



Glow-worm

206606/10/87

Installation and Servicing Instructions

To be left adjacent to the gas meter

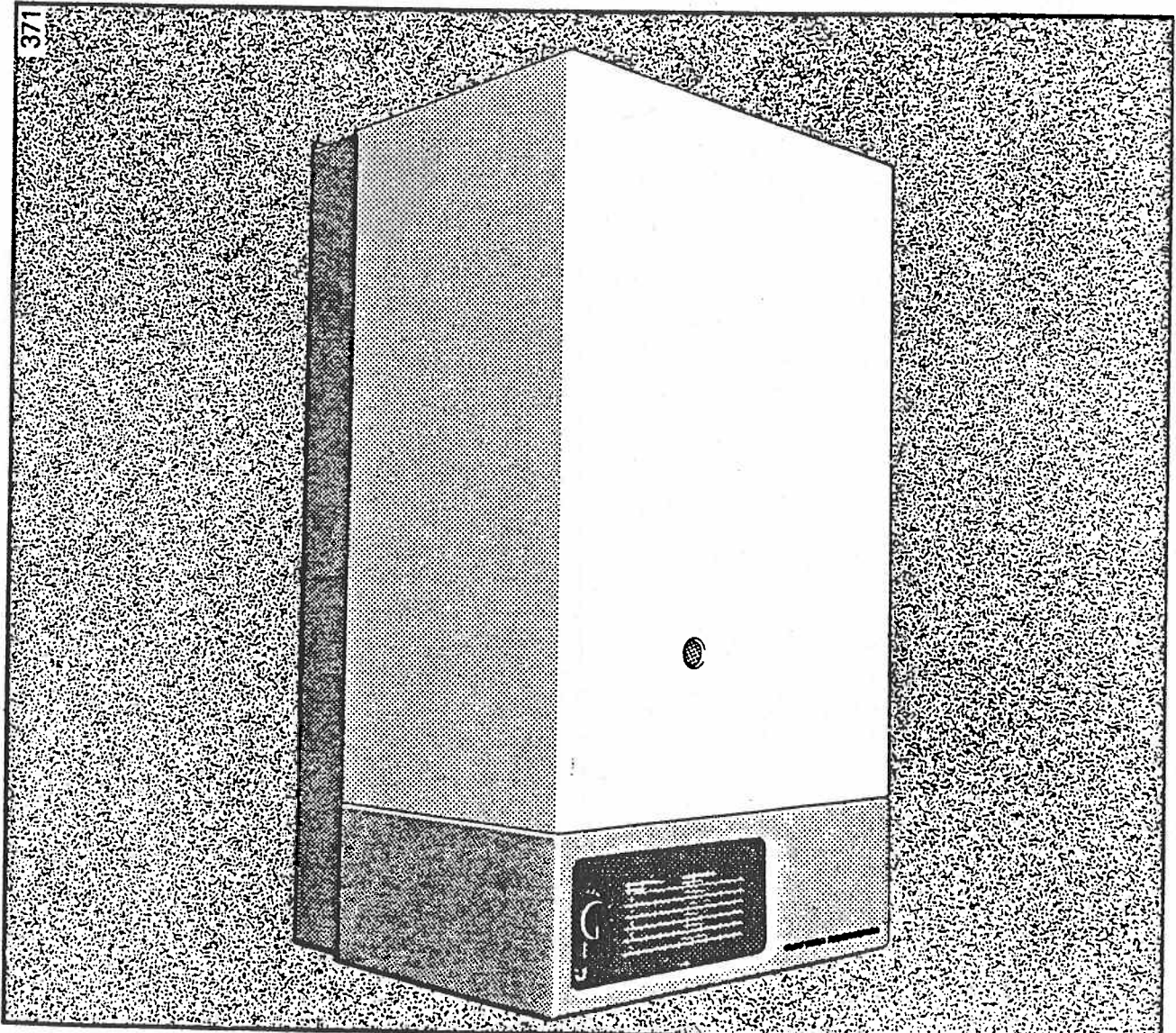
FUELSAVER 40B Mk II

G.C. Number 41 315 96

FUELSAVER 50B Mk II

G.C. Number 41 315 95

Balanced Flue Boilers
With Honeywell Control



1 GENERAL

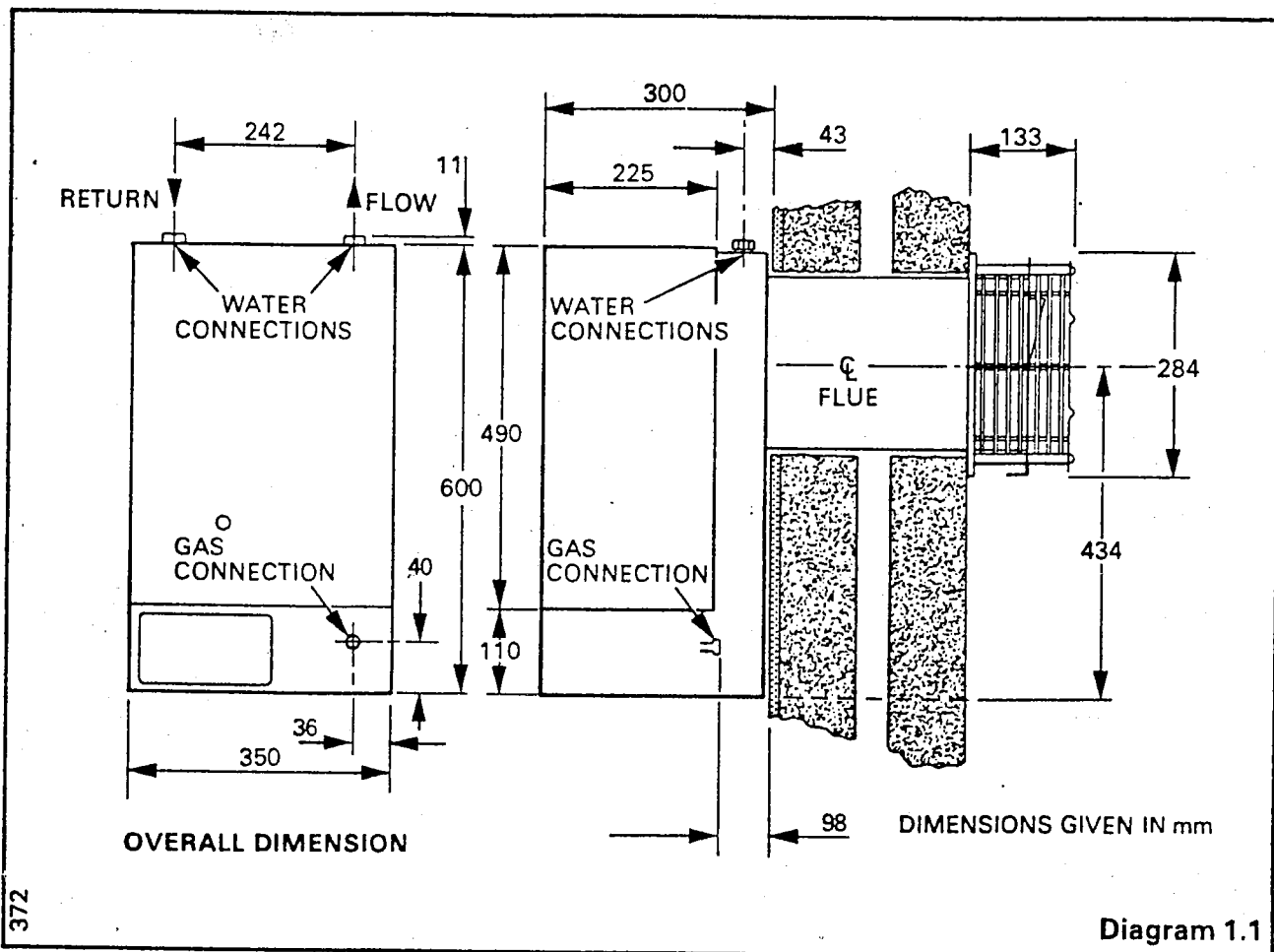


Diagram 1.1

IMPORTANT NOTICE: The Fuelsaver Mk II boilers are for use on natural gas only and **MUST NOT** be used on any other gas.

Electrical supply : 240V ~ 50Hz, fused 3A

Gas connecton: Rc $\frac{1}{2}$, ($\frac{1}{2}$ in. BSPT)

Water connection: 22mm Copper

Model	40B Mk II	50B Mk II
Weight Complete:	27 kg (59.5 lb)	27.5 kg (60.6 lb)
Water Content:	0.5 litre (0.11 gal)	0.6 litre (0.13 gal)
Injector, Bray:	Hole dia 3.25mm	Hold dia 3.5mm

Burner: Bray AB 24024 Bray AB 24021

ALL DIMENSIONS GIVEN IN MILLIMETRES, see diagram 1.1 and 1.2.

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

1.1 RANGE RATING

THIS BOILER MAY BE RANGE RATED TO SUIT INDIVIDUAL SYSTEMS. THE FOLLOWING TABLE GIVES THE MAXIMUM AND MINIMUM OUTPUTS.

The boiler input is factory pre-set at maximum and should be adjusted to suit the system requirements.

Glow-worm FUELSAVER 40B Mk II			
RANGE RATING	Min	Medium	Max
NOMINAL HEAT INPUT	kW	10.99	14.65
	Btu/h	37500	50000
NOMINAL HEAT OUTPUT	kW	8.79	11.72
	Btu/h	30000	40000
BURNER SETTING PRESSURE	m bar	6.1	11.0
	in.w.g.	2.4	4.4

Glow-worm FUELSAVER 50B Mk II			
RANGE RATING	Min	Medium	Max
NOMINAL HEAT INPUT	kW	14.65	18.32
	Btu/h	50000	62500
NOMINAL HEAT OUTPUT	kW	11.72	14.65
	Btu/h	40000	50000
BURNER SETTING PRESSURE	m bar	8.1	12.6
	in.w.g.	3.3	5.1

PLEASE REMEMBER:

ALWAYS USE PUMPED CIRCUITS WITH THE PUMP CONNECTED DIRECTLY TO THE BOILER CONTROL BOX.
 ALWAYS INCORPORATE PUMPED PRIMARIES TO A HOT WATER CYLINDER.
 THE PUMP CAPACITY MUST BE ADEQUATE FOR THE SYSTEM.
 INCORRECT WIRING CAN BE DANGEROUS.
 STATIC HEAD IS IMPORTANT.
 BALANCE THE SYSTEM.
 VENT THE SYSTEM BEFORE FIRING THE BOILER.
 ALWAYS ALLOW ACCESS FOR SERVICING THE BOILER AND ANY CONTROLS.
 IN 'HARD' OR 'AGGRESSIVE' WATER AREAS IT IS RECOMMENDED THAT AN INHIBITOR IS USED, SUCH AS 'FERNOX CP3'.

1.2 PROCEDURE

It is essential that the boiler is installed strictly in accordance with the instructions in this booklet and the attention of the installer is drawn in particular to the following points.

1.3 STATUTORY REQUIREMENTS

THE INSTALLATION OF THIS BOILER MUST BE CARRIED OUT BY A COMPETENT PERSON AND MUST BE IN ACCORDANCE WITH THE RELEVANT REQUIREMENTS OF THE CURRENT ISSUE OF THE GAS SAFETY (Installation & Use) REGULATIONS, RELEVANT BUILDING REGULATIONS, I.E.E. WIRING REGULATIONS, LOCAL WATER UNDERTAKING BYELAWS and BUILDING STANDARDS (Scotland) REGULATIONS. DETAILED RECOMMENDATIONS ARE CONTAINED IN THE FOLLOWING BRITISH STANDARD CODES OF PRACTICE:

CP331 PART 3, BS5440 PART 1 and PART 2, BS6798, BS5449 PART 1 and BS5546.

1.4 GAS SUPPLY

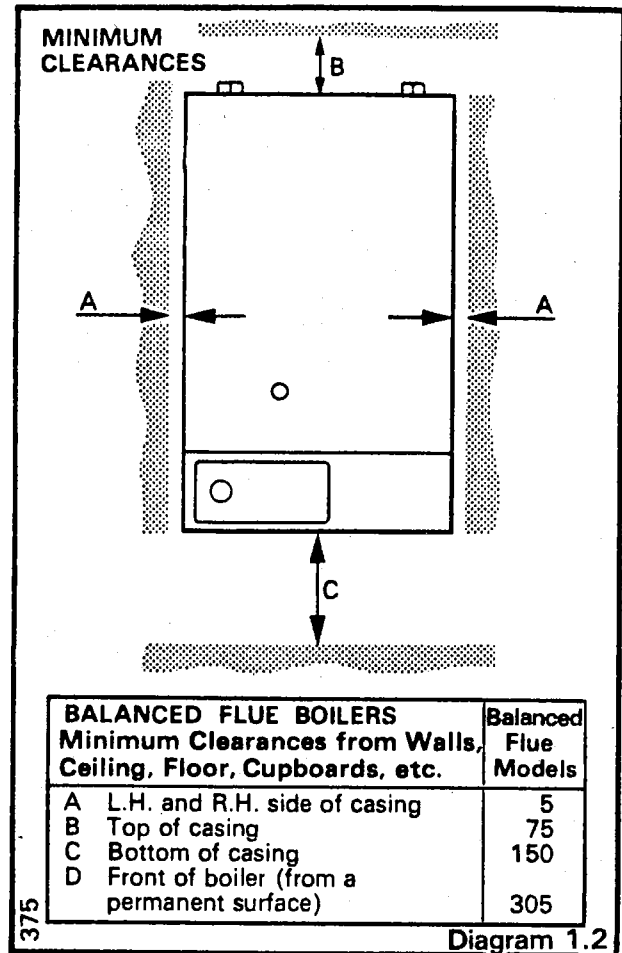
Installation pipes should be fitted in accordance with CP331 Part 3. Pipework from the meter to the boiler must be of adequate size. Pipes of a smaller size than the boiler inlet gas connection should not be used. The complete installation must be tested for soundness as described in the above code.

1.5 ELECTRICAL

The electrical installation must be carried out by a qualified electrician. All external components shall be of the approved type and shall be connected in accordance with the current I.E.E. Wiring Regulations and any local regulations which apply. The boiler must be earthed with connections to the mains supply preferably through a standard 13 amp shuttered socket outlet and 3 amp fused 3 pin BS1363 plug. Alternatively, a 3 amp fused double pole isolating switch may be used, having a minimum double pole contact separation of 3mm, serving only the boiler. Heat resistant flexible cable of at least 0.75mm^2 (24/0.20mm), to BS6500 table 12 must be used for all connections to the control box.

1.6 B.S.I. CERTIFICATION

1.6.1 This boiler is certified by B.S.I. for safety and performance. It is therefore, important that no alteration is made to the boiler unless recommended in writing by Glow-worm Ltd.



1.6.2 Any alteration not approved by Glow-worm Ltd. could invalidate the B.S.I. certification, boiler warranty and could also infringe the Gas Safety (Installation & Use) Regulations.

1.7 BOILER LOCATION

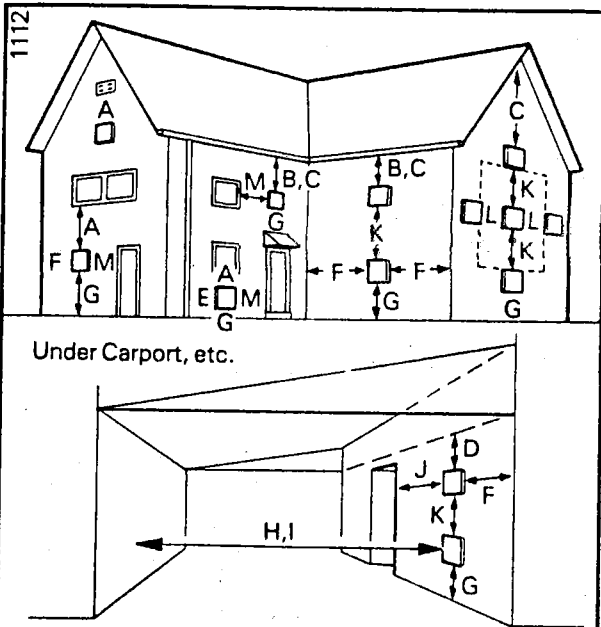
1.7.1 The boiler position should be such that the minimum clearances are provided as shown in diagram 1.2.

