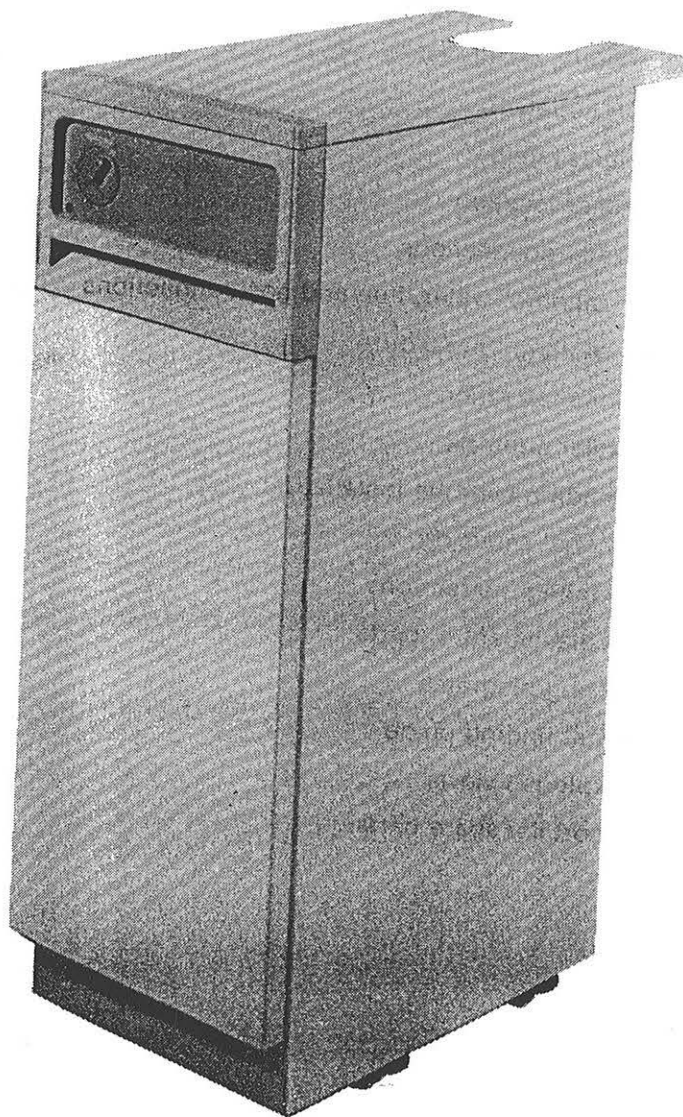




Installation and Servicing Instructions

Marathon 400C and 500C Floor standing gas boilers

G.C. Appliance No's: Marathon 400C 41 494 14, Marathon 500C 41 494 15



FOR USE WITH NATURAL GAS (G20) ONLY

Read these instructions thoroughly before working on the boiler

GAD (90/396/EEC)



LIST OF CONTENTS

Section	Subject	Page
1	Introduction	3
2	Technical data	3
3	General requirements	3
4	Delivery	4
5	Gas supply	4
6	Electricity supply	4
7	Air supply	4
8	Flue system	4
9	Boiler location	5
10	Water connections	5
11	Position of water, flue and gas connections	5
12	Installation procedure	6
13	Commissioning	10
14	Boiler controls	11
15	Handing over the installation	11
16	Annual servicing	11
17	Lighting instructions	14
18	Replacement of parts	14
19	Wiring diagrams	18
20	Fault finding guide	20
21	Exploded views	21
22	Short list spare parts	23

1. INTRODUCTION

These open flue floor standing boilers are for use on natural gas only.

The Marathon 400C is range rated from an output of 8.8 to 11.7 kW (30 000 to 40 000 Btu/h).

The Marathon 500C is range rated from an output of 11.7 to 14.7 kW (40 000 to 50 000 Btu/h).

The Marathon 400C and 500C are factory set to the maximum output.

The boilers are designed for use with an open central heating system and an indirect domestic hot water cylinder. THEY MUST NOT BE CONNECTED TO A DIRECT CYLINDER.

2. TECHNICAL DATA

For boiler model and serial no. see data plate above gas valve.

Boiler		Marathon 400C	Marathon 500C
Burner		One Bray AB20031 LR	One Bray AB20030 LR
Burner injector		E 7 x 1.19	7 x 1.34
Pilot burner		Honeywell Q359A1009	
Pilot injector		Honeywell 4500-4108-001 marked 38/36A	
Pilot flame		Approximately 20 mm long	
Spark gap		4.0 to 5.0 mm	
Ignition		Piezo push button	
Dry weight with case		60 kg (132 lb)	79 kg (174 lb)
Water content		5.45 litre (1.2 gal)	6.36 litre (1.4 gal)
*Head loss		0.27 m (10.0 in)	0.44 m (17.0 in)
Maximum static head		30.5 m (100 ft)	
Minimum static head		1.0 m (39 in) above top of white case	
Height		850 mm (33½ in)	
Width		300 mm (12 in)	
Depth		600 mm (24 in)	
Clearance required for servicing and ventilation	Top	300 mm (12 in)	
	Front	450 mm (18 in)	
	sides	25 mm (1 in)	
Flue size		100 mm (4 in) dia.	
Water connections		Two Rc1 flow, one Rc1 gravity return and one Rc ¾ heating return	
Gas connection		Rp½	

*Head loss is given between the heating flow and return tapplings, for a temperature rise across the boiler of 11°C (20°F)

NOMINAL BOILER RATINGS

Boiler	Output		Input		Burner setting pressure	
	kW	Btu/h	kW	Btu/h	mbar	in wg
Marathon 800B	8.79	30 000	12.38	42 250	11.7	4.7
	11.72	40 000	15.62	53 300	17.4	7.0
Marathon 1000B	11.7	40 000	16.7	57 140	12.7	5.1
	14.7	52 000	20.1	68 500	17.8	7.1

3. GENERAL REQUIREMENTS

The boiler must be installed in accordance with: The Gas Safety (Installation and Use) Regulations 1994, and the current issue of the Building Regulations, Building Standards (Scotland) Regulations, Local Building Regulations, Model and local Water Undertaking Byelaws and IEE Wiring Regulations. Detailed recommendations are stated in the following British Standard Codes of Practice: CP331:3, BS6798, BS5546, BS5440:1, BS5440:2 and BS5449:1.

Note: Gas Safety Regulations: It is the law that all gas appliances are installed by competent persons in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety to ensure that the law is complied with.

4. DELIVERY

The boiler is delivered in two packages (1) the uncased boiler and (2) the case parts.

A plug in programmer kit and a pump kit are available to fit within the boiler case. The programmer simplifies wiring and is suitable for use with all external control systems shown in the system wiring diagrams supplied with the boiler.

5. GAS SUPPLY

The Marathon 400C requires 1.5 m³/h (52 ft³/h) of natural gas and the Marathon 500C requires 1.9 m³/h (65 ft³/h). The meter and supply pipes must be capable of delivering this quantity of gas in addition to the demand from any other appliances in the house.

The complete installation must be tested for gas soundness and purged in accordance with CP331:3.

A gas supply pressure of 20 mbar is required at the inlet to the appliance. Performance data is based on G20 reference gas.

6. ELECTRICITY SUPPLY

A 240 volts- 50Hz, single phase electricity supply fused to 3 amperes, must be provided in accordance with the latest edition of the I.E.E. Wiring Regulations and any other local regulations that may apply. The current rating of the wiring to the boiler must exceed 3 amperes and have a cross sectional area of at least 0.75 mm² in accordance with BS.6500. Table 16.

The supply to the boiler and its associated equipment should be controlled by an exclusive 3A fused double pole switch (having at least 3 mm contact separation in both poles) so that complete isolation from the supply can be achieved to enable servicing work to be carried out in safety.

The appliance must be earthed.

Warning

Electrical installation, commissioning and servicing should be carried out by a competent person in accordance with the I.E.E. Wiring Regulations.

7. AIR SUPPLY

These open flue boilers must have a clearance of at least 25 mm (1 in) at each side for air movement.

The boiler must not be boxed in tightly with kitchen units.

Air supply for combustion and ventilation must be provided in accordance with BS5440:2.

1. If the boiler is installed in a room, the room must have a permanent air vent either direct to the outside air or to an adjacent room which itself has a permanent air vent to the outside air. The minimum effective area of the air vent(s) required is:

Marathon 400C	39 cm ² (6 in ²)
Marathon 500C	57 cm ² (9 in ²)

2. If the boiler is installed in a cupboard or compartment, permanent air vents are required in the cupboard or compartment, one at high level and one at low level, either direct to the outside air or to a room. Both high and low level air vents must communicate with the same room or must be on the same wall to outside air. The minimum effective areas required are given in the following table:

Boiler		Marathon 400C		Marathon 500C	
Vents to outside air	High level	70 cm ²	(11 in ²)	90 cm ²	(14 in ²)
	Low level	140 cm ²	(22 in ²)	180 cm ²	(28 in ²)
Vents into a room	High level	140 cm ²	(22 in ²)	180 cm ²	(28 in ²)
	Low level	280 cm ²	(44 in ²)	360 cm ²	(56 in ²)

Where the cupboard or compartment is ventilated to a room, the room itself must have an air vent direct to outside air of minimum effective area as given in paragraph 1.

Ensure that there is at least 100 mm (3 in) clearance in front of the boiler for air movement.

Note: Air vents in internal walls should not communicate with a bedroom, toilet, bathroom or kitchen.

3. **IMPORTANT:** The above areas are for natural circulation. If there is any type of extract fan fitted in the premises there is a possibility that if adequate air inlet areas from outside are not provided, spillage of products from the boiler flue could occur when the fan is in operation. Where such installations occur, a spillage test with the fan running must be carried out as described in BS5440:1, Appendix B. The air inlet areas given above may have to be increased to prevent spillage.

8. FLUE SYSTEM

The boiler must be connected to a suitable flue which will provide a consistent updraught without undue cooling of the flue gases. The requirements of BS5440:1 should be followed. Horizontal flue runs should be avoided and the flue should terminate above roof edge level in accordance with the relevant recommendations given in BS5440:1. The flue must be fitted with a terminal, preferably one which has been tested and found satisfactory by British Gas.

Existing chimneys may be suitable but must be swept first and require an approved liner to be fitted. If in doubt regarding the suitability of a flue, consult the local Gas Region for advice.

If the flue is required to be taken through the wall behind the boiler, there should be a minimum of 600 mm (2 ft) of vertical flue directly above the draught diverter prior to any bend.

A minimum clearance of 25 mm should be maintained between the flue pipe and any adjacent combustible material.

Note: When the flue is taken through the ceiling and into the roofspace, or the room above, it must be provided with a sleeve of non-combustible material sufficient to allow an air space between the sleeve and flue of 25 mm (1 in) minimum. A suitable non-combustible plate must be fitted to centre the flue and maintain the 25 mm air gap.

If a twin wall insulated flue is used it may be necessary to use an appliance connector, available from the flue manufacturer. Nominal flue size: 100 mm (4 in).

9. BOILER LOCATION

The boiler is not suitable for external installation.

The boiler must stand firm and level. No special floor protection is needed, but finishes which soften when warm, e.g. linoleum and plastic floor tiles, should be removed, or may be protected by an insulating sheet at least 10 mm thick. The boiler should not be installed in a bedroom and must not be installed in a room containing a bath or shower or in a garage.

Where the installation of the boiler will be in an unusual position, special procedures may be necessary and BS6798 and BS5546 give detailed guidance on this aspect.

A cupboard or compartment used to enclose the boiler must be designed and constructed specifically for this purpose. Details of essential features of cupboard/compartment design including airing cupboard installations are given in BS6798 and BS5546 and should be complied with.

