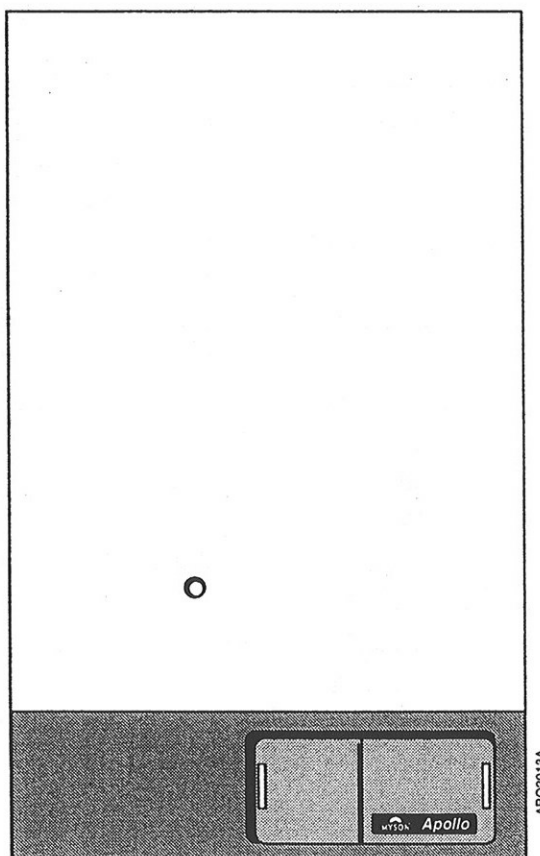


# Installation & Service Instructions

## Apollo 60B, 80B

### Wall Mounted Natural Draught Balanced Flue Gas Boilers



#### THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS 1994.

"In your own interest, and that of safety, it is 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."

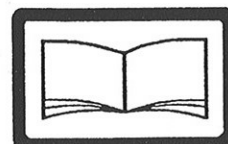
The polythene bags used for packaging are a potential hazard to babies and young children and **MUST BE DISPOSED OF IMMEDIATELY.**

Installation must be in accordance with the Installation & Service Instructions and the rules in force.

**LEAVE THESE INSTRUCTIONS WITH THE USER FOR USE ON FUTURE CALLS**

**For Use With Natural Gas  
(G20) Only At 20mbar  
For Use in GB & IE**

**IMPORTANT**  
PLEASE READ THIS BOOK  
BEFORE INSTALLING,  
OPERATING OR SERVICING  
THIS BOILER.



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# Technical Data

For boiler model and serial number, see lighting instruction label inside the bottom cover or the data plate on the inner case.

Boiler		Apollo 60 B		Apollo 80 B	
Burner type		Bray AB24078M or Furigas 175-500-032		Bray AB24079M or Furigas 175-500-033	
Burner injector		Bray 10/1800		Bray 10/2200	
Pilot injector		Honeywell 45.00-4108-001 marked 38/36A			
Pilot flame		Approximately 20 mm long			
Spark gap		3.0 to 4.0 mm			
Ignition		Piezo push button			
Weight (empty) exc. flue		30.0 kg (66.2 lb)		32.7 kg (72.0 lb)	
Lifting weight (installing)		14.1 kg (31.1 lb)		16.4 kg (36.2 lb)	
Water content		0.6 litre (0.1 gal)		1.1 litre (0.1 gal)	
Max. flow temperature		82°C			
Design temperature rise		10°C across system, 8°C across boiler			
Maximum static head		30.5 m (100 ft)			
Minimum static head		150 mm (6 in) above the highest point in the system			
* Water Flow Rate		1890 litres/h		2430 litres/h	
* Head loss		2.0 m (78 in)		0.9 m (36 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		R p ½			

\* Water flow rate and head loss for a boiler differential of 8°C.

## NOMINAL BOILER RATINGS

Boiler	Output		Input		Burner pressure	
	kW	Btu/h	kW	Btu/h	mbar	in wg
Apollo 60 B	14.7	50 000	18.8	64 000	8.7	3.5
	17.6	60 000	22.1	75 500	12.0	4.8
Apollo 80 B	17.6	60 000	22.3	76 000	8.7	3.5
	22.6	77 100	28.2	96 200	14.1	5.7

# Introduction

## Gas Safety (Installation & Use) Regulations 1994.

This appliance must be installed and serviced by a competent person, in accordance with the above regulations.

In the UK 'Corgi' Registered Installers (including the regions of British Gas Plc) undertake the work to a safe and satisfactory standard.