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

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

1.7.4 A compartment used to enclose the boiler must be designed and constructed specifically for this purpose. An existing cupboard or compartment may be used providing that it is modified for the purpose. Details of essential features of cupboard compartment design are given in BS6798.

2 FLUE AND VENTILATION



MINIMUM SITING DIMENSIONS FOR BALANCED FLUE TERMINALS

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

Diagram 2.1

AIR VENT AREA TABLE FOR COMPARTMENT INSTALLATIONS

POSITION OF AIR VENTS	AIR VENT AREAS			
	AIR FROM ROOM OR INTERNAL SPACE		AIR DIRECT FROM OUTSIDE	
	40 B	50 B	40 B	50 B
HIGH VENT	132 cm ²	165 cm ²	66 cm ²	83 cm ²
LOW VENT	132 cm ²	165 cm ²	66 cm ²	83 cm ²

2.1 BALANCED FLUE UNIT

Detailed recommendations for flueing are given in BS 5440:1. The following notes are intended to give general guidance.

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

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

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

2.1.3 The air inlet/products outlet duct and the terminal of the boiler must not be closer than 50mm to combustible material. Detailed recommendations on protection of combustible material are given in BS 5440:1, sub-clause 20.1.

2.2 TIMBER FRAMED HOUSING

If the appliance is to be installed in a timber framed 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 region of British Gas or Glow-worm Ltd.

2.3 PROTECTING THE TERMINAL

2.3.1 Where the terminal is less than 2 meters 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.

2.3.2 Guards are available from Tower Flue Components Ltd., telephone Tonbridge 351555, quoting reference 'A' Black, or from Quinnell, Barrett and Quinnell Ltd., 884 Old Kent Road, London S.E.15, quoting reference type 'E'.

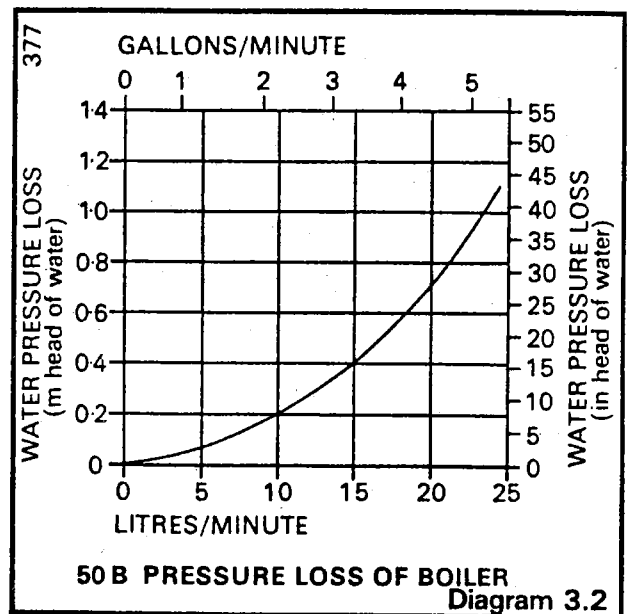
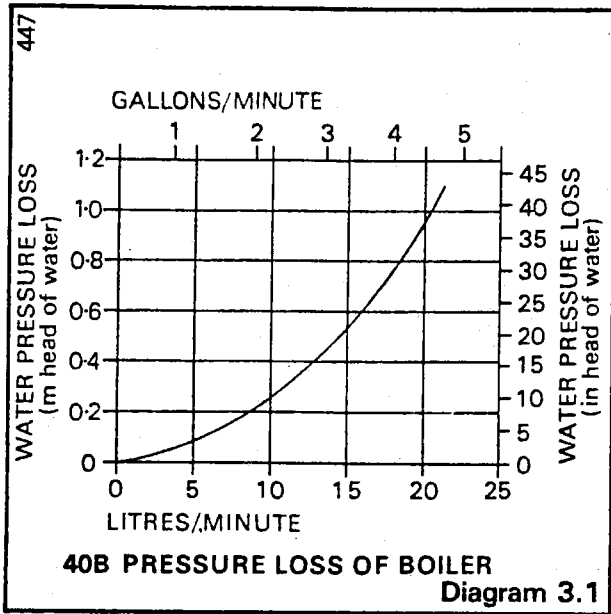
2.4 ROOM VENTILATION

Where the boiler is fitted in a room, or internal space, the boiler does not require the room or internal space, containing it to have a permanent air vent.

2.5 CUPBOARD/COMPARTMENT VENTILATION

2.5.1 Where the boiler is fitted in a cupboard or compartment, the ventilation area must be in accordance with AIR VENT TABLE.

2.5.2 Both the high level and low level air vents must communicate with the same room, or internal space, or must both be on the same wall to outside air.



3.1 PUMP

3.1.1 The pump should be fitted in the flow pipe from the boiler and it is recommended that a pump producing at least 2.5m (8ft) head is used to give a temperature difference of approximately 11°C (20°F). The pump should then give a flow rate through the boiler as follows:

- Fuelsaver 40B MkII** 15.3 litres/min (3.4 gal/min)
- Fuelsaver 50B MkII** 19.2 litres/min (4.2 gal/min)

3.1.2 For details of pressure loss of the boiler see appropriate graph, diagram 3.1 for 40B model or 3.2 for 50B model. Examples of suitable approved pumps are SMC Commodore, Grundfos UPS 15 and Euramo MXL 130. High resistance microbore systems may require a higher duty pump.

3.2 BY-PASS

A by-pass must be fitted, see diagram 3.3. The flow through the boiler while the burner is alight must not be allowed to fall below the following minimum flow rates:

- Fuelsaver 40B MkII** 10.5 litres/min (2.3 gal/min)
- Fuelsaver 50B MkII** 13.2 litres/min (2.9 gal/min)

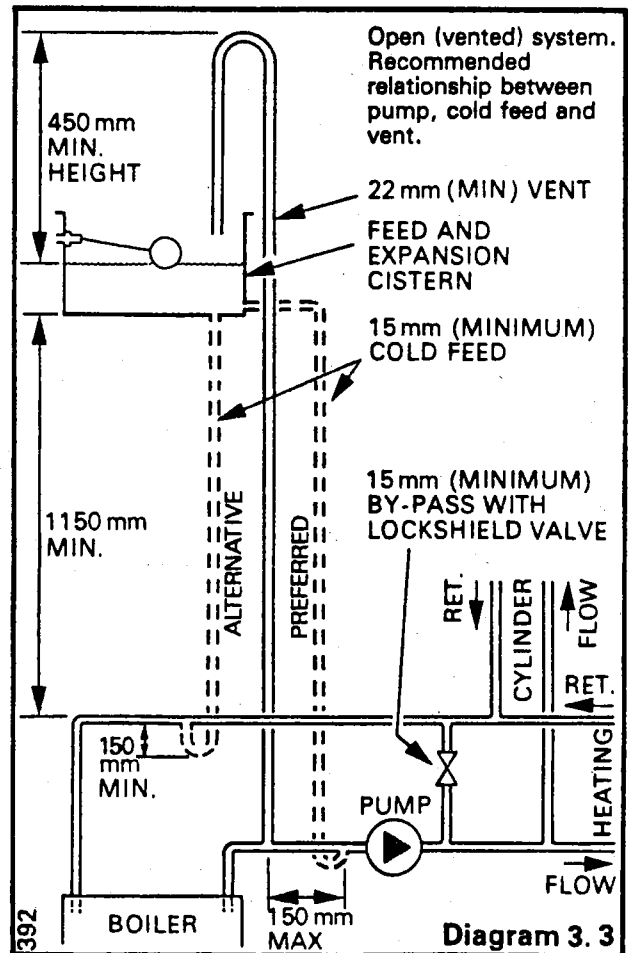
This is equivalent to a maximum temperature difference of 16°C, (29°F).

3.3 CYLINDER

The hot water cylinder must be a double feed (fully indirect) pattern. Single feed (self-priming) cylinders are not recommended, and must not be used on sealed systems.

3.4 SAFETY VALVE

The provision of a safety valve is not necessary for an open vented system, however if a safety valve is fitted it must comply with the specification detailed in section 4.2.



3.5 OPEN (VENTED) WATER SYSTEMS

- 3.5.1 A 22mm diameter open vent must be fitted in the flow from the boiler and terminated above the cold feed and expansion cistern, which should be not less than 22 litre (5 gallon) capacity.
- 3.5.2 The vent must have a continuous rise to discharge over the cistern. Horizontal runs should be avoided. It is essential that no valve is fitted to the open vent.
- 3.5.3 The cistern must not be situated more than 27.5 meters above the boiler.
- 3.5.4 A 15mm diameter minimum cold feed must be fitted in the system.
- 3.5.5 For an open (vented) system it is important that the relative positions of the pump, cold feed and open vent should be as shown in diagram 3.3.

3.6 DRAINAGE

A Drain cock must be provided at the lowest point(s) which will allow the drainage of the entire system, including the boiler and hot water storage vessel, for subsequent servicing. Drain cocks shall be to BS2879, type 1. A drain point is provided, for heat exchanger drainage, on the body.

3.7 WATER CONNECTIONS

The boiler is supplied with nuts and olives to accept 22mm outside diameter copper tube to BS2871. The right-hand connection is the flow from the boiler, the return is the left-hand.

3.8 INHIBITOR

- 3.8.1 If an inhibitor is to be used in the system, it is recommended by Industrial (Anti-corrosion) Services Ltd. that 'Ferrox CP3' is used, in accordance with their instructions.
- 3.8.2 Where installing a Fuelsaver boiler into an existing system, special care should be taken to drain the entire system, including radiators, then thoroughly flush out before installing the boiler and adding the inhibitor.

4.1 GENERAL

The installation should comply with the appropriate requirements of BS5449 Part 1 and BS6798, see diagram 4.1 for layout.

4.2 SAFETY VALVE

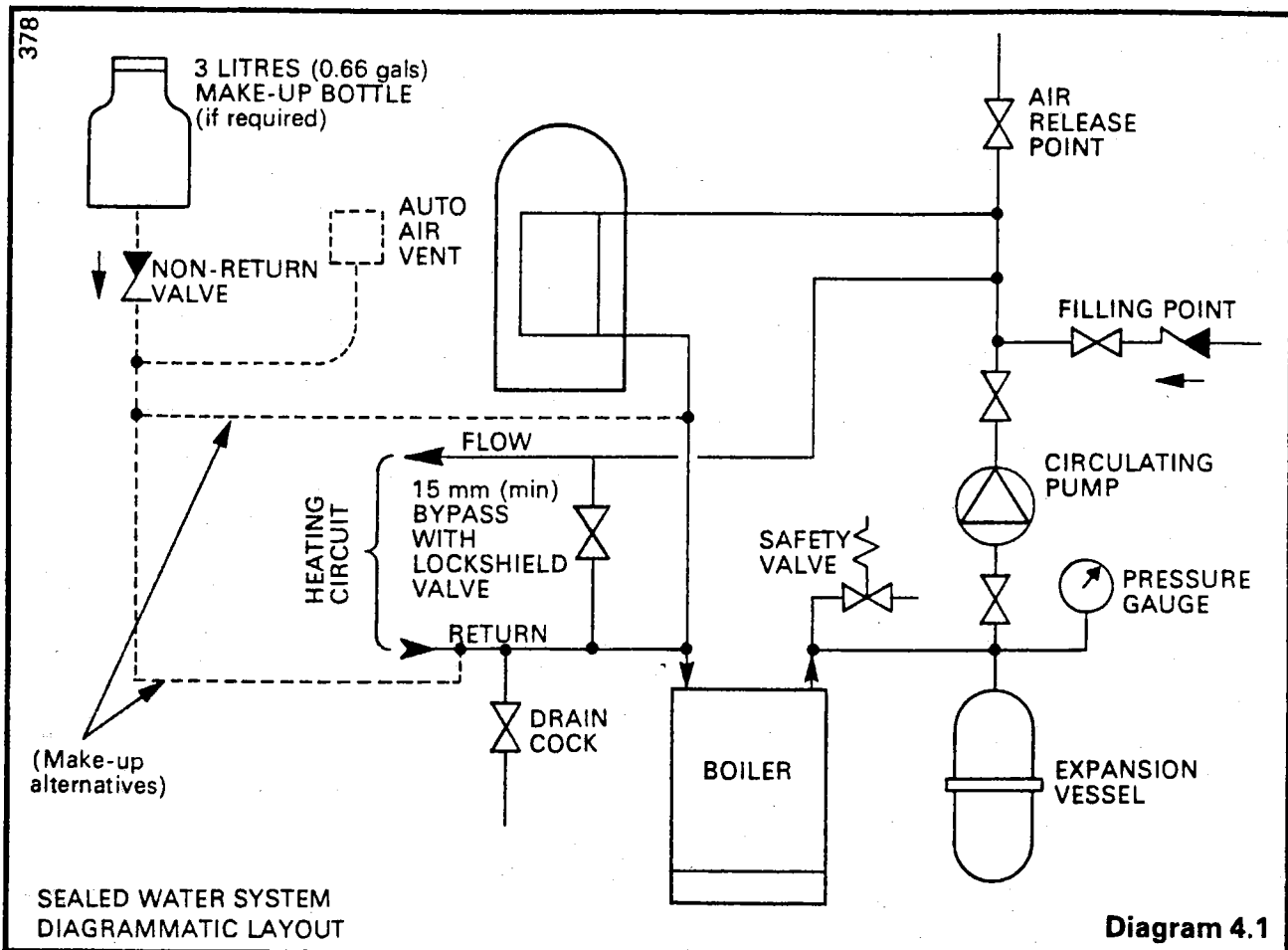
A safety valve must be fitted in a sealed system. The safety valve must conform with the requirements of BS6759 Part 1 and fitted to the requirements of BS6798.

4.3 EXPANSION VESSEL

- 4.3.1 A diaphragm type expansion vessel shall be connected at a point close to the inlet side of the circulating pump in a manner laid down in the vessel maker's instruction, see illustration of recommended system layout diagram 4.1.
- 4.3.2 The expansion vessel must be chosen to suit the volume of water in the system, refer to BS5449 Part 1 clause 25 for further details. The charge pressure shall not be less than the static head at the point of connection. (i.e. height of the top point of the system above the expansion vessel).
- 4.3.3 The expansion vessel should have an acceptance volume sufficient to accommodate the volume change of the system water when heated from 10°C to 110°C. The practical acceptance volume is that which the vessel will accommodate when the gauge pressure developed rises to 0.35 bar less than the safety valve setting. For most systems the ratio will be between 8:1 and 12:1 (refer to BS5449 Part 1 for specific information). The volume of water in the boiler is given in section 1, 'General'.

4.4 PRESSURE GAUGE

A pressure gauge with set pointer and covering at least the range 0 to 4 bar (0 to 60 lbf/in²) shall be permanently fitted to the system in a position visible to the person carrying out the filling operation.



4.5 CYLINDER

The hot water cylinder shall be either of the indirect coil type or a direct cylinder fitted with an immersion calorifier which is suitable for operating at gauge pressure of 0.35 bar in excess of the safety valve setting. Single feed indirect cylinders are not suitable.