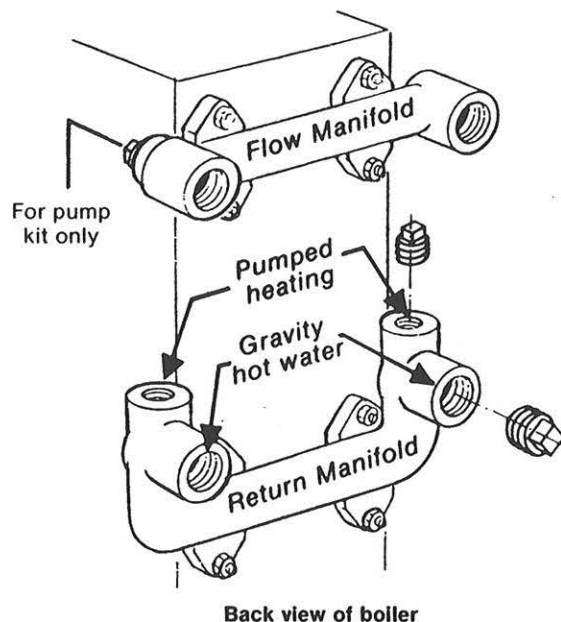
If the boiler is to be fitted in a run of kitchen units it is recommended that the boiler is fitted first or the adjacent units removed.

10. WATER CONNECTIONS

The water connections are via manifolds on the back of the boiler as shown opposite. See section 11 for their position. All unused tapings must be plugged. Two plugs are supplied fitted loose in the manifold tapings, they must be removed and refitted with jointing compound if they are used.

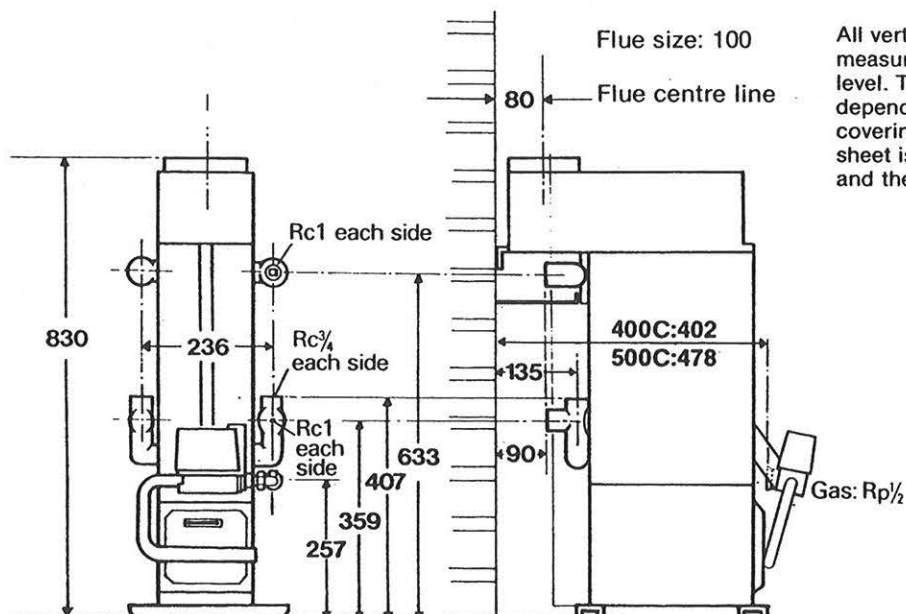
Important: On gravity systems, both pumped and gravity returns **MUST** be connected to the same end of the return manifold.

Fit one or more draining taps (BS2879) to enable the water system to be fully drained.



11. POSITION OF WATER, FLUE AND GAS CONNECTIONS

All dimensions in mm



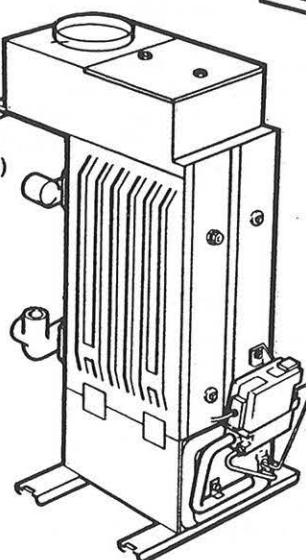
All vertical dimensions are measured from the existing floor level. These dimensions may vary depending on whether any floor covering, and/or an insulating sheet is placed between the boiler and the floor.

12. INSTALLATION PROCEDURE

1 UNPACK THE BOILER

1. Carefully unpack the boiler. Do not discard the packing until all the items are found.
2. Remove the wooden transit packing from the base of the boiler.
3. Place the case top safely aside to avoid possible damage.

Spacing angle
(See frame 2)



Case top
1 off

Deflector plate
1 off



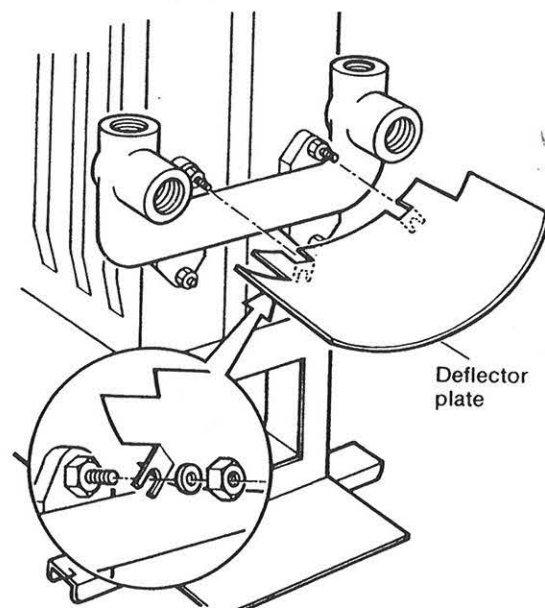
M10 washers
2 off

M10 nuts
2 off

Find these parts in the pack

2 PREPARE AND INSTALL THE BOILER

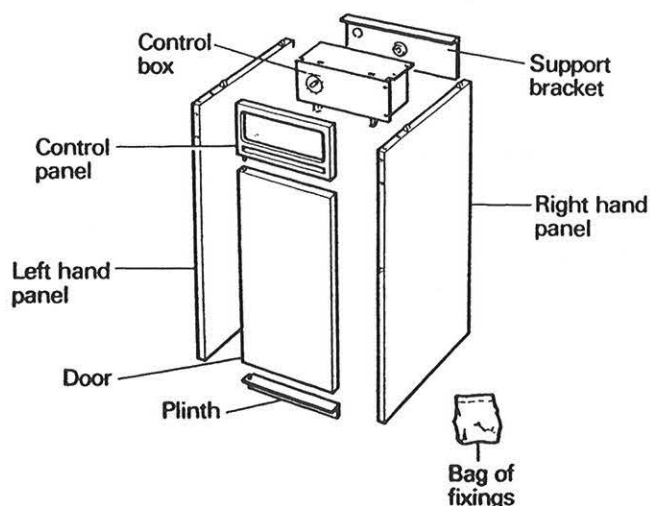
1. Fit the water fittings to the flow and return manifolds using jointing compound (see section 10, page 5).
2. Fit the deflector plate to the boiler. The two lugs fit over the extended studs. Secure with two M10 nuts and washers supplied.
3. Stand the boiler on the floor, on an insulating sheet if required (see section 9, page 5), with the spacing angle (see diagram above) on the back of the draught diverter touching the wall. Check that the boiler is standing firm and level.
4. Connect the first length of flue to the socket on top of the boiler. Pack the joint with a suitable caulking string and seal with a suitable fire cement.
5. Connect the water system pipework to the fittings previously fitted.
6. If a Marathon pump kit is being installed assemble the pump and pipework to the boiler. (See fitting instructions packed with the pump kit).
7. Connect the gas supply to the boiler service cock on the gas valve inlet.
DO NOT TURN ON THE GAS SUPPLY AT THIS STAGE.
8. Thoroughly flush the whole system with cold water without the pump in position (temporarily replace the pump with a suitable piece of pipe). Ensure all valves are open. With the pump fitted, fill, vent and check for water soundness, rectifying where necessary.



Back view of boiler

3 UNPACK THE CASE

Carefully unpack the case. Do not discard the packing until all the items are found.



M5 nut
1 off

Rubber door stops
2 off

Small No. 8 spire nuts
4 off

Large No. 8 spire nuts
2 off

No. 8 x 12 lg c'sk screws
6 off

No. 8 x 12 lg pan hd screws
4 off

Door latch
1 off

Case top clips
4 off

Cable ties
2 off

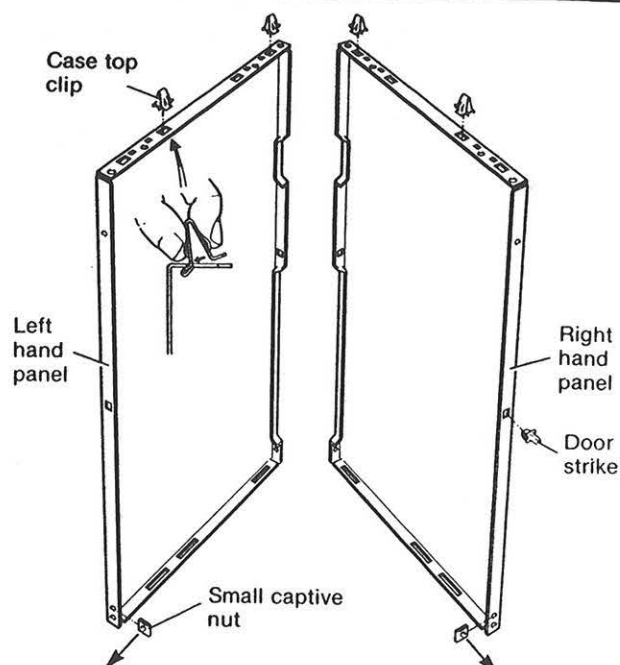
Door strike
1 off

Contents of fixings bag

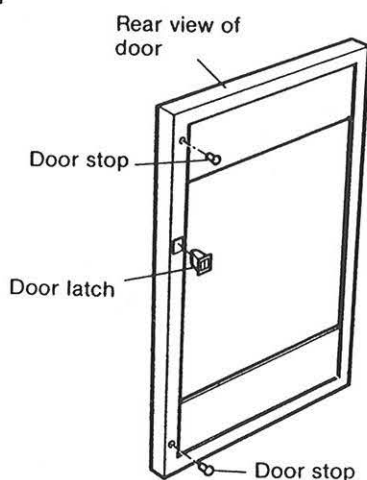
Find these parts in the pack

4 ASSEMBLE THE CASE PARTS

1. Fit the four case top clips, supplied with the case, to the case side panels in the holes shown.
 2. Fit the door strike, supplied with the case, to the right hand side panel as shown.
 3. Fit two of the small captive nuts, supplied with the case, to the bottom of the side panels in the holes shown.
- Note:** when fitting the captive nuts, ensure that the flat side faces outwards (in the direction of the arrow).

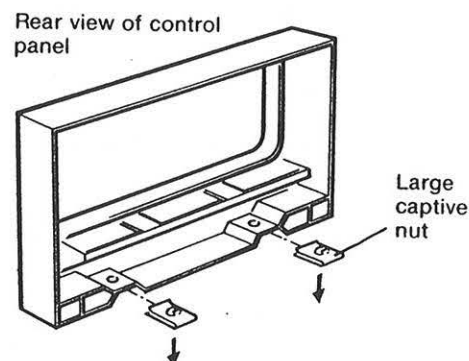


5 Assemble the case parts — continued



4. Fit the door latch and two rubber door stops, supplied with the case, to the rear of the door as shown.

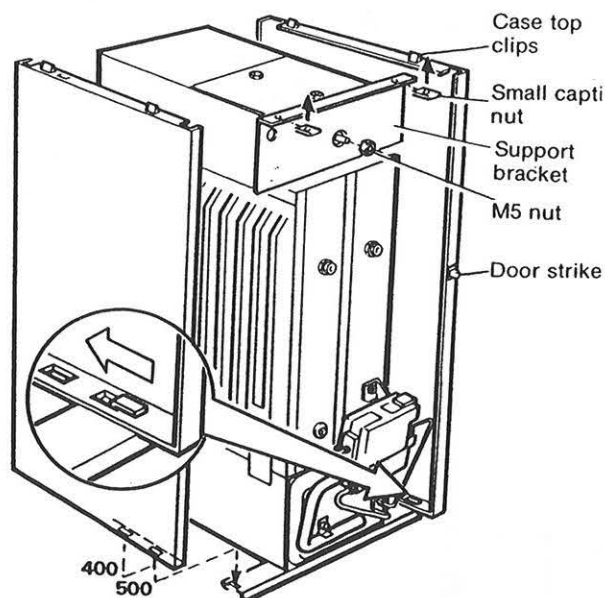
6 Assemble the case parts — continue



5. Fit the two large captive nuts, supplied with the case, to the bottom of the control panel as shown.
- Note:** when fitting the captive nuts, ensure that the flat side faces outwards (in the direction of the arrow).