Failure to install appliances correctly could lead to prosecution.

It is in your own interest, and that of safety, to ensure that the regulations are complied with.

The Apollo boilers can be range rated at the following outputs (All models factory set to maximum output):

Apollo 60 B: 14.7 to 17.6 kW (50 000 to 60 000 Btu/h)

Apollo 80 B: 17.6 to 22.6 kW (60 000 to 77 100 Btu/h)

The boilers are designed for use on fully pumped open vented or sealed water systems with an indirect hot water cylinder.

THEY MUST NOT BE CONNECTED TO A DIRECT CYLINDER.

The boilers are for use on Natural Gas (G20) only.

Samples of the Myson Apollo gas boilers have been examined by British Gas Plc, a United Kingdom Notified Body. The range is certified to comply with the essential requirements of the Gas Appliance Directive 90/396/EEC, the Low Voltage Directive 72/23/EEC and shows compliance with the Electro Magnetic Compatibility Directive 89/336/EEC and are therefore permitted to carry the CE Mark.

## Delivery & Kits Available

The unit is delivered in two packages (1) the cased boiler and (2) the balanced flue terminal. 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 C size terminal will be supplied with the boiler.

A plug-in programmer kit is also 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, includes a built in by-pass which does not require adjusting and allows the 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.

## 1. Installation Requirements

### 1.1 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 and 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.

#### Heat Exchanger

**Material** - Copper with lead/tin coating.

**Description** - Finned copper tube.

**Known Hazards** - Inhalation or ingestion of lead dust or fumes may cause headache and nausea.

**Precautions** - Unused heat exchangers present minimal risk to health other than normal hygiene practices would demand regarding washing before eating etc. Deposits found on or below a heat exchanger that has been in use could contain lead oxide. Avoid inhalation by using a vacuum cleaner in conjunction with other cleaning tools when servicing the boiler.

### 1.2 Codes of Practice

The boiler must be installed in accordance with: The Gas Safety (Installation and Use) Regulations 1994, these Installation Instructions and the Regulations in Force and only used in a suitably ventilated location.



### 1.3 Gas Supply

The natural gas requirements are as follows:

Apollo 60B: 2.1 m<sup>3</sup>/h (74 ft<sup>3</sup>/h)      Apollo 80B: 2.7 m<sup>3</sup>/h (95 ft<sup>3</sup>/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 pipe diameter required will depend on the boiler model and the pipe length from the gas meter. 15mm diameter pipe will be adequate for the following lengths:-

Apollo 60B: 5m      Apollo 80B: 3m

These lengths must be reduced by 0.5m for each elbow and tee fitted. Longer lengths will require the use of 22mm diameter pipe.

The complete installation must be tested for gas soundness and purged as described in BS6891.

### 1.4 Electricity Supply

230V/240V ~ 50Hz via a fused double pole switch with a contact separation of at least 3 mm in both poles adjacent to the boiler. Power consumption is approximately 5W. There must be only one common isolator for the boiler and its control system and it must provide complete electrical isolation.

Fuse the supply at 3 A. The minimum requirement for the power supply cable is that it should be a PVC sheathed cord at least 0.75 mm<sup>2</sup> (24 x 0.2 mm) (code designation HO5 VV-F or HO5 VVH2-F) as specified 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.

#### **WARNING: THIS APPLIANCE MUST BE EARTHED.**

In the event of an electrical fault after installation of the boiler, preliminary electrical systems checks must be carried out i.e. Earth Continuity, Short Circuit, Polarity and Resistance to Earth.

### 1.5 Location of Boiler

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 25 mm to combustible material. A metal sleeve should be installed to surround the flue duct to provide a 25mm annular space. Further guidance is given in BS5440:1:1990, sub-clauses 3.3 and 4.2.5.

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 Potterton Myson.

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 purpose. Details of essential features of cupboard/compartment design including airing cupboard installations are given in BS6798 and BS5546 and should be complied with.

The boiler requires only the clearances stated in the Technical Data, Page 3, after installation. If it is felt that extra space is required for installation any adjacent kitchen units or fittings may have to be 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.