4.6 MAKE-UP

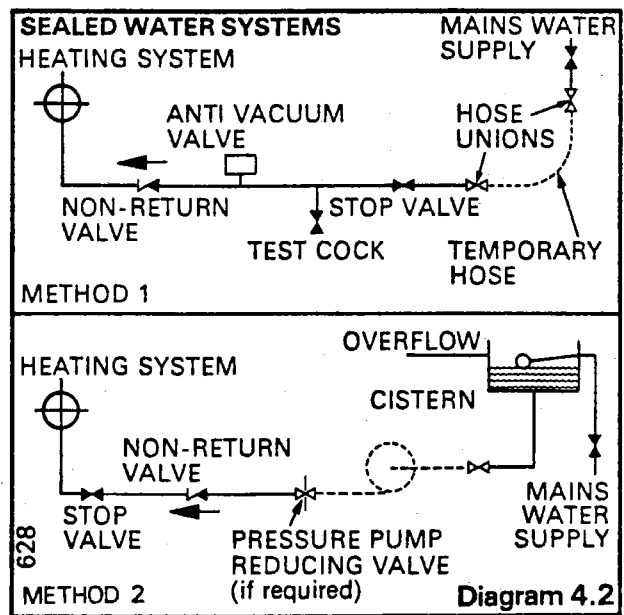
Provision shall be made for replacing water lost from the system either from a make-up vessel or by pre-pressurising the system. A make-up vessel must be mounted in a position higher than the top point of the system and connected through a non-return valve to the system on the return side of either the hot water cylinder or heating circuit. Where access to a make-up vessel would be difficult provision for make-up can be made by pre-pressurisation of the system, see also 4.8 'Filling'.

4.7 MAINS CONNECTIONS

There must be no connection to the mains water supply or to a water storage cistern supplying domestic water, even through a non-return valve, without the approval of the local water undertaking.

4.8 FILLING

The system is to be fitted with a filling point at low level. Two methods of filling are shown in diagram 4.2.

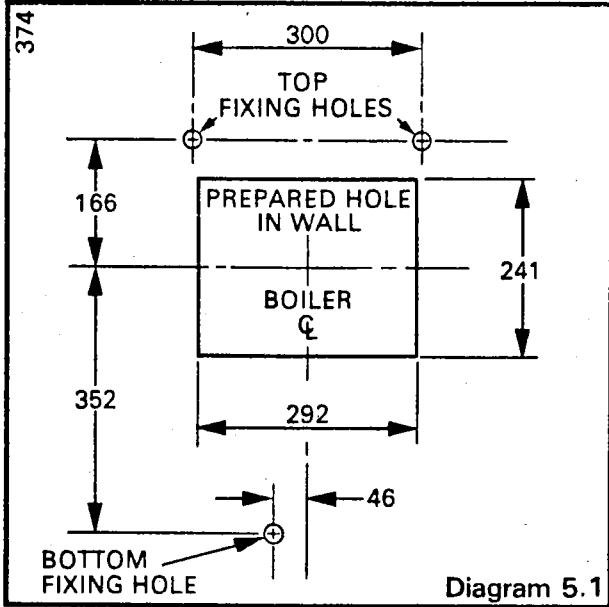


5 FLUE AND PREPARATION

5.1 FLUE LENGTHS

5.1.1 Check that the balanced flue set supplied is suitable for the wall thickness through which it has to pass.

5.1.2 The standard flue set supplied is suitable for wall thicknesses 238mm to 330mm. For alternative wall thicknesses, a short flue kit No.406205 for 76mm to 238mm and a long flue kit 416193 for 324mm to 580mm are available to order.



5.2 POSITIONING

5.2.1 Place the template provided on the wall in the required boiler position and mark location of balanced flue hole, see diagram 5.1.

5.2.2 Cut the hole in the wall to accept the wall liner sleeve 'G', see diagram 5.2.

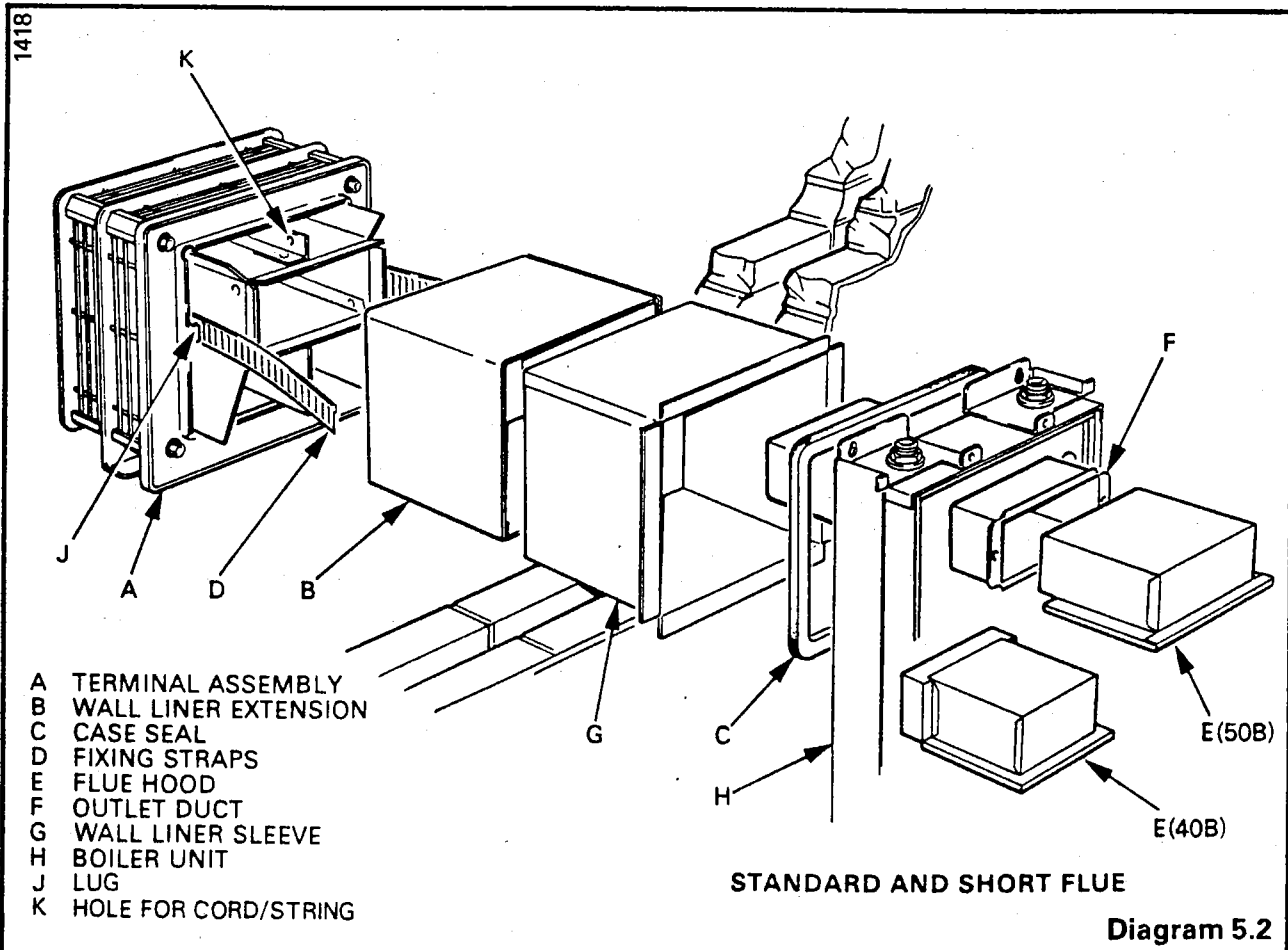
5.2.3 Make good any plasterwork necessary at this stage. When dry, select the liner with the turned flange at one end 'G'. Push it into the hole until the flange is flush with the wall. Fit the extension of the liner 'B' from inside so that it is flush with the outside brickwork. Mark the two liner positions and remove them from the hole. Align the marks on the liners and tape the two together with the tape provided.

5.2.4 The sleeve 'B' is not required for wall thickness less than length of duct 'G' on the short flue set. For shorter wall thickness than duct 'G' length the plain ends of ducts 'G' and 'F' will have to be cut to the required length.

5.2.5 Re-position the template on the wall in line with wall opening or refer to diagram 5.1.

5.2.6 Mark positions for the three fixing screws.

5.2.7 Drill and plug the three fixing holes, suitable for No.10 x 50mm long wood screws and wall plugs.



- A TERMINAL ASSEMBLY
- B WALL LINER EXTENSION
- C CASE SEAL
- D FIXING STRAPS
- E FLUE HOOD
- F OUTLET DUCT
- G WALL LINER SLEEVE
- H BOILER UNIT
- J LUG
- K HOLE FOR CORD/STRING

STANDARD AND SHORT FLUE

Diagram 5.2

5.3 PREPARATION

5.3.1 Remove the controls cover by pulling forward until it is clear of the boiler, thus exposing the controls.

5.3.2 Remove outer casing by releasing the screw at the bottom and unhooking at the top, then the inner case by releasing the screws at top and bottom, see diagram 5.3.

5.3.3 Remove the flue hood by removing the wing nuts holding the securing angle and remove the angle. Refer to diagram 5.4 for 40B model or diagram 5.5 for 50B model. Lift off the flue hood. Remove the flue duct screws, 'A'. These screws are also used to secure the sealing plates on the Fuelsaver 50B model.

5.3.4 Remove the backing strip from the case seal 'C' provided and fix it around the spigot on the back of the boiler 'H', see diagram 5.2.

5.3.5 Remove the two side strips from the bottom package fitment and hook over the top edge of the side panel. Secure each side strip with one screw at the bottom.

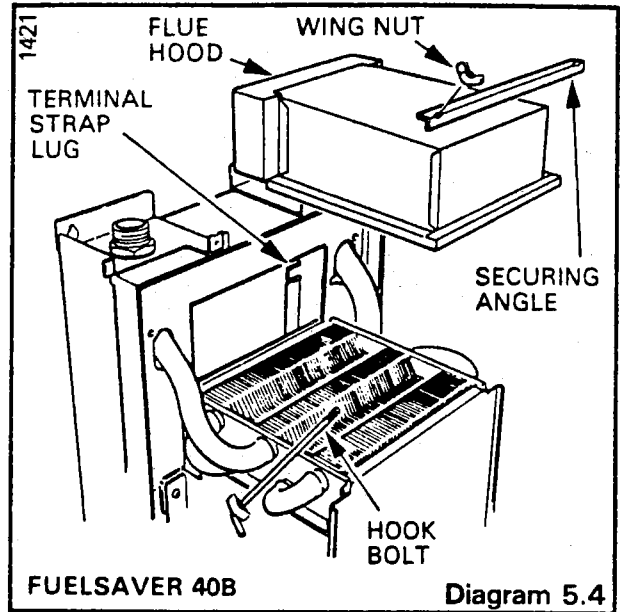


Diagram 5.4

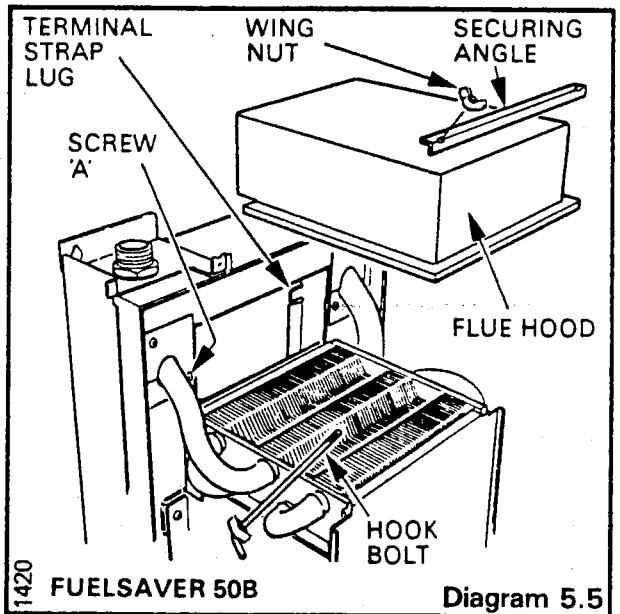


Diagram 5.5

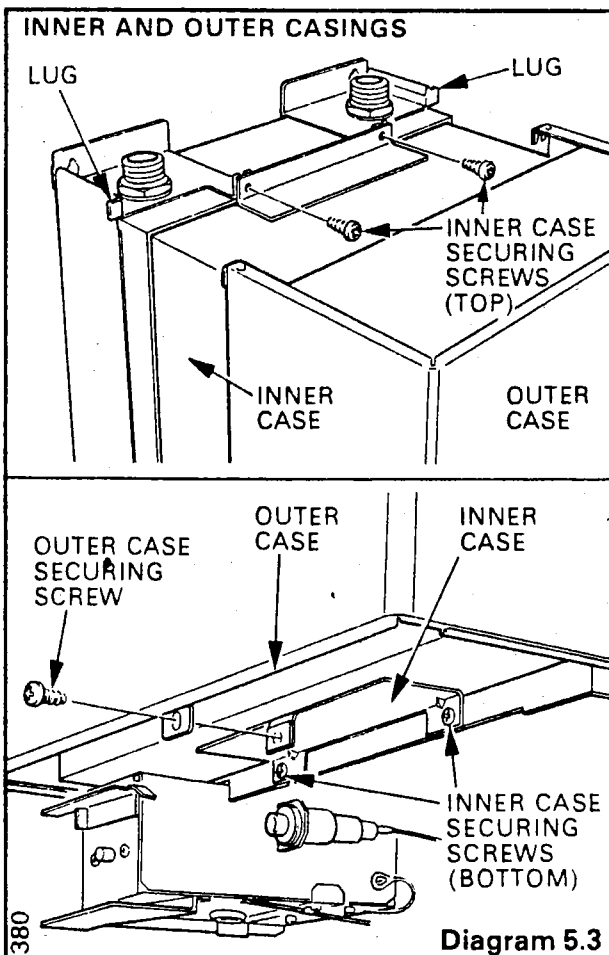


Diagram 5.3

6 INSTALLATION

6.1 EXTERNAL ACCESS PROCEDURE

- 6.1.1 Fix slotted straps 'D' to terminal 'A' by inserting the lugs on the terminal into the end of each strap. Bend lugs towards the outside so that the straps are securely held. See diagram 5.2.
- 6.1.2 Fit the wall liner assembly 'B and G' into the hole in the wall, from inside the room.
- 6.1.3 Fit the top two fixing screws, allowing them to protrude from the wall surface to accept the keyhole slots on the appliance. Hook the appliance onto the screws and tighten.
- 6.1.4 Fit the bottom fixing screw.
- 6.1.5 Place the terminal against the outside wall with the inner flange of the wall plate located inside the wall liner assembly. Support the terminal in any suitable way, alternatively:

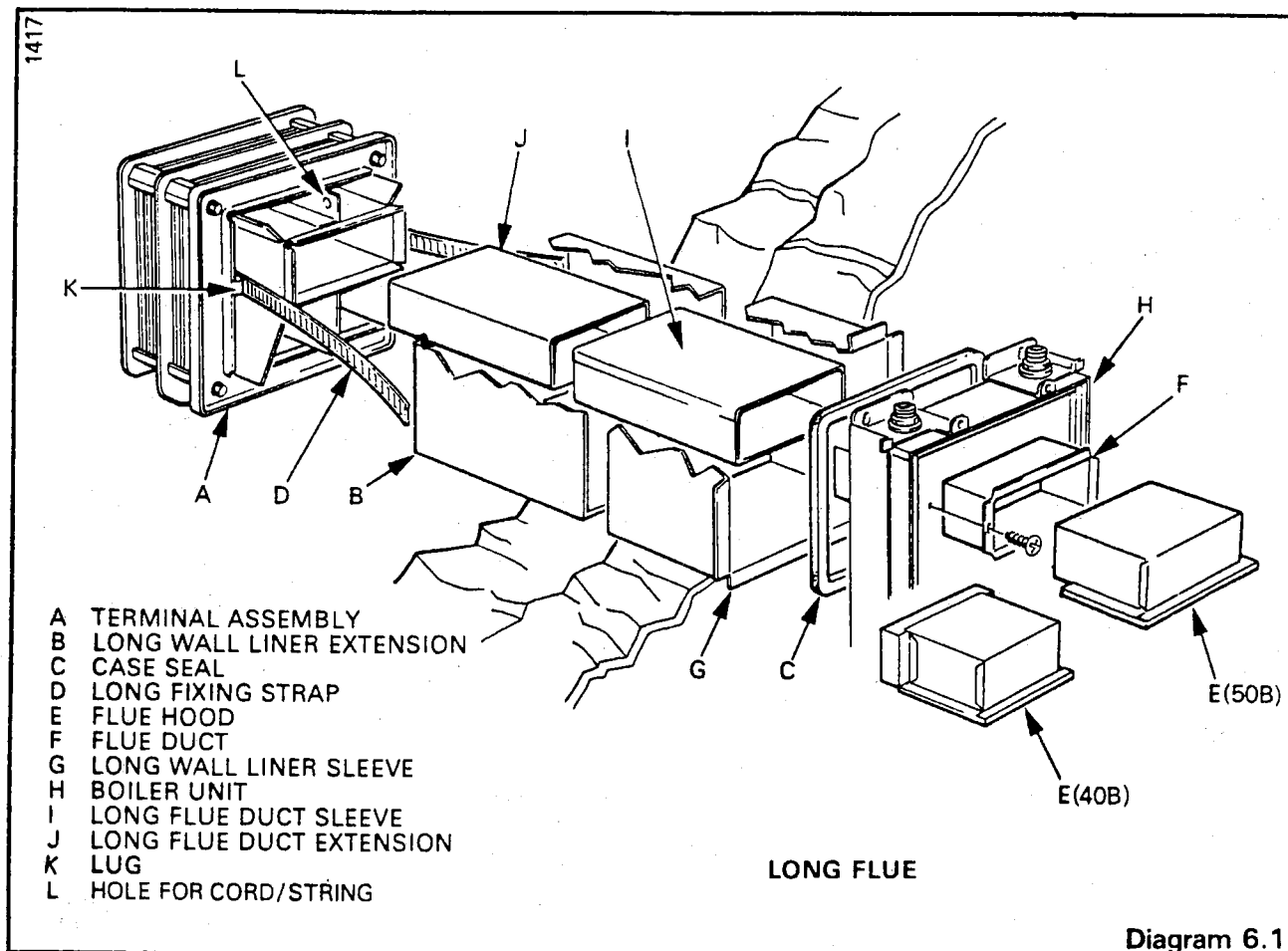
Attach a length of strong string, cord etc. to the terminal through the small hole provided in the top centre of the baffle, see diagram 5.2. Attach a suitable weight to the free end of the string. Pass the weight and string through the hole in the wall.
- 6.1.6 Working from inside the room, attach the straps to the appliance lugs, see diagram 5.4, and bend inwards towards the room. Cut off excess length from the straps.
- 6.1.7 Push the flue duct 'F' into the terminal with the unflanged end against the terminal. Ensure that the lower flange of duct 'F' fits behind the combustion chamber rear panel. For walls less than 230mm thick, cut the surplus length from the unflanged end of the duct, to suit the wall thickness.
- 6.1.8 Refit the two screws through the duct flange and sealing plates but do not tighten.

NOTE: sealing plates are not fitted on 40B model.
- 6.1.9 Replace the flue hood, inserting the rear into the flue duct. Push down on the rear of the hood and tighten the sealing plate screws. Re-fit the securing angle, tie rods and wing nuts.
- 6.1.10 Refit the inner case and secure with the screws previously removed.

6.2 INTERNAL ACCESS PROCEDURE

- 6.2.1 It is possible to install the terminal from inside the building should this be required.
- 6.2.2 Fix slotted straps 'D' to terminal 'A' by inserting the lugs on the terminal on to the end of each strap. Bend lugs towards the outside so that the straps are securely held, see diagram 5.2.
- 6.2.3 Fit the top two fixing screws, allowing the heads to protrude from the wall surface to accept the keyhole slots in the appliance.
- 6.2.4 Attach a length of strong string, cord etc., to the terminal through the small hole provided in the top centre of the baffle.
- 6.2.5 Fit the wall liner assembly 'B and G' into the hole through the wall.
- 6.2.6 Pass the terminal through the wall liner assembly, using the string with a suitable attached weight to hold the terminal in position. NOTE: The terminal 'TOP' is indicated, and the flange of the wall plate is to be located inside the wall liner assembly.
- 6.2.7 Hook the appliance onto the two screws in the wall, passing the string and weight through the air duct in the back of the appliance. Tighten two upper screws and fit bottom screw.
- 6.2.8 Attach the two slotted straps from the terminal to the two lugs on the appliance, see diagram 5.4 and bend lugs inward, towards the room. Cut off excess length of straps and remove string.
- 6.2.9 Push the flue duct 'F' into the terminal, with the unflanged end against the terminal. Ensure that the lower flange of duct 'F' fits behind the rear panel of combustion chamber. For walls less than 230mm thick, cut the surplus length from the unflanged end of the duct, to suit the wall thickness.
- 6.2.10 Refit the two screws through the duct flange and sealing plates, but do not tighten.

NOTE: sealing plates are not fitted on 40B model.
- 6.2.11 Replace the flue hood, inserting the rear into the flue duct. Push down onto the rear of the hood, and tighten the sealing plate screws. Re-fit the securing angle, tie rods and wing nuts firmly, but not overtighten.
- 6.2.12 Refit the inner case, and secure it with the screws previously removed.



6.3 INSTALLING THE LONG FLUE SET

6.3.1 For long flue sets see diagram 6.1, the flue duct 'F', extension 'J' and duct sleeve 'I' need to be assembled together to suit the wall thickness. This assembly is 75mm longer than the wall liner assembly 'B' and 'G', already prepared. With a minimum overlap of 40mm at each joint, use the tape provided to make a permanent assembly of the three flue duct elements.

6.3.2 Push the flue duct assembly into the terminal, with the unflanged end entering the terminal. Ensure that the lower flange of duct 'F' fits behind the rear panel of the combustion chamber.

6.3.3 Refit the two screws through the duct flange and sealing plates but do not tighten.

NOTE: sealing plates are not fitted on 40B model.

6.3.4 Replace the flue hood, inserting the rear into the flue duct. Push down on the rear of the hood, and tighten the sealing plate screws (sealing plates are not fitted on 40B model). Refit the securing angle, tie-rods and wing nuts firmly, but do not overtighten.

6.3.5 Refit the inner case, and secure it with the screws previously removed.

7.1 GAS

7.1.1 The gas inlet to the appliance is $Rc\frac{1}{2}$ and is situated at the base of the appliance on the gas cock.

7.1.2 The gas meter must be capable of passing, in addition to all other demands, as follows:

Natural Gas Requirements

Fuelsaver 40B Mk II 1.4 m³/h (50 ft³/h)

Fuelsaver 50B Mk II 1.75 m³/h (63 ft³/h)

7.1.3 The meter governor must ensure a constant outlet pressure of 20 mbar, (8 in. wg.). The gas installation should be in accordance with CP331 Part 3. The whole of the gas installation, including the meter should be inspected and tested for soundness and purged in accordance with the recommendations of CP331 Part 3.

7.2 WATER

7.2.1 The boiler is supplied with nuts and olives to accept 22mm diameter copper tubing to BS2871.

7.2.2 The right hand connection is the flow from the boiler the return is the left hand.

8 ELECTRICAL WIRING

8.1 SUPPLY CABLE CONNECTION

8.1.1 Remove the control box by removing the two fixing screws at the front above the fascia, and lower the front of the box until it is clear of its cover. Push box towards the rear to disengage its hinging at the rear and lower the box, see diagram 8.1. The box will still be attached to the boiler via the plastic retaining strap. If the box is to be removed entirely, pull the strap off the plastic fastener. Care should now be taken not to damage the thermostat or overheat cut-off capillaries or electrical cables. Refit the retaining strap with plastic fastener.

8.1.2 Thread the mains cable in through the centre bottom grommet in the rear of the controls cover, through the cable clamp and connect to the terminal strip, see diagram 8.1 and 8.2. When making connections, ensure that the earth conductor is made longer than the line and neutral conductors, so that if the cable is strained the earth conductor will be the last to be disconnected.

NOTE: THIS APPLIANCE MUST BE EARTHED AND HAVE A PERMANENT MAINS SUPPLY.

8.1.3 The electrical isolator must isolate both the appliance and system controls.

8.2 PUMP CABLE CONNECTION

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

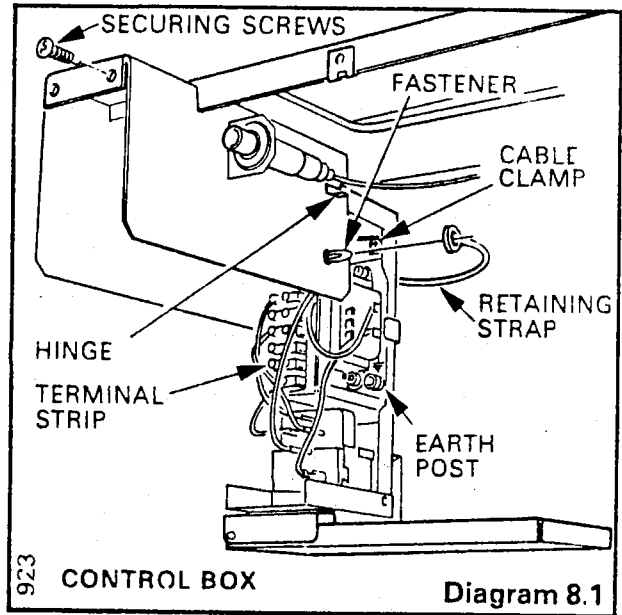


Diagram 8.1

8.3 WIRING

All wiring of the installation must comply with the current I.E.E. Wiring Regulations and any local regulations which apply. All cable and connections must be of the approved type.

8.4 TESTING

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

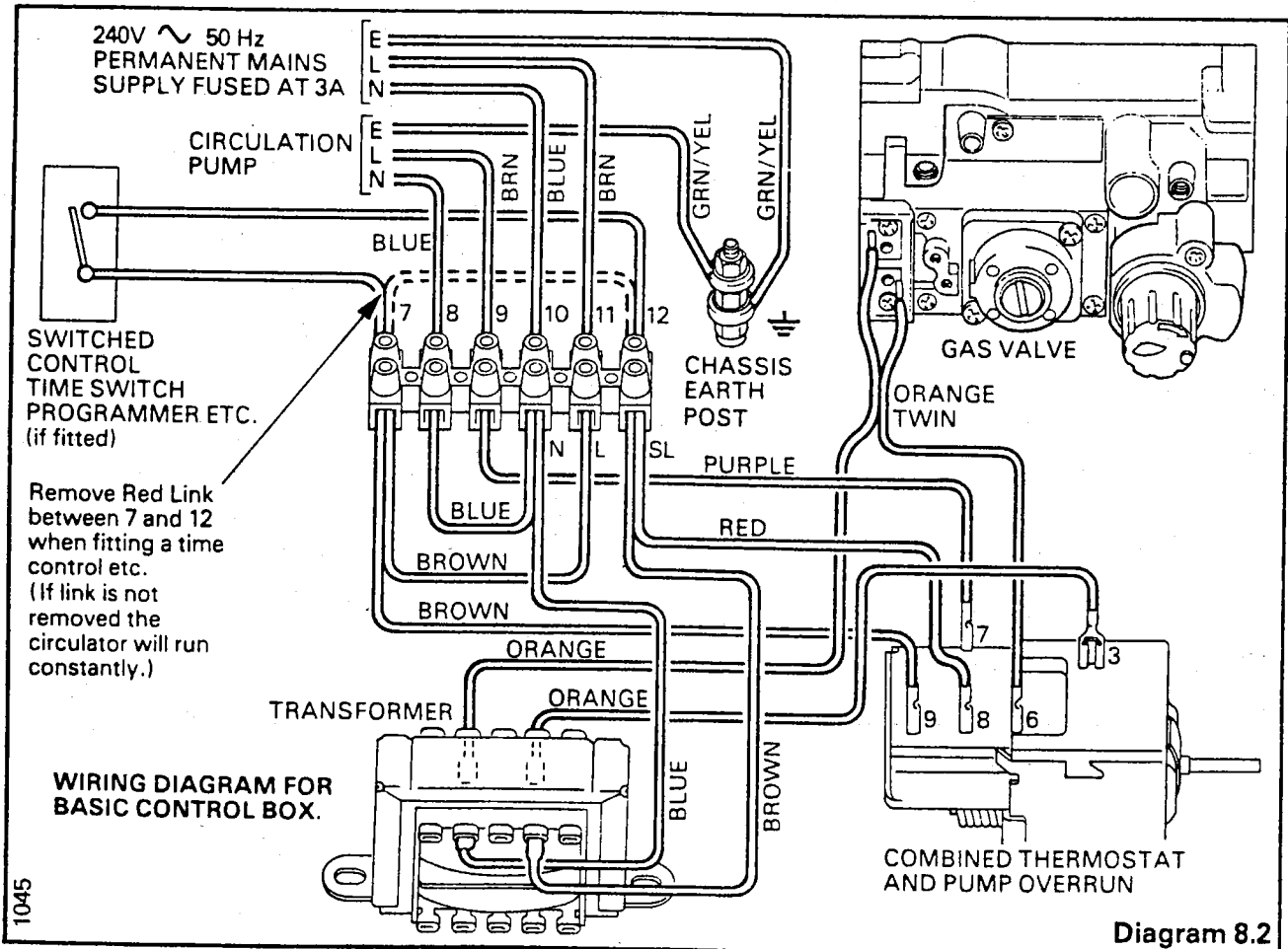


Diagram 8.2

8.5 EXTERNAL CONTROLS AND SCHEMES

- 8.5.1 Remove the red link between 7 and 12 in the boiler control box when using any of the suggested schemes or switch control.
- 8.5.2 Any external boiler controls **must** only be wired to interrupt the link between terminal 7 and 12. The boiler requires a permanent mains supply as shown in diagram 8.2.
- 8.5.3 The pump **must** be wired to the boiler control box as shown.
- 8.5.4 All controls must be connected in accordance with the manufacturers' instructions.

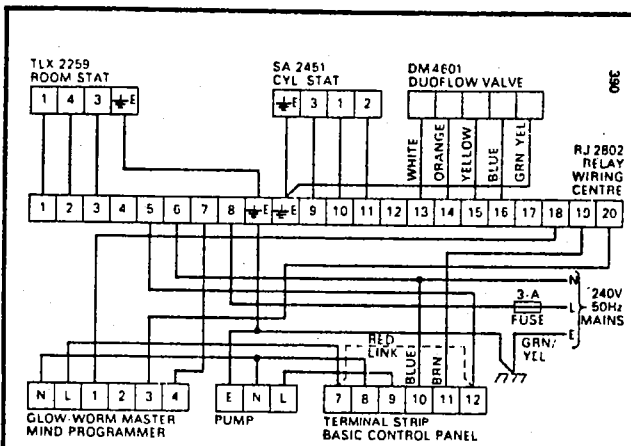
8.5.5 THE INSTALLER IS REQUESTED TO ADVISE THE USER OF THE CONTROLS SCHEMES USED WITH THE BOILER AND TO GIVE GUIDANCE ON THE OPERATION OF THE CONTROLS.

8.6 CONTROL BOX SECURING

Replace the control box by engaging the rear hinge arrangement and raising the front of the box to secure with the two screws.

8.7 GLOW-WORM PROGRAMMER KIT

Installation and wiring instructions for the integral programmer are supplied with the kit.



Scheme 1

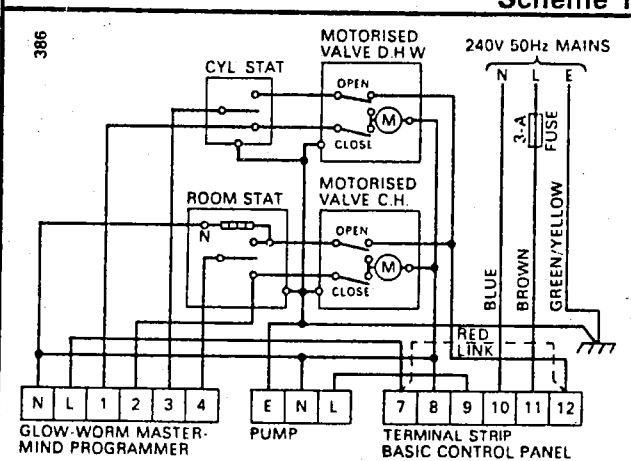
Scheme 1 Satchwell Duoflow system 16 position programmer. Remove links A and B from RJ2802 wiring centre.