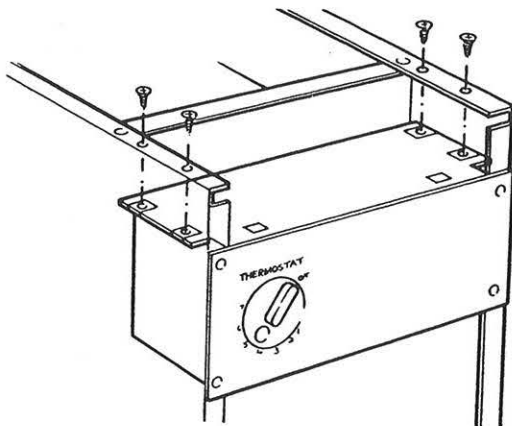
7 FIT THE CASE SIDES

1. Fit two small captive nuts, supplied with the case, to the ends of the support bracket.
- Note:** when fitting the captive nuts, ensure that the flat side faces outwards (in the direction of the arrow).
2. Locate the support bracket on the stud on the front of the flue box, as shown. Loosely secure in position using an M5 nut, supplied with the case, nut to be finger tight only.
 3. Fit the right hand side panel with the bottom slots over the raised lugs on the base channels and push the panel backwards to locate it under the raised lugs.
 4. Bring the side panel up vertical over the top of the support bracket and secure using one of the No. 8 x 12 lg c'sk screws supplied with the case.
 5. Repeat operations 3 and 4 for the left hand side panel.
 6. Tighten the M5 nut securing the support/heat shield bracket.



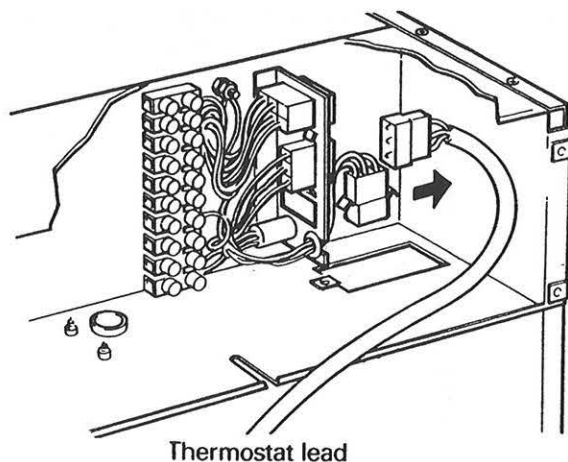
8 FIT THE CONTROL BOX

1. Position the control box between the case sides as shown.
2. Secure in position with four No. 8 x 12 lg c'sk screws, supplied with the case.



9 Fit the Control Box — continued

3. Remove the four screws securing the facia panel.
4. Disconnect the 3-way plug and socket and remove the facia panel.

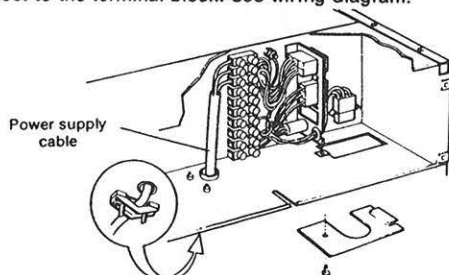


10 CONNECT THE POWER SUPPLY CABLE AND GAS VALVE LEAD

1. Slacken the two screws in the cable clamp underneath the control box. Feed the power supply cable through the hole in the case support bracket, under the cable clamp and through the bush. Connect the wires, Brown to L, Blue to N and Green and Yellow to $\perp$ on the terminal block.

Note: When connecting the power supply cable to the terminal block, ensure that the length of the earth wire is such, that if the supply cable slips out of the cable clamp the live and neutral wires become taut before the earth wire.

2. Tighten the cable clamp screws to secure the power supply cable.
3. Pass any external wiring through the hole in the case support bracket, through the bush in the back of the control box and connect to the terminal block. See wiring diagram.

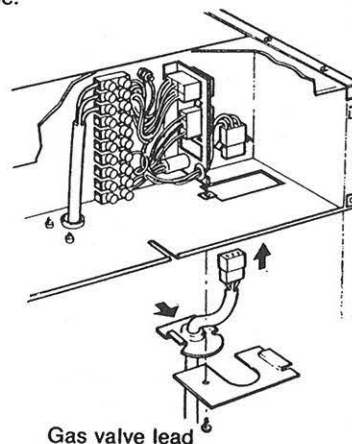


4. Remove the gas valve lead clamping bracket from underneath the control box.

DO NOT SWITCH ON THE ELECTRICITY SUPPLY AT THIS STAGE

Connect the power supply cable and gas valve lead — continued

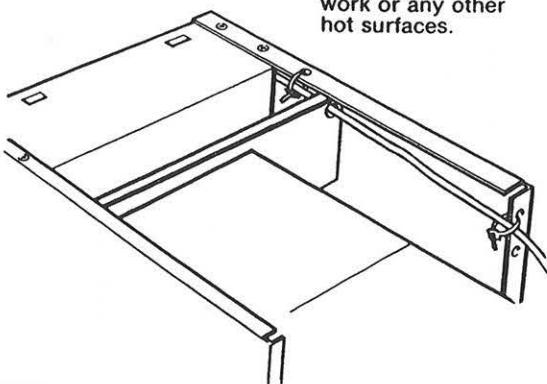
5. Push the cable bush support (fitted to the gas valve lead) into the U slot in the clamping bracket.
6. Pass the gas valve lead plug through the base of the control box and connect it to the 3-way socket.
7. Secure the clamping bracket in position on the control box base.



12 SECURE THE WIRING

1. Bind together all cables leading to the control box and secure to the case side with the cable ties, supplied with the case.
2. Clip the cables to the wall behind the boiler.

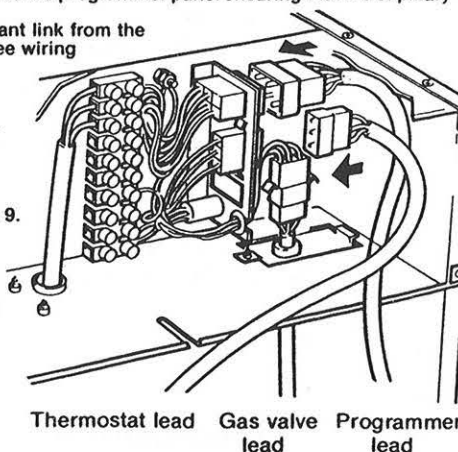
3. Make sure the cables do not come into contact with the flue box, heat exchanger, pipe-work or any other hot surfaces.



13 FIT THE PROGRAMMER KIT (if used)

If the Marathon programmer kit is used, the boiler thermostat must be removed from the facia panel and fitted to the programmer as follows:

1. Remove the thermostat knob by carefully pushing with a screwdriver through the cutouts in the back of the facia panel.
2. From the front of the panel remove the two screws securing the thermostat.
3. Fit the thermostat to the programmer panel ensuring that the capillary is uppermost.
4. Remove the relevant link from the terminal block. See wiring diagram.
5. Connect the 3-way and 6-way plug and sockets.
6. Secure the programmer panel in position with four screws removed in frame 9. Ensure that the thermostat capillary passes through the cut-out in the control box base.
7. Proceed to frame 15.

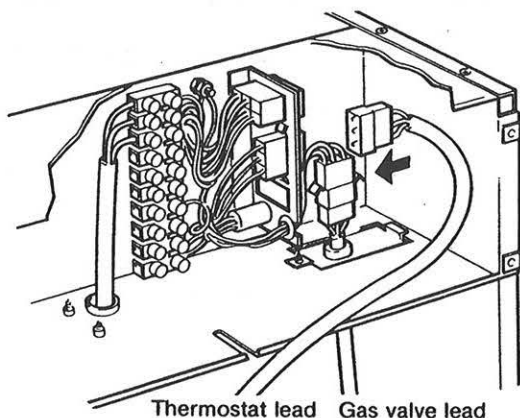


14 FIT THE FACIA PANEL

If the Marathon programmer kit is not used, replace the facia panel as follows:

1. Connect the 3-way plug and socket as shown.
2. Secure the panel in position with the four screws removed in frame 9.

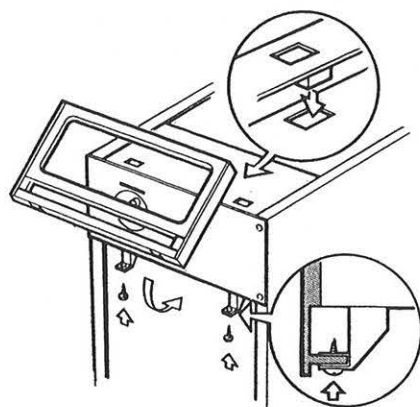
Ensure that the thermostat capillary passes through the cut-out in the control box base.



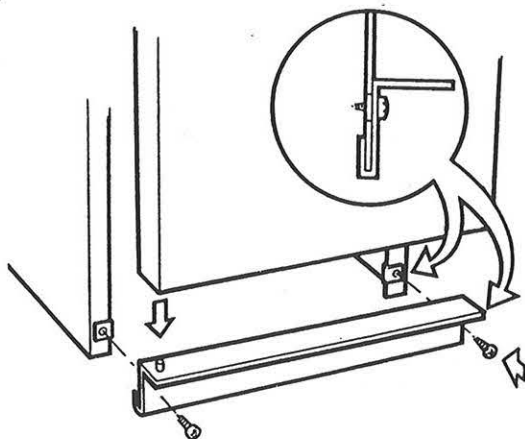
Thermostat lead Gas valve lead

15 FIT THE CONTROL PANEL AND THERMOSTAT PHIAL

1. Locate the two spigots on the top of the control panel into the cut outs on the top of the control box and swing the panel down into position.
2. Secure the bottom of the panel to the control box using two No. 8 x 12 lg pan hd screws, supplied with the case.
3. Remove the thermostat phial fixing (screw or split pin) from the thermostat pocket on the front of the heat exchanger and insert the phial into the pocket. Secure in position with the fixing previously removed.



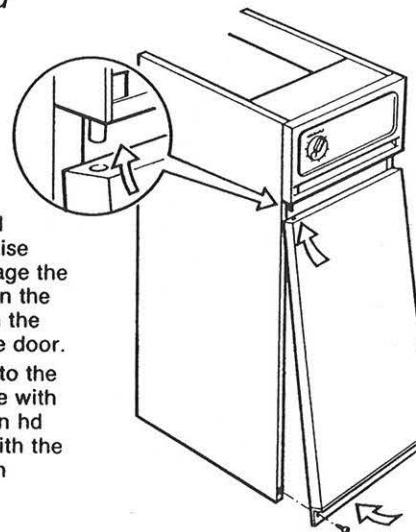
16 FIT THE PLINTH AND DOOR



1. Loosely secure the plinth to the right hand case side with one No. 8 x 12 lg pan hd screw, supplied with the case.
2. Engage the lower hinge pin on the left hand end of the plinth with the bush in the bottom of the floor.
3. Continue the fitting of the door, see frame 17.

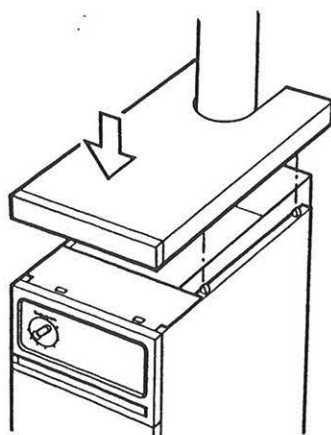
17 Fit the Plinth and Door — continued

4. Hold the door and plinth together, raise the door and engage the upper hinge pin on the control panel with the bush on top of the door.
5. Secure the plinth to the left hand case side with a No. 8 x 12 lg pan hd screw, supplied with the case. Tighten both plinth screws.



18 FIT THE CASE TOP

Engage the case top onto the spring clips on the top of the case sides and press down to secure.



