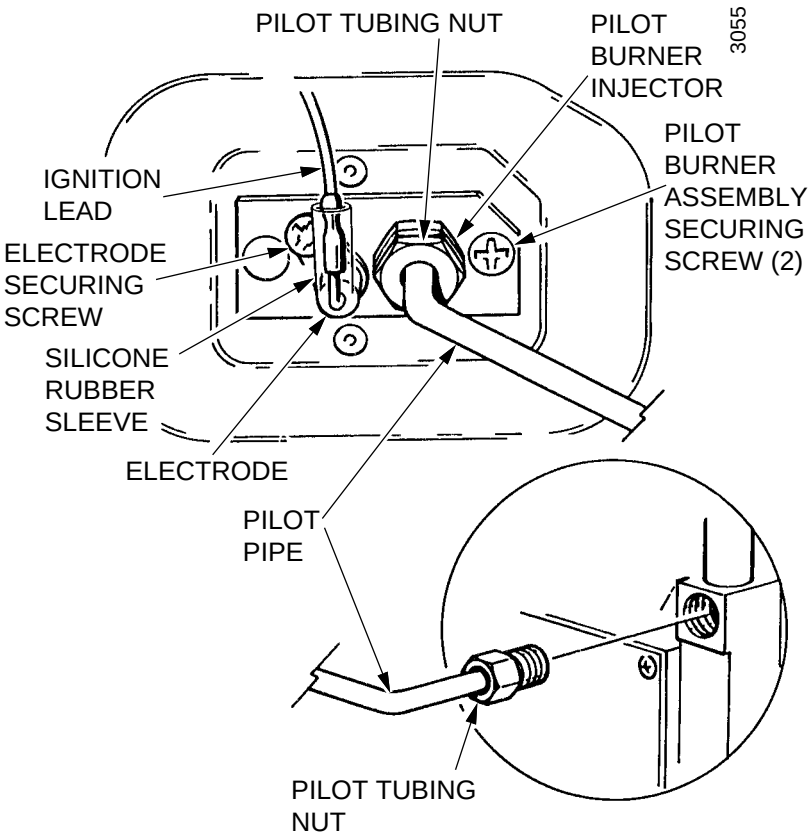
Gain access as Section 10, steps 1 to 4.

Pull off the ignition lead at the electrode (covered with a silicone rubber sleeve) and printed circuit board.

Unscrew the tubing nuts at both ends releasing the pilot pipe.

Remove the pilot burner by unscrewing the two securing screws as shown.

The pilot burner or injector can now be replaced.



Electrode

Gain access as Section 10, steps 1 to 4.

Pull off the ignition lead at the electrode.

Remove the electrode securing screw.

The electrode can now be replaced.

Printed Circuit Board (PCB)

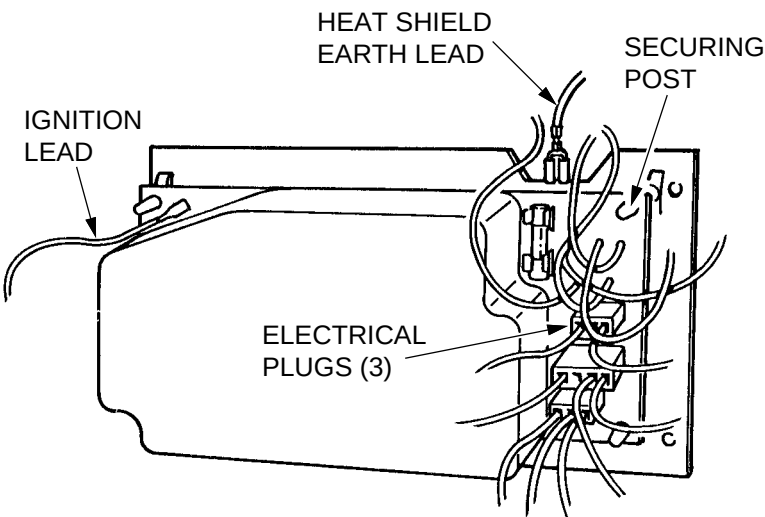
Gain access as Section 10, steps 1 to 4.

Do not disturb the heat shield earth connector.

Disconnect the three electrical plugs, ignition lead, the earth and mains cables.

Pull the board away from the supports.

