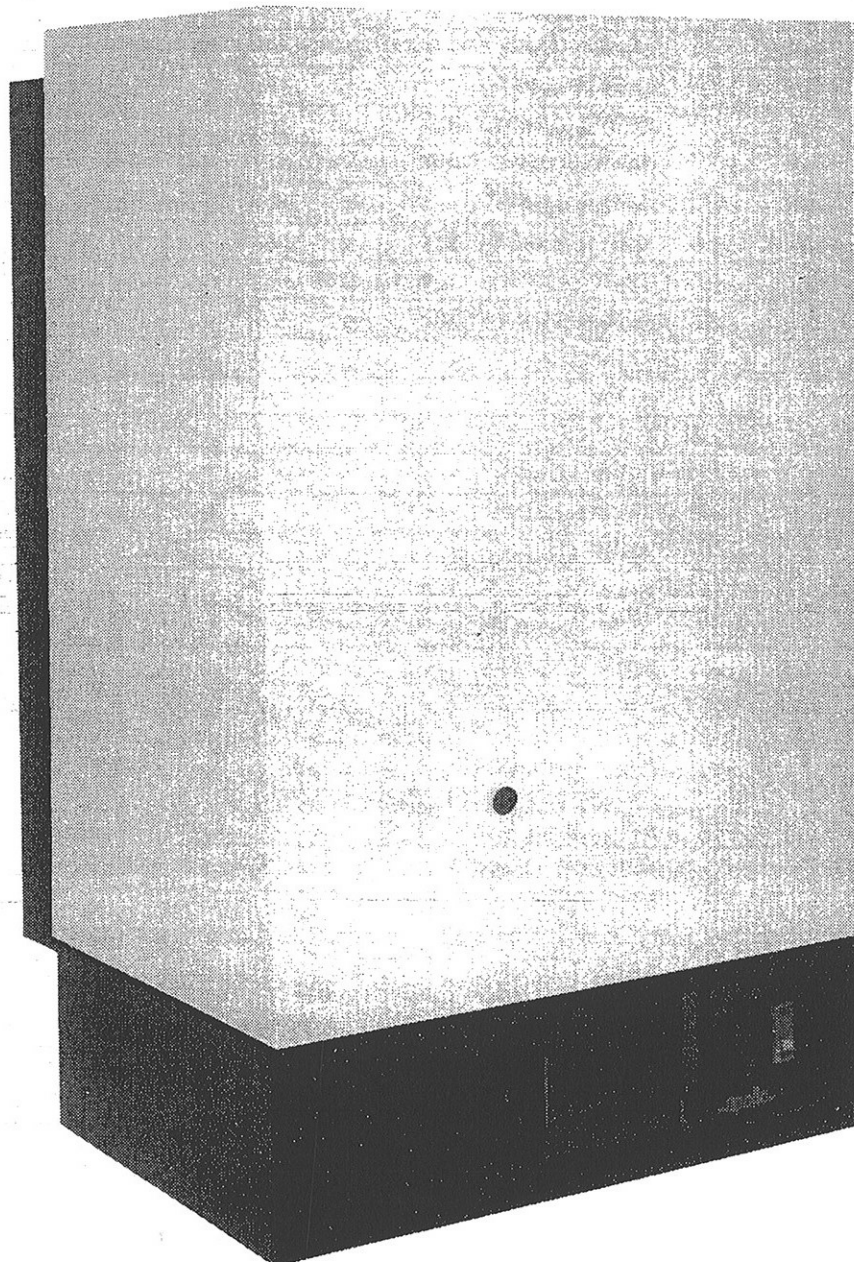


Installation and Servicing Instructions

Apollo 50/65B and 65/80B wall mounted gas boilers

G.C. Appliance No's. Apollo 50/65B: 41 789 67 Apollo 65/80B: 41 789 69



**Read these instructions thoroughly before working on the boiler.
For use with Natural Gas only. (Leave these instructions adjacent to the gas meter).**

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1. INTRODUCTION

These room-sealed wall mounted boilers are for use on natural gas only.

The Apollo 50/65B and 65/80B boilers are range rated at the following outputs, and are factory set to the maximum output.

Apollo 50/65B: 14.7 to 19.1 kW (50 000 to 65 000 Btu/h)

Apollo 65/80B: 19.1 to 23.4 kW (65 000 to 80 000 Btu/h)

The boilers are designed for use only on fully pumped open vented or sealed systems with an indirect hot water cylinder. **THEY MUST NOT BE CONNECTED TO A DIRECT CYLINDER.**

2. TECHNICAL DATA

Boiler	Apollo 50/65B	Apollo 65/80B
Burner type	Furigas 175-500-022 or Bray AB24015M	
Burner injector	Bray 10/2200	Bray 10/2300
Pilot injector	Honeywell 4500-4108-001 marked 38/36A	
Pilot flame	Approximately 20 mm long	
Spark gap	3.0 to 4.0 mm	
Ignition	Piezo push button	
Weight (empty)	32 kg (70lb)	
Lifting weight (installing)	17.69 kg (39 lb)	
Water content	1.0 litre (0.22 gal)	
Max. flow temperature	82°C	
Design temperature rise	9°C	
Maximum static head	30.5 m (100 ft)	
Minimum static head	200 mm (8 in) above white case	
* Head loss	0.41 m (16 in)	0.63 m (25 in)
Height	760 mm (30 in)	
Width	450 mm (17¾ in)	
Depth	350 mm (13¾ in)	
Clearance required for servicing	Top	50 mm (2 in)
	Bottom	90 mm (3½ in)
	Front	350 mm (13¾ in)
	Sides	5 mm (¼ in)
Flue terminal size	300 mm high x 300 mm wide x 110 mm deep	
Water connections	Compression fittings to accept 28 mm copper tube to BS2871	
Gas connection	Rp½	

* Head loss given is applicable only when the flow through the boiler is 1473 litres/h (5.4 gal/min) for the Apollo 50/65B and 1827 litres/h (6.7 gal/min) for the Apollo 65/80B.

NOMINAL BOILER RATINGS

Boiler	Output		Input		Burner setting pressure	
	kW	Btu/h	kW	Btu/h	mbar	in wg
Apollo 50/65B	14.7	50 000	18.8	64 000	7.5	3.0
	16.1	55 000	20.5	70 000	9.0	3.6
	17.6	60 000	22.2	75 700	10.5	4.2
	19.1	65 000	23.8	81 250	12.0	4.8
Apollo 65/80B	19.1	65 000	24.2	82 500	9.7	3.9
	20.5	70 000	25.9	88 300	11.5	4.6
	22.0	75 000	27.7	94 500	13.2	5.3
	23.4	80 000	29.3	100 000	14.7	5.9

3. GENERAL REQUIREMENTS

The boiler must be installed in accordance with: The Gas Safety (Installation and Use) Regulations 1984 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 Standards: BS5440:1:1978, BS5440:2:1976, BS5449:1:1977, BS5546:1979, BS6798:1987 and BS6891:1988.

Note-Gas Safety Regulations 1984: 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 unit is delivered in two packages (1) the cased boiler and (2) the balanced flue terminal type A, B, C or D as required.

A plug-in programmer kit is available to fit inside the boiler casing. This programmer simplifies wiring and is suitable for use with all external control systems shown in the system wiring diagrams supplied with the boiler.

A pump and by-pass kit is available which positions the pump in a readily accessible position above the boiler, includes a built in by-pass and allows a combined cold feed and vent to be connected directly to the boiler. The kit includes an outer case extension which increases the boiler height to 1007 mm.

5. GAS SUPPLY

The natural gas requirements are as follows:

Apollo 50/65B: 2.3 m³/h (81 ft³/h), Apollo 65/80B: 2.8 m³/h (99 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 as described in BS6891.

6. ELECTRICITY SUPPLY

240V ~ 50 Hz via a fused double pole switch with a contact separation of at least 3 mm in both poles or preferably a fused 3 pin plug and shuttered socket outlet (both complying with the requirements of BS1363) adjacent to the boiler.

Fuse the supply at 3 A. The minimum requirement for the power supply cable is that it should be a PVC sheathed flexible cord at least 0.75 mm² (24 x 0.2 mm) (code designation HO55 VV-F or HO5 VVH2-F) as described in table 16 of BS6500:1984.

All wiring external to the boiler shall comply with the latest IEE Wiring Regulations and any local regulations which apply.

The appliance must be earthed.

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

7. AIR SUPPLY

The room in which the boiler is installed does not require a purpose provided air vent.

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 both be on the same wall to the outside air. Both the high and low level vent must each have a free area as stated in the following table. The free area of each vent may be halved if the ventilation is provided directly from outside.

Apollo 50/65B: 214 cm² (33 in²), Apollo 65/80B: 264 cm² (40 in²)

If the boiler is installed in a cupboard or compartment with a door, allow at least 100 mm clearance between the front of the boiler and the door for air movement.

8. FLUE SYSTEM

Four telescopic terminal assemblies are available to fit the following wall thicknesses:

Size A: 100 - 150 mm

Size B: 150 - 230 mm

Size C: 230 - 380 mm

Size D: 380 - 630 mm

Unless otherwise specified the size C terminal will be supplied with the boiler.

9. BOILER LOCATION

The boiler is not suitable for external installation.

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

The boiler is suitable for installation to a combustible wall e.g. wood cladding, provided that the flue duct is not closer than 2 mm (1 in) to combustible material. A metal sleeve should be installed to surround the flue duct to provide a 25 mm (1 in) annular space. Further guidance is given in BS5440:1:1978, sub-clause 20.1.

If the boiler 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 advice must be sought from the local region of British Gas or from Myson Heating.

The boiler may be installed in any room, although particular attention is drawn to the requirements of the current IEE Wiring Regulations and, in Scotland, the electrical provisions of the Building Standards applicable in Scotland with respect to the installation of the boiler in a room containing a bath or shower.

Where a room-sealed appliance is installed in a room containing a bath or shower, any electrical switch or appliance control, utilising mains electricity should be so situated that it cannot be touched by a person using the bath or shower.

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. An existing cupboard or compartment may be used provided that it is modified for the the 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 installed in a run of kitchen units it is recommended that the boiler is fitted first or the adjacent units removed. The boiler must be installed so that the flue 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, corners and ventilation openings are specified in the following table:

Terminal position	Minimum spacing
Directly below an openable window, air vent or any other ventilation opening	300 mm (12 in)
Below gutters, soil pipes or drain pipes	300 mm (12 in) *
Below eaves	300 mm (12 in) *
Below balconies	600 mm (24 in)
Above adjacent ground or balcony level	300 mm (12 in) **
From vertical soil pipes or drain pipes	75 mm (3 in)
From an external corner	340 mm (13 in)
From an internal corner	600 mm (24 in)
From a surface facing the terminal	600 mm (24 in)
From a terminal facing the terminal	600 mm (24 in)
Vertically from a terminal on the same wall	1500 mm (60 in)
Horizontally from a terminal on the same wall	300 mm (12 in)
Adjacent to an opening window	150 mm (6 in)
From an opening in a car port i.e. door or window into the house	1200 mm (48 in)

* If the flue terminal is fitted within 850 mm (34 in) of a plastic or painted gutter/pipe or 450 mm (18 in) of painted eaves, an aluminium shield of at least 750 mm (30 in) in length should be fitted to the underside of the gutter/pipe or painted surface.

** If the terminal is fitted less than 2 m (6.6 ft) above a balcony, above ground or above a flat roof to which people have access then a suitable terminal guard must be provided and fitted.

A type A protective guard is available from Tower Flue Components Ltd. at Vale Rise, Tonbridge, Kent TN9 1TB. Tel: 0732 351555.