Scheme 2 Independent control of hot water and heating, both pumped, using two motorised valves, 16 position programmer.

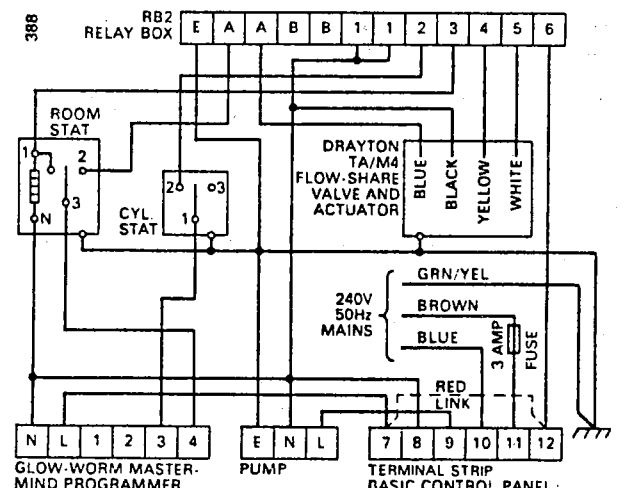
Scheme 3 Honeywell Sundial Plan Y. Follow Honeywell instructions for piping and controls installation.

Scheme 4 Pumped hot water and heating, using a Drayton Flow-share valve.

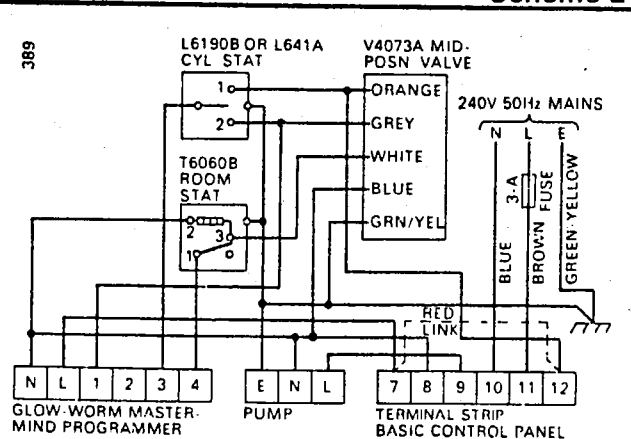
Scheme 5 Independent control of hot water and heating both pumped, using two spring return valves, 16 position programmer.



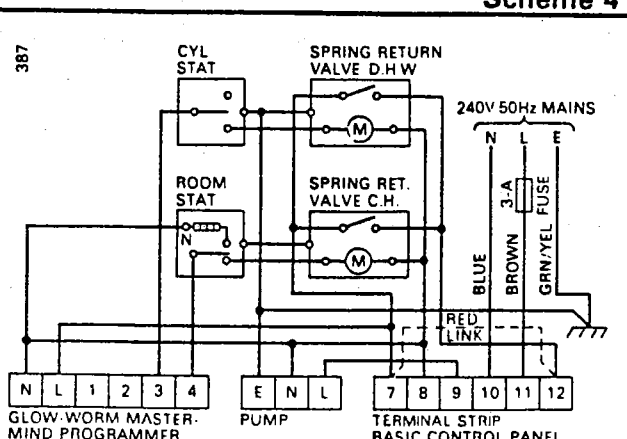
Scheme 2



Scheme 4

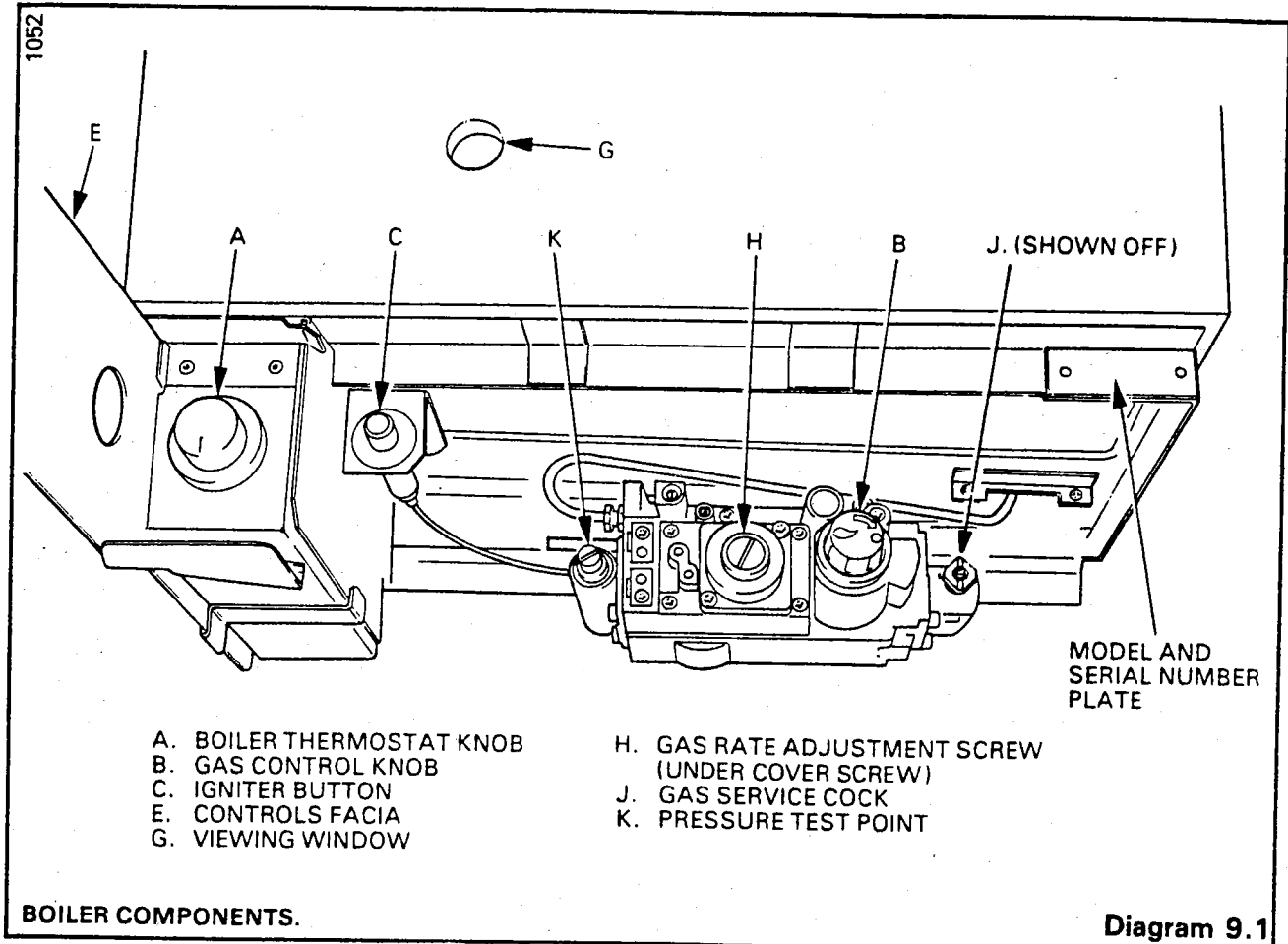


Scheme 3



Scheme 5

9 COMMISSIONING



9.1 COMMISSIONING (Sealed systems only)

- 9.1.1 Flush the whole system with cold water and fill until the pressure gauge registers 1.5bar, (21.5 lbf/in²). Clear any air locks and check for water soundness.
- 9.1.2 Check the operation of the safety valve preferably by allowing the water pressure to rise until the valve lifts. This should be within 0.3bar, (± 4.3 lbf/in²), of the pre-set pressure. Where the above is not possible a manual check should be conducted.
- 9.1.3 Release pressure of cold water to the initial system design pressure.
- 9.1.4 Any set pointer on the pressure gauge should be set to coincide with the indicating pointer.

9.2 COMMISSIONING (All systems)

- 9.2.1 Ensure that the system has been thoroughly flushed, is full of water and that all air is properly vented from the system, including the pump.
- 9.2.2 Before operating the boiler check that any time clock, room thermostat, domestic cylinder thermostat or other controls that may be used on the system are calling for duty and checked for correct operation.

9.3 INITIAL LIGHTING AND ADJUSTMENT

- 9.3.1 Refit the outer case.
- 9.3.2 TURN BOILER THERMOSTAT KNOB 'A' TO '0' POSITION, SEE DIAGRAM 9.1.
- 9.3.3 For access to the gas valve pressure regulator, test point and igniter button, swing forward controls facia 'E'.
- 9.3.4 Remove gas pressure test point screw and fit a pressure gauge to test point 'K'.
- 9.3.5 Turn on the main electricity supply to the unit and check that the pump is circulating water through the unit.
- 9.3.6 OPEN ALL WINDOWS AND EXTINGUISH ANY MAKED LIGHTS IN THE ROOM. PUT OUT PIPES AND CIGARETTES.
- 9.3.7 **CAUTION:** The following procedure should be carried out by a qualified gas service engineer. Identify the boiler controls with relevant details on diagram 9.1.
- 9.3.8 Turn on main gas supply and purge air from the supply pipe in accordance with the recommendations of CP331 Part 3.
- 9.3.9 Turn boiler gas service cock 'J' to 'ON', with line horizontal.

9.3.10 Depress the gas valve control knob 'B' fully and hold. Depress and release the Piezo igniter button 'C' until the pilot burner lights. At this stage, air may be present in the gas pipes and this operation may need to be repeated until all air is expelled. When the pilot burner lights, check through the viewing window 'G', keep control knob 'B' fully pushed on for approx. 20 seconds to heat the thermocouple. If the pilot burner fails to light, or stay alight then repeat the sequence as above.

9.3.11 If the gas valve control knob 'B' is turned clockwise to its stop (in direction of arrow), the off position, a safety lock prevents it being fully depressed again until the thermocouple has cooled, to stop attempted re-light in an unsafe condition. No attempt should be made to force knob 'B', this will rotate automatically to the lighting position.

9.3.12 Make sure that the burner pilot is alight and stable. Set any clock or programmer to an 'ON' position and ensure that any other controls are calling for duty.

9.3.13 Turn the thermostat knob 'A' fully clockwise and the main burner should ignite gradually, taking 3 to 5 seconds to reach full flame and can be seen through the viewing window 'G'. Check that there is adequate air for combustion; indicated by the correct appearance of the flames.

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

9.3.15 To adjust the burner setting pressure remove the pressure regulator cover screw and adjust the internal screw 'H' to obtain the required heat input, see RANGE RATING table on page 2, for settings. Turn clockwise to increase pressure. Replace cover screw after setting.

9.3.16 Should any doubt exist about the gas rate, check that at the meter 10 minutes after lighting the appliance.

9.3.17 Swing back controls facia until it clicks into position and replace controls cover.

9.4 TESTING

9.4.1 Check the operation of the flame failure device on the boiler to ensure that the burner shuts down within 60 seconds.

9.4.2 Check the thermocouple output in millivolts with the thermocouple in both closed and open circuit, refer to FAULT FINDING, section 12.

9.5 FLUSHING

9.5.1 Allow the system to reach maximum working temperature and examine for water leaks.

9.5.2 The system should then be turned off and rapidly drained while hot.

9.5.3 Refill the system and vent all air as before.

9.6 SEALED SYSTEMS

Sealed systems should be adjusted to the initial design pressure. Any set pointer on the pressure gauge should be positioned to coincide with the indicating pointer.

9.7 ALL SYSTEMS - ADJUSTMENT

9.7.1 When commissioning the system the boiler should first be fired with the by-pass valve fully closed on full service i.e. 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 by-pass valve fully closed on minimum load, (normally this will be on 'central heating only' with one radiator, in the main living area, operating). The valve should be gradually opened to achieve the following flowrates:

Fuelsaver 40B MkII 15.3 litres/min (3.4 gal/min)

Fuelsaver 50B MkII 19.2 litres/min (4.2 gal/min)

9.7.2 UNDER NO CIRCUMSTANCES MUST THIS VALVE BE LEFT IN THE FULLY CLOSED POSITION.

9.7.3 Operate the boiler again on full service and check that balancing is satisfactory; make further adjustments, if necessary.

9.7.4 If thermostatic radiator valves are fitted, care must be taken to ensure adequate flowrate when the valves close.

9.8 COMPLETION

9.8.1 Adjust the thermostat to the required setting, adjust systems controls to their required settings and instruct the user in the operation of the boiler and any system controls.

9.8.2 Hand the Users Instructions to the user or purchaser for retention. Instruct the efficient and safe operation of the boiler and heating/hot water system. Advise the user or purchaser that for continued efficient and safe operation of the boiler it is important that adequate servicing is carried out at intervals recommended by the local gas region.

10 SERVICING

Servicing must be carried out by a competent person. Before commencing a service, turn off the gas supply at the main service cock and isolate the electricity supply.

10.1 HEATING BODY SERVICING

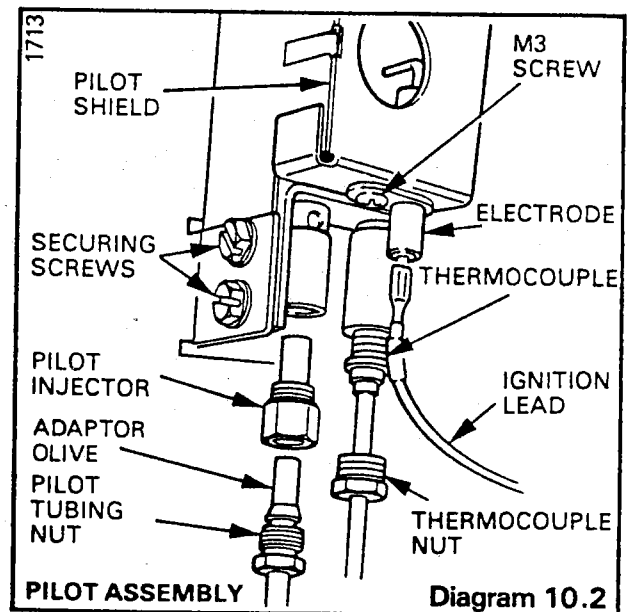
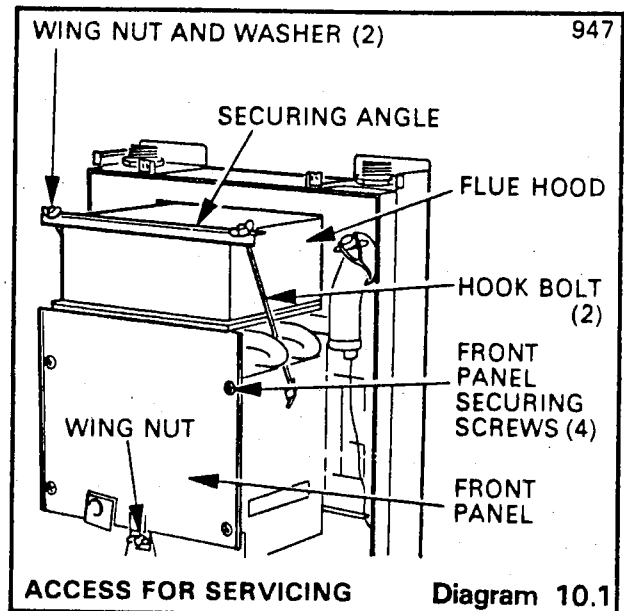
- 10.1.1 Remove controls cover by pulling forwards and clear of appliance.
- 10.1.2 Remove outer casing by releasing the screw at the bottom and unhooking at the top. Remove the inner case by releasing the screws at top and bottom, see diagram 5.3.
- 10.1.3 Remove the flue hood by removing the wing nuts holding the securing angle, see diagram 10.1 and remove the angle. Lift off the flue hood.
- 10.1.4 Remove the combustion chamber front panel by removing the wing nut at the bottom front and the four screws securing to the combustion chamber sides.
- 10.1.5 Remove the two screws and washers securing the pilot burner and pilot shield to the main burner, see diagram 10.2.
- 10.1.6 Pull forward the pilot assembly sufficiently to allow the main burner to be disengaged from the injector. Raise the burner up through the combustion chamber and remove. Take care not to damage the insulation inside the combustion chamber and also the pilot burner and electrode assembly.
- 10.1.7 Brush any deposits from the heat exchanger and collect on a sheet of paper.