## 1.6 Air Supply

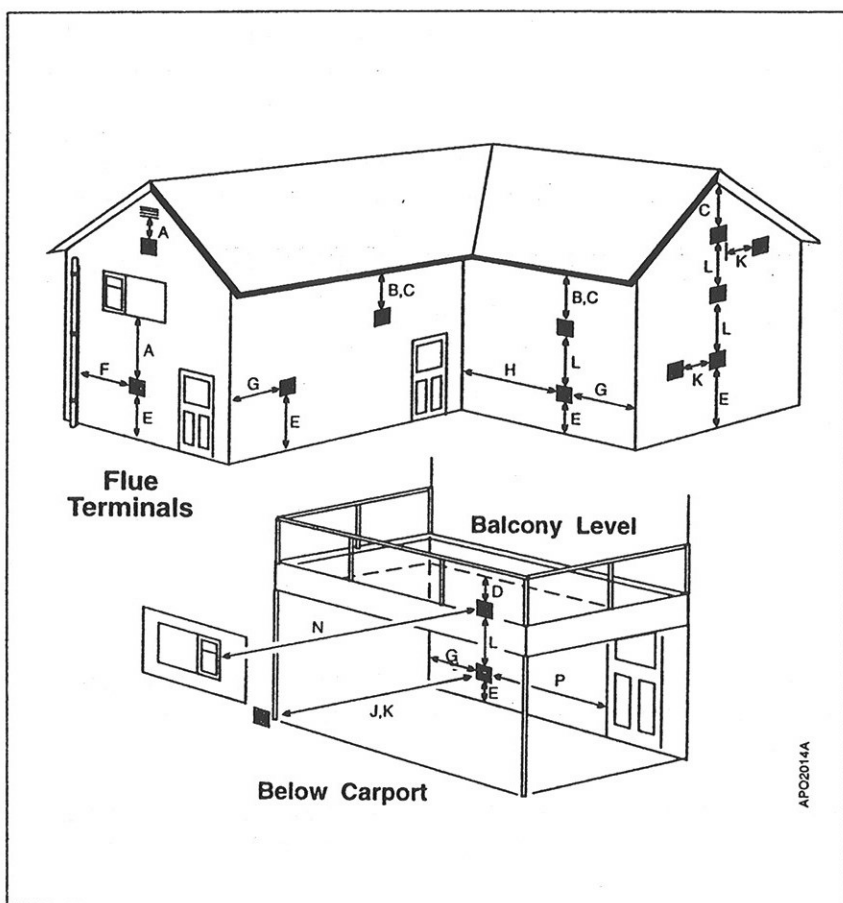
The room in which the boiler is installed does not require a purpose provided air vent.

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 level and low level air vents must communicate with the same room or must be on the same wall to outside air. Both the high level and low level vent must each have a free area as stated below. The free area of each vent may be halved if the ventilation is provided directly from outside.

Apollo 60 B: 199 cm<sup>2</sup> (31 in<sup>2</sup>)      Apollo 80 B: 254 cm<sup>2</sup> (39 in<sup>2</sup>)

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.

## 1.7 Terminal Location



The minimum acceptable spacings from the terminal to obstructions, corners and ventilation openings are specified in the following table:

\* If the 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: 01732 351555. The guard must be securely fitted to the wall and centrally located over the flue terminal. Refer to the manufacturers instructions.

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

## 1.8 Important Installation Notes

1. The Apollo is to be used only on fully pumped systems, and with an indirect cylinder.
2. The pump must produce enough head to ensure a flow rate of 1890 litres/h (420 gal/h) for the Apollo 60B and 2430 litres/h (540 gal/h) for the Apollo 80B.
3. 28mm isolating valves must be fitted close to or integral with the pump.
4. Connect the pump in the flow pipe as shown in the water system schematics.
5. Mains electricity and the pump must always be connected to the boiler to allow the pump overrun to function.
6. For open vented systems a combined or close coupled feed and vent must be connected as shown in the water system schematics.
7. A system by-pass is essential. The by-pass should be of 15mm pipe and must be as short as possible across the 28mm flow and return pipes and at least 1.5m away from the boiler. Install the by-pass as shown in the water system schematics and adjust as described in the commissioning instructions.
8. 28mm 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 MB-1 (in 4 litre container) or Sentinel X100 inhibitor should be used. See Commissioning Instructions for details of use.

## 1.9 Boiler Dimensions and Position of Water and Gas Connections

Refer to Fig. 1.