10. IMPORTANT INSTALLATION NOTES

1. The Apollo is to be used only on fully pumped systems, and with an indirect cylinder.
2. Only high head pumps producing at least 3.35 m (11 ft) head at a flow rate of 1473 litres/h (5.4 gal/min) for the Apollo 50/65B and 1827 litres/h (6.7 gal/min) for the Apollo 65/80B must be used.
3. Connect the pump in the flow pipe as shown in the water system schematics.
4. Mains electricity and the pump must always be connected to the boiler to allow the pump overrun to function.
5. For open vented systems a combined or close coupled feed and vent must be connected as shown in the water system schematics.
6. A system by-pass is essential. The by-pass should be of 15 mm pipe and must be as short as possible across the 28 mm flow and return pipes and at least 1.5 m away from the boiler. Install and adjust the by-pass as shown in the water system schematics and adjust as described in the commissioning instructions.
7. If the pump incorporates isolating valves they must be 28 mm.
8. 28 mm flow and return pipes must be used at least to the by-pass and preferably for most of the index circuit.
9. The system wiring must be completed in accordance with the diagrams supplied with the boiler.
10. When commissioning, the system must be vented and the pump running before the main burner is lit.
11. The system must be flushed twice; initially cold with the pump removed and all valves open, and then after the first heating.
12. Where the Apollo replaces an older boiler in an existing system, make sure the cylinder is indirect.
13. In areas with hard or aggressive water we recommend that Fernox CP3 inhibitor should be used. See commissioning instructions for details of use.

11. WATER SYSTEM SCHEMATICS

The balancing valve should be of a type that is non adjustable by the householder and must have at least 1.5 m of 28 mm pipe each side between it and the boiler.

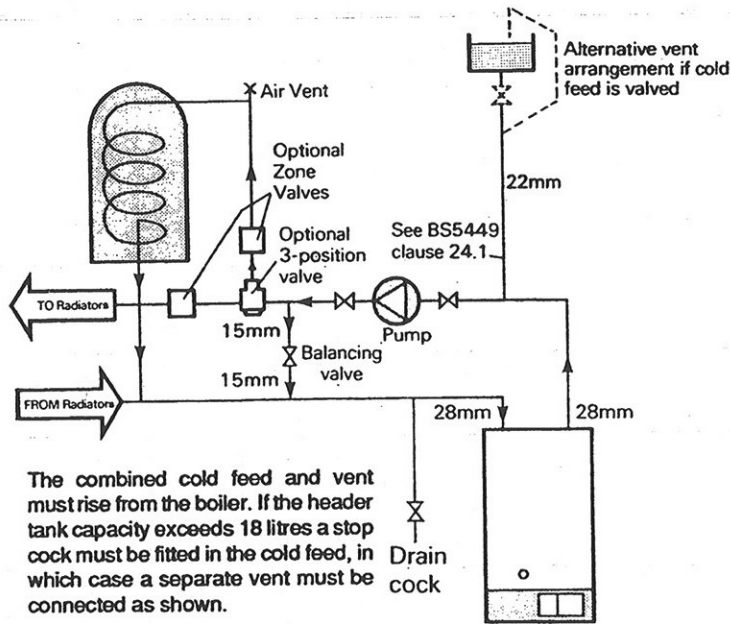
Compression fittings are supplied for flow and return to accept 28 mm copper tubing to BS2871.

Always ensure that the pump has sufficient static head. Check the pump manufacturers minimum head.

The flow through the boiler must not be allowed to fall below 1473 litres/h (5.4 gal/min) for the Apollo 50/65B and 1827 litres/h (6.7 gal/min) for the Apollo 65/80B while the burner is alight.

Ensure that the pump is accessible for servicing. 28 mm isolating valves must be positioned as close to the pump as possible. Fit one or more draining taps (BS2879) to enable the water system to be fully drained.

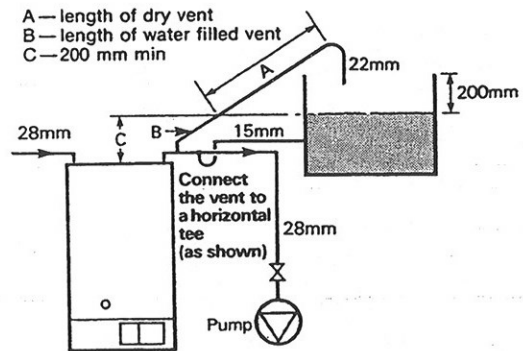
a. Fully pumped open vented system with combined cold feed and vent.



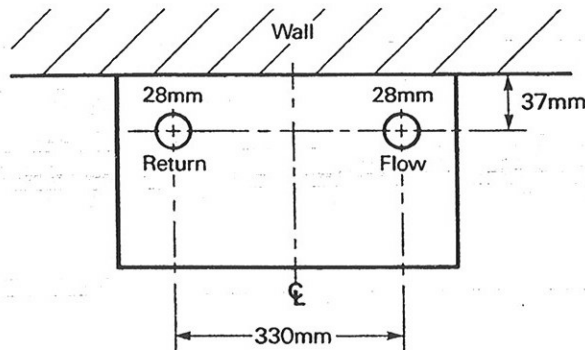
b. Length of wet and dry vents for close coupled cold feed.

HEATING LOAD Btu/h	VENT LENGTH	
	A (mm)	B (mm)
80 000	700	500
75 000	666	480
70 000	600	450
65 000	570	430
60 000	520	400
55 000	475	370
50 000	420	330

The distance between the cold feed and vent connection to the system must be more than 150 mm. The point of connection of these pipes should be as close to the boiler as practicable.



c. Water connections



Top view of boiler showing water connections

12. SEALED SYSTEM REQUIREMENTS

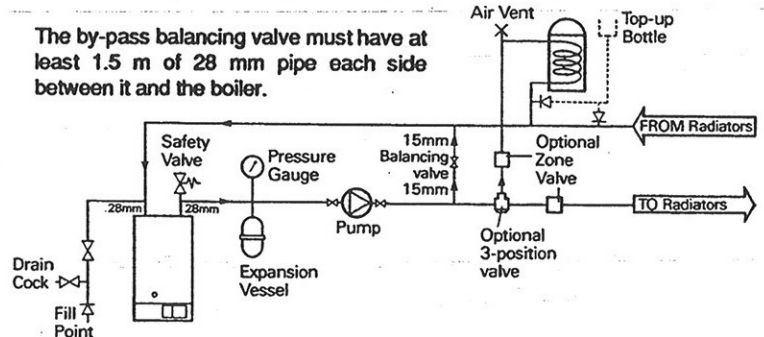
- The installation must comply with the requirements of BS6798 and BS5449:1. Maximum water temperature is $82^{\circ}\text{C} \pm 3^{\circ}\text{C}$.
- A safety valve set to operate at 3 bar (45 lbf/in²) shall be fitted in the flow pipe close to the boiler. There must not be any valves between the safety valve and the boiler. The valve should be positioned on a discharge pipe fitted to prevent any discharge creating a hazard to occupants or cause damage to electrical components and wiring.
- A pressure gauge covering at least the range 0 to 4 bar (0 to 60 lbf/in²) shall be fitted in the system.
- A diaphragm type expansion vessel, to BS4814, shall be connected at a point close to the inlet side of the pump. The vessel must be chosen to suit the volume of water in the system and the charge pressure must not be less than the static head at the point of connection. Further details can be obtained from "Material and Installation Specification for Domestic Central Heating and Hot Water" published by British Gas.

Sizing Table:

Air or Nitrogen charge pressure (bar)	0.5		1.0	
Pre-pressurisation pressure (bar)	None	1.0	None	1.5
Expansion vessel volume (litres)	A x 0.07	A x 0.120	A x 0.088	A x 0.160

A = System volume (litres)

- e. The hot water cylinder shall either be the indirect coil type or a cylinder fitted with an immersion calorifier.
- f. Water lost from the system shall be replaced from a make-up vessel, and non return valve, mounted higher than the top of the system on the return side of the cylinder or radiators. Where access to a make-up vessel would be difficult, make-up can be provided by pre-pressurisation of the system.
- g. The system may be filled from the mains via a temporary hose connection from a draw-off tap supplied from a service pipe under mains pressure, provided that this procedure is acceptable to the local water authority. The following fittings should form a permanent part of the system and fitted in the order stated:
 - i) a stop valve complying with the requirements of BS1010:2, ii) a test cock, iii) an anti-vacuum valve of a type approved by the National Water Council and iv) a non-return valve of an approved type.
- h. Fill the system until the pressure gauge registers 1.5 bar (22 lbf/in²). Examine for leaks and rectify where necessary.
- i. Refer to the commissioning instructions, light the boiler and allow the system to reach its maximum working temperature. Examine for leaks then turn off the boiler. Drain the system while it is still hot. Refill, vent and adjust the cold fill pressure to the required value.



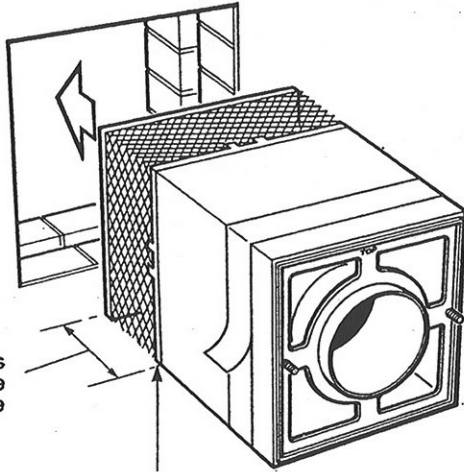
13. INSTALLATION PROCEDURE

<div data-bbox="135 884 805 1512" data-label="Complex-Block"> <h4 style="text-align: center;">1 UNPACK THE BOILER</h4> <ol style="list-style-type: none"> 1. Carefully unpack the boiler. Do not discard the packing until all the items are found. 2. Carefully slide off the bottom cover from the boiler, and remove the outer case by slackening the bottom fixing screw and sliding the case towards the top of the boiler then lifting it clear. 3. Unscrew the two screws at the top and one at the bottom securing the inner case and lift off the case. 4. Place the inner case, outer case and bottom cover safely aside to avoid possible damage. <p>The illustration shows the boiler with its bottom cover removed. It also shows the wall mounting plate and extended nuts. Labels include 'Extended nuts: 2 off', 'Wall mounting plate', and 'Bottom cover removed'.</p> <p style="text-align: center;">Find these parts in the pack</p> <p>Note: Do not stand the boiler on its end as it will damage the gas valve.</p> </div>	<div data-bbox="821 884 1508 1512" data-label="Complex-Block"> <h4 style="text-align: center;">2 BOILER DIMENSIONS AND GAS CONNECTION</h4> <p>All dimensions in mm</p> <p>The diagrams show the boiler's overall dimensions and the clearance required for servicing. The overall case dimensions are: Height: 760 mm, Width: 450 mm, Depth: 350 mm. The gas connection is labeled 'Gas Rp 1/2'. The clearance required for servicing is: Top: 50 mm, Bottom: 90 mm, Front: 350 mm, Side: 5 mm. The outer case dimensions are shown as 60 mm wide and 20 mm high.</p> <p>Overall case dimensions. Height: 760 mm Width: 450 mm Depth: 350 mm</p> <p>Clearance required for servicing. Top: 50 mm Bottom: 90 mm Front: 350 mm Side: 5 mm</p> </div>
<div data-bbox="135 1523 805 2128" data-label="Complex-Block"> <h4 style="text-align: center;">3 PREPARE THE WALL</h4> <p>All dimensions in mm</p> <p>The diagram shows the wall preparation dimensions. The boiler's footprint is 450 mm wide and 760 mm high. The wall plate is 360 mm wide and 70 mm high. The flue terminal opening is 310 mm wide and 310 mm high. The distance from the top of the boiler to the top of the wall plate is 25 mm. The distance from the bottom of the boiler to the bottom of the wall plate is 70 mm. The distance from the side of the boiler to the side of the wall plate is 70 mm. The distance from the front of the boiler to the front of the wall plate is 70 mm. The distance from the back of the boiler to the back of the wall plate is 70 mm. The distance from the top of the boiler to the top of the flue terminal opening is 20 mm. The distance from the bottom of the boiler to the bottom of the flue terminal opening is 70 mm. The distance from the side of the boiler to the side of the flue terminal opening is 70 mm. The distance from the front of the boiler to the front of the flue terminal opening is 70 mm. The distance from the back of the boiler to the back of the flue terminal opening is 70 mm.</p> <ol style="list-style-type: none"> 1. Decide upon the position of the boiler, ensuring that the flue terminal will meet the requirements given on page 5. 2. Mark the position of the hole for the flue terminal and the four wall plate fixing screws. 3. Cut the hole in the wall for the flue terminal. 4. Drill and plug the four fixing holes to accept 2 1/2" lg. No. 12 woodscrews. <p>Flue terminal size: 300 high x 300 wide x 110 deep</p> </div>	<div data-bbox="821 1523 1508 2128" data-label="Complex-Block"> <h4 style="text-align: center;">4 UNPACK AND ADJUST THE FLUE TERMINAL</h4> <ol style="list-style-type: none"> 1. Remove the terminal assembly and roll of sealing tape from the carton. 2. Adjust the terminal to suit the finished wall thickness. Dimension 'A' to be finished wall thickness. 3. Seal the joint with the tape provided. 4. Remove the two extended nuts from the mounting studs. Retain the nuts - see frame 9. <p>The diagram shows the flue terminal assembly being adjusted to fit the wall. Dimension 'A' is indicated as the finished wall thickness. The terminal is shown being inserted into the wall and sealed with tape.</p> </div>

5

POSITION THE FLUE TERMINAL

1. Ensure that the terminal is the correct way up and insert it into the wall.



Mesh and stainless steel strip to be clear of outside wall.