10.2 MAIN BURNER SERVICING

With the main burner removed as in section 10.1, brush or vacuum any deposits from the burner, ensuring that the flame ports are unobstructed. Brushes with metallic bristles must not be used.

10.3 REASSEMBLY

- 10.3.1 Replace items in reverse order of removal.
- 10.3.2 When replacing main burner ensure that it is pushed fully home onto the injector and that the guides are engaged on the injector manifold.



Before removing any parts, turn off gas supply at main service cock and isolate electrical supply. ALWAYS test for gas soundness after replacing any gas carrying component.

11.1 MAIN INJECTOR

11.1.1 With the main burner removed as in section 10, the injector, at the rear of the combustion chamber, can be unscrewed and replaced as necessary using a new sealing washer.

11.1.2 When replacing main burner ensure that it is pushed fully home onto injector and that the guides are engaged on the injector manifold.

11.2 PILOT BURNER AND PILOT INJECTOR

11.2.1 Remove controls cover by pulling forwards and clear of the boiler.

11.2.2 Remove outer case by releasing the screw at the bottom and unhooking at the top. Remove the inner case by releasing the screws at top and bottom. see diagram 5.3.

11.2.3 Pull off ignition lead from electrode.

11.2.4 Unscrew the tubing nut at the base of the pilot burner, releasing the pilot tube.

11.2.5 To remove the pilot injector, unscrew it from the base of the pilot burner, see diagram 10.2.

11.2.6 Release the wing nuts securing the flue hood, see diagram 10.1.

11.2.7 Remove the combustion chamber front panel, as in paragraph 10.1.4.

11.2.8 Unscrew the thermocouple nut.

11.2.9 Remove the two screws and washers securing the pilot burner and pilot shield to the main burner, see diagram 10.2.

11.2.10 Remove the pilot burner and shield, complete with electrode and mica window.

11.2.11 Take care not to damage the electrode. When replacing, ensure that the spark gap is as shown in diagram 11.1.

11.3 THERMOCOUPLE

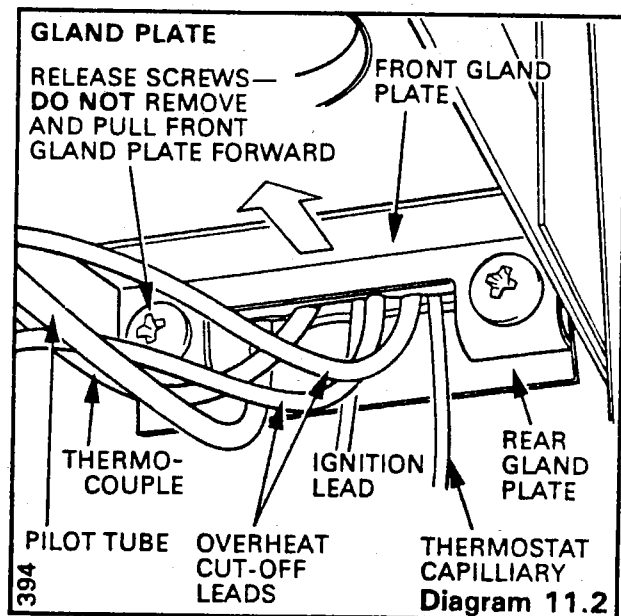
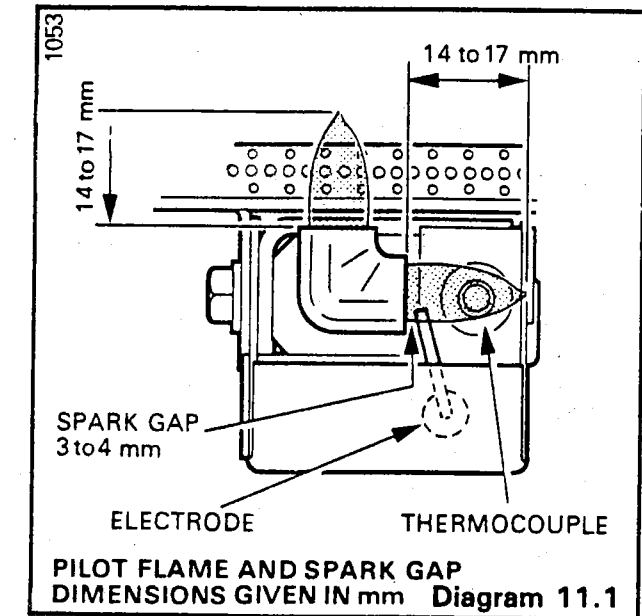
11.3.1 Follow instructions 11.2.1 to 11.2.4.

11.3.2 Unscrew the thermocouple nut.

11.3.3 Release the two screws securing the front and rear gland plates, (do not remove these screws). Pull forward the front gland plate, see diagram 11.2.

11.3.4 Release the thermocouple connection at interrupter at rear of gas valve and remove clips attaching it to the pilot tube. The thermocouple can now be removed.

11.3.5 Bend the replacement thermocouple to match the discarded one. No bending radius should be less than 12mm internal.



11.3.6 Refit thermocouple to the interrupter, check that the connectors from the overheat cut-off are in place in the interrupter and held by the thermocouple nut, see diagram 11.3. Do not overtighten.

11.3.7 If there is insufficient access at the right-hand side of the boiler, re-engagement of the thermocouple and overheat cut-off leads are blind operations. In this instance, it is recommended that the inner case is removed, refer to 11.2.2.

11.3.8 After refitting, check that the electrode gap is as shown in diagram 11.1.

11.4 ELECTRODE

11.4.1 Follow instructions 11.2.1 to 11.2.3.

11.4.2 Electrode can now be unscrewed from the pilot shield.

11.4.3 When replacing, check that the spark gap is as shown in diagram 11.1.

11 REPLACEMENT OF PARTS

11.5 OVERHEAT CUT-OFF

11.5.1 Remove controls cover and outer case as described in 11.2.1 and 11.2.2. Remove flue hood as in 10.1.3.

11.5.2 Release the connectors at the interrupter in the gas valve by undoing the thermocouple nut, see diagram 11.3.

11.5.3 Remove the two screws securing the overheat cut-off to the clamp, see diagram 11.4. Do not disturb the clamp.

11.5.4 Release the two screws securing the front and rear gland plates (do not remove these screws), see diagram 11.2, then withdraw the leads of the overheat cut-off.

11.5.5 When refitting, smear heat sink compound supplied between the face of the overheat cut-off and the water connection pipe and ensure that it is located on to the heating body pipe correctly.

11.5.6 If there is insufficient access at the right-hand side of the appliance, re-engagement of the thermocouple and overheat cut-off leads are blind operations. In this instance, it is recommended that the inner case is removed, refer to 11.2.2.

11.6 HEATING BODY

11.6.1 Remove controls cover and casings as in 11.2.1 and 11.2.2.

11.6.2 Remove flue hood and combustion chamber front as in 10.1.3 and 10.1.4.

11.6.3 Remove retaining clip from thermostat phial pocket and withdraw phial from pocket. Do not wipe off heat sink compound.

11.6.4 Remove the two screws attaching the overheat cut-off to the clamp.

11.6.5 Remove the two screws securing the flue duct and remove, also on the Fuelsaver 50B model, remove the two screws securing the sealing plates, see diagram 11.5.

11.6.6 Drain the heating circuit of water (a drain cock is usually found at the lowest point of the heating system). A drain point is provided for heat exchanger draining.

11.6.7 Disconnect the flow and return connections, then the locknuts on the flow and return bulkhead fittings, see diagram 11.5.

11.6.8 Loosen the four screws (do not remove) holding the combustion chamber to the air duct.

11.6.9 Lift the heating body from the combustion chamber, withdrawing the connections through the air duct.

11.6.10 Replace washers and locknuts to the flow and return bulkhead fittings.

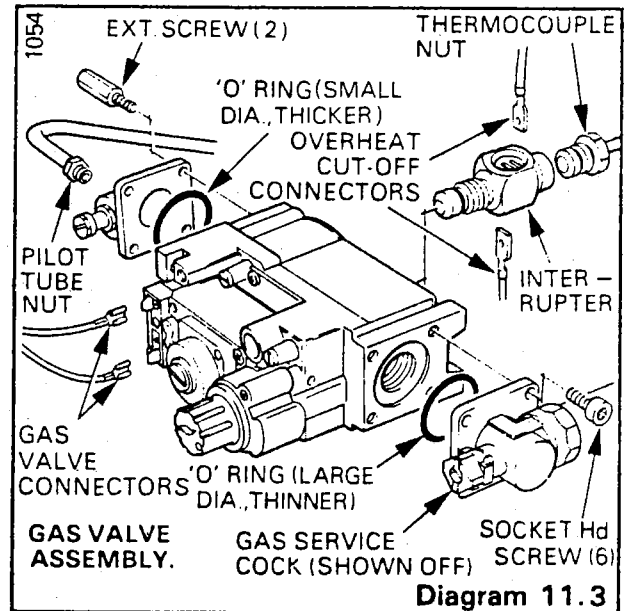


Diagram 11.3

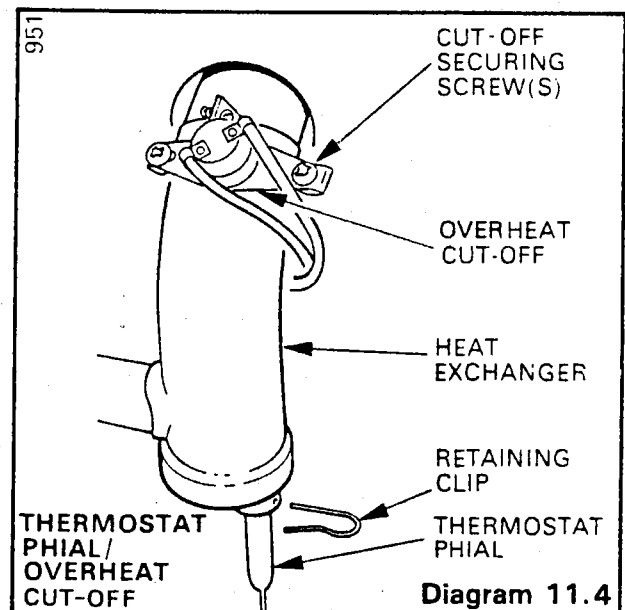


Diagram 11.4

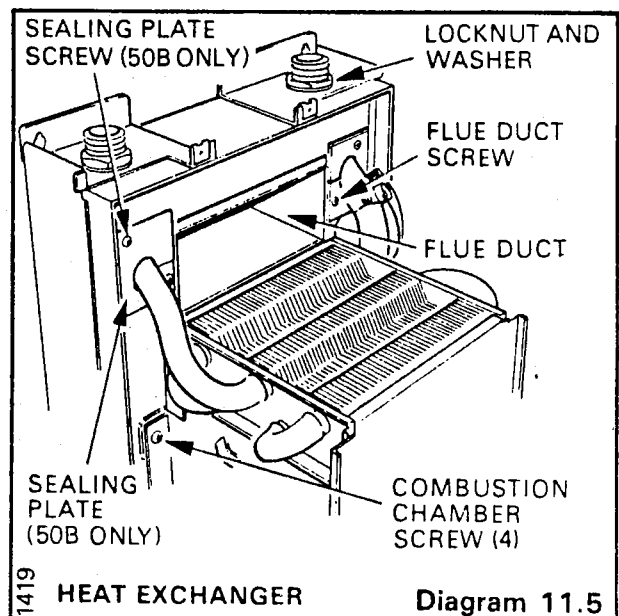


Diagram 11.5

11.6.11 Replace combustion chamber front - do not tighten these screws.

11.6.12 Replace flue duct (and sealing plates on Fuelsaver 50B model) - do not tighten these screws.

11.6.13 Replace overheat cut-off and thermostat phial. When replacing these components smear with heatsink compound supplied. Ensure that the thermostat phial is secured in the pocket with the retainer and that the overheat cut-off is fastened to the clamp.

11.6.14 Replace flue hood with securing angle, hook bolts and wing nuts, tighten firmly but do not overtighten.

11.6.15 Ensure that the tabs on the top edge of the combustion chamber are located in the slots in the heating body end plates.

11.6.16 Tighten all the loosely fitted screws.

11.7 GAS VALVE

11.7.1 Remove controls cover by pulling forwards, clear of appliance.

11.7.2 Swing forwards control fascia.

11.7.3 Remove outer case by releasing the screws at the bottom and unhooking at the top.

11.7.4 Unscrew thermocouple connection and remove the overheat cut-off connectors from the thermocouple interrupter, see diagram 11.3.

11.7.5 Disconnect orange connectors from the gas valve by pulling from the connections.

11.7.6 Release the two screws securing the front and rear gland plates, see diagram 11.2, (do not remove these screws) and pull the front plate forward. Release the pilot tube nut and withdraw the pilot tube from the gas valve.

11.7.7 Remove the four hex socket head screws from the gas service cock flange with a hexagon key wrench, (Allen Key).

11.7.8 Support the gas valve and remove the two socket head screws and two extended hexagon screws securing the gas valve to the burner supply pipe flange.

11.7.9 Ease the valve clearance of the flanged connections and discard both 'O' rings.

11.7.10 Transfer the thermocouple interrupter to the replacement valve, hand tighten the thermocouple interrupter to the valve and finally tighten one quarter turn to leave the interrupter black insert facing vertical, see diagram 11.3.

11.7.11 Reassemble the valve to the gas service cock flange using the new, larger, thinner 'O' ring supplied. Ensure the valve is the correct way round. Direction of flow is indicated by an arrow on the valve.

11.7.12 If there is insufficient access at the right-hand side of the appliance, re-engagement of the thermocouple and overheat cut-off connectors are blind operations. In this instance, it is recommended that the inner case is removed, refer to 'SERVICING' section 10.

11.7.13 Fit the new, smaller, thicker 'O' ring supplied between the gas valve and burner supply pipe flange, see diagram 11.3, ensuring that it is correctly located in the recess in the valve. Fit the special extended hexagon screws at the top.

11.7.14 Re-connect the pilot supply to the gas valve and secure the gland plates.

11.7.15 Re-connect the connectors to the gas control valve, see diagram 8.2 for wiring.

11.7.16 Recommission boiler by referring to 'COMMISSIONING' section 9.

11.8 PIEZO UNIT

11.8.1 Remove controls cover by pulling forwards and clear of appliance.

11.8.2 Swing forward controls fascia.

11.8.3 Pull off ignition lead from the tag on the piezo unit.

11.8.4 Remove the backing nut from the body of the piezo unit and remove the unit.

11.9 IGNITION LEAD

11.9.1 Remove controls cover and casings as in 11.2.1 and 11.2.2.

11.9.2. Release the two screws securing the front and rear gland plates, (do not remove these screws). Pull forward the front gland plate, see diagram 11.2.

11.9.3 Pull off ignition lead from tag on electrode.

11.9.4 Pull off ignition lead from the tag on the piezo unit, the lead can now be removed.

11.9.5 When fitting the ignition lead, connect the clear insulated connector to the spark electrode.

11 REPLACEMENT OF PARTS

11.10 ELECTRICAL CONTROL BOX

- 11.10.1 Remove controls cover and casings as described in 11.2.1 and 11.2.2.
- 11.10.2 Remove retaining clip from boiler thermostat phial pocket and withdraw the phial from the pocket, see diagram 11.4.
- 11.10.3 Release the two screws securing the front and rear gland plates, (do not remove these screws). Pull forward the front gland plate, see diagram 11.2.
- 11.10.4 Remove the control box by undoing the two fixing screws at the front above the fascia, and lower the front of the box until it is clear of its cover. Push box towards the rear of appliance to disengage its hinging at the rear, and lower the box, see diagram 8.1. Withdraw the thermostat capillary through the bottom of the air duct.
- 11.10.5 Disconnect electrical cables (a) mains L.N.SL and E at terminal block No's 11, 10, 12 and earth stud. (b) pump at terminal block No's 8, 9 and earth stud. (c) disconnect orange wires at gas valve. (d) disconnect any remote controls at terminal 7 and 12.
- 11.10.6 If an integral programmer has been fitted, refer to the instructions with the programmer to disconnect.
- 11.10.7 Replace in reverse order, for details of wiring see diagram 8.2. When replacing the thermostat phial, smear it with heat sink compound and ensure that it is secured in the pocket by the retainer.