When fitting the replacement make sure that it is correctly located on to the securing posts and make sure that all the connections are remade.



Control Thermostat and Overheat Cutoff

Gain access as Section 10, steps 1 to 5.

Control Thermostat:

Pull off the control thermostat knob, remove the two screws securing the thermostat to the control box.

Remove the electrical connections from the thermostat body.

Overheat Cutoff:

Remove the nut securing the overheat cutoff, withdraw the assembly.

Control Thermostat/Overheat Cutoff

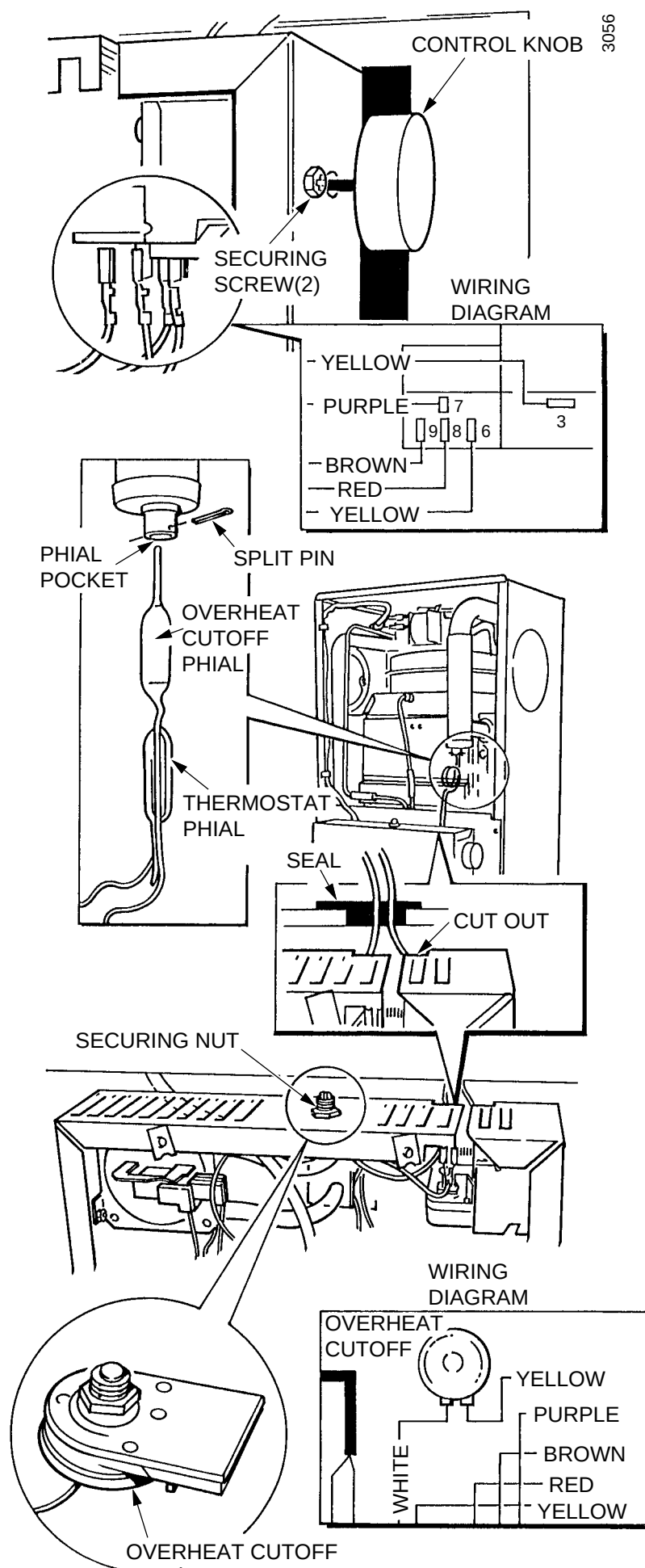
Now remove the split pin and then the thermostat phials from the pocket.

Make sure that the thermostat capillaries are correctly routed and the phials are securely fitted into the pocket.

Note: The position of the two phials should be as shown when replacing in the pocket.

Reconnect the electrical leads as shown.

When replacing either of these thermostats make sure that the phial is smeared with the heat sink compound supplied with the replacement.



Air Pressure Switch

Note: Alternative types of Air Pressure Switches may be fitted.

Gain access as Section 10 steps 1 to 4.