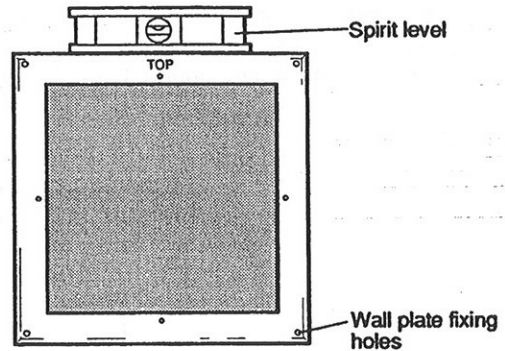
This joint to be flush with outside wall surface.

2. To prevent the boiler displacing the terminal, temporarily retain the terminal to the wall plate, when fitted. String passed through the terminal frame may be used.

6

FIT THE WALL PLATE

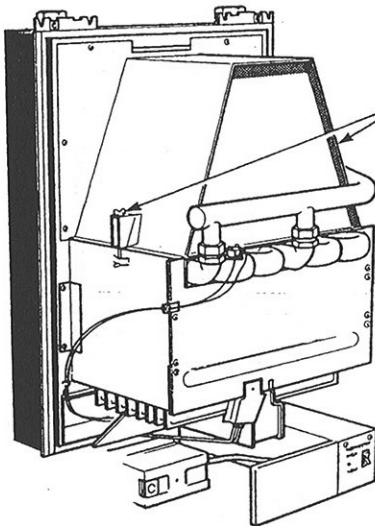
1. Ensure that the wall plate is level and the correct way up, and position it over the two studs on the terminal.



2. Fasten to the wall with four 2½" lg. No. 12 woodscrews (not supplied) into the holes previously drilled and plugged.

7

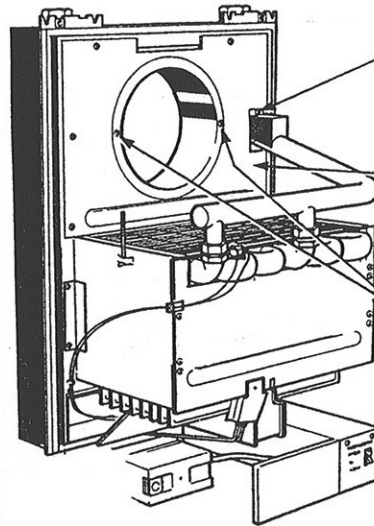
PREPARE THE BOILER



1. Remove the two flue hood retaining wing nuts and take off the flue hood by lifting upwards and withdrawing it.
2. Carefully lift out the flue spigot which is standing on top of the heat exchanger.

8

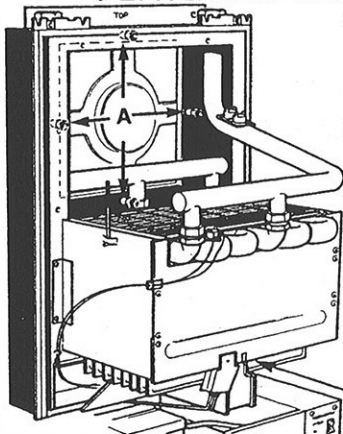
Prepare the Boiler - continued



1. Remove the one screw securing the thermostat cover and lift off the cover.
2. Remove the six screws securing the flue outlet mounting plate and carefully withdraw the plate.
3. Remove the two screws parked in the flue outlet mounting plate.

9

SECURE THE BOILER TO THE WALL PLATE AND TERMINAL



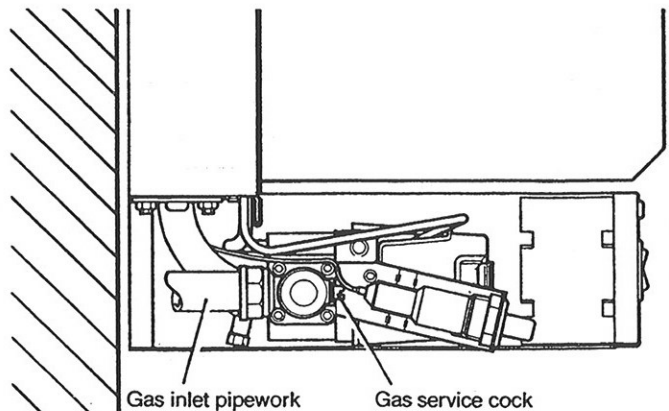
1. Lift the boiler and offer it to the wall plate and secure to the upper and lower studs 'A' with the two nuts supplied.
2. Secure the terminal to the boiler using the two side studs 'A' and the two nuts removed in frame 4.
3. Tighten the four nuts to form a seal.
4. Replace the flue outlet mounting plate and secure with six screws.
5. Insert the flue spigot ensuring it engages into the terminal and secure with two screws.

DO NOT LIFT HERE

6. Replace the thermostat cover and secure with one screw.
7. Replace the flue hood and secure with two wing nuts.
8. Make good the gap between the outside wall and the terminal.

10

CONNECT THE GAS SUPPLY



Gas inlet pipework

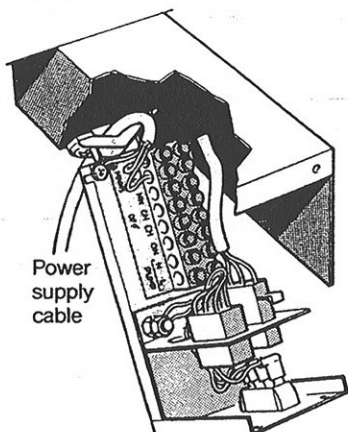
Gas service cock

Connect a 15 mm gas supply to the service cock.

Do not turn the gas supply on at this stage.

11

CONNECT THE POWER SUPPLY CABLE

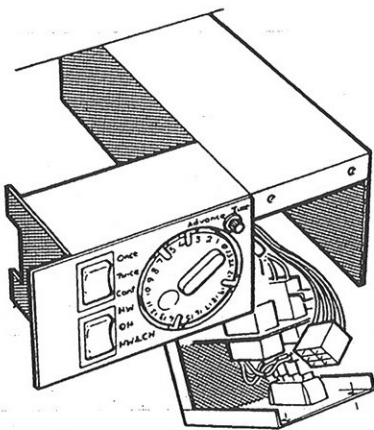


1. Remove the two screws securing the front of the wiring centre and carefully lower it. If access is difficult it may be disengaged and drawn forward. It may be necessary to unplug the 3-way plug on the gas valve lead to allow the wiring centre to be drawn forward.
2. Slacken two screws in the cable clamp below the wiring centre. Feed the power supply cable under the clamp and connect the wires, brown to L and blue to N on the terminal block and green and yellow to the earthing screw ($\frac{1}{2}$). See wiring diagram.
3. Keep the wiring centre in the open position, take up excess slack in the power supply cable between the terminal block and the cable clamp, then tighten the cable clamp screws. Check that the wiring centre will open and close freely without straining the power supply cable.
Note: When connecting the power supply cable to the terminal block and earthing screw, ensure that the length of the earth wire is such, that if the power supply cable slips out of the cable clamp the live and neutral wires become taut before the earth wire.
4. The pump and any external controls wiring should be connected to the terminal block. See wiring diagram. A bush is provided in the left hand side of the control box to pass the leads through.
5. If a programmer is not fitted, remove link HW to ON and connect a switched live to terminal ON.
6. Replace the 3-way plug if it was removed.
7. Replace the wiring centre and secure with two screws if the programmer kit is not to be fitted.

Do not switch on the electricity supply at this stage.

12

FIT THE PROGRAMMER KIT



1. Slide out and discard the fascia panel on the side of the control box.
2. Engage the programmer fixing into the slot in the side of the control box and push fully home.
3. Connect the programmer 6-pin plug to the 6-pin socket on the wiring centre, push fully home until the latch engages.
4. Replace the wiring centre and secure with two screws.

13

COMPLETE THE INSTALLATION

After connecting the water connections, see water system schematics, page 6 thoroughly flush the whole system without the pump in position. Ensure that all valves are open. With the pump fitted, fill, vent and check for water soundness, rectifying where necessary.

14. COMMISSIONING

See page 10 for boiler controls.

1. Test for gas soundness and purge the supply

- a. With the boiler service cock closed (the cock is closed when the operating slot is vertical), pressure test the gas supply and inlet pipework connection to the boiler service cock for soundness in accordance with BS6891.
- 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 BS6891. Retighten the test point screw and test for gas soundness.

2. Light the pilot

With the gas supply on, electricity supply off and the boiler thermostat switch set to O:

- 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 2a until the pilot is lit. Continue to hold the gas valve button in for a little longer then release it slowly.

3. Check the pilot flame

The pilot throttle is factory set fully open. Remove the two screws securing the pilot shield and lift off the shield. Check that the pilot flame (approximately 20 mm long) envelops the thermocouple tip. Adjust if necessary (clockwise to reduce the flame). Minimum closed circuit 5 mV. Replace the pilot shield and secure with two screws.

4. Test the pilot supply for gas soundness

With the pilot alight:

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

5. Test the main burner supply for gas soundness

With the pilot alight:

- Switch on the electricity supply, set the programmer switch to CONT, if a programmer is fitted and check that all system controls are calling for heat.
- Apply a suitable leak detecting fluid to the main burner manifold joint at the chassis and the gas valve and chassis connections of the gas valve manifold.
- Set the boiler thermostat switch to HIGH and check that the main burner lights smoothly from the pilot flame. With the main burner alight test the burner and manifold connections for gas soundness.

6. Check the main burner setting pressure

After the main burner has been alight for 10 minutes:

- Set the boiler thermostat switch to O. Remove the burner setting pressure test point screw on the gas valve manifold and connect a pressure gauge.
- Set the boiler thermostat switch to HIGH 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.
- Set the boiler thermostat switch to O, disconnect the pressure gauge and replace the pressure test point screw. Set the boiler thermostat switch to HIGH to light the main burner and test for gas soundness around the pressure test point screw using a suitable leak detecting fluid.
- Check that the arrow on the data plate (positioned on the front of the inner case at the bottom right hand corner) is against the correct boiler rating.

7. 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.

8. Replace the inner case

Replace the inner case and secure with three screws. Tighten sufficiently to form a seal.

9. Final water system check and addition of inhibitor

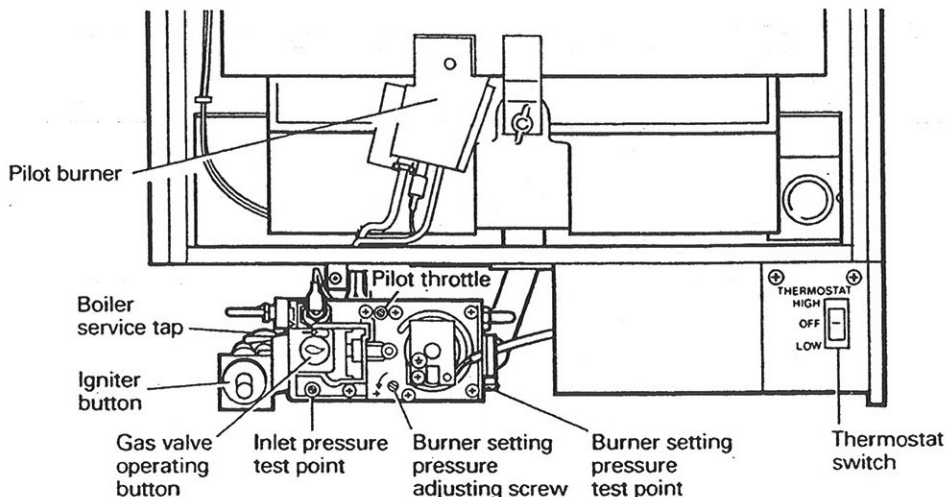
- When the system has been tested turn the boiler off (set the boiler thermostat switch to O), drain the water while it is still hot in order to complete the flushing process.
- When an inhibitor is added to the system, Fernox Manufacturing Co. Ltd. recommend Fernox CP3 for use with copper tube boilers and this should be used in accordance with their instructions. Where the boiler is used on an old system, special care is required. The system should be drained and flushed out, ensuring that all radiators are drained. When filling add the correct quantity of CP3 for the system volume. As a guide a 3 radiator system will on average require about 2¼ pints, a 6 radiator system 4¼ pints and a 9 radiator system about 6¼ pints.
- After the system has been filled, vent and make a final check for water soundness.