### Overall cased dimensions:

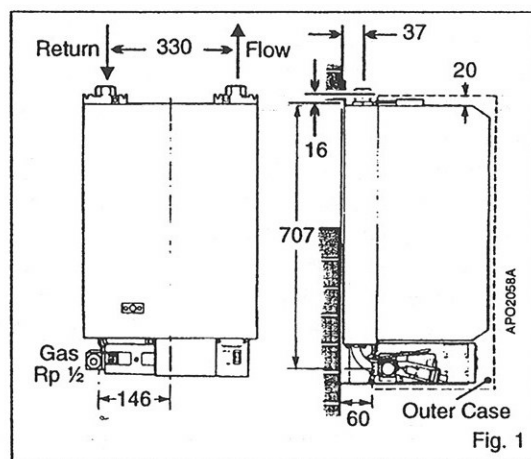
Height:	760 mm
Width:	450 mm
Depth:	350 mm

### Clearances required for servicing:

Top:	50 mm
Bottom:	90 mm
Front:	350 mm
Sides:	5 mm

See Section 1.7 for installation clearances.

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



## 1.10 Water system Schematics

### a. Fully pumped open vented system with combined cold feed and vent - see Fig. 2.

The combined cold feed and vent must rise from the boiler.

Some water authorities require a stop cock in the cold feed, in which case a separate vent must be connected as shown.

### b. Length of wet and dry vents for close coupled cold feed - see Fig. 3.

The distance between the cold feed and vent connection to the system must not be more than 150mm. The point of connection of these pipes should be as close to the boiler as practicable.

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

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 1890 litres/h (420 gal/h) for the Apollo 60B and 2430 litres/h (540 gal/h) for the Apollo 80B while the burner is alight.

Ensure that the pump is accessible for servicing. 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.

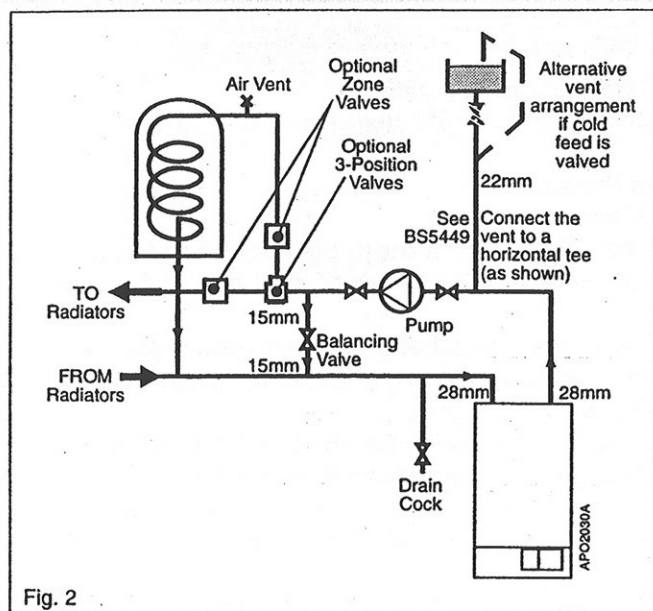


Fig. 2

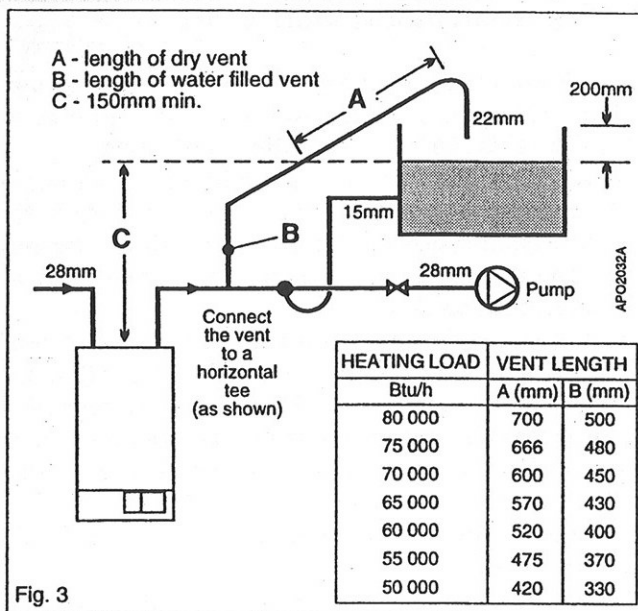


Fig. 3

## 1.11 Sealed System Requirements

Refer to Fig. 4.

- The installation must comply with the requirements of BS6798 and BS5449. Maximum water temperature is  $82^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .
- A safety valve, as described in BS5449, operating at 3 bar (45 lbf/in<sup>2</sup>) 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 with a fill pressure indicator, to be set at the initial setting pressure, covering at least the range 0 to 4 bar (0 to 60 lbf/in<sup>2</sup>) shall be fitted in the system.
- A diaphragm type expansion vessel, to BS4814, shall be connected at a point close to the pump inlet. 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 and BS7074:1.