Remove the air pressure tubes and electrical connections, release the screws and nuts, remove the switch.

When fitting the replacement make sure that all the plastic tubes and electrical connections are made as shown.

Gas Valve

Gain access as Section 10, steps 1 to 4.

Disconnect all electrical leads from the gas valve.

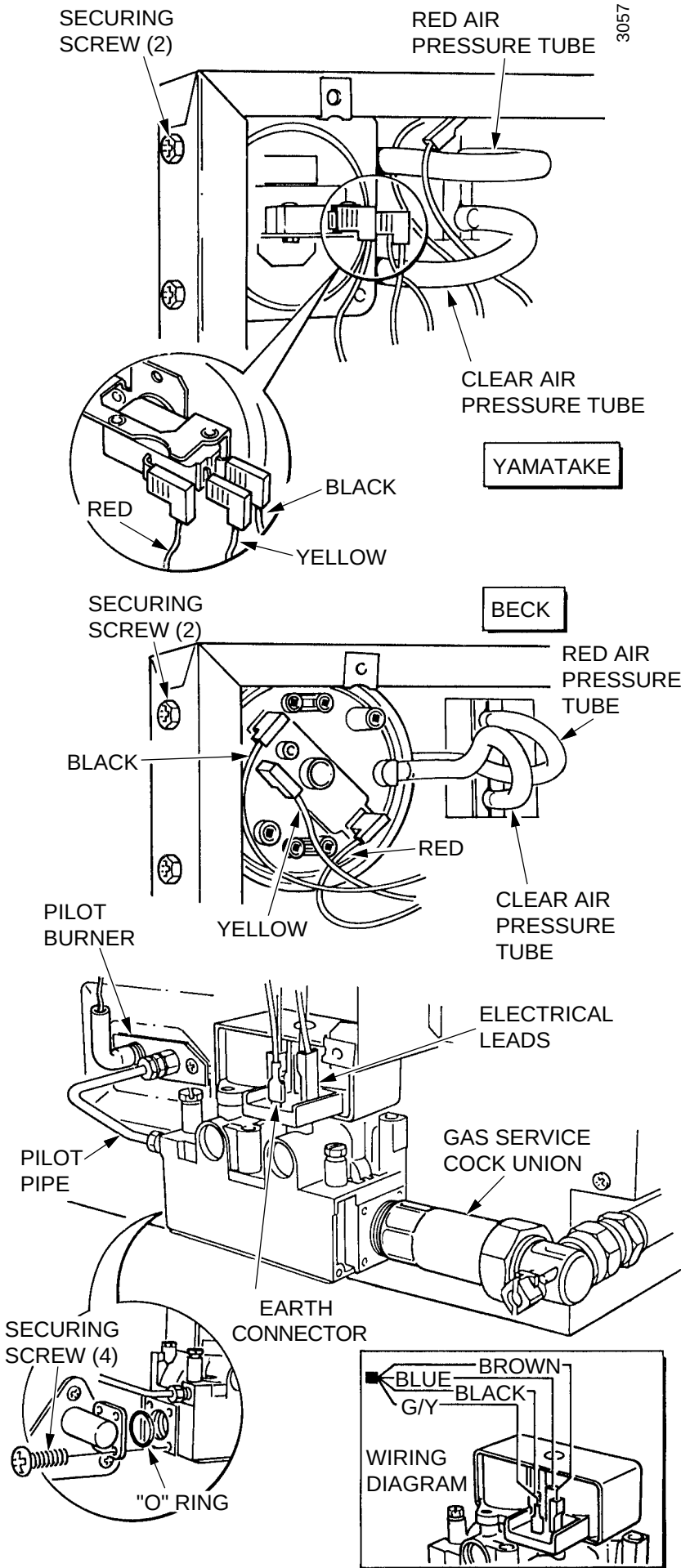
Disconnect the pilot pipe at the pilot burner.

Undo the four screws at the outlet manifold and disconnect the gas service cock union.

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

Fit the new valve, take care not to damage the "O" ring.

It will be necessary to purge the pipework and valve before relighting, check gas pressure settings, refer to Section 7.



Fan

step
1

Gain access as Section 10, steps 1, 2 and 5.

Remove the electrical connections and disconnect the air tubes.

Remove the fluehood/fan assembly screws and withdraw the assembly.