10. By-pass valve adjustment

- Fully close the by-pass valve and then open it one full turn. Light the boiler with the heating circuit only in operation and balance the system using pump and radiator valves to give an 11° C temperature drop across the individual radiators.
- Adjust the by-pass valve as necessary to give a temperature rise of 9° C across the boiler flow and return, i.e. measured before the by-pass.

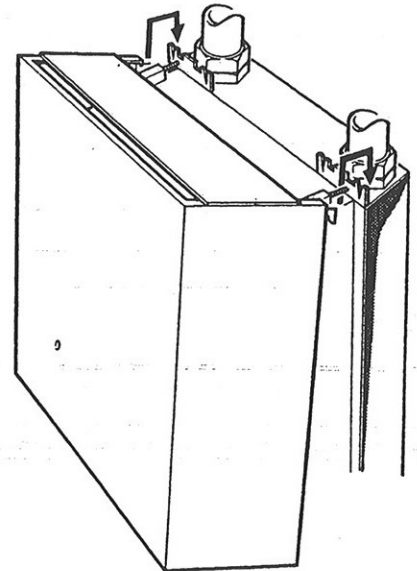
15. BOILER CONTROLS

(inner case, gas valve cover and facia panel removed)



16. FINAL ASSEMBLY AND HANDING OVER THE INSTALLATION

1. Lift the outer case into position over the boiler, push back and lower to engage the case fixings into the top of the chassis sides.
2. Secure the case in position by tightening the bottom fixing screw.
3. If a programmer is fitted, set the clock to the correct time (do not rotate the dial anti-clockwise) and set the programme selector switches to the required settings. See User instructions.
4. Hand the User instructions to the User and instruct in the safe operation of the boiler and controls. Replace the bottom cover.
5. 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.
6. 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.
7. Leave a permanent card attached to the boiler giving:
 - a. Name and address of installer.
 - b. Date of installation.
 - c. A wiring diagram of the circuit.



17. 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 installation of the flue terminal and ensure it is not obstructed.
3. Remove the flue hood and combustion chamber front and check if the burner or heat exchanger requires cleaning.
4. Examine the main injector orifice and 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.
7. When refitting the inner case check that the seal is in good condition and ensure that it compresses satisfactorily.

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

The boiler data plate is positioned on the inner case at the bottom right hand corner.

The procedure for Annual Servicing is given in frames 14 to 19.

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

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

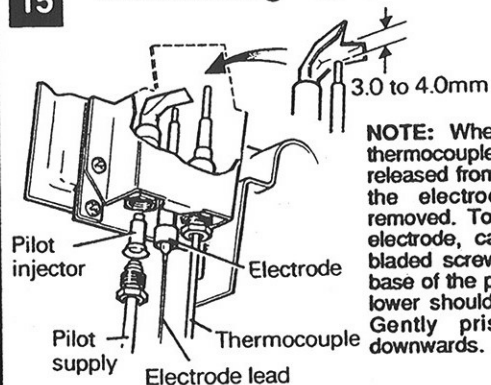
14

DISMANTLING

1. Slacken the screw securing the bottom of the outer case, lift the case up slightly and take it off. Place the case safely aside to avoid possible damage.
2. Unscrew the three inner case screws, two at the top and one at the bottom and remove the inner case.
3. Remove the two wing nuts securing the flue hood to the combustion chamber and remove the flue hood by lifting it upwards and withdrawing it forwards.
4. Remove the two screws, above the boiler thermostat switch, securing the wiring centre and lower the wiring centre. If a programmer is fitted, unplug the programmer plug from the wiring centre and slide out the programmer. If a programmer is not fitted, slide out the fascia panel. Replace the wiring centre.
5. Remove the upper and lower screws, two each side, and one wing nut securing the combustion chamber front cover and withdraw the cover.
6. Carefully prise the electrode out of the pilot assembly with a flat bladed screwdriver - see note in frame 15.

15

Dismantling - continued



NOTE: Whenever the pilot or thermocouple nuts are to be released from the pilot assembly, the electrode must first be removed. To avoid cracking the electrode, carefully apply a flat bladed screwdriver between the base of the pilot tube nut and the lower shoulder of the electrode. Gently prise the electrode downwards.

7. Undo the nut and disengage the thermocouple.
8. Remove the screw securing the gas valve cover and lift off the cover.
9. Slacken the pilot supply tubing nut at the gas valve, remove the tubing nut from the pilot assembly and disconnect the pilot supply from the pilot assembly.

16 Dismantling - *continued*

- Carefully remove and retain the pilot injector.
- From underneath the base of the chassis remove the two pozi screws securing the burner manifold.
- Carefully move the pilot supply to one side and lift out the burner assembly. Take care not to lose the burner flange 'O' ring.
- Cover the exposed gas way in the base of the chassis.

17 CLEANING THE BOILER

- Brush the heat exchanger from above and below using a suitable brush. Brush sideways **NOT** back to front. Remove any fallen deposits from the boiler base.
- Turn the burner upside down and tap gently to remove any debris.
- Clean the pilot burner and electrode with a fine wire brush if necessary.
- Unscrew the injector from the burner manifold, clean by blowing through or washing. Do **NOT** clear the injector with a pin or wire. Clean the pilot injector in a similar manner.
- To clean or replace the pilot filter in the gas valve refer to frame 34.
- Excessive build up of carbon on the thermocouple tip should be removed with a fine wire brush.

18 REASSEMBLY

- Replace the burner injector using a small amount of jointing compound.
- Remove the protective covering from the gas way in the base of the chassis.
- Check that the 'O' ring is in position in the burner flange.
- Replace the burner assembly and secure with two screws previously removed.
- Replace the pilot injector and reconnect the pilot supply to the pilot assembly. Fully tighten the pilot supply connection at the gas valve.
- Re-engage the thermocouple and secure with nut.
- Replace the electrode ensuring it is pushed fully home. Check that the spark gap is 3.0 to 4.0 mm, see frame 15.
- Replace the combustion chamber front ensuring that the burner stud locates in the bracket. Secure with four screws and one wing nut. Take care not to trap the overheat cut off device leads. Note that the top left hand screw secures the bracket for the cut off device leads. Do not forget to secure this bracket in position.

19 Reassembly - *continued*

- Replace the flue hood. Engage the tie rods through the side brackets and secure with two wing nuts.
- Open the wiring centre and replace the programmer, if fitted and reconnect the programmer plug. Replace the facia panel if a programmer is not fitted. Replace the wiring centre and secure with two screws.
- Light the pilot and check the flame, test the pilot and main burner supplies for gas soundness, check the main burner setting pressure and replace the gas valve cover and inner case as described in the commissioning instructions, page 9.
- Lift the outer case into position over the boiler, push back and lower to engage the case fixings into the top of the chassis sides. Secure in position by tightening the bottom fixing screw.
- Replace the bottom cover.

18. LIGHTING INSTRUCTIONS

See page 10 for boiler controls

With the gas supply on, electricity supply off and the boiler thermostat switch set to O:

- 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.
- 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 a little longer, then release it slowly.

When the pilot remains alight:

- Switch on the electricity supply, set the programmer switch to CONT, if a programmer is fitted and check that all system controls are calling for heat.
- Set the boiler thermostat switch to HIGH and the main burner will light.
- If a programmer is fitted, ensure that the clock is set to the correct time (do not rotate the dial anti-clockwise) and that the programme selector switches are set to their previous settings.

19. REPLACEMENT OF PARTS

The procedure for the replacement of parts is given in frames 20 to 40.

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

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

20

TO REPLACE THE ELECTRODE

Refer to diagram in frame 15.

1. Remove the outer and inner cases, see frame 14.
2. Disconnect the electrode lead from the electrode.
3. Carefully prise the electrode out of the pilot assembly with a flat bladed screwdriver - see note in frame 15.
4. Insert a new electrode, ensuring it is pushed fully home, and reconnect the electrode lead.
5. Remove the two screws securing the pilot shield. Lift off the pilot shield and check that the spark gap is 3.0 to 4.0 mm.
6. Operate the piezo unit to check that a spark is present.
7. Replace the pilot shield and secure with two screws.
8. Replace the inner case and programmer or fascia panel.
9. Replace the outer case.
10. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

21

TO REPLACE THE PILOT INJECTOR

Refer to diagram in frame 15.

1. Remove the outer and inner cases, see frame 14.
2. Carefully prise the electrode out of the pilot assembly with a flat bladed screwdriver - see note in frame 15.
3. Remove the tubing nut at the pilot assembly and carefully disconnect the pilot supply.
4. Remove the pilot injector.
5. Fit a new injector, reconnect the pilot supply and replace the electrode.
6. Light the pilot and check the flame, test the pilot supply for gas soundness and replace the inner case as described in the commissioning instructions, page 9.
7. Replace the outer case.
8. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

22

TO REPLACE THE PILOT BURNER

Refer to diagram in frame 15.

1. Remove the outer and inner cases, see frame 14.
2. Carefully prise the electrode out of the pilot assembly with a flat bladed screwdriver - see note in frame 15.
3. Undo the nut and disengage the thermocouple from the pilot assembly.
4. Undo the tubing nut and carefully disengage the pilot supply from the pilot assembly.
5. Remove the two screws securing the pilot shield and lift off the pilot shield.
6. Remove the remaining screw securing the pilot burner and remove the pilot burner.
7. Fit a new pilot burner and secure with two screws. Replace the injector, pilot supply, thermocouple and electrode. Check that the spark gap is 3.0 to 4.0 mm.
8. Remove the uppermost screw securing the pilot burner and replace the pilot shield securing it with two screws.
9. Light the pilot and check the flame, test the pilot supply for gas soundness and replace the inner case as described in the commissioning instructions, page 9.
10. Replace the outer case.
11. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

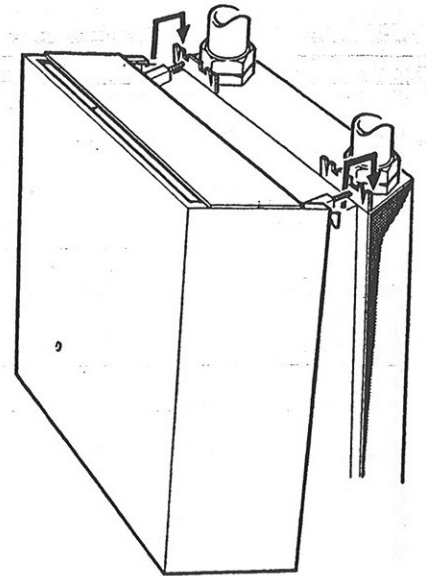
23

TO REPLACE THE THERMOCOUPLE

1. Remove the outer and inner cases, see frame 14.
2. Remove the screw securing the gas valve plastic cover and lift off cover.
3. Remove the clamping bracket which retains the pilot supply, thermocouple and overheat cut-off device leads at the bottom of the chassis.
4. Carefully prise the electrode out of the pilot assembly with a flat bladed screwdriver - see note in frame 15.
5. Disconnect the thermocouple from both the pilot assembly and gas valve.
6. Carefully bend the replacement thermocouple to match the discarded one.
7. Connect the thermocouple to the gas valve and pilot assembly. Ensure that the overheat cut-off device lead is in position before the thermocouple is secured to the gas valve, see frame 26.
8. Replace the electrode ensuring it is pushed fully home.
9. Replace the clamping bracket retaining the pilot supply, thermocouple and overheat cut-off device leads.
10. Replace the gas valve cover and inner case as described in the commissioning instructions, page 9.
11. Replace the outer case.
12. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

16. FINAL ASSEMBLY AND HANDING OVER THE INSTALLATION

1. Lift the outer case into position over the boiler, push back and lower to engage the case fixings into the top of the chassis sides.
2. Secure the case in position by tightening the bottom fixing screw.
3. If a programmer is fitted, set the clock to the correct time (do not rotate the dial anti-clockwise) and set the programme selector switches to the required settings. See User instructions.
4. Hand the User instructions to the User and instruct in the safe operation of the boiler and controls. Replace the bottom cover.
5. 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.
6. 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.
7. Leave a permanent card attached to the boiler giving:
 - a. Name and address of installer.
 - b. Date of installation.
 - c. A wiring diagram of the circuit.