Sizing table:

Air or Nitrogen charge pressure (bar)	0.5		1.0	
Pre-pressurisation pressure (bar)	0.5	1.0	1.0	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)

- The hot water cylinder shall either be the indirect coil type or a cylinder fitted with an immersion calorifier.
- 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.

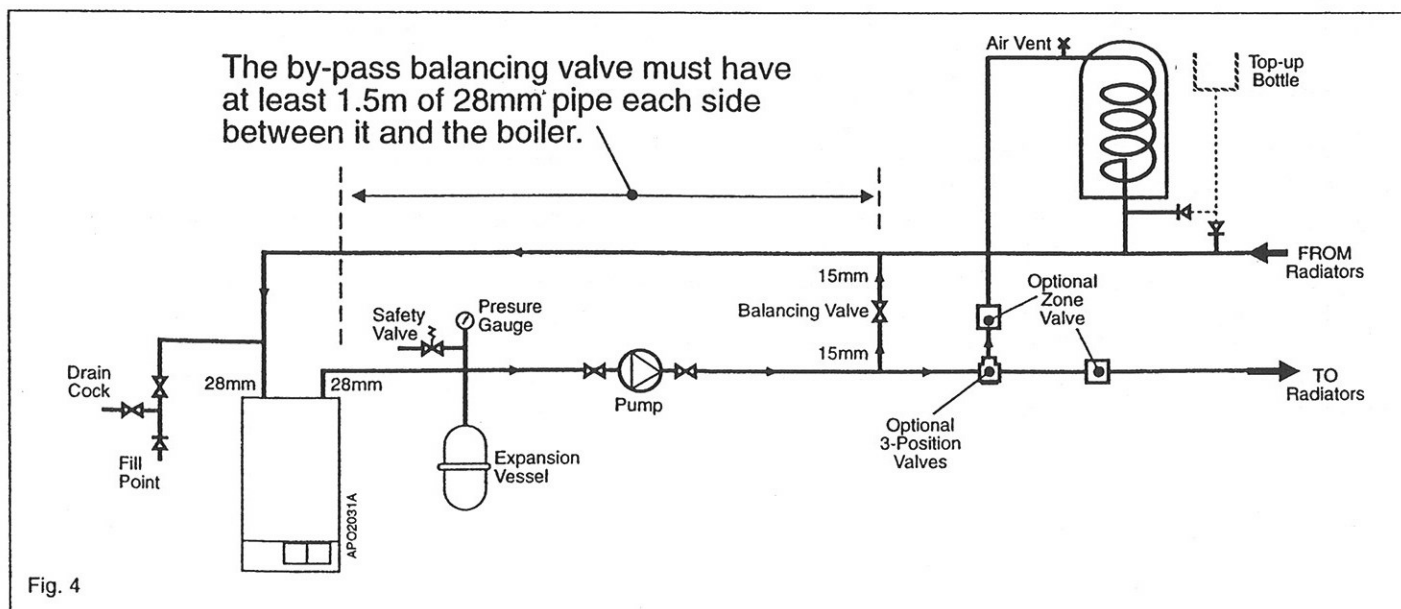


Fig. 4



- 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 to the requirements of BS1010:2.
  - ii) a test cock.
  - iii) an anti-vacuum valve of a type listed in the Water Fitting and Materials Directory.
  - iv) a non-return valve of an approved type.
- h. Fill the system until the pressure gauge registers 1.5 bar (22 lbf/in<sup>2</sup>). Examine for leaks and rectify where necessary. 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.