13. COMMISSIONING

See page 11 for boiler controls

1. Test for soundness and purge the gas supply

a. With the boiler service cock closed (the slot in the operating head indicates the direction of flow through the cock), pressure test the gas supply and inlet pipework connection to the boiler service cock for soundness in accordance with CP331:3.

b. Remove the screw securing the gas valve cover and lift off the cover.

c. Loosen the gas inlet pressure test point screw one turn. Ensure the gas supply is on and open the boiler service cock to purge in accordance with CP331:3.

d. Retighten the test point screw. Test around the test point screw and service cock to gas valve joint for gas soundness using a suitable leak detecting fluid.

2. Test the pilot burner connection for gas soundness (after servicing or replacement of parts only)

With the burner and gas valve assembly removed:

a. Stand the burner assembly on end in front of the boiler and reconnect the boiler service cock.

b. Open the boiler service cock, fully depress the gas valve operating button and keep it pressed in. At the same time test the pilot supply connection at the pilot burner for gas soundness using a suitable leak detecting fluid.

c. Close the boiler service cock, disconnect the burner and gas valve assembly and refit it to the boiler. Secure the burner door in position with four nuts previously removed.

d. Reconnect the boiler service cock union and replace the nut and washer securing the gas valve bracket.

e. Open the boiler service cock and test the service cock to gas valve joint for gas soundness using a suitable leak detecting fluid.

3. Light the pilot

With the gas supply on, electricity supply off and the boiler thermostat turned to OFF:

a. Fully depress the gas valve operating button and keep it pressed in. At the same time operate the igniter button to light the pilot. If the pilot does not light, operate the igniter button repeatedly until it does.

b. When the pilot lights continue to hold the gas valve operating button in for a further 10 to 20 seconds, then release it slowly.

Caution: If the pilot does not stay alight, release the gas valve operating button and slide it in the direction of the arrow. Wait for 3 minutes and repeat operation 3a until the pilot is lit. Continue to hold the gas valve operating button in for 20 seconds, then release it slowly.

4. Test the pilot supply for gas soundness (after servicing or replacement of parts only)

Test the pilot supply connection at the gas valve for gas soundness using a suitable leak detecting fluid.

5. Check the pilot flame

The pilot throttle is factory set fully open. Check that the pilot flame (approximately 20 mm lg) envelops the thermocouple tip. Adjust if necessary.

6. Light the main burner

With the pilot alight:

a. Switch on the electricity supply, set the programme selector switch to Continuous, if a programmer is fitted and check that all system controls are calling for heat.

b. Turn the boiler thermostat to position 7 and check that the main burner lights smoothly from the pilot flame.

(After servicing or replacement of parts only) — Test the main burner supply to gas valve connection for gas soundness using a suitable leak detecting fluid.

7. Check the main burner setting pressure

With the gas valve cover removed and after the main burner has been alight for at least 10 minutes:

a. Turn the boiler thermostat to OFF. Loosen the burner setting pressure test point screw one turn and connect a pressure gauge.

b. Turn the boiler thermostat to position 7 and if necessary adjust the burner setting pressure to give the heat input required. Turn the adjusting screw clockwise to decrease the setting pressure.

Note: The boiler is factory set to the maximum input. See Technical Data, page 3, for the boiler ratings and setting pressures.

c. Turn the boiler thermostat to OFF, disconnect the pressure gauge and retighten the pressure test point screw. Turn the boiler thermostat to position 7 to light the main burner and test for gas soundness around the pressure test point screw using a suitable leak detecting fluid.

d. Remove the self-adhesive arrow from the inspection ticket tied to the burner supply pipe and stick it to the Data Plate (positioned above gas valve) to indicate the appropriate burner setting pressure.

8. Replace the gas valve cover

Replace the gas valve cover, ensuring that the cable clamp is located correctly in the cover, and secure with its screw.

9. Check the flue

Check the flue for correct operation as described in BS5440:1.

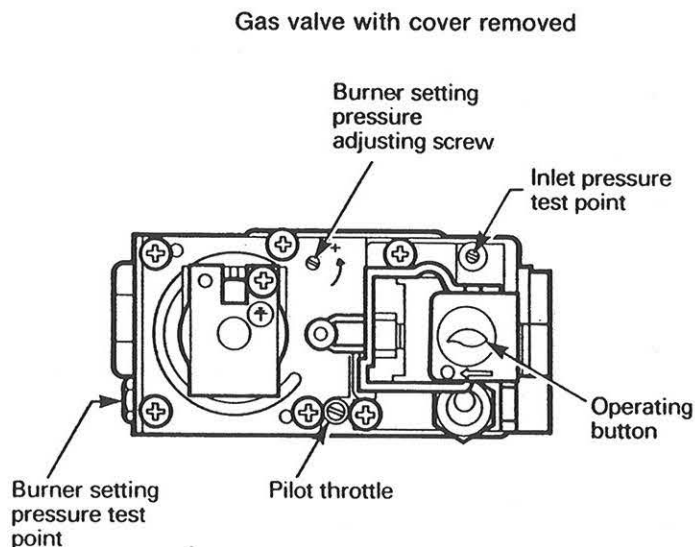
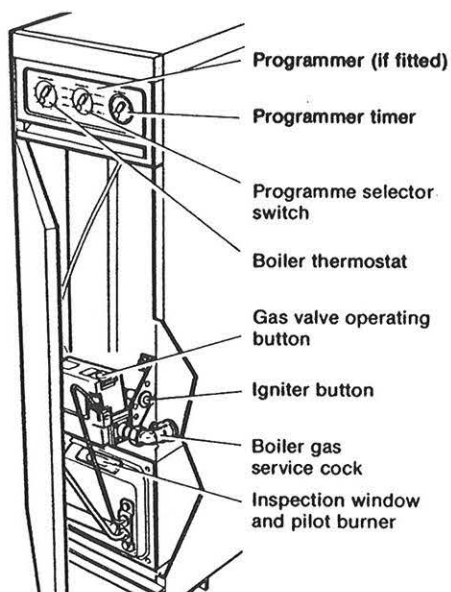
10. Set the clock and programme (if a programmer is fitted)

Set the clock to the correct time (do not rotate the dial anticlockwise) and the programme and selector switches to the required settings. See User instructions.

11. Final water system check

When the system has been tested, drain the water while it is still hot in order to complete the flushing process. Refill, vent and make a final check for water soundness. Remove the temporary label from the top of the casing, having checked compliance with the information it contains.

14. BOILER CONTROLS



15. HANDING OVER THE INSTALLATION

Hand over the User instructions to the User and instruct in the safe operation of the boiler and controls.

Advise the User of the precautions necessary to prevent damage to the system and to the building in the event of the system remaining inoperative during frost conditions.

Advise the User that for continued efficient and safe operation of the boiler it is important that adequate servicing is carried out at least once a year by a qualified service engineer or the local Gas Region.

Leave a permanent card attached to the boiler giving:

1. Name and address of installer.
2. Date of installation.
3. A wiring diagram of the circuit.

16. ANNUAL SERVICING

The following aspects of the boiler and installation should be examined, and rectified as necessary.

1. Run the boiler and check the operation of its controls, observe the flame picture and ensure that the boiler responds to any switches and programmer.
2. Check the condition of the flue and ensure it is not obstructed.
3. Remove the flue box cover and check if the heat exchanger requires cleaning.
4. Examine the main injector to ensure it is clear and undamaged.
5. Remove any build up of carbon deposits from the thermocouple tip.
6. If a sufficiently large pilot flame cannot be achieved examine the pilot injector orifice to ensure it is clear and undamaged.

On completion of the service run the boiler and ensure that it operates satisfactorily.

The boiler data plate is positioned above the gas valve.

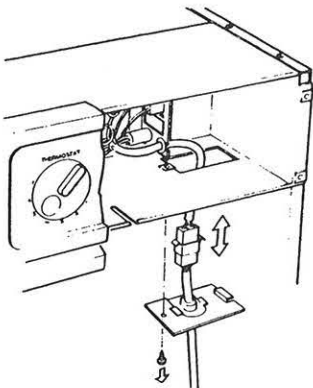
The procedure for Annual Servicing is given in frames 19 to 29.

Warning: Before commencing work slide the gas valve operating button in the direction of the arrow to turn off the boiler. Turn off the electricity supply and isolate the gas supply at the boiler service cock. Allow the boiler to cool.

Important: Always test for gas soundness after completing any servicing and carry out functional checks of controls.

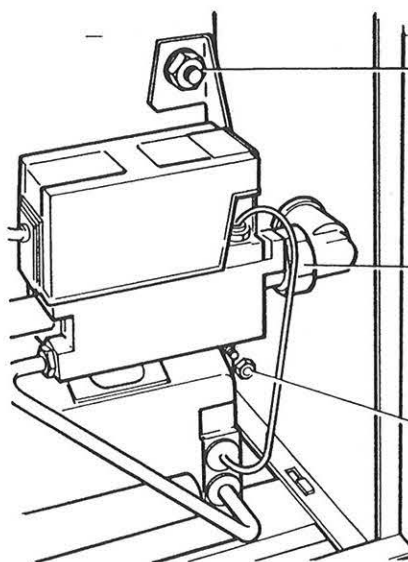
19 DISMANTLING

1. Remove the case top by carefully pulling it upwards.
2. If the case door will not open beyond 90° remove the two plinth screws and remove the door and plinth.



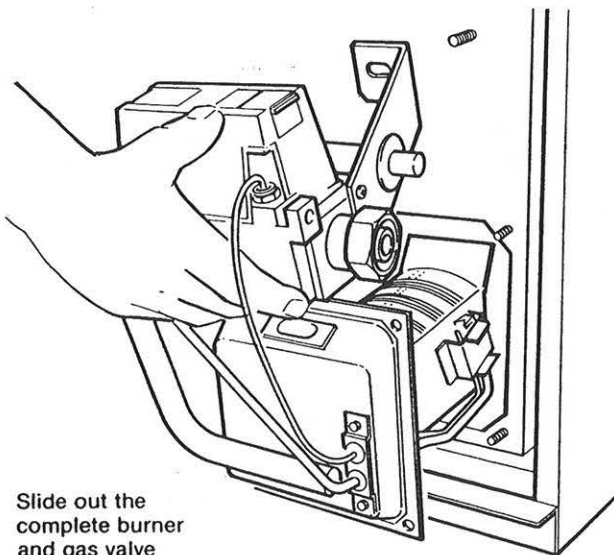
3. Remove the screw securing the gas valve lead clamping bracket to the base of the control box.
4. Carefully withdraw the lead and disconnect the 3-way plug and socket.

20 Dismantling — continued



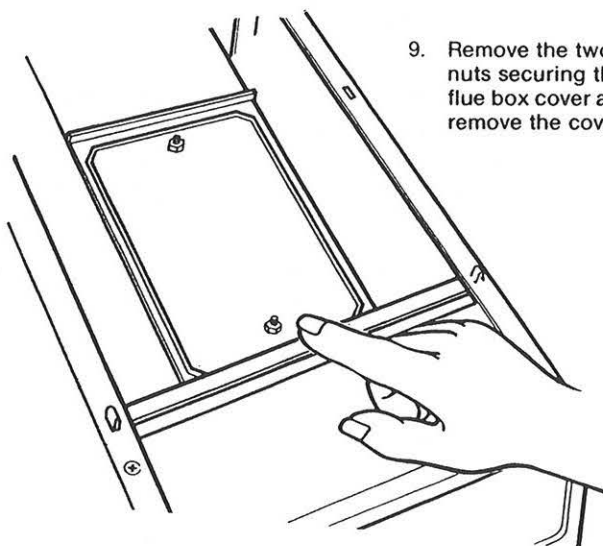
5. Remove the nut and washer securing the gas valve bracket.
6. Disconnect the union at the boiler gas service cock.
7. Remove four nuts fixing the burner door (one at each corner).

21 Dismantling — continued



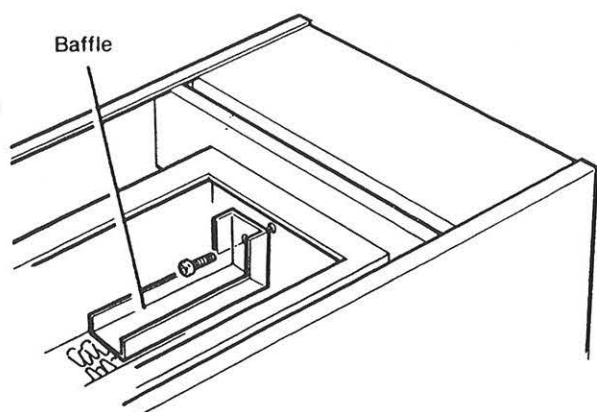
8. Slide out the complete burner and gas valve assembly.