17. 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 installation of the flue terminal and ensure it is not obstructed.
3. Remove the flue hood and combustion chamber front and check if the burner or heat exchanger requires cleaning.
4. Examine the main injector orifice and 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.
7. When refitting the inner case check that the seal is in good condition and ensure that it compresses satisfactorily.

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

The boiler data plate is positioned on the inner case at the bottom right hand corner.

The procedure for Annual Servicing is given in frames 14 to 19.

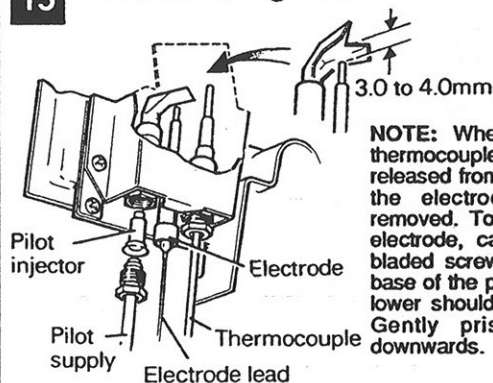
WARNING: Before commencing work slide off the bottom cover and slide the gas valve operating button in the direction of the arrow to turn off the boiler. Allow the boiler to cool and isolate the electricity supply. Turn off the gas supply at the gas service cock.

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

14 DISMANTLING

1. Slacken the screw securing the bottom of the outer case, lift the case up slightly and take it off. Place the case safely aside to avoid possible damage.
2. Unscrew the three inner case screws, two at the top and one at the bottom and remove the inner case.
3. Remove the two wing nuts securing the flue hood to the combustion chamber and remove the flue hood by lifting it upwards and withdrawing it forwards.
4. Remove the two screws, above the boiler thermostat switch, securing the wiring centre and lower the wiring centre. If a programmer is fitted, unplug the programmer plug from the wiring centre and slide out the programmer. If a programmer is not fitted, slide out the fascia panel. Replace the wiring centre.
5. Remove the upper and lower screws, two each side, and one wing nut securing the combustion chamber front cover and withdraw the cover.
6. Carefully prise the electrode out of the pilot assembly with a flat bladed screwdriver - see note in frame 15.

15 Dismantling - continued



NOTE: Whenever the pilot or thermocouple nuts are to be released from the pilot assembly, the electrode must first be removed. To avoid cracking the electrode, carefully apply a flat bladed screwdriver between the base of the pilot tube nut and the lower shoulder of the electrode. Gently prise the electrode downwards.

7. Undo the nut and disengage the thermocouple.
8. Remove the screw securing the gas valve cover and lift off the cover.
9. Slacken the pilot supply tubing nut at the gas valve, remove the tubing nut from the pilot assembly and disconnect the pilot supply from the pilot assembly.

24

TO REPLACE THE BURNER

NOTE: The burner fitted may be either Furigas (silver) or Bray (blue) either may be used as a replacement for the other.

1. Remove the outer case, inner case and programmer or fascia panel, see frame 14.
2. Slacken the two wing nuts securing the flue hood and remove the burner assembly as described in frames 14, 15 and 16, paras 5 to 13.
3. Remove the pilot assembly and main burner injector and fit to the new burner. Use a small amount of jointing compound on the burner injector.
4. Using a new 'O' ring in the burner manifold flange fit the burner and reassemble as described in frames 18 and 19, paras 2 to 8.
5. Fully tighten the wing nuts securing the flue hood.
6. Open the wiring centre and replace the programmer, if fitted and reconnect the programmer plug. Replace the fascia panel if a programmer is not fitted. Replace the wiring centre and secure with two screws.
7. Light the pilot and check the flame, test the pilot and main burner supplies for gas soundness and replace the gas valve cover and inner case as described in the commissioning instructions, page 9.

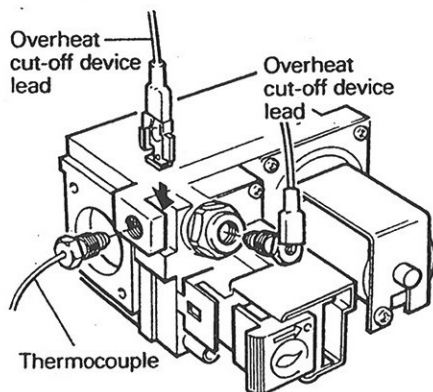
25

TO REPLACE THE OVERHEAT CUT OFF DEVICE

The **overheat cut-off device** is mounted on the front of the heat exchanger.

1. Remove the outer and inner cases, see frame 14.
2. Remove the two wing nuts securing the flue hood and lift off the flue hood.
3. Remove the screw securing the gas valve plastic cover and lift off cover.
4. Remove the clamping bracket which retains the pilot supply, thermocouple and overheat cut-off device leads at the bottom of the chassis.
5. Unscrew the thermocouple from the gas valve and withdraw the cut-off device lead. Unscrew the other cut-off device lead from the gas valve. See frame 26.
6. Remove the clip securing the cut-off device leads to the chassis.
7. Remove the screw securing the lead bracket to the combustion chamber front cover.
8. Unscrew the fixing screws and remove the overheat cut-off device from the mounting plate on the heat exchanger.

26

Overheat Cut-Off Device - continued

9. Ensure that the mounting plate is clean and fit the new cut-off device, ensure that the leads are secured to the chassis with the cable clip and that the lead bracket is secured to the combustion chamber front cover. Reassemble in reverse order.
10. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

27

TO REPLACE THE 'HI' OR 'LO' THERMOSTATS

Two thermostats are mounted on the right hand (Flow) pipe from the heat exchanger. The 'Hi' thermostat is marked with brown paint and the 'Lo' thermostat with white paint.

1. Remove the outer and inner cases, see frame 14.
2. Remove the screw securing the thermostat cover, on the flow pipe and pull the cover forward.
3. Disconnect the two wires from the thermostat.
4. Unscrew the fixing screws and remove the thermostat.
5. Ensure that the mounting plate is clean, fit the new thermostat and secure in position.
6. Reconnect the two wires. The polarity of these wires is not important. Ensure that the brown wire goes to the 'Hi' thermostat and the white wire goes to the 'Lo' thermostat. The yellow wires are common. See wiring diagram.
7. Replace the thermostat cover.

28

'Hi' or 'Lo' Thermostats - continued

8. Replace the inner and outer cases.
9. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.
10. Check that the 'Hi' thermostat switches the boiler on and off when the boiler thermostat switch is set to HIGH. Set the boiler thermostat switch to LOW and check that the 'Lo' thermostat switches the boiler on and off.

29

TO REPLACE THE GAS VALVE

ENSURE THAT THE GAS SUPPLY IS OFF

1. Remove the outer case, inner case and programmer or fascia panel, see frame 14.
2. Remove the screw securing the gas valve plastic cover and lift off cover.
3. Disconnect the push-on terminals (the polarity of these wires is not important) and unscrew the earth terminal from the side of the gas valve.
4. Remove the clamping bracket which retains the pilot supply, thermocouple and overheat cut-off device leads at the bottom of the chassis.
5. Carefully prise the electrode out of the pilot assembly with a flat bladed screwdriver - see note in frame 15.
6. Disconnect the pilot supply and thermocouple from the gas valve and pilot assembly. Take care not to lose the pilot injector, see frame 15.
7. Disconnect the overheat cut-off device leads from the gas valve, see frame 26.
8. Disconnect the electrode lead from the piezo unit. Remove the one 3 mm socket screw securing the piezo unit mounting bracket and remove the bracket.

30

Gas Valve - continued

9. Remove the eight 3 mm socket screws securing the gas valve (four to the service cock and four to the burner manifold) and withdraw the gas valve.
10. Using new 'O' rings in the service cock and manifold flanges (both 'O' rings are the same size), reassemble and fit the new valve to the boiler in reverse order. Do not replace the plastic gas valve cover at this stage.
11. Open the wiring centre and replace the programmer, if fitted and reconnect the programmer plug. Replace the fascia panel if a programmer is not fitted. Replace the wiring centre and secure with two screws.
12. Light the pilot and check the flame, test the pilot supply connections and gas valve inlet and outlet connections for gas soundness, check the burner setting pressure, replace the gas valve cover and inner case as described in the commissioning instructions, page 9.
13. Replace the outer case and bottom cover.

32

TO REPLACE THE PIEZO UNIT

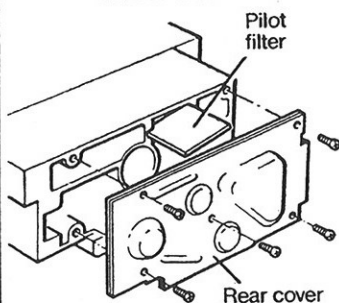
1. Disconnect the electrode lead from the piezo unit.
2. Unscrew the piezo unit from the retaining nut on its support bracket.
3. Fit a new unit and reconnect the electrode lead.
4. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

34

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 THAT THE GAS SUPPLY IS OFF



1. Remove the gas valve as described in frames 29 and 30.
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. Replace the gas valve in reverse order to frames 29 and 30. Do not replace the inner and outer cases at this stage.
6. Turn on the gas supply and check the service cock to gas valve joint for gas soundness using a suitable leak detecting fluid.

31

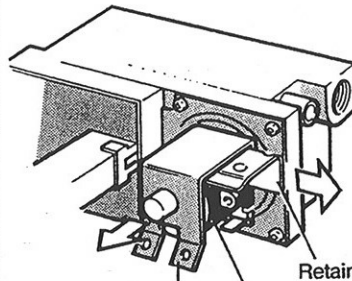
TO REPLACE THE BURNER INJECTOR

1. Remove the outer case, inner case and programmer or fascia panel, see frame 14.
2. Slacken the two wing nuts securing the flue hood and remove the burner assembly as described in frames 14, 15 and 16, paras 5 to 13.
3. Unscrew the injector from the manifold.
4. Screw in a replacement injector using a small amount of jointing compound.
5. Replace the burner assembly as described in frames 18 and 19, paras 2 to 8.
6. Fully tighten the wing nuts securing the flue hood.
7. Open the wiring centre and replace the programmer, if fitted and reconnect the programmer plug. Replace the fascia panel if a programmer is not fitted. Replace the wiring centre and secure with two screws.
8. Light the pilot and check the flame, test the pilot and main burner supplies for gas soundness and replace the gas valve cover and inner case as described in the commissioning instructions, page 9.
9. Replace the outer case and bottom cover.

33

TO REPLACE THE GAS VALVE SOLENOID

1. Remove the screw securing the gas valve plastic cover and lift off cover.
2. Disconnect the push-on terminals (the polarity of these wires is not important) and unscrew the earth terminal from the gas valve.



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 12. Light the boiler and replace the bottom cover.

35

Pilot Filter - continued

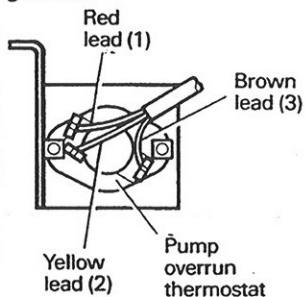
7. Light the pilot and check the flame and test the pilot supply connections for gas soundness as described in the commissioning instructions, page 9.
8. Apply a suitable leak detecting fluid around the gas valve rear cover and the gas valve manifold joint around the gas valve outlet. Set the programme selector switch to CONT, if a programmer is fitted. Switch on the electricity supply and set the boiler thermostat switch to HIGH to light the main burner. Test the gas valve rear cover and outlet connection for gas soundness.
9. Replace the inner case, outer case and bottom cover.