## 2. Installation

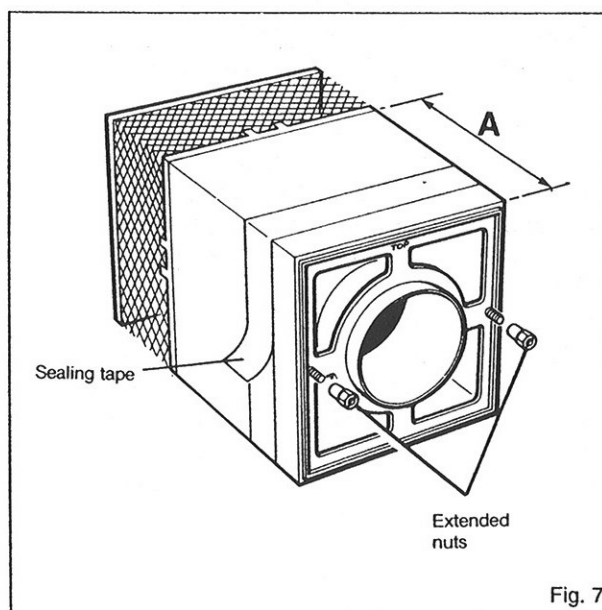
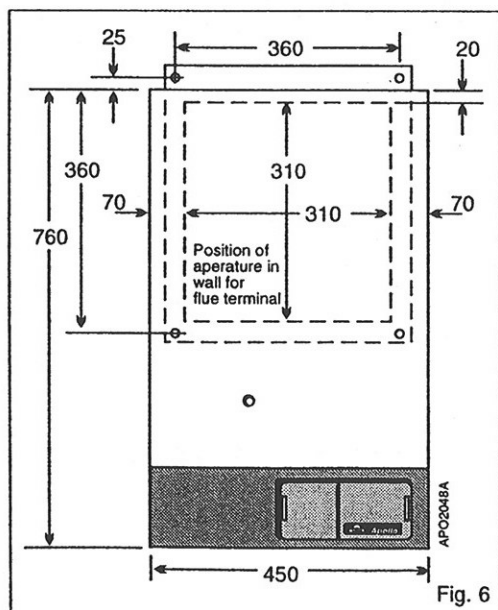
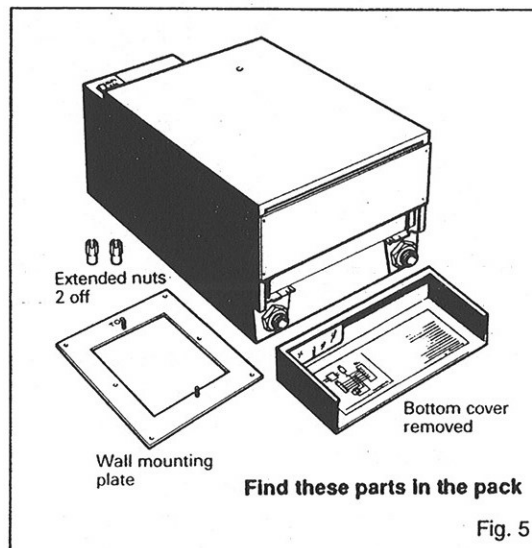
### 2.1 Unpack the boiler - see Fig. 5.

**Note:** Do not stand the boiler on its end as it will damage the gas valve.

1. Carefully unpack the boiler.
2. Carefully slide off the bottom cover from the boiler.
3. Remove the outer case by **slackening** the bottom fixing screw and sliding the case towards the top of the boiler then lifting it clear.
4. Unscrew the three inner case fixing screws, 'B' in Fig. 15, two at the top and one at the bottom, and lift off the case.
5. Keep the inner case, outer case and bottom cover in a safe place so as not to damage them before fitting.

### 2.2 Prepare the wall - see Fig. 6.

1. Decide upon the position of the boiler, ensuring that the position of the flue terminal will meet the requirements given in Section 1.7.
2. Mark the position of the hole for the flue duct and the four wall plate fixing screws as shown in Fig. 6.
3. Cut the hole in the wall for the flue terminal.
4. Drill and plug the four fixing holes to accept 2½" long No.12 woodscrews.
5. Make a note of the finished wall thickness, this is very important and is required for Section 2.3 when adjusting the length of the flue duct.