22 Dismantling — continued



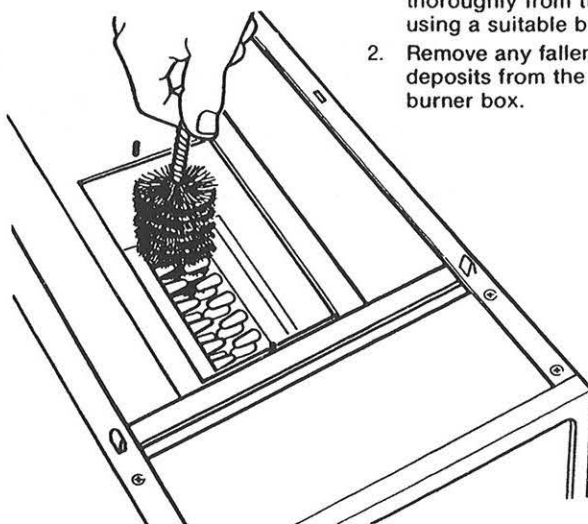
9. Remove the two nuts securing the flue box cover and remove the cover

23 Dismantling — continued



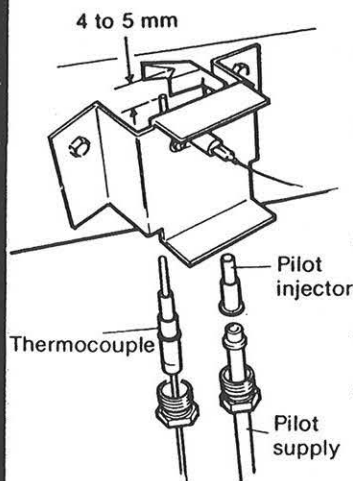
10. From inside the flue box remove the screw securing the baffle to the front of the flue box and lift out the baffle.

24 CLEANING THE HEAT EXCHANGER



1. Brush all flueways thoroughly from the top using a suitable brush.
2. Remove any fallen deposits from the burner box.

25 CLEANING THE PILOT AND THERMOCOUPLE



1. Loosen and disconnect the pilot supply and thermocouple from the pilot assembly.
2. Remove the pilot injector and clean by blowing through the orifice or washing. Do NOT clear the injector with a pin or wire.
3. Examine the thermocouple for damage. Excessive build up of carbon on the tip should be removed with a fine wire brush.
4. Check that the spark gap is 4 to 5 mm.
5. Replace the pilot injector and re-engage the pilot supply and thermocouple to the pilot assembly and secure with union nuts.

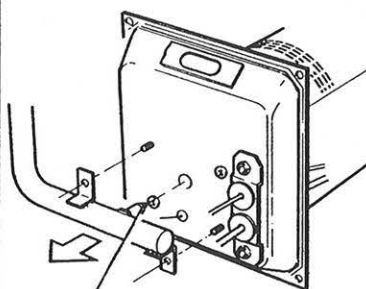
To replace the pilot filter in the gas valve refer to frame 46.

26 CLEANING THE BURNER

1. Remove the two screws or nuts and sealing washers fixing the burner end plate. Remove the end plate and gasket.
2. Carefully slide out the lint filter. Clean the filter by brushing carefully with a soft brush, aided by blowing through the mesh.
3. Brush the burner top and check that the flame ports are clear. Any blockage may be removed using a fine wire brush. Remove any deposits inside the burner by tapping the open end down.
4. Replace the lint filter. Slide the filter in carefully against the top of the burner and on top of the side flanges. Push full home.
5. Replace the end plate and gasket and secure in position. Ensure that the sealing washers are used.

27 CLEANING THE MAIN INJECTOR

1. Remove the screw securing the gas valve plastic cover and lift off cover.
2. Disconnect the thermocouple and pilot supply from the gas valve.



3. Disconnect the electrode lead from the piezo unit.
4. Remove the two nuts securing the burner manifold to the burner door and separate the manifold from door.
5. Unscrew the injector from the manifold. Clean by blowing through or washing. Do NOT clear the injector with a pin or wire. Replace the injector using a new sealing washer if necessary.
6. Secure the manifold to the burner door with two nuts previously removed.
7. Re-connect the electrode lead to the piezo unit and re-connect the pilot supply and thermocouple to the gas valve.

28 REASSEMBLY

1. Replace the baffle into the top of the heat exchanger and secure in position with the screw previously removed.
2. Replace the flue box cover, ensuring the gasket is intact and secure with the nuts previously removed.
3. Test the pilot burner connection for gas soundness, replace the burner and gas valve assembly and test the boiler service cock connection for gas soundness as described in the commissioning instructions, page 10.
4. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
5. Replace the case door if it has been removed — frame 19.
6. Replace the case top.

29 Reassembly — continued

7. Light the pilot, test the pilot supply for gas soundness, check the pilot flame, light the main burner, test the main burner supply for gas soundness, check the main burner setting pressure, replace the gas valve cover and set the clock and programmer (if fitted) as described in the commissioning instructions, page 10.
8. Before leaving the site, the service engineer should check that:
 - a) no flammable material is left in contact with the boiler shell, eg. paper or textiles which have fallen behind the boiler.
 - b) ventilation requirements remain at the required standard, by venting the room.
 - c) the gaps between the case sides and the wall or kitchen units are not obstructed. This is the means of entry for combustion air.

17. LIGHTING INSTRUCTIONS

See page 11 for boiler controls

With the gas supply on, electricity supply off and the boiler thermostat turned to OFF:

1. Fully depress the gas valve operating button and keep it pressed in. At the same time operate the igniter button to light the pilot. If the pilot does not light, operate the igniter button repeatedly until it does.
2. When the pilot lights, continue to hold the gas valve operating button in for a further 10 to 20 seconds, then release it slowly.

Caution: If the pilot does not stay alight, release the gas valve operating button and slide it in the direction of the arrow. Wait for 3 minutes and repeat operation 1 until the pilot is lit. Continue to hold the gas valve operating button in for 20 seconds, then release it slowly.

When the pilot remains alight:

3. Switch on the electricity supply, set the programmer selector switch to Continuous, if a programmer is fitted and check that all system controls are calling for heat.
4. Turn the boiler thermostat to position 7 and the main burner will light.
5. If a programmer is fitted, ensure that the clock is set to the correct time (do not rotate the dial anticlockwise) and the programme and selector switches are set to their previous settings.

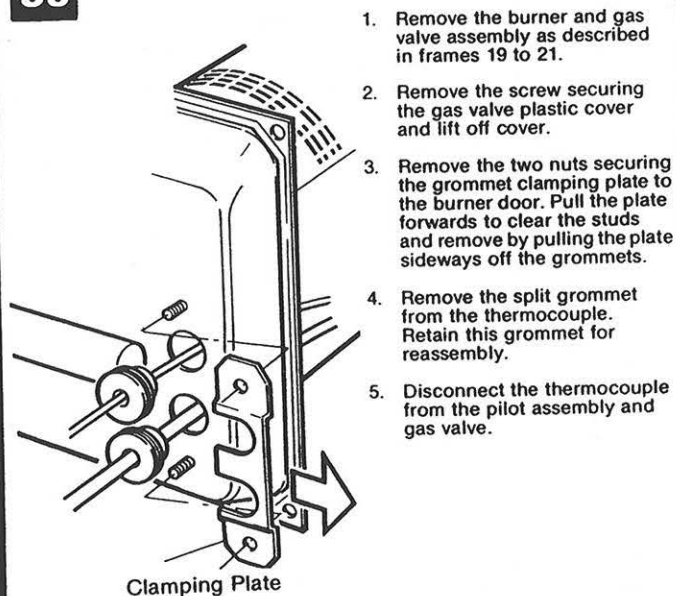
18. REPLACEMENT OF PARTS

The procedure for the replacement of parts is given in frames 30 to 47.

Warning: Before commencing work slide the gas valve operating button in the direction of the arrow to turn off the boiler. Turn off the electricity supply and isolate the gas supply at the boiler service cock. Allow the boiler to cool.

Important: Always test for gas soundness after completing any exchange of gas carrying components and carry out functional checks of controls.

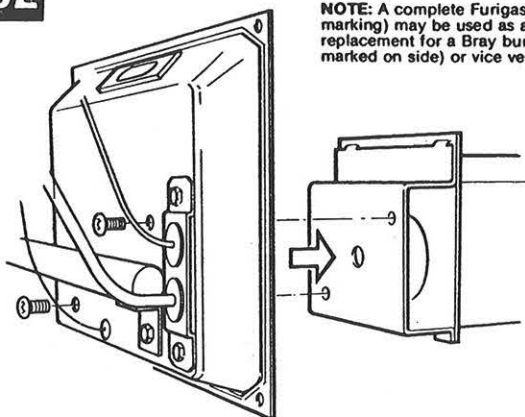
30 TO REPLACE THE THERMOCOUPLE



31 Thermocouple — continued

6. Carefully bend the replacement thermocouple to match the discarded one.
7. Pass the thermocouple through the burner door and connect to the gas valve and pilot assembly.
8. Place the split grommet over the thermocouple and slide the clamping plate over the two grommets. Ensure that the grommets are correctly located.
9. Secure the clamping plate to the burner door with the two nuts previously removed.
10. Replace the gas valve plastic cover and secure with its screw. Ensure that the cable clamp is located correctly on the left hand side.
11. Test the pilot burner connection for gas soundness, replace the burner and gas valve assembly and test the boiler service cock connection for gas soundness as described in the commissioning instructions, page 10.
12. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
13. Replace the case door if it has been removed — frame 19.
14. Refer to the lighting instructions, above, and light the boiler.

32 TO REPLACE THE BURNER



NOTE: A complete Furigas burner (no marking) may be used as a direct replacement for a Bray burner (Bray marked on side) or vice versa.

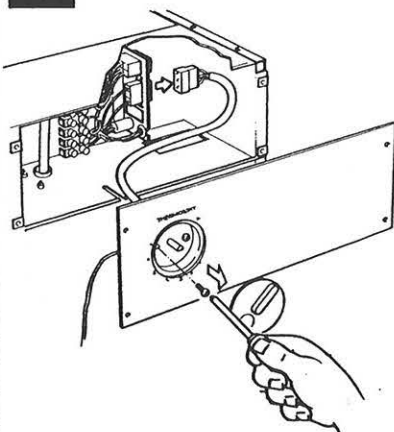
1. Remove the burner and gas valve assembly as described in frames 19 to 21.
2. Remove the two nuts securing the pilot assembly to the burner.
3. Remove the two screws fixing the burner to the burner door.
4. Remove the burner by pulling backwards off the injector.

34 TO REPLACE THE LINT FILTER

Note: the burner may be either Bray or Furigas. When replacing components they are NOT interchangeable.

1. Remove the burner and gas valve assembly as described in frames 19 to 21.
2. Remove the lint filter from the burner as described in frame 26.
3. Fit the new lint filter and reassemble the burner as described in frame 26.
4. Test the pilot burner connection for gas soundness, replace the burner and gas valve assembly and test the boiler service cock connection for gas soundness as described in the commissioning instructions, page 10.
5. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
6. Replace the case door if it has been removed — frame 19.
7. Refer to the lighting instructions, page 14 and light the boiler.

36 Boiler Thermostat — continued



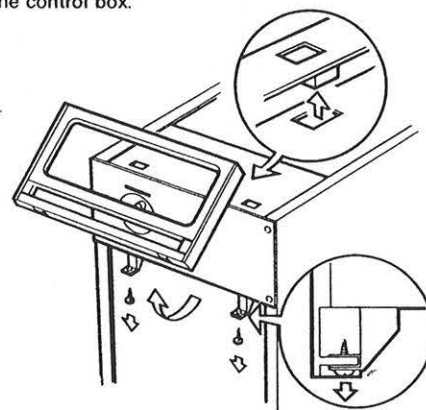
6. Remove the four screws securing the facia panel.
7. Disconnect the 3-way thermostat plug and socket (also disconnect the 6-way plug and socket if a programmer is fitted).
8. Remove the thermostat knob by carefully pushing with a screwdriver through the cut outs in the back of the facia panel.
9. From the front of the panel remove the two fixing screws and remove the thermostat.