36 TO REPLACE THE PUMP OVERRUN THERMOSTAT

The pump overrun thermostat is situated at the bottom right hand corner of the chassis above the wiring centre.

1. Remove the outer and inner cases, see frame 14.

2. Remove the one screw securing the pump overrun thermostat mounting bracket situated next to the wiring centre underneath the chassis. Carefully withdraw the bracket complete with thermostat.



3. Disconnect the three leads and remove the two screws securing the thermostat to the bracket.

4. Fit the new thermostat to the mounting bracket and secure with two screws.

5. Connect the three leads to the thermostat and reassemble in reverse order.

6. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover. Allow the boiler to heat up fully then switch it off at the programmer or external controls and check that the pump runs for 5 to 15 minutes.

37 TO REPLACE THE PROGRAMMER (if fitted)

Refer to diagram in frame 12.

1. Remove the two screws securing the wiring centre and carefully lower it.

2. Unplug the programmer plug from the wiring centre.

3. Slide out the programmer from the control box.

4. Slide the new programmer into the control box, and push fully home.

5. Connect the programmer plug to the wiring centre.

6. Close the wiring centre and secure with two screws.

7. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

38 TO REPLACE THE COMBUSTION CHAMBER INSULATION

1. Remove the outer and inner cases, see frame 14.

2. Slacken the two wing nuts securing the flue hood.

3. Remove the upper and lower screws, two each side, and one wing nut securing the combustion chamber front cover and withdraw the cover.

4. Remove the insulation clamps on the front cover and slide out the front insulation. Slide in a new panel and replace the clamps.

5. Slide out the two side panels and remove the rear panel by pulling forwards at the top then lifting out.

6. Fit a new rear panel, lower edge first and push back into position. Slide in two new side panels.

7. Replace the combustion chamber front, ensuring that the burner stud locates in the bracket and secure with four screws and wing nut. Take care not to trap the overheat cut-off device leads. Note that the top left hand screw secures the bracket for the overheat cut-off device leads, do not forget to secure this bracket in position.

39 Combustion Chamber Insulation - continued

8. Tighten the two wing nuts securing the flue hood to the combustion chamber.

9. Replace the inner and outer cases.

10. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

40 TO REPLACE THE MAIN HEAT EXCHANGER

NOTE: The main heat exchanger consists of two identical units connected together and may be replaced individually if required.

1. Drain the system using the system draining tap.

2. Remove the outer case, inner case and flue hood, see frame 14.

3. Remove the thermostat cover, flue spigot and flue outlet mounting plate, see frame 8.

4. Remove the upper and lower screws, two each side, and one wing nut securing the combustion chamber front cover and withdraw the cover.

5. Remove the overheat cut-off device from the front of the heat exchanger.

6. Undo the fittings securing the inlet and outlet pipes to the heat exchanger.

7. Lower the front of the heat exchanger to disengage it from the outlet pipes, then disengage it from the inlet pipe.

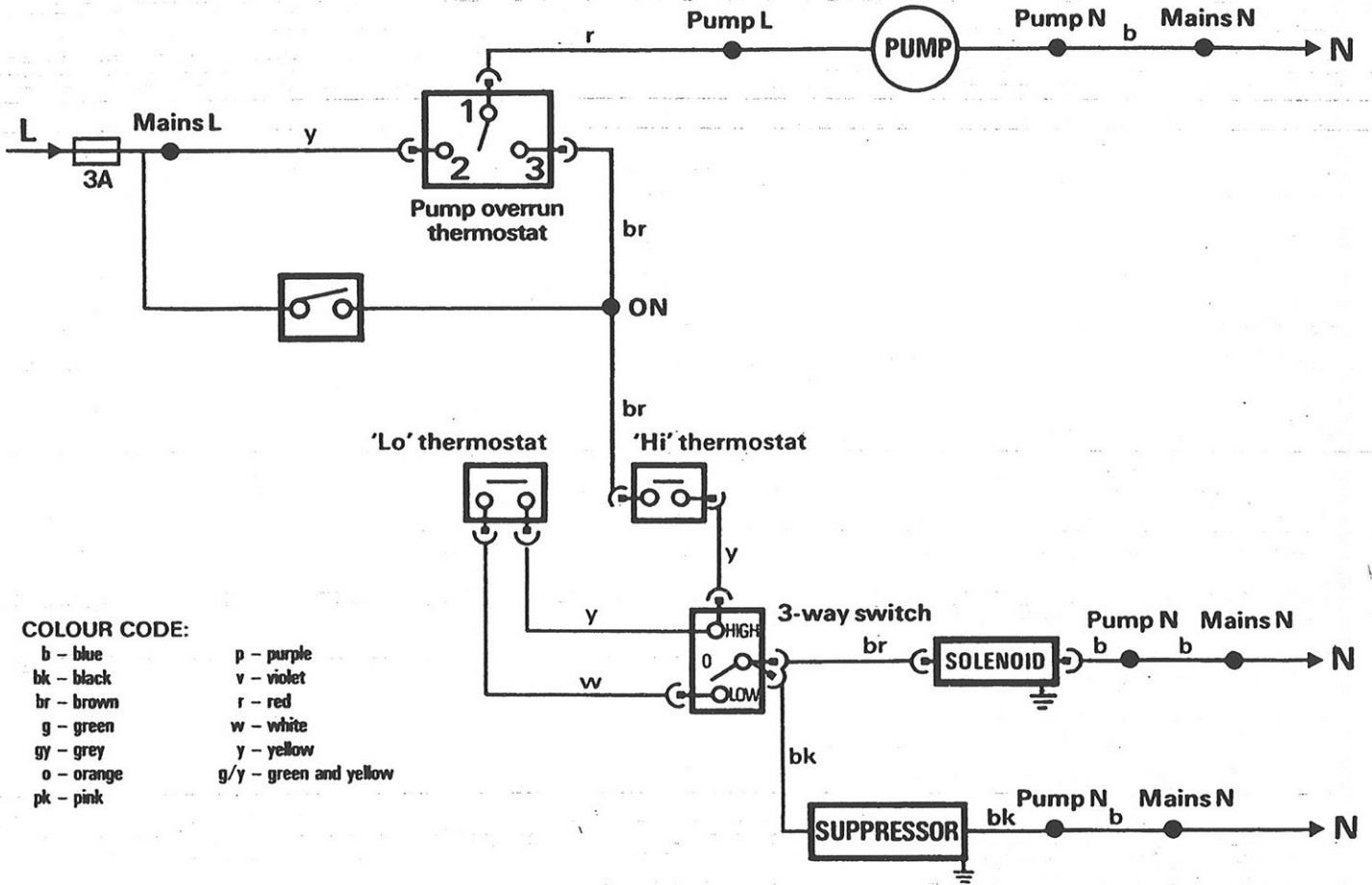
8. Reassemble in reverse order using a new heat exchanger. When replacing the combustion chamber front cover ensure that the burner stud is located in the bracket and that the overheat cut-off device leads are not trapped. Note that the top left hand screw secures the bracket for the overheat device cut-off leads, do not forget to secure this bracket in position.

9. Fill and vent the system.

10. Refer to the lighting instructions, page 12. Light the boiler and replace the bottom cover.

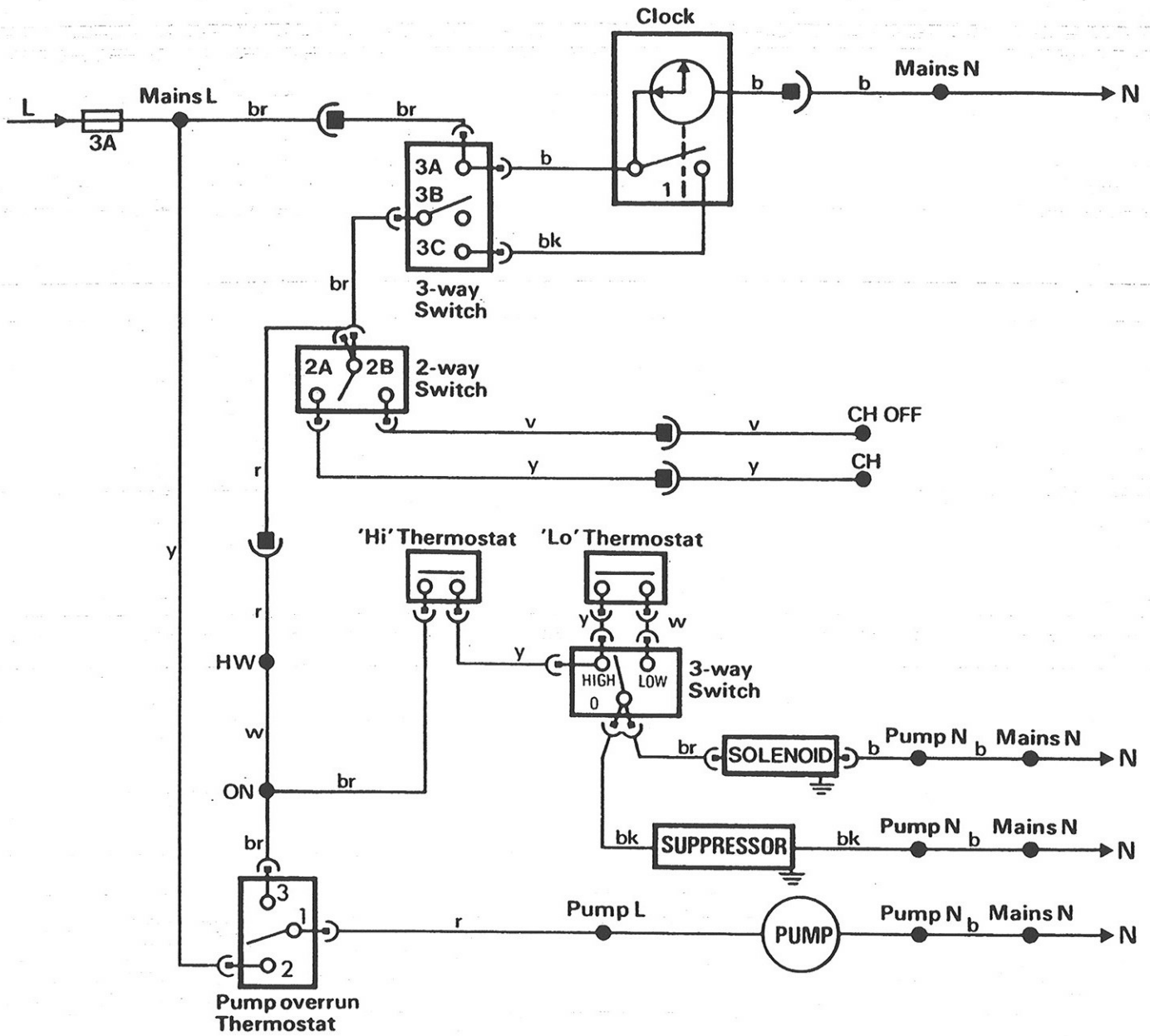
20. WIRING DIAGRAMS

a. Functional flow wiring diagram without programmer



NOTE: If a programmer is not fitted link HW to ON to be removed by the installer and a switched live connected to terminal ON.