Turn the flue hood over and release the two securing screws as shown.

Remove the sealant from the fan outlet and manifold.

Take the beige/grey sealant supplied with the replacement fan and place firmly around the internal spigot of the flue manifold.

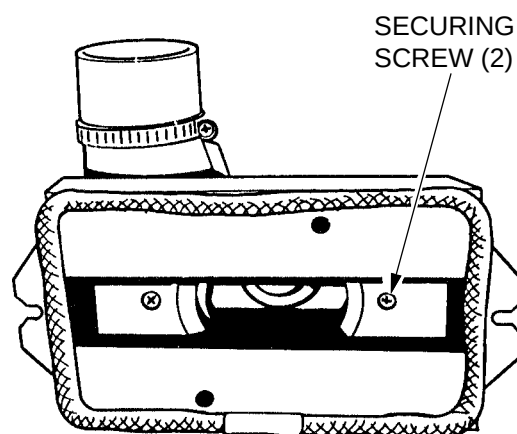
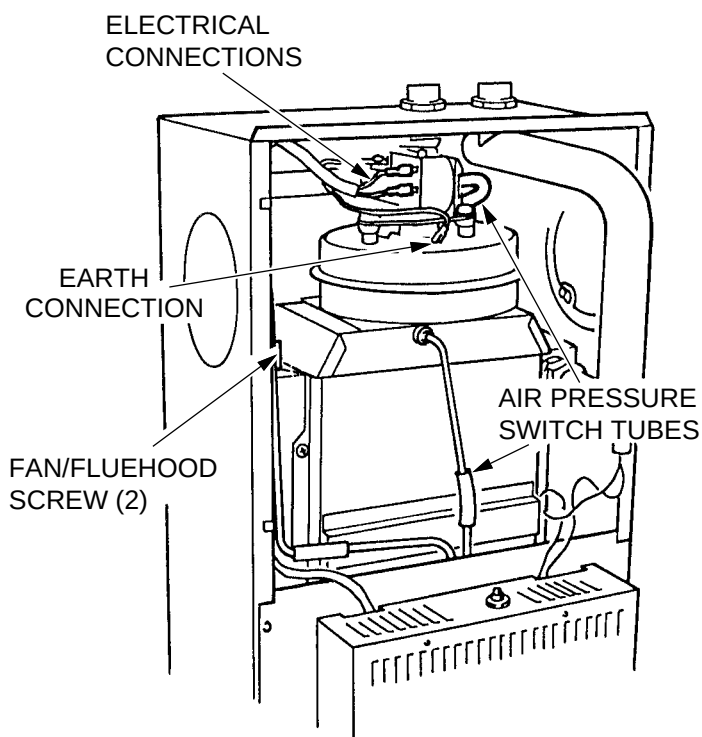
After fitting the fan outlet to the spigot smooth the sealant over the joint.

Make sure that when fitting the replacement fan to the flue hood that it is the correct way round for connection to the flue, refer to the diagram in Section 6, also steps 10 and 11.

Make sure that the earth connection is remade onto the new fan assembly.

The polarity of the other connections is not important.

step
2



Main Burner

Gain access as Section 10, steps 1 to 5 and 9.

Remove burner as in Section 10, step 13.

Main Burner Injector

Gain access as Section 10, steps 1 to 5 and 9.

Remove the injector as in Section 10, steps 13 and 14.

Insulation

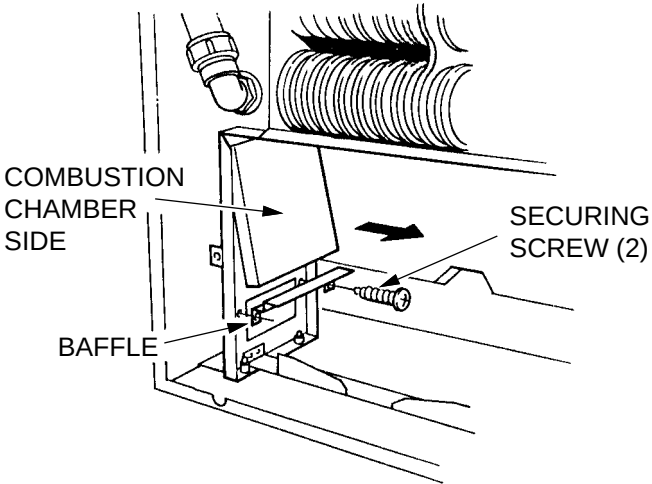
Gain access as Section 10, steps 1 to 10.