### 2.3 Unpack and adjust the flue terminal - see Fig. 7.

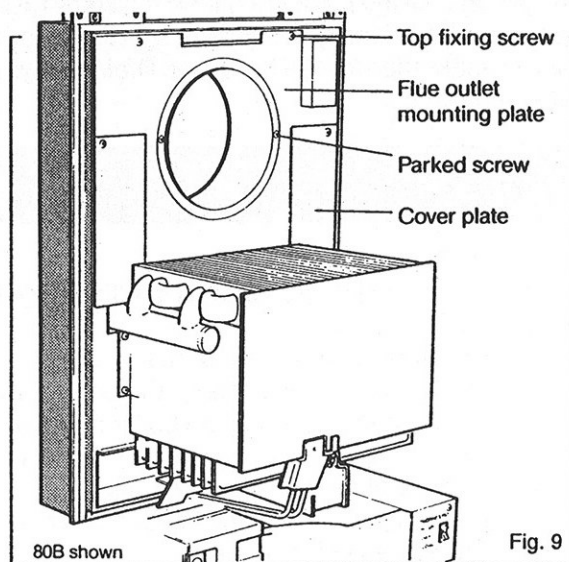
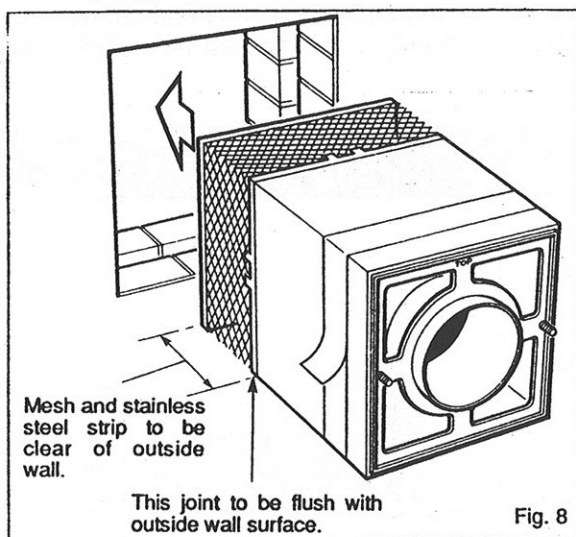
1. Remove the flue terminal assembly and roll of sealing tape from the carton. The sealing tape is used to seal the flue duct after it has been adjusted to the correct length.
2. Using the measurement noted in Section 2.2 adjust the telescopic terminal to suit the finished wall thickness.
 

**Note:** Dimension 'A' in Fig. 7 to be the finished wall thickness.
3. Seal the telescopic joint with the tape provided.
4. Remove the two extended nuts from the mounting studs. Retain these nuts for securing the terminal to the boiler in Section 2.5.



## 2.4 Position the flue terminal and fit the wall mounting plate - See Fig. 8.

1. Ensure that the terminal is the correct way up and insert it into the wall.
2. The mesh and the stainless steel strip are to be clear of the outside wall, See Fig. 8.
3. To prevent the boiler displacing the terminal, temporarily retain the terminal to the wall mounting plate, when fitted. String passed through the terminal frame may be used.
4. Ensure that the wall mounting plate is level and the correct way up, and position it over the two studs on the terminal.
5. Secure the wall mounting plate to the wall with four 2½" long, No.12 woodscrews (not supplied) into the holes previously drilled and plugged.



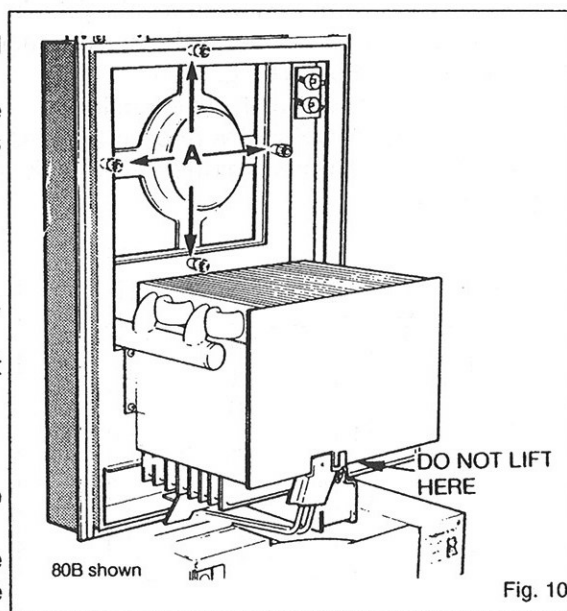
## 2.5 Prepare the boiler and secure it to the wall mounting plate - See Figs. 9 and 10.

1. Remove the two wing nuts 'A' and tie rods 'B' in Fig. 16, securing the flue hood to the combustion chamber and remove the flue hood by withdrawing it forwards.

Take care when removing the flue hood as the flue spigot is supplied loose on top of the heat exchanger.

**Note: 80 B only** - The two tie rods retaining the flue hood are to be located in the holes in the bottom of the combustion chamber sides when reassembling.