b. Functional flow wiring diagram with Apollo pin set type programmer



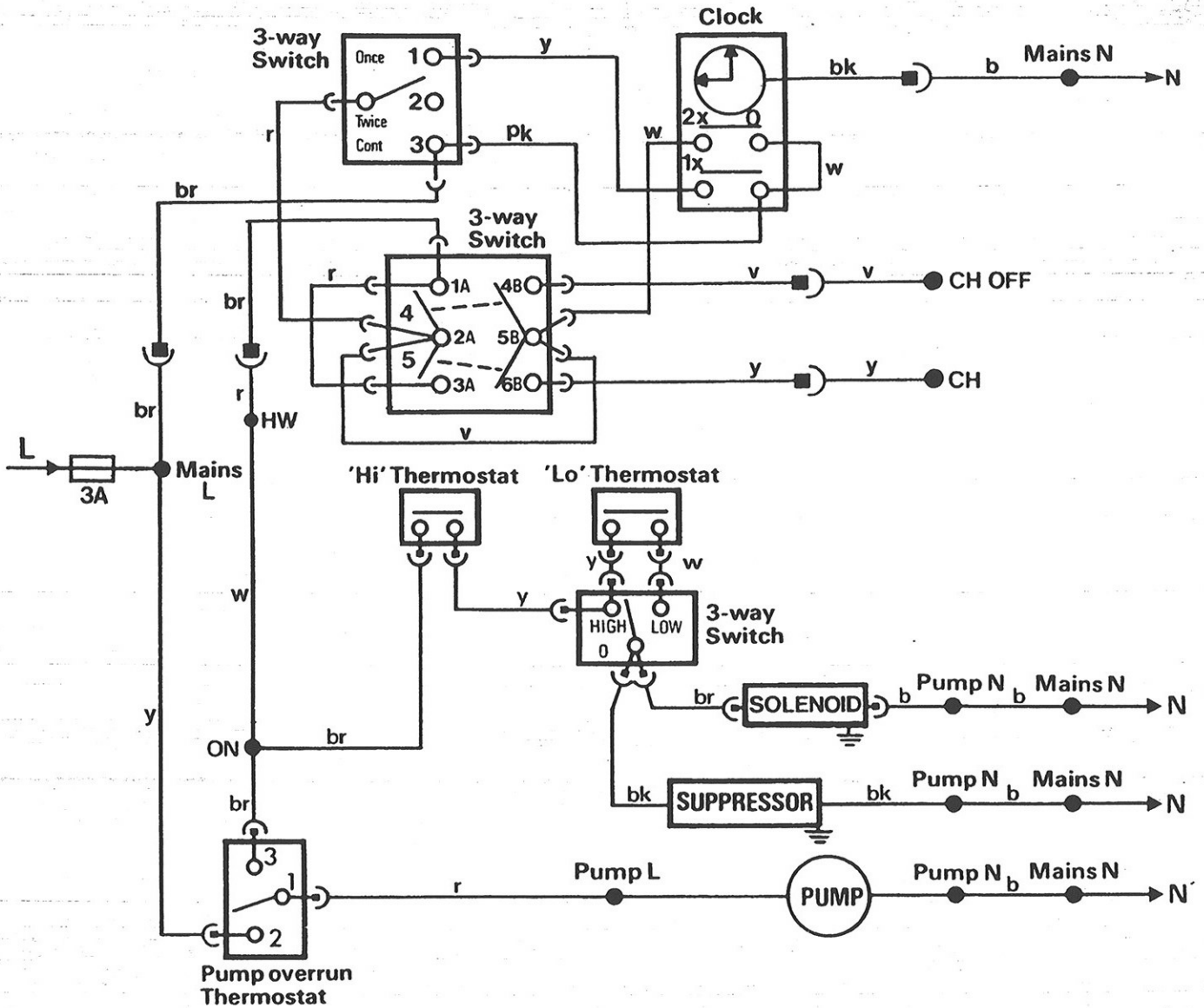
NOTE: Link HW-ON is removed when any external controls are fitted.

COLOUR CODE:

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

SERVICE	SELECTOR SWITCH CLOSED					
	1	2A	2B	3A	3B	3C
OFF						
CH OFF, HW						
CH + HW						
CONT. CH + HW						
CONT. HW						

c. Functional flow wiring diagram with Apollo tappet type programmer



NOTE: Link HW-ON is removed when any external controls are fitted.

COLOUR CODE:

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

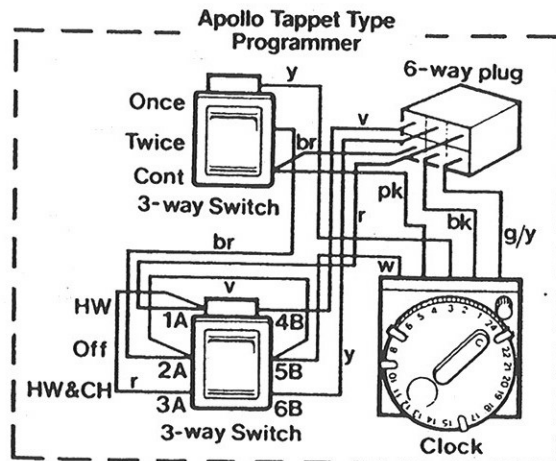
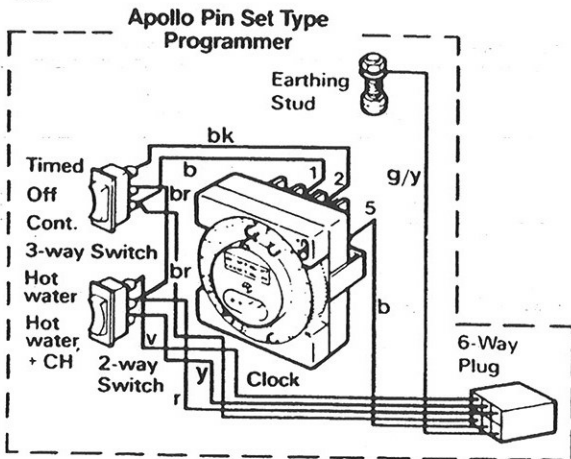
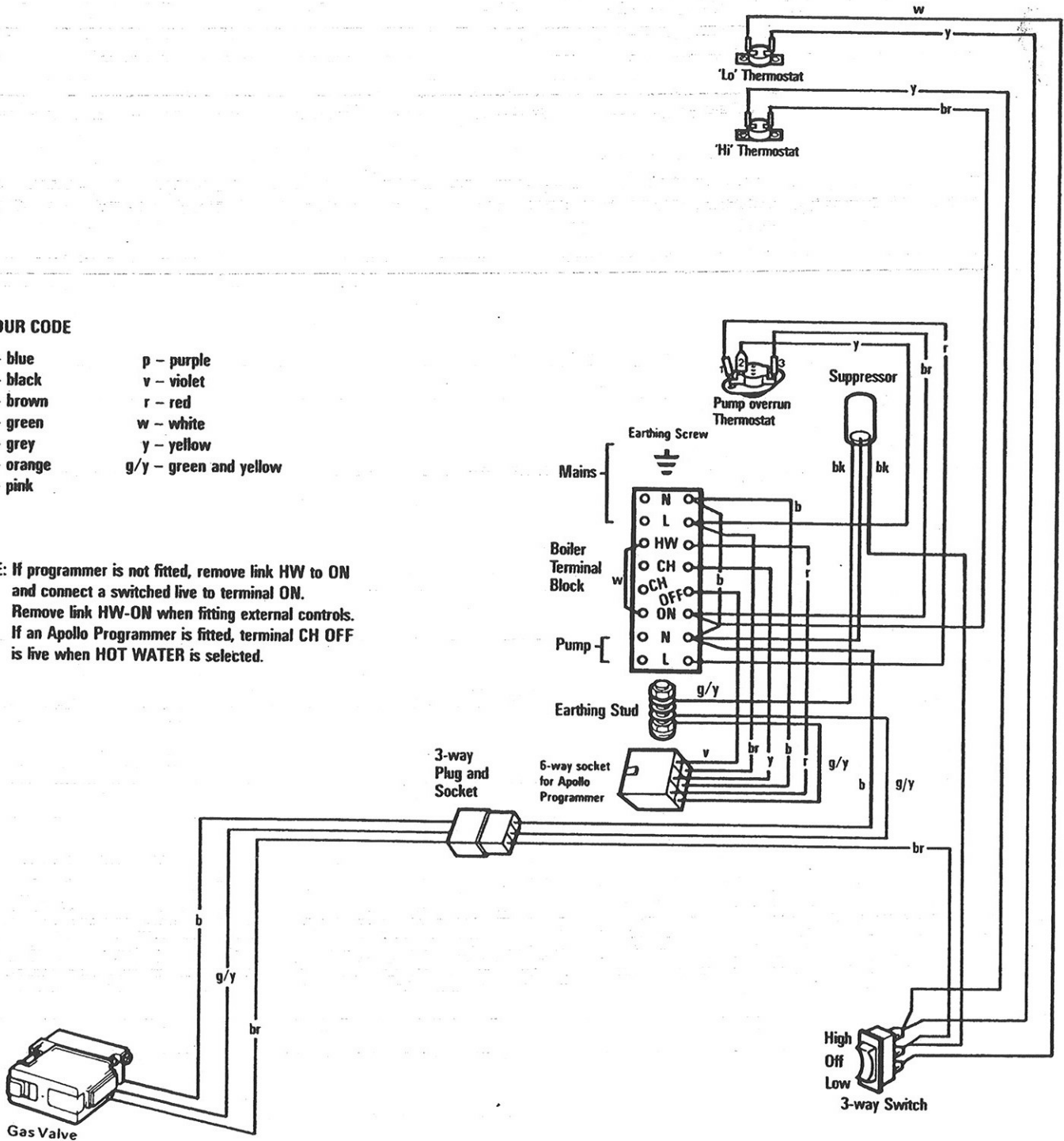
SERVICE	SELECTOR SWITCH CLOSED				
	1	2	3	4	5
OFF					
CH OFF HW2X					
CH OFF HW1X					
CH + HW2X					
CH + HW1X					
CONT. CH + HW					
CONT. HW					

d. Illustrated wiring diagram

COLOUR CODE

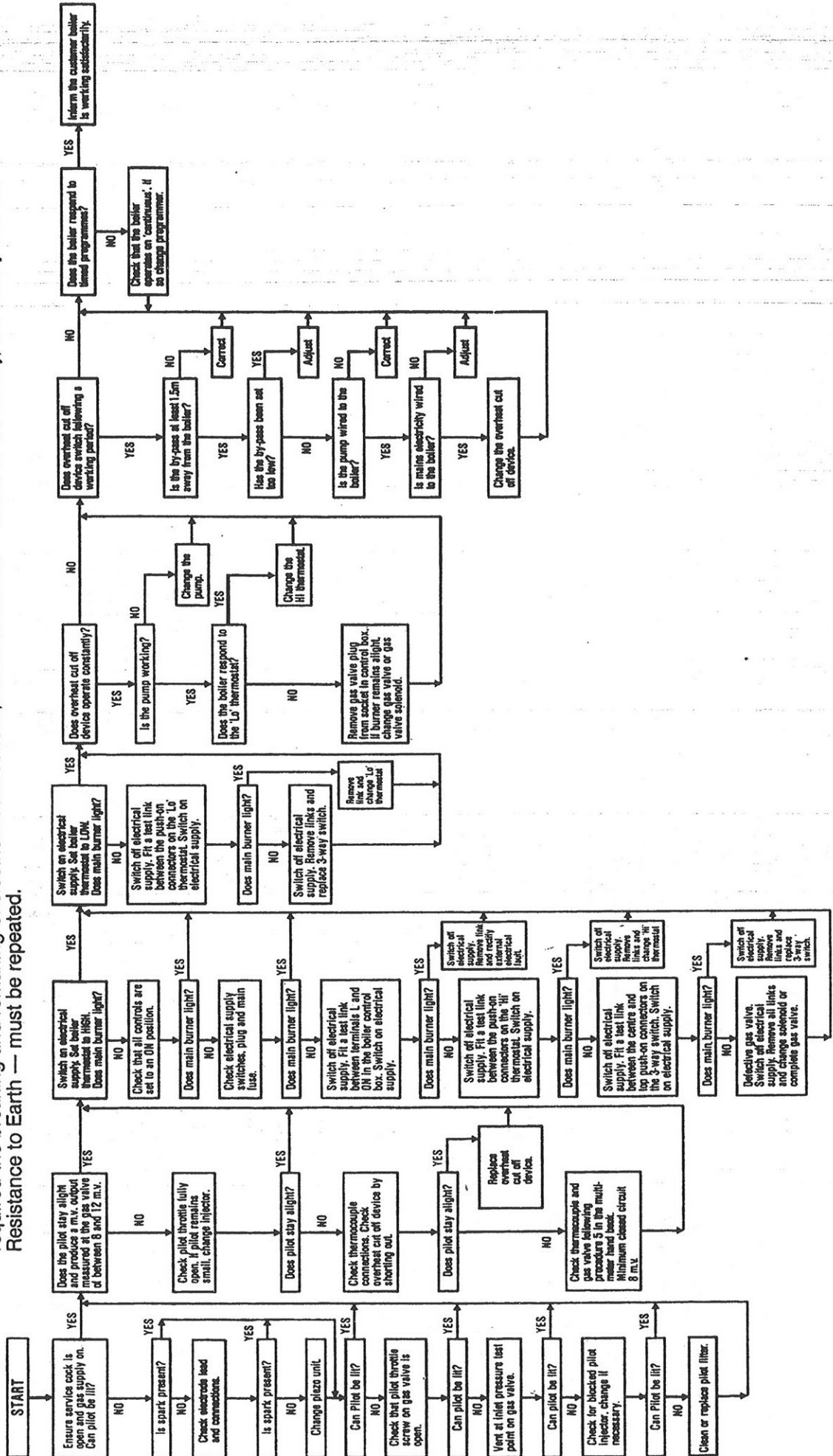
- | | |
|------------|------------------------|
| b - blue | p - purple |
| bk - black | v - violet |
| br - brown | r - red |
| g - green | w - white |
| gy - grey | y - yellow |
| o - orange | g/y - green and yellow |
| pk - pink | |

NOTE: If programmer is not fitted, remove link HW to ON and connect a switched live to terminal ON.
 Remove link HW-ON when fitting external controls.
 If an Apollo Programmer is fitted, terminal CH OFF is live when HOT WATER is selected.