11.11 BOILER THERMOSTAT

- 11.11.1 Follow instructions 11.10.1 to 11.10.4.
- 11.11.2 Swing forward controls fascia and remove the thermostat control knob.
- 11.11.3 Slacken the screw securing the thermostat capillary clip to the control box and release the capillary.
- 11.11.4 Pull off the connections from the thermostat terminals. Remove the two screws securing the thermostat to the control box. The thermostat may now be removed, withdrawing the capillary through the bottom of the air duct.
- 11.11.5 When replacing, smear the thermostat phial with heat sink compound supplied before replacing in the pocket. Ensure that it is secured by the retainer.

FAULT AND CAUSE

REMEDY

12.1 PILOT GOES OUT AFTER A PERIOD OF REMAINING ALIGHT

- 12.1.1 Front cover not correctly fitted. Fit parts correctly.
- 12.1.2 Flue parts not fitted or sealed properly. Seal cavity or fit flue parts correctly as described in installation instructions.
- 12.1.3 Electrical supply failure causing overheat cut-off to operate. Relight pilot.
- 12.1.4 Overheat cut-off operating. Refer to 12.3.
- 12.1.5 Pump incorrectly wired. Connect pump in accordance with diagram 8.2.

12.2 MAIN BURNER WILL NOT IGNITE

- 12.2.1 External, remote controls not "ON". Check that any remote external controls are calling for duty.
- 12.2.2 Boiler thermostat not on. Check boiler thermostat is in an "ON" position. See also 12.9, 'Electrical Fault Finding'.

12.3 THERMOSTAT WILL NOT CUT OUT

- 12.3.1 Thermostat phial not fitted in pocket. Fit phial in pocket.
- 12.3.2 Faulty thermostat. Replace thermostat.

12.4 OVERHEAT CUT-OFF CUTS OUT PREMATURELY

- 12.4.1 Air in heating body. Vent system. Alter system layout if necessary.
- 12.4.2 Water circulation low or stopped. Pump not functioning correctly. Check pump is wired directly to boiler. Alter system if necessary.
- 12.4.3 Overheat cut-off operates before boiler cycles on max boiler thermostat setting. Change faulty overheat cut-off.
- 12.4.4 Correctly set overheat cut-off operates prematurely. 12.4.1 and 12.4.2 are satisfactory. Change faulty heating body.

12.5 INSUFFICIENT HEAT

- 12.5.1 Thermostat set too "LOW". Increase setting.
- 12.5.2 Inlet gas pressure inadequate. Increase gas pressure.
- 12.5.3 Governor setting incorrect. (ensure thermostat is on maximum setting) Check burner pressure against data plate. Reset only if more than 10% away from required figure.

12.6 APPLIANCE NOISY IN OPERATION

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

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

12 FAULT FINDING

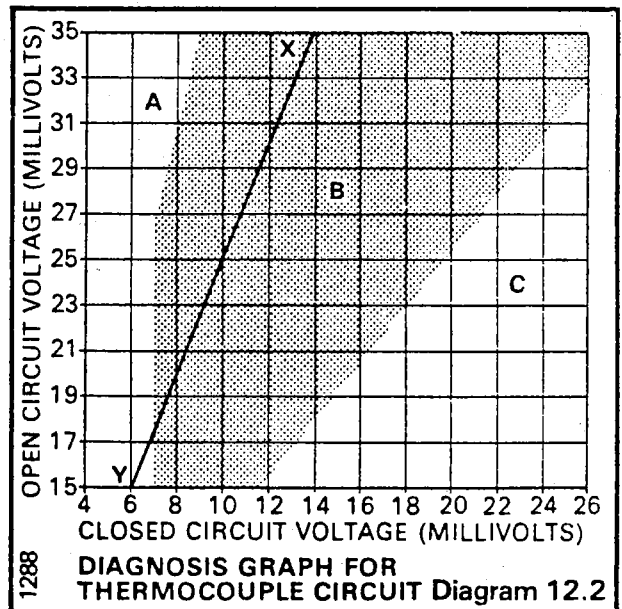
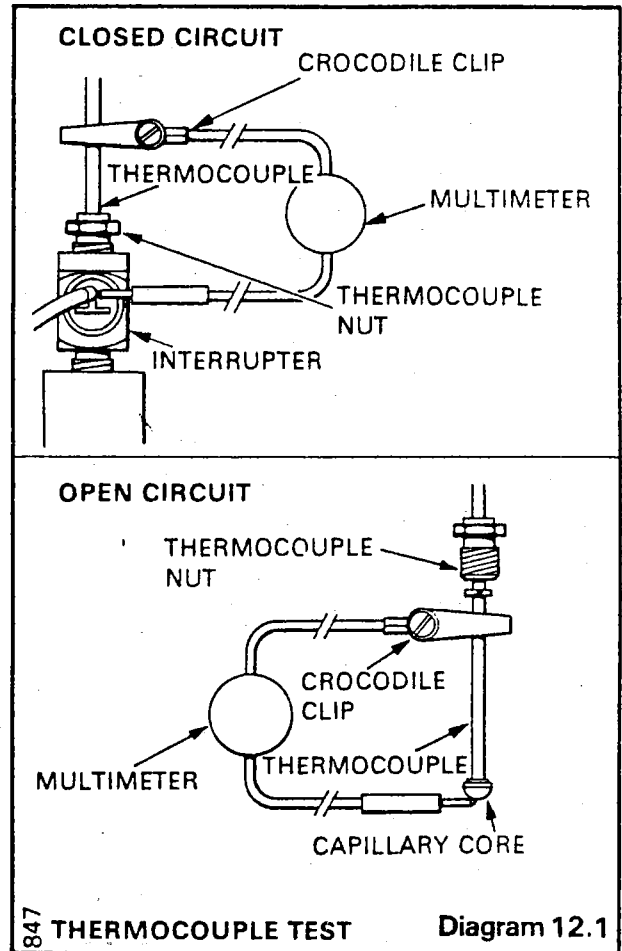
12.7 THERMOCOUPLE

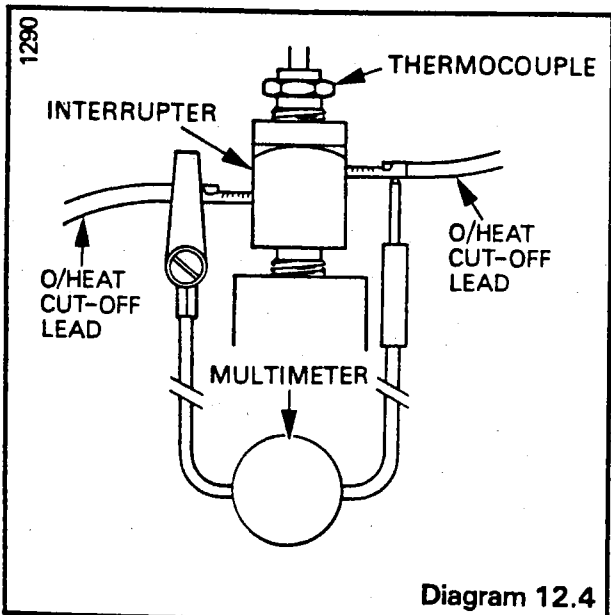
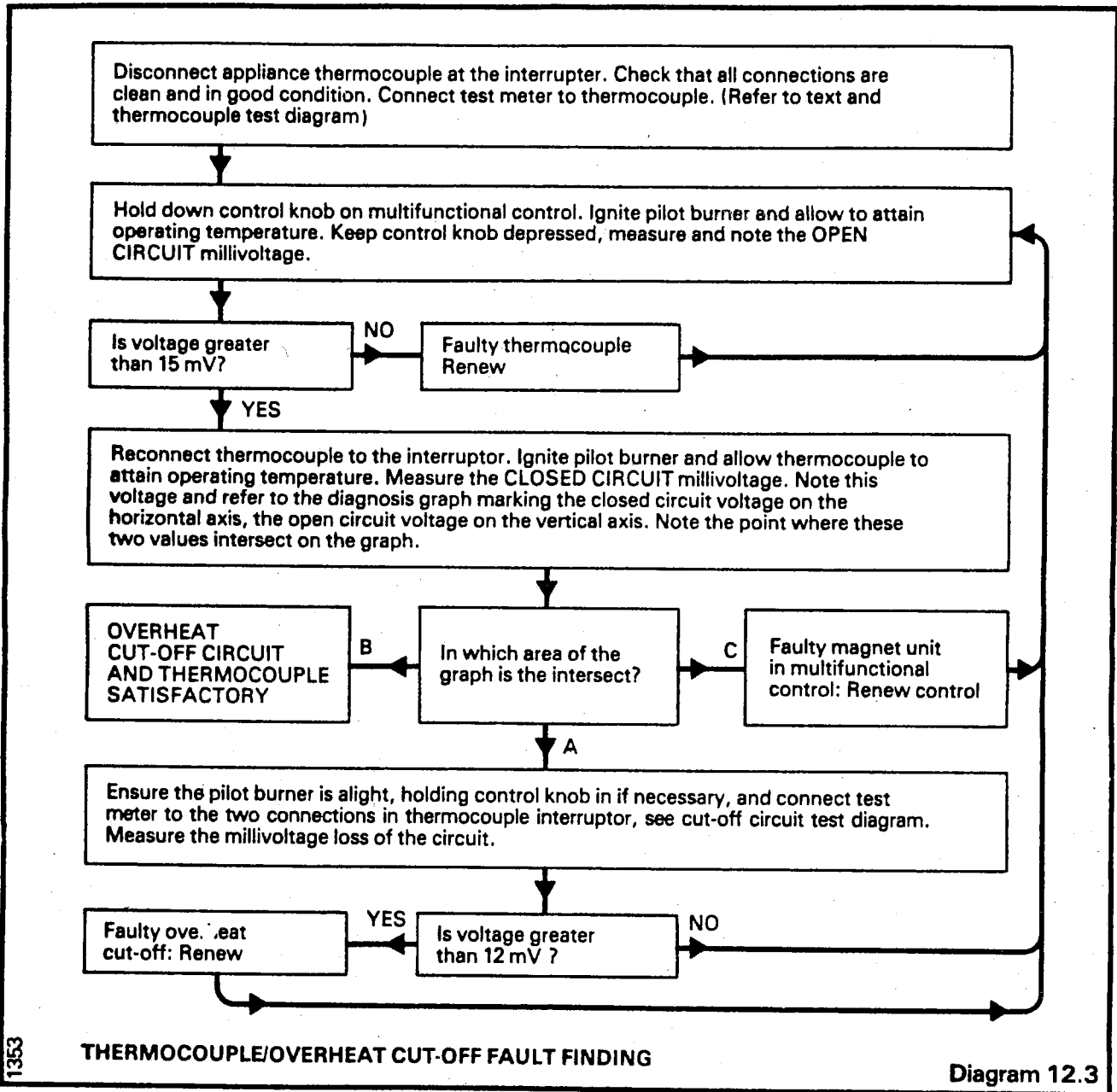
12.7.1 To test the thermocouple, a meter with a range of 0 to 30 mV is required similar to the British Gas, (Minitest 6), Multimeter.

12.7.2 **Close Circuit** - With the pilot lit connect one crocodile clip to the thermocouple capillary as close as possible to the thermocouple nut which is fastened into the interrupter, see diagram 12.1. Connect the other lead to the connector held interrupter nearest to the gas valve, then take millivoltage reading.

12.7.3 **Open Circuit** - Disconnect the thermocouple nut from the interrupter. Connect crocodile clip to thermocouple capillary and connect the other lead to the capillary core. Hold in gas control knob and light pilot, keeping the control knob held until the thermocouple millivoltage has settled, to take reading.

12.7.4 Refer to thermocouple diagnosis graph, diagram 12.2 when using the chart, diagram 12.3.





12.8 OVERHEAT CUT-OFF

12.8.1 With the pilot burner lit, by holding in the gas control knob if necessary, connect multimeter to the two terminals either side of the thermocouple interrupter, see diagram 12.4.