Combustion Chamber Sides and Rear:

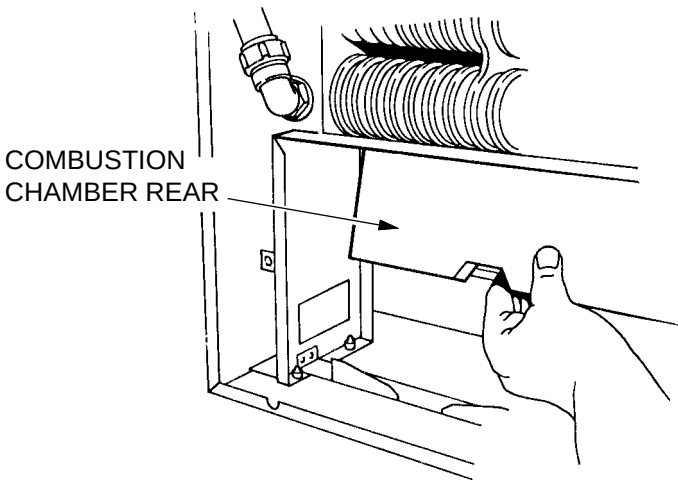
step
1

Remove the baffles.

Remove the insulation and fit the replacement parts making sure they are fitted as shown.



70 ILLUSTRATED



Heat Exchanger Front Cover Panel:

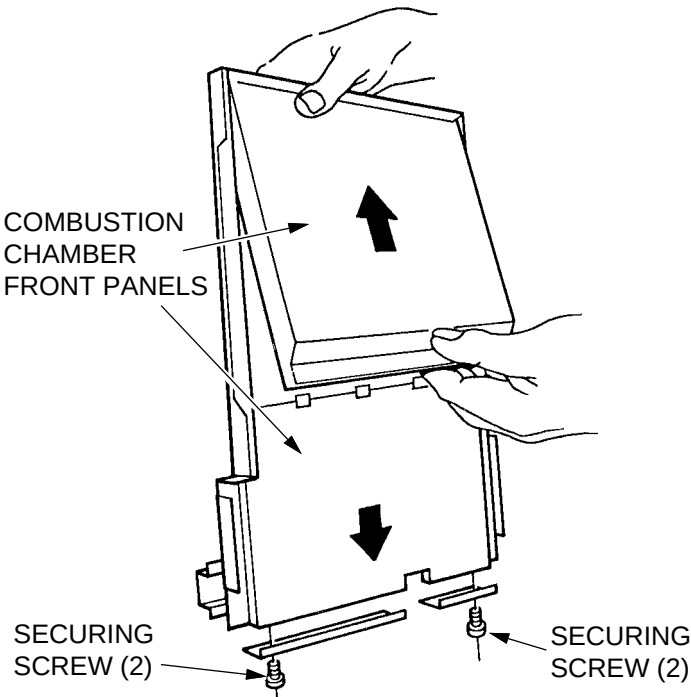
step
2

Remove panel, Section 10, step 10.

Upper Insulation: push up and pull out to remove.

Lower insulation: remove the securing screws and angle and remove the insulation.

When refitting either, make sure that it is fitted as shown.



Viewing Window

Gain access as Section 10, steps 1 to 4.

Remove the two screws and then the window.

When replacing take care not to damage the gasket.