21. FAULT FINDING GUIDE

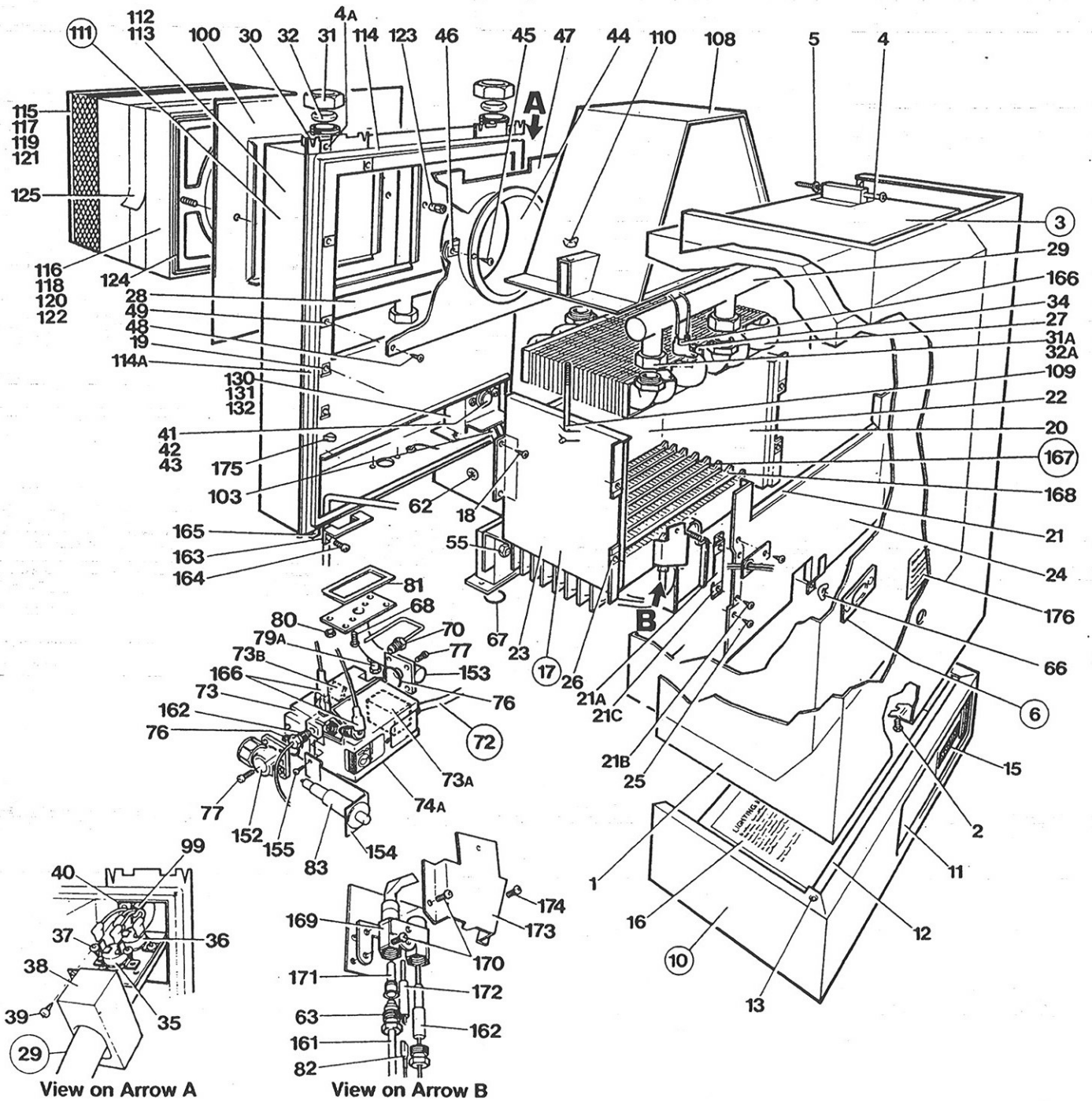
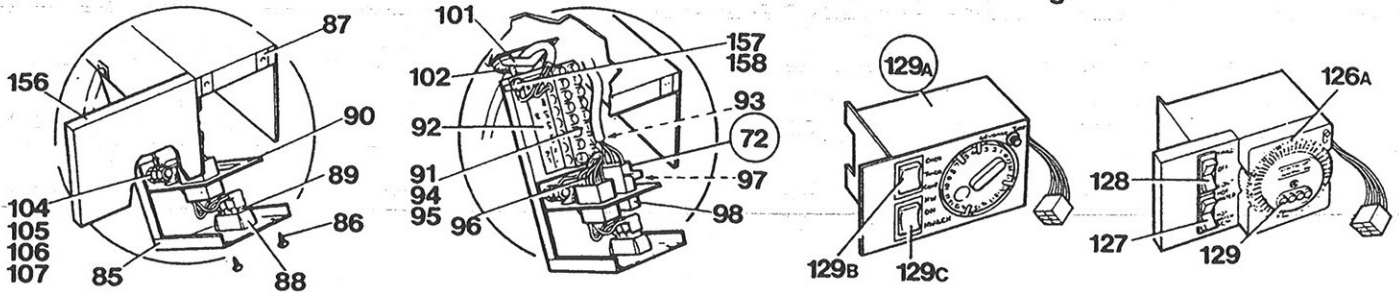
Preliminary electrical system checks as contained in the BGC multimeter instructions book are the first electrical checks to be carried out during a fault finding procedure. On completion of the service/fault finding task which has required the breaking and remaking of electrical connections, then the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



22. EXPLODED VIEW - APOLLO 50/65B and 65/80B

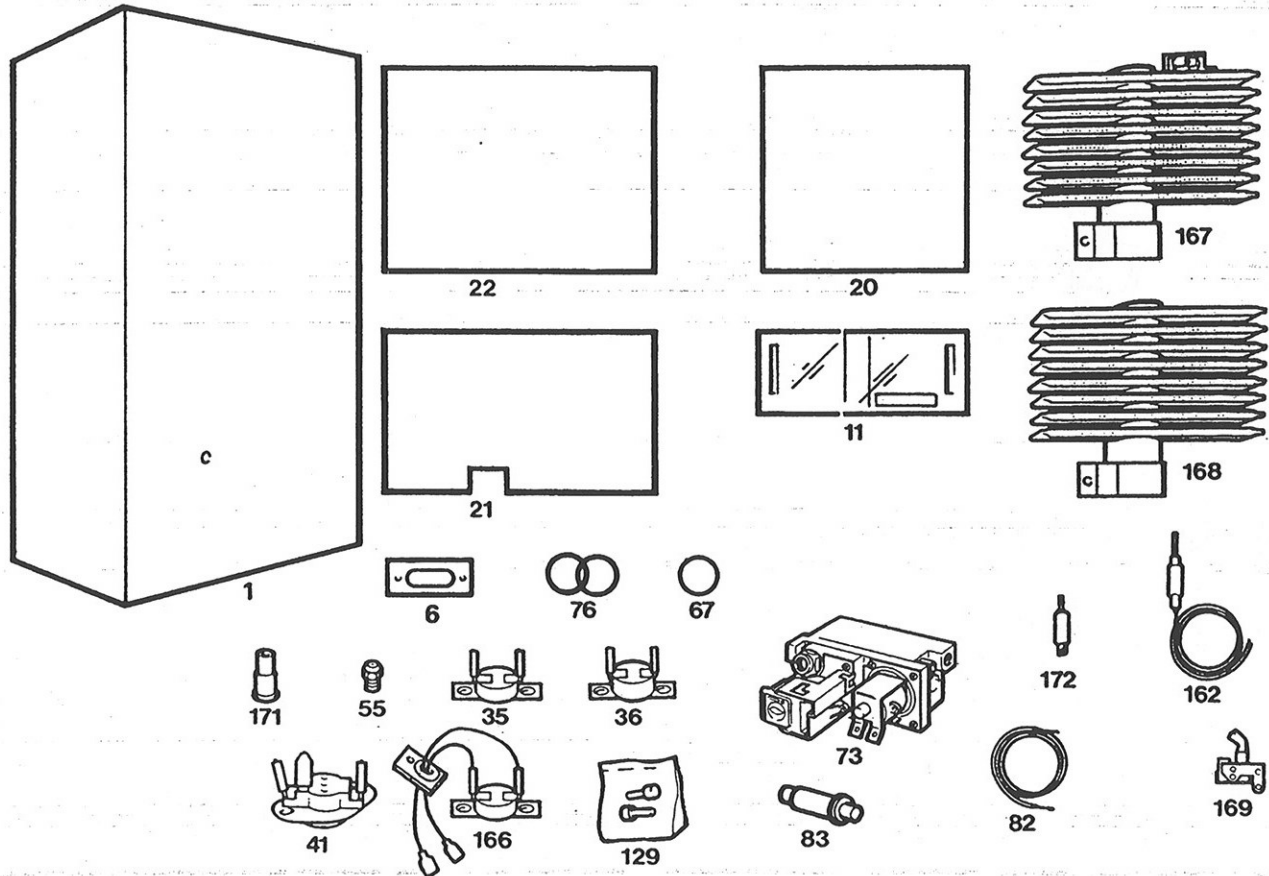
WIRING CENTRE DETAILS

Programmiers



Encircled number denotes a complete assembly

23. SHORT LIST SPARE PARTS



Key No.	GC No.	Description	Qty.	Part No.
1	323 489	Outer case	1	402A393
6	377 000	Window assembly	1	402A2476
11	323 339	Plastic door	2	402C053
20	323 495	Combustion chamber insulation (sides)	2	402C428
21	323 496	Combustion chamber insulation (front)	1	402C429
22	323 498	Combustion chamber insulation (rear)	1	402C430
35	382 397	'Hi' thermostat	1	402S114
36	382 373	'Lo' thermostat	1	402S115
41	382 374	Pump overrun thermostat	1	402S087
55	398 064	Main injector. Cat 10 size 2200 50/65	1	402S644
55		Main injector. Cat 10 size 2300 65/80	1	402S2724
67	323 361	Burner 'O' ring	1	402S098
73	395 685	Gas valve	1	V4700E1007
76	359 211	Gas valve 'O' ring	2	400-0016-7-32
82	323 367	Spark electrode lead with grommet	1	402S089
83	386 551	Piezo unit	1	402S083
129	323 452	Programmer pins (pack of 6)	1	402A302
162	390 131	Thermocouple	1	Q309A2721
166		Overheat cut off device with leads	1	402A2834
167		Burner and pilot assembly 50/65	1	402A2718
167		Burner and pilot assembly 65/80	1	402A2723
168		Burner	1	402S2721
169	386 511	Pilot burner	1	Q385A1046
171	384 980	Pilot injector 38/36A	1	4500-4108-001
172	386 512	Spark electrode	1	309S330

SALES INQUIRIES:

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Warwick
CV34 4LL

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Gateshead
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TECHNICAL HELPLINE:

Technical Department
Brooks House
Coventry Road
Warwick
CV34 4LL

Tel: 08706 049049
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

Registered Office: 84 Eccleston Square . London SW1V 1PX

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O MYSON