33 Burner — continued

5. Fit the new burner and retain with two screws.
6. Fit the pilot assembly to the new burner and secure with two nuts.
7. Test the pilot burner connection for gas soundness, replace the burner and gas valve assembly and test the boiler service cock connection for gas soundness as described in the commissioning instructions, page 10.
8. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
9. Replace the case door if it has been removed — frame 19.
10. Refer to the lighting instructions, page 14 and light the boiler.

35 TO REPLACE THE BOILER THERMOSTAT

1. Remove the case top by carefully pulling it upwards.
2. Remove the two plinth screws and remove the door and plinth.
3. Remove the thermostat phial fixing (screw or split pin) from the thermostat pocket on the front of the heat exchanger. Withdraw the phial from the pocket.
4. Remove the two screws securing the bottom of the control panel to the control box.
5. Swing the panel up and disengage the two spigots from the top of the control box.

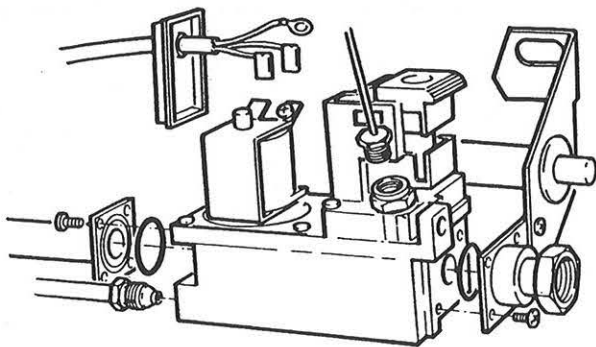


37 Boiler Thermostat — continued

10. Disconnect the leads from the old thermostat, noting their position, and connect to the new one. See wiring diagram.
11. Carefully bend the capillary to match the discarded one.
12. Secure the new thermostat to the facia panel with two screws. Ensure that the capillary is uppermost.
13. Re-connect the 3-way plug and socket, (and 6-way plug and socket if a programmer is fitted).
14. Replace the facia panel ensuring that the capillary passes through the cut out in the control box base. Secure the panel with four screws and replace the control knob.
15. Insert the thermostat phial into the pocket on the front of the heat exchanger and secure in position with the fixing previously removed.
16. Replace the control panel, case door, plinth and case top.
17. Refer to the lighting instructions, page 14 and light the boiler. Allow the boiler to heat up and check that the thermostat will switch the boiler off when turned to a low setting.

38 TO REPLACE THE GAS VALVE

Ensure that the gas supply is OFF.



1. Remove the burner and gas valve assembly as described in frames 19 to 21.
2. Remove the screw securing the gas valve plastic cover and lift off cover.
3. Disconnect the pilot supply and thermocouple from the gas valve.
4. Disconnect the push-on terminals (the polarity of these wires is not important) and unscrew the earth terminal from the gas valve. Leave the cable clamp in position on the lead.

39 Gas Valve — continued

5. Undo the four screws and remove the inlet flange complete with mounting bracket and piezo unit. Discard the 'O' ring in the inlet flange.
6. Undo the four screws and remove the gas valve from the burner manifold. Discard the 'O' ring in the manifold flange.
7. Fit new 'O' rings in the inlet flange and burner manifold flange and secure to the new valve.
8. Connect the electric leads, thermocouple and pilot supply to the new valve.
9. Test the pilot burner connection for gas soundness and replace the burner and gas valve assembly as described in the commissioning instructions, page 10.
10. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
11. Light the pilot, test the pilot supply for gas soundness, check the pilot flame, light the main burner and test the burner supply to gas valve connection for gas soundness, check the burner setting pressure and replace the gas valve cover as described in the commissioning instructions, page 10.
12. Replace the case door if it was removed — frame 19.

40 TO REPLACE THE PILOT INJECTOR

Refer to the diagram in frame 25

1. Remove the burner and gas valve assembly as described in frames 19 to 21.
2. Remove the tubing nut at the pilot assembly and carefully disconnect the pilot supply.
3. Remove the pilot injector.
4. Fit a new injector and reconnect the pilot supply.
5. Test the pilot burner connection for gas soundness, replace the burner and gas valve assembly and check the pilot flame as described in the commissioning instructions, page 10.
6. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
7. Replace the case door if it has been removed — frame 19.

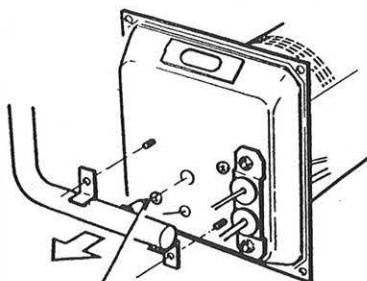
41 TO REPLACE THE ELECTRODE

Refer to the diagram in frame 25

1. Remove the burner and gas valve assembly as described in frames 19 to 21.
2. Disconnect the electrode lead from the piezo unit.
3. Remove the two screws securing the electrode to the pilot assembly. Remove the electrode complete with lead and grommet.
4. Fit the new electrode and secure with two screws. Pass the electrode lead through the burner door and locate the grommet in the door.
5. Connect the electrode lead to the piezo unit.
6. Check that the spark gap is 4 to 5 mm.
7. Test the pilot burner connection for gas soundness and replace the burner and gas valve assembly as described in the commissioning instructions, page 10.
8. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
9. Replace the case door if it has been removed — frame 19.
10. Refer to the lighting instructions, page 14 and light the boiler.

42 TO REPLACE THE BURNER INJECTOR

1. Remove the burner and gas valve assembly as described in frames 19 to 21.
2. Remove the screw securing the gas valve plastic cover and lift off cover.



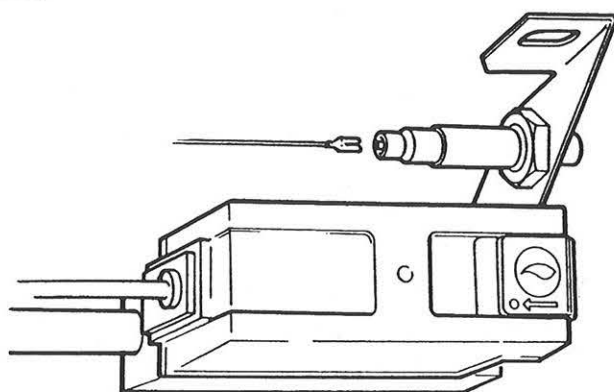
Main injector

3. Disconnect the thermocouple and pilot supply from the gas valve.
4. Disconnect the electrode lead from the piezo unit.
5. Remove the two nuts securing the burner manifold to the burner door and separate the manifold from door.
6. Unscrew the injector from the burner manifold tube.
7. Screw in a replacement injector using a new sealing washer.

43 Burner injector — continued

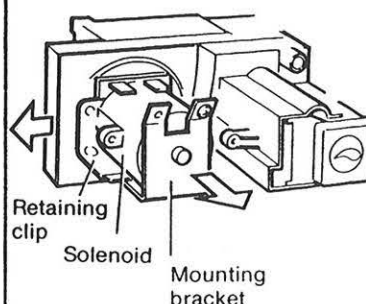
8. Refit the manifold tube and gas valve to the burner door. Secure with two nuts.
9. Reconnect the thermocouple and pilot supply to the gas valve.
10. Reconnect the electrode lead to the piezo unit.
11. Test the pilot burner connection for gas soundness, replace the burner and gas valve assembly and test the pilot supply for gas soundness as described in the commissioning instructions, page 10.
12. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
13. Replace the case door if it has been removed — frame 19.
14. Refer to the lighting instructions, page 14 and light the boiler.

44 TO REPLACE THE PIEZO UNIT



1. Disconnect the electrode lead from the piezo unit.
2. Undo the nut securing the piezo unit to the gas valve support bracket and remove unit.
3. Fit a new unit and reconnect the electrode lead.
4. Refer to the lighting instructions, page 14 and light the boiler.

45 TO REPLACE THE GAS VALVE OPERATING SOLENOID

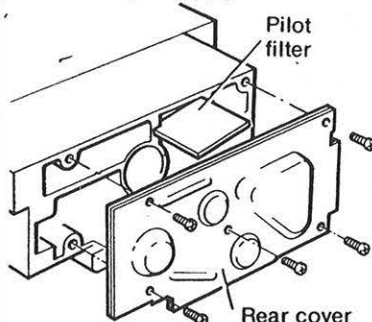


1. Remove the screw securing the gas valve plastic cover and lift off cover.
2. Disconnect the push-on terminals from the solenoid (the polarity of these wires is not important), unscrew the earth terminal.
3. Carefully prise out the retaining clip from behind the solenoid and lift off the solenoid and its mounting bracket.
4. Position the new solenoid into the mounting bracket and reassemble in reverse order.
5. Refer to the lighting instructions, page 14 and light the boiler.

46 TO REPLACE THE PILOT FILTER

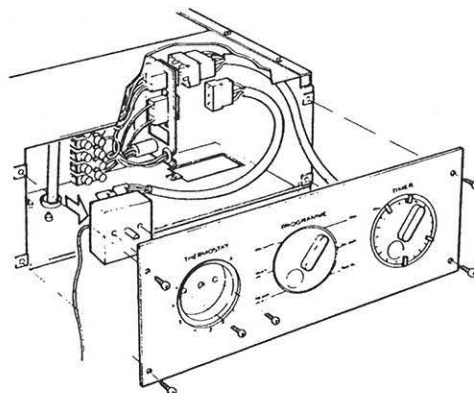
NOTE: It is extremely unlikely that the pilot filter will become blocked. If the pilot injector and pilot supply are clear and the filter is still suspect proceed as follows:

Ensure the gas supply is OFF.



1. Remove the burner and gas valve assembly as described in frames 19 to 21.
2. Remove the five screws securing the rear cover plate and carefully remove it. Discard the gasket.
3. Carefully remove the pilot filter and replace with a new one.
4. Replace the rear cover using a new gasket and secure by evenly tightening the five screws.
5. Test the pilot burner connection for gas soundness, replace the burner and gas valve assembly and check the pilot flame as described in the commissioning instructions, page 10.
6. Reconnect the gas valve lead plug and socket and secure the clamping bracket to the base of the control box.
7. Apply a suitable leak detecting fluid around the gas valve rear cover. Refer to the lighting instructions, page 14 and light the main burner. Test the gas valve rear cover for gas soundness.
8. Replace the case door if it has been removed — frame 19.