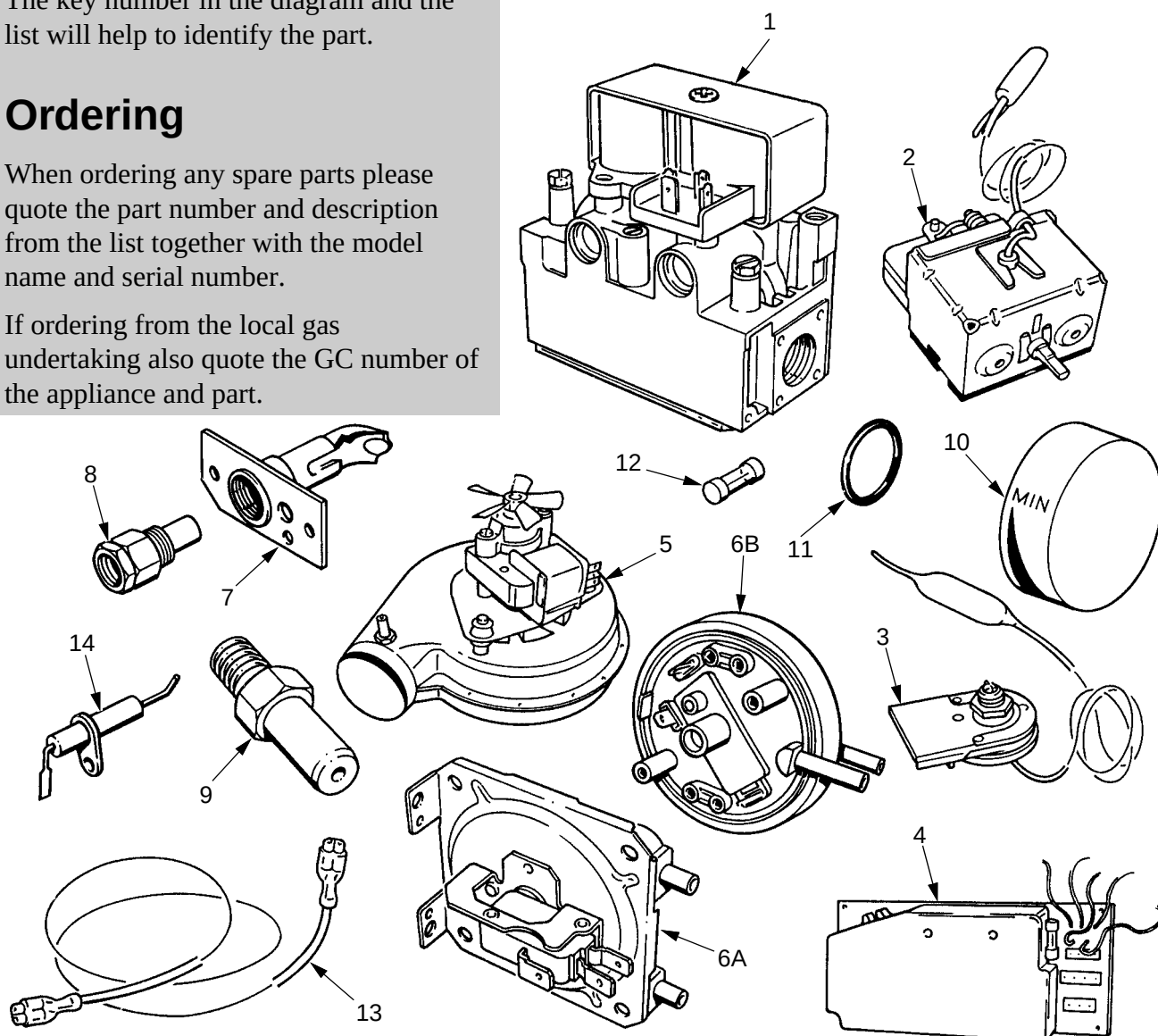
Part Identification

The key number in the diagram and the list will help to identify the part.

Ordering

When ordering any spare parts please quote the part number and description from the list together with the model name and serial number.

If ordering from the local gas undertaking also quote the GC number of the appliance and part.



Key No	Glow-worm Part No	Description	GC No.
1	800165	Gas valve assembly, inc item11	313 300
2	202539	Thermostat	397 893
3	202538	Overheat thermostat	397 894
4	900817	Printed circuit board	313 301
5	440073	Fan assembly (60) - <i>special</i>	397 987
5	800238	Fan assembly (70) - <i>special</i>	313 397
6A	202135	Air pressure switch - Yamatake	313 303
6B	440165	Air pressure switch - <i>special</i>	313 391
7	203428	Pilot assembly - inc. 8 and 14	313 304
8	800187	Pilot injector - <i>special</i>	313 392
9	205701	Main injector (60) - <i>special</i>	313 393
9	205702	Main injector (70) - <i>special</i>	313 394
10	440108	Control knob - thermostat - assembly	313 306
11	208040	"O" ring - gas valve	334 592
12	202015	Fuse to BS4265 sheet 2. type F1A	334 750
13	WX1800	Ignition lead	313 307
14	800188	Electrode - <i>special</i>	313 395