12.8.2 Take the millivoltage drop reading and refer to thermocouple/overheat cut-off fault finding diagram 12.3.

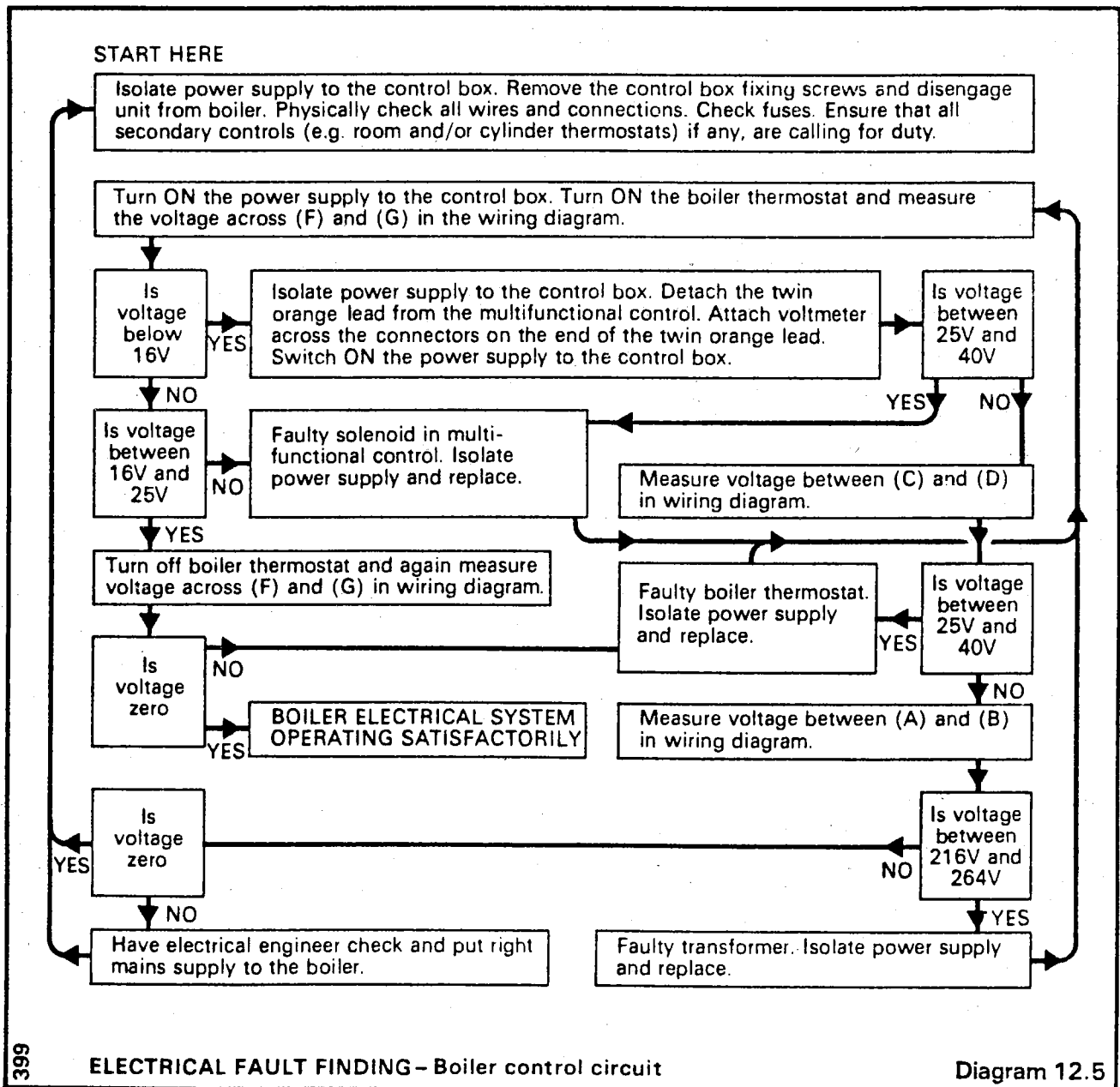
12 FAULT FINDING

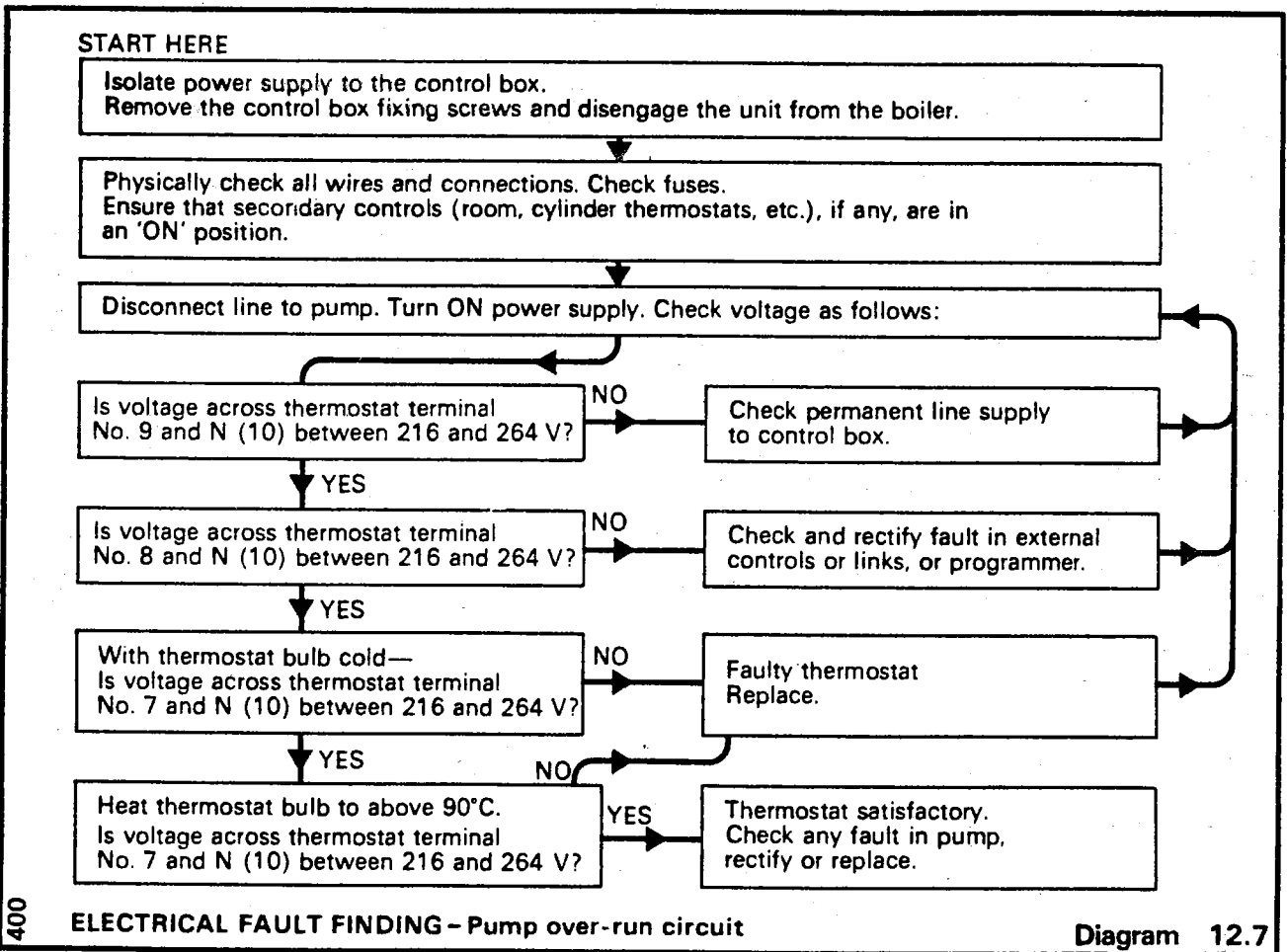
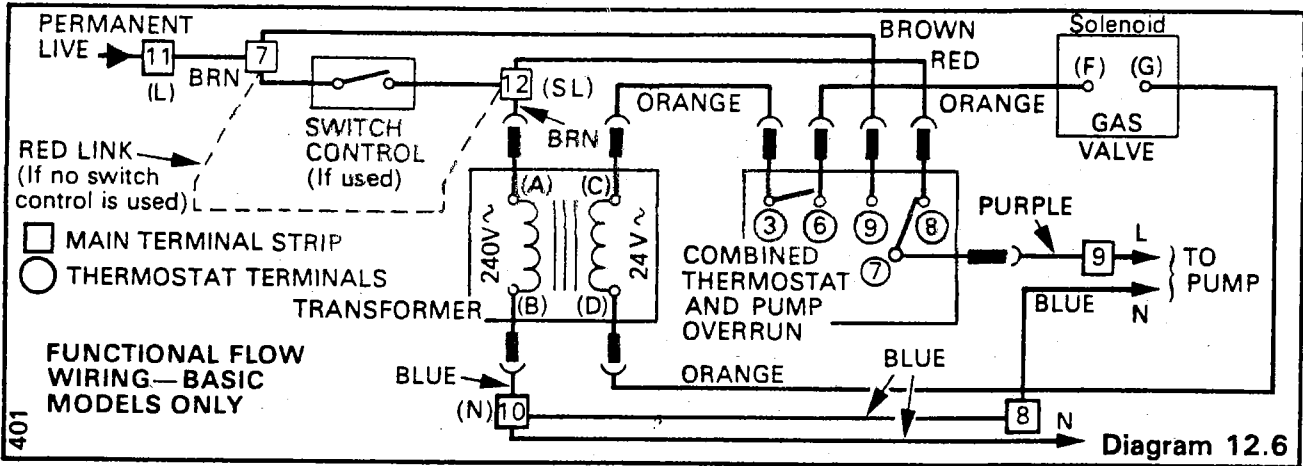
12.9 ELECTRICAL

IMPORTANT:- The preliminary electrical system checks contained in the British Gas Multimeter instructions book are the first checks to be carried out during a fault finding procedure. On completion of the service/fault-finding task which has required the breaking and re-making of electrical connections then the checks 'A' Earth continuity, 'C' Polarity and 'D' Resistance to Earth must be repeated.

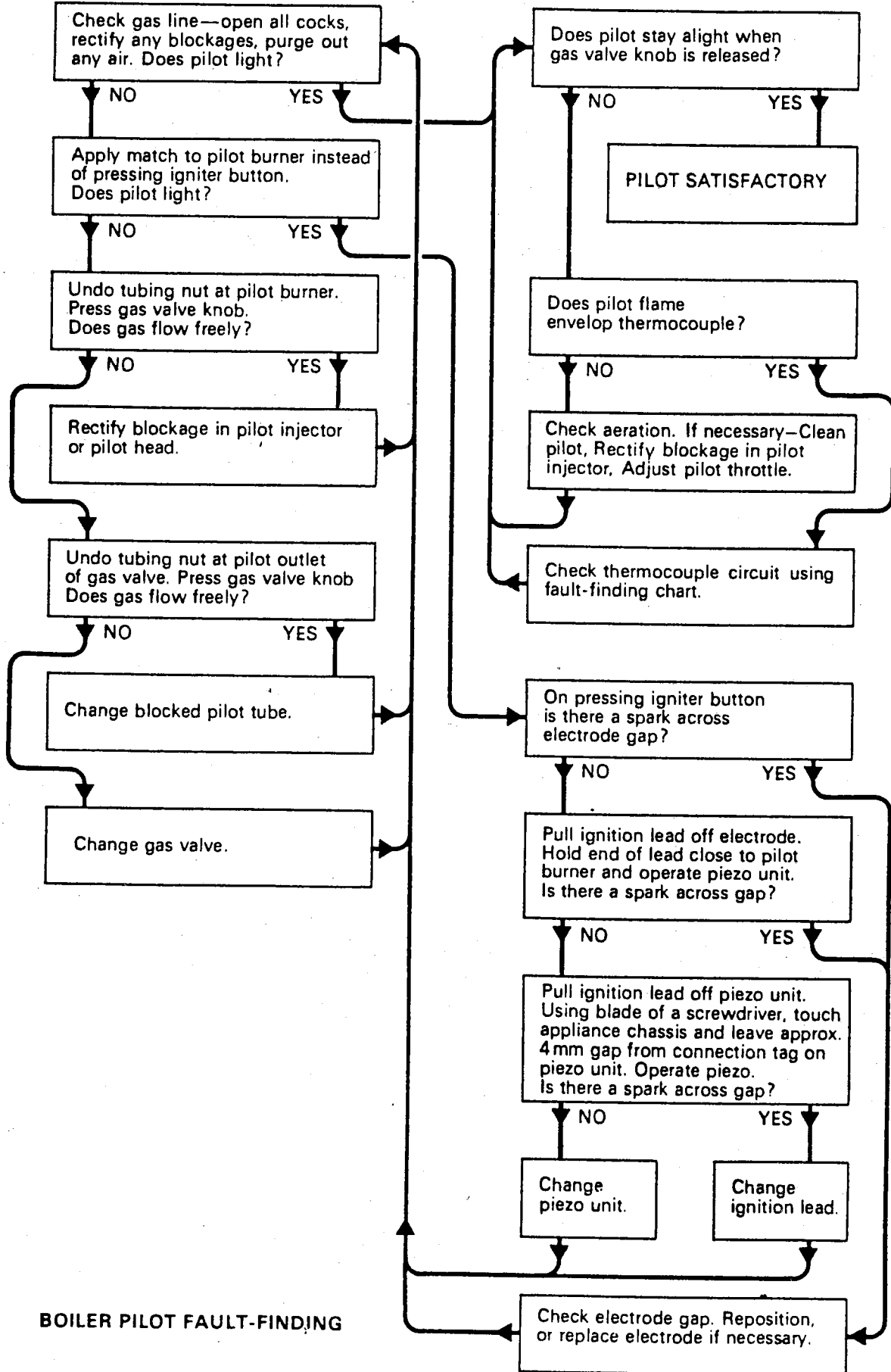
12.9.1 To check boiler thermostat, transformer and multi-functional control, see diagram 12.5 and functional flow wiring diagram 12.6.

12.9.2 To check thermostat pump over-run circuit see diagram 12.7 and functional flow wiring diagram 12.6.





PILOT WILL NOT LIGHT
START HERE



BOILER PILOT FAULT-FINDING

Diagram 12.8

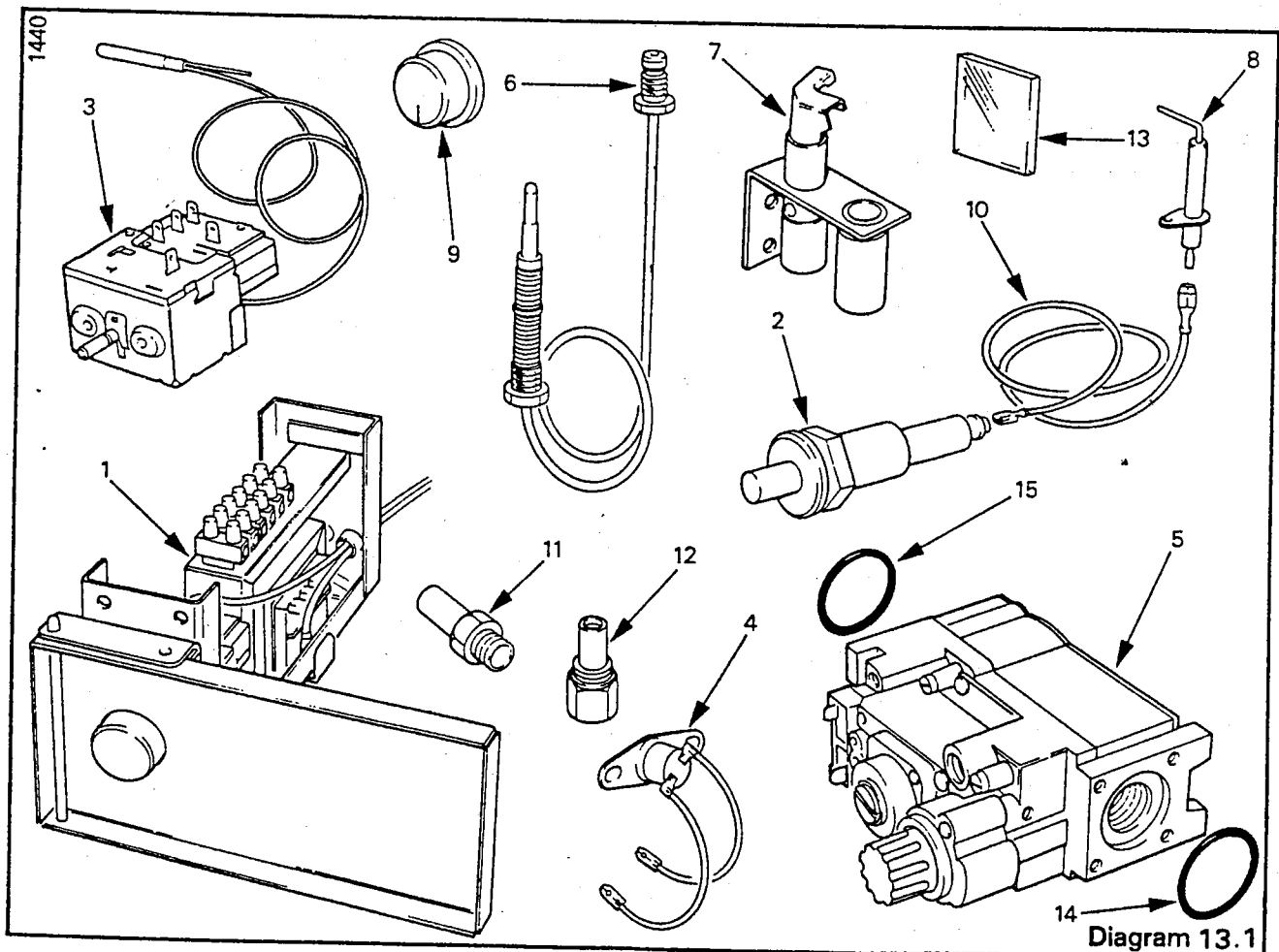
13.1 PART IDENTIFICATION

The key number in the first column of this list will help you identify each part shown in diagram 13.1.

13.2 ORDERING

When ordering spare parts, quote the part number and description, stating model number and serial number off the plate, see diagram 9.1. Gas Regions should also include the G.C. Number of the part.

Key No.	G.C. Part No.	Glow-worm Part No.	Description
1	355 386	416030	Electrical control box
2	-	900501	Piezo unit
3	384 145	416189	Boiler Thermostat assembly
4	355 374	416188	Overheat Cut-off assembly
5	312 792	416213	Gas valve assembly - Honeywell (incl. 14 & 15)
6	-	900000	Thermocouple
7	394 161	203415	Pilot burner - Johnson (incl. 12)
8	384 149	202600	Electrode
9	355 401	416144	Thermostat knob
10	355 500	WW4612	Ignition lead
11	384 160	203004	Boiler injector, marked 3.25 (FS 40B MkII)
11	384 142	203002	Boiler injector, marked 3.50 (FS 50B MkII)
12	-	203509	Pilot injector - Johnson
13	355 153	411194	Sight glass
14	312 602	212031	'O' Ring - gas valve/cock
15	334 658	208068	'O' Ring - gas valve/test point



CC



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

DG Disc 4/81