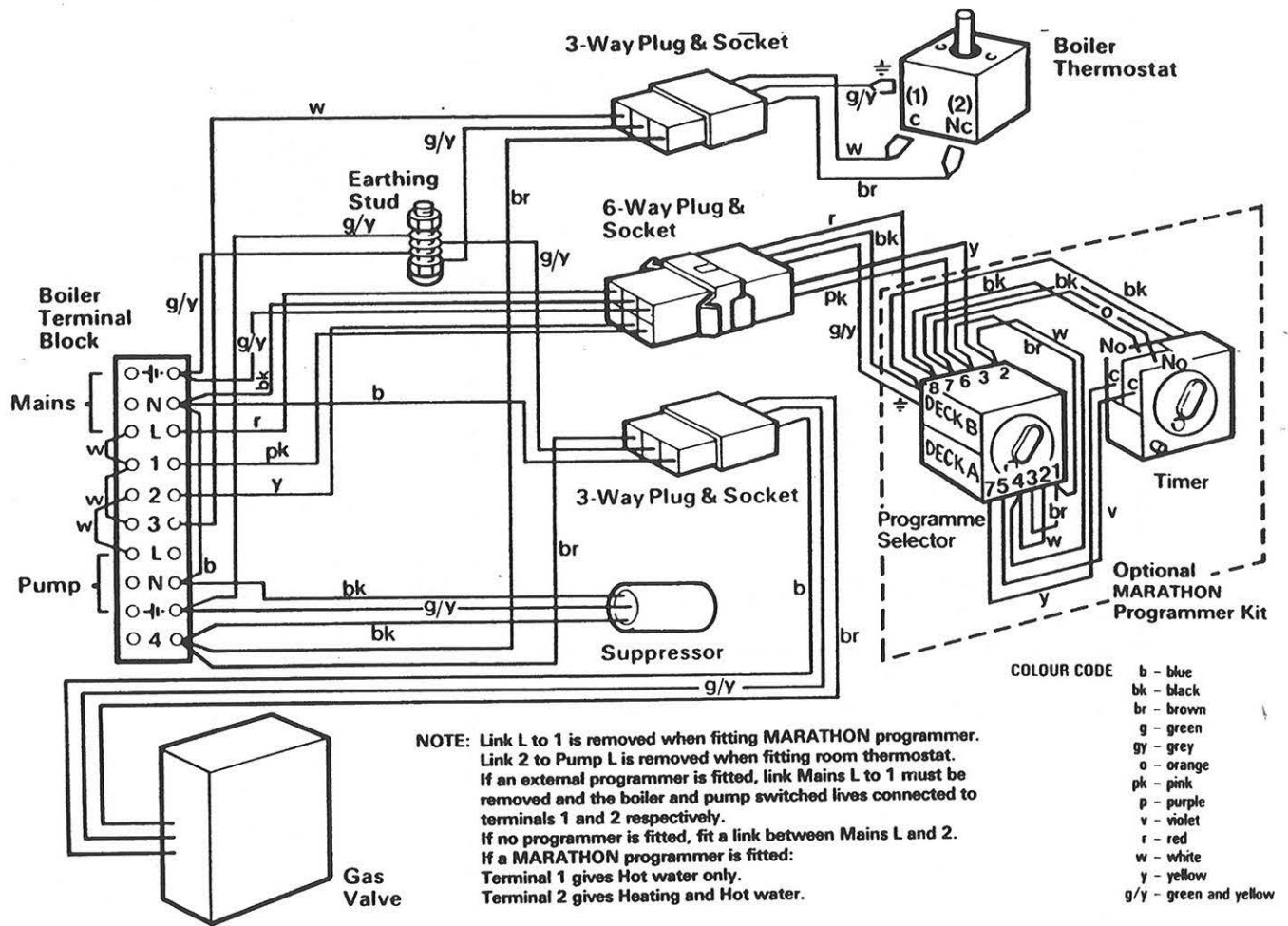
47 TO REPLACE THE PROGRAMMER (if fitted)



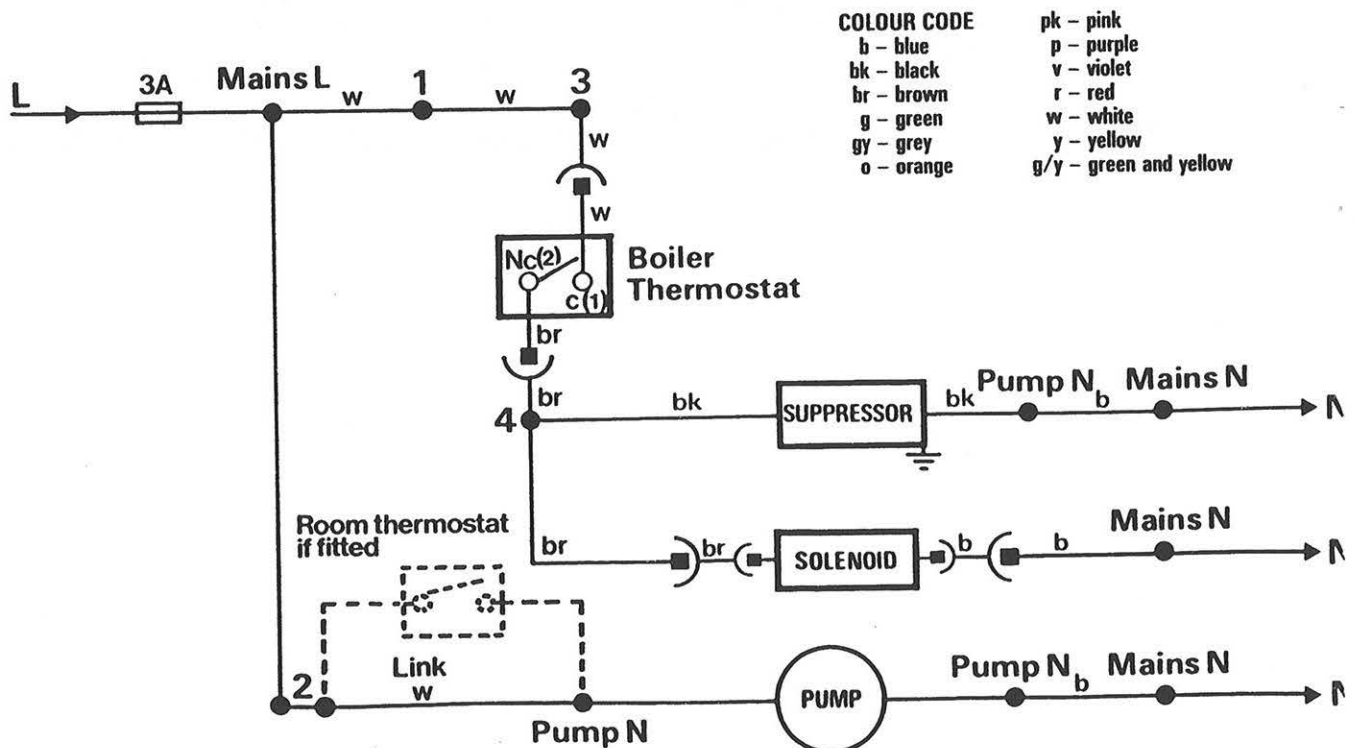
1. Remove the case top, door, control panel, facia panel and boiler thermostat as described in frames 35 and 36.
2. Fit the boiler thermostat to the new programmer assembly, ensuring the capillary is uppermost and reassemble in reverse order.
3. Refer to the lighting instructions, page 14 and light the boiler.

19. WIRING DIAGRAMS

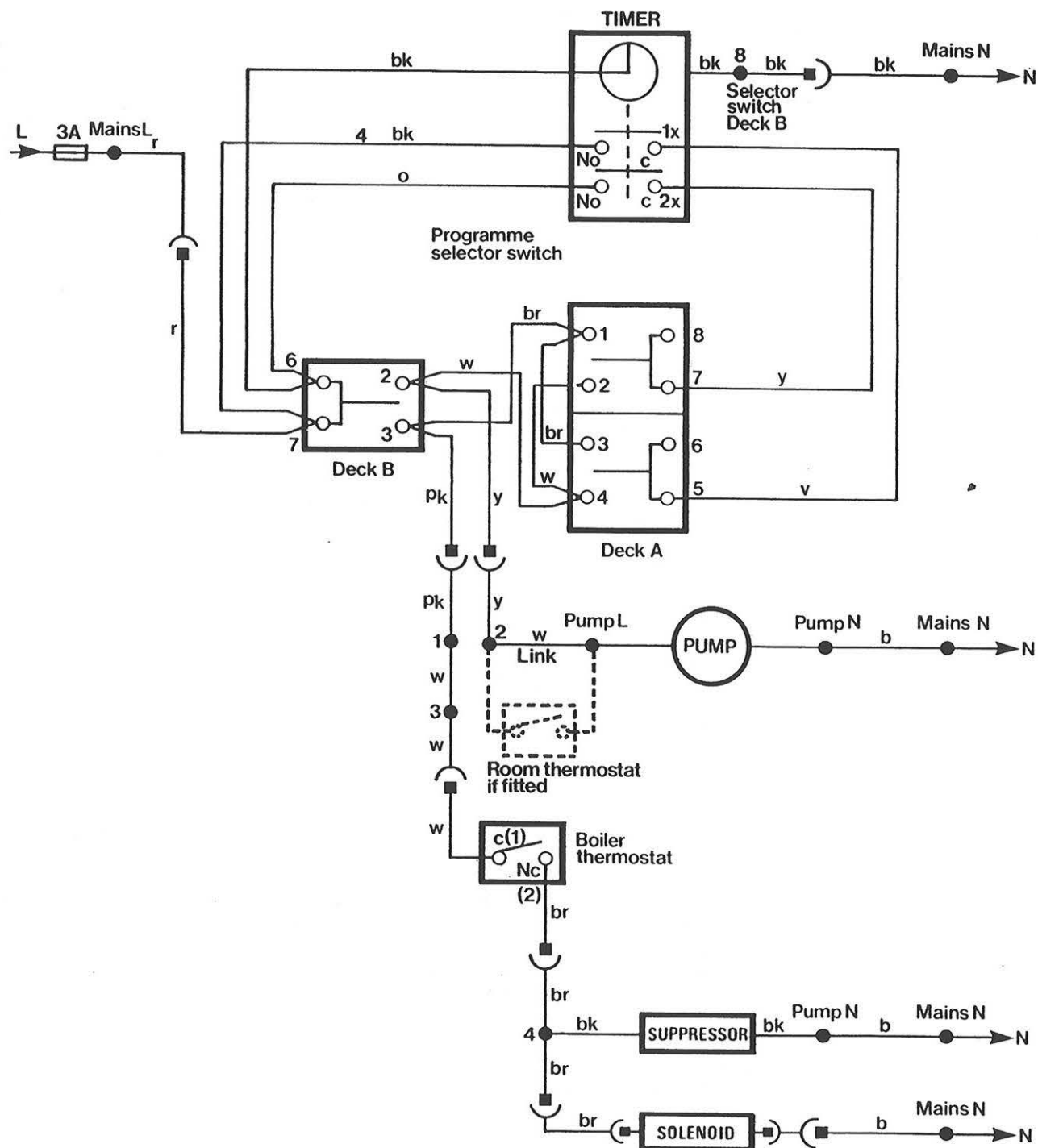
a. Illustrated wiring diagram



b. Functional flow wiring diagram without programmer



c. Functional flow wiring diagram with Marathon programmer



COLOUR CODE

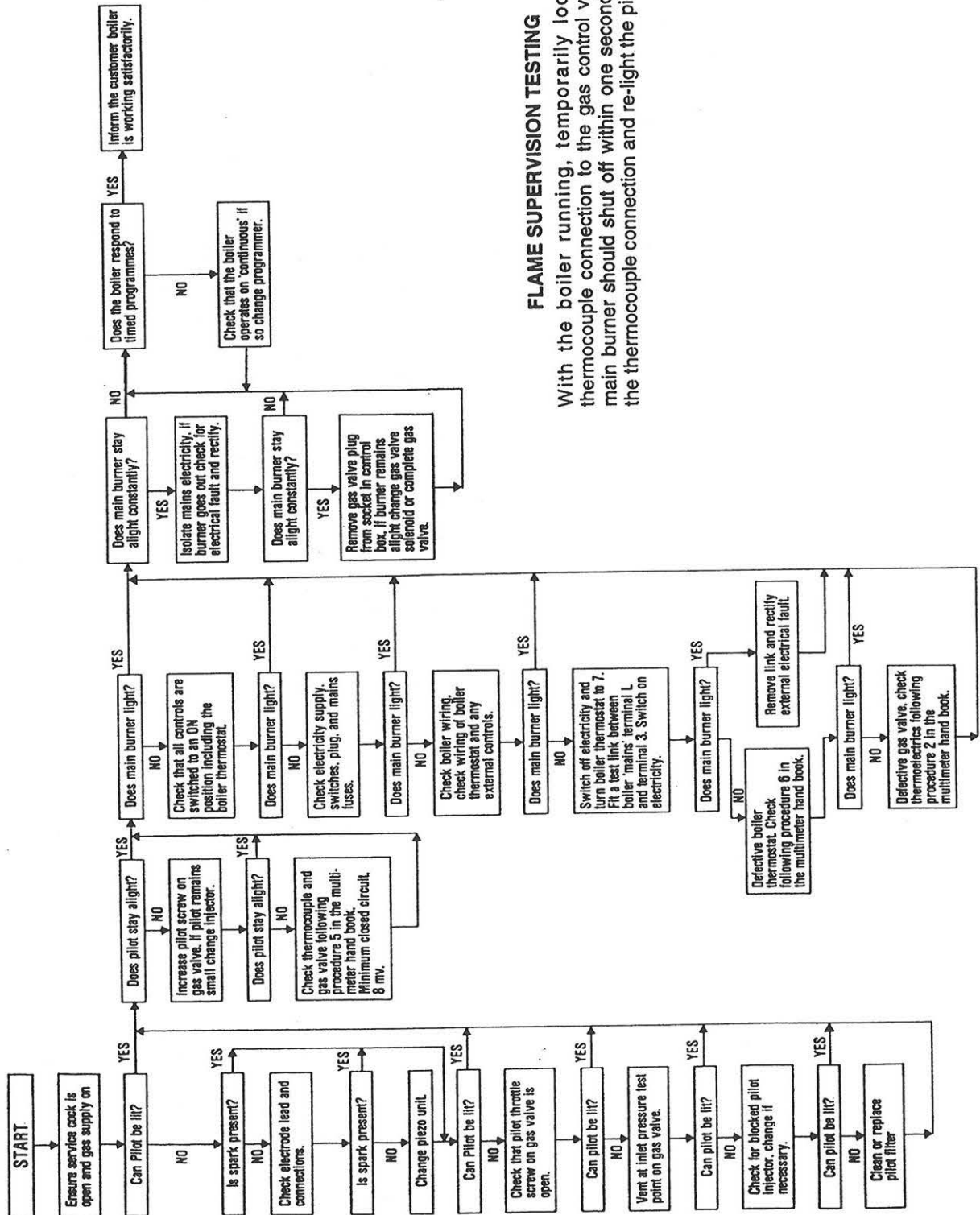
b - blue	p - purple
bk - black	v - violet
br - brown	r - red
g - green	w - white
gy - grey	y - yellow
o - orange	g/y - green and yellow
pk - pink	

SELECTOR SWITCH CLOSED

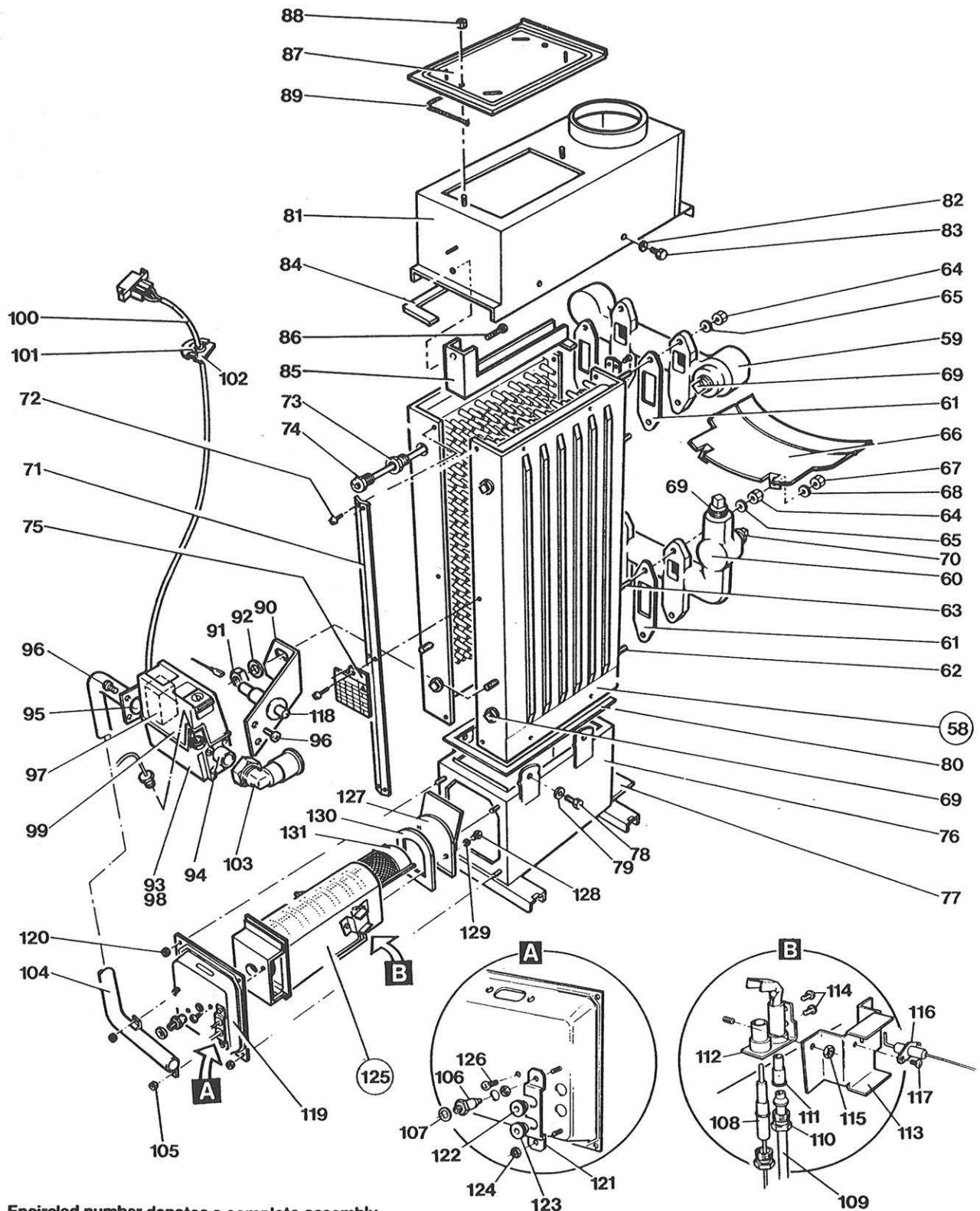
SERVICE	A1	A2	A3	A4	B2	B3
OFF						
CH OFF HW 2X	/					
CH OFF HW 1X			/			
CH + HW 2X	/	/				
CH + HW 1X			/	/		
CONTINUOUS					/	/

20. FAULT FINDING GUIDE

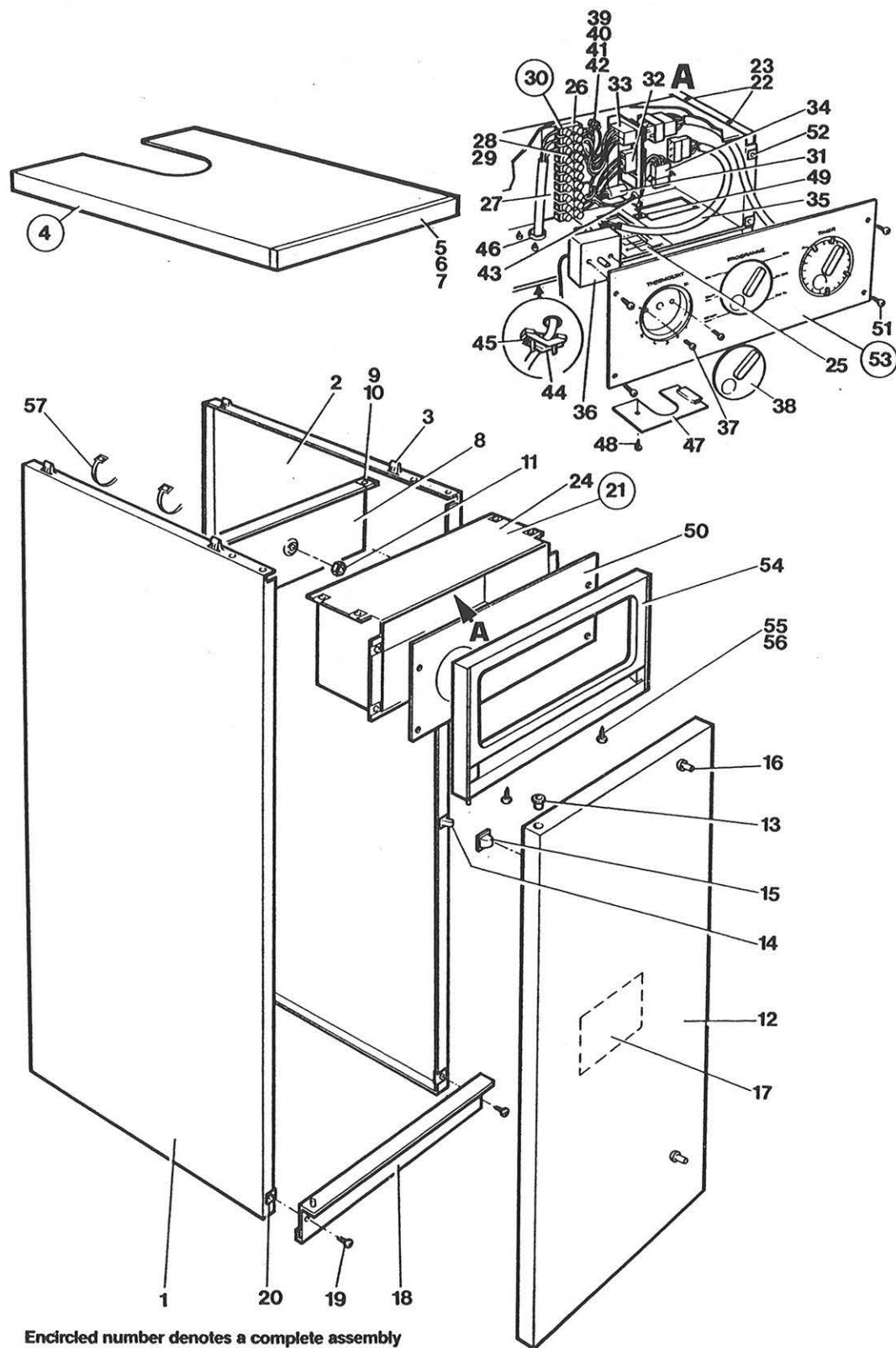
Preliminary electrical system checks as contained in the BGC multimeter instructions book are the first electrical checks to be carried out during a fault finding procedure. On completion of the service/fault finding task which has required the breaking and remaking of electrical connections, then the checks — A. Earth Continuity, C. Polarity and D. Resistance to Earth — must be repeated.



21. EXPLODED VIEWS
a. Marathon 400C and 500C boiler



b. Marathon 400C and 500C case



HEALTH AND SAFETY INFORMATION FOR THE INSTALLER AND SERVICE ENGINEER

Under the Consumer Protection Act 1987 and section 6 of the Health and Safety at Work Act 1974, we are required to provide information on substances hazardous to health.

Small quantities of adhesives and sealants used in the product are cured and present no known hazards.

The following substances are also present.

Insulation & Seals	
Material	— Ceramic Fibre; Alumino — Silicone Fibre
Description	— Boards, Ropes, Gaskets
Known Hazards	— Some people can suffer reddening and itching of the skin. Fibre entry into the eye will cause foreign body irritation. Irritation to respiratory tract.
Precautions	— People with a history of skin complaints may be particularly susceptible to irritation. High dust levels are only likely to arise following harsh abrasion. In general, normal handling and use will not present discomfort, follow good hygiene practices, wash hands before consuming food, drinking or using the toilet.
First Aid	— Medical attention must be sought following eye contact or prolonged reddening of the skin.
Thermostat	
Material	— Contains very small quantity of xylene.
Description	— Sealed phial and capillary containing liquid.
Known Hazards	— Irritating to skin, eyes and throat. Vapour is harmful. Inflammable — do not extinguish with water.
Precautions	— Do not incinerate. Avoid contact with broken/leaking phials. Do not purposely puncture.
First Aid	— Eye/skin contact, wash with clean water, seek medical attention.

Sales Enquiries:
Sales Department
Eastern Avenue
Team Valley Trading Estate
Gateshead
Tyne & Wear NE11 0PG
Tel: 0191 491 4466
Fax: 0191 491 7568

Service Enquiries:
Service Department
Brooks House
Coventry Road
Warwick
CV34 4LL
Tel: 01926 496896
Fax: 01926 410006

Spares Enquiries:
Parts Division
Queensway
Leamington Spa
Warwickshire
CV31 3RG
Tel: 01926 880600
Fax: 01926 880680

Technical Helpline:
Technical Department
Brooks House
Coventry Road
Warwick
CV34 4LL
Tel: 01926 410044
Fax: 01926 410006

Training Administration:
Unit 5, Titan Business Centre
Spartan Close
Tachbrook Park
Leamington Spa
Warwickshire CV34 6RS
Tel: 01926 430481
Fax: 01926 882971

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Warwick Operations, Portobello Works, Emscote Road, Warwick CV34 5QU

All descriptions and illustrations provided in this leaflet have been carefully prepared but we reserve the right to make changes and improvements in our products which may affect the accuracy of the information contained in this leaflet.

POTTERTON MYSON
PART OF BLUE CIRCLE

All goods are sold subject to our standard conditions of sale which are available on request.