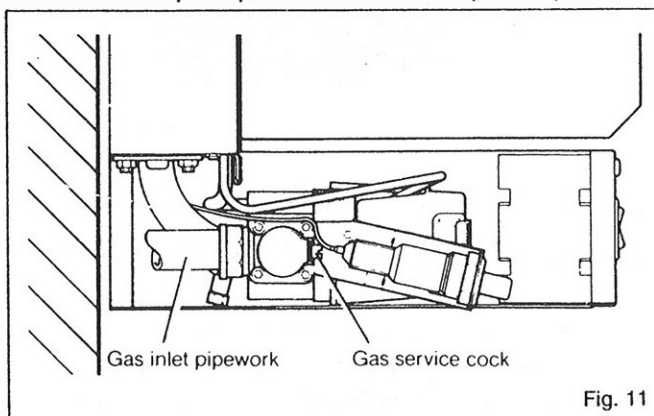
2. Remove the flue spigot which is standing on the heat exchanger.
3. Remove the two cover plates (one each side) adjacent to the heat exchanger inlet and outlet pipes, See Fig. 9.
4. Remove the two screws parked at the sides of the flue outlet opening, See Fig. 9.
5. Remove the remaining two screws, at the top, securing the flue outlet mounting plate, See Fig. 9, and carefully withdraw the plate.
6. Lift the boiler into position, lift by the chassis NOT the burner/combustion chamber, and locate the four holes in the back of the chassis over the studs on the wall mounting plate. Take care not to dislodge the terminal.
7. Secure the boiler to the upper and lower studs, 'A' in Fig. 10, using the two extended nuts supplied with the boiler. Secure the terminal to the boiler using the two side studs 'A', See Fig. 10, using the two extended nuts removed from the terminal in Section 2.3. Tighten the nuts to form a seal.
8. Replace the flue outlet mounting plate and secure with two screws at the top. Replace the two cover plates (one each side) adjacent to the heat exchanger inlet and outlet pipes.
9. Insert the flue spigot ensuring it engages into the terminal opening and secure with the two screws previously removed from the flue outlet mounting plate.
10. Replace the flue hood, inserting the spigot on the rear of the flue hood into the flue spigot and secure in position with the two wing nuts and tie rods previously removed. See note in para 1 for 80 B.



## 2.6 Connect the Gas Supply - See Fig. 11.

Connect the gas supply, using a suitable adaptor, to the service cock.

**Do not turn the gas supply on at this stage.**



## 2.7 Connect the Power Supply Cable - See Fig. 12.

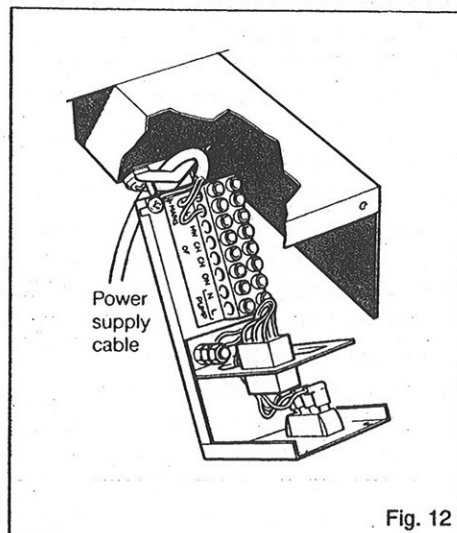
**Note:** A permanent live and the pump must be connected to the boiler.

1. Remove the screw, 'A' in Fig. 15, securing the front of the wiring centre and carefully lower it.
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 ( $\equiv$ ).
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, 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 lead and any external controls wiring should be passed through the bush, provided in the left hand side of the wiring centre, and connected to the terminal block. See wiring diagram page 20. Ensure that all external control cables are secured.
5. The link HW to ON is only needed if the internal programmer is fitted but without a cylinder thermostat. Otherwise remove link HW to ON and connect a switched live to terminal ON.

**Do not switch on the electricity supply at this stage.**



## 2.8 Fit the Programmer Kit.

1. With the wiring centre lowered slide out the facia panel on the side of the control box. Engage the programmer fixing into the slot in the control box and push fully home.
2. Connect the programmer 6-pin plug to the 6-pin socket on the wiring centre, See Fig. 15, push fully home until the latch engages.
3. Close the wiring centre and secure in position with the fixing screw.

## 2.9 Complete the Installation.

1. Connect the system flow and return pipes to the top compression unions (See Water System Schematics, Section 1.10).
2. Thoroughly flush the whole system with cold water without the pump in position. Ensure all valves are open.
3. With the pump fitted, fill, vent and check for water soundness, rectifying where necessary.

# 3. Commissioning

See Section 3.2 for Boiler Controls.

## 3.1 Commission the Boiler

### 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). 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 programme 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 pressure

After the main burner has been alight for 10 minutes:

- Set the boiler thermostat switch to 'O'. Remove the burner 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 pressure to give the heat input required.

**60B** - Turn the adjusting screw clockwise to decrease the pressure.

**80B** - The adjusting screw is under a capscrew, remove this to gain access, turn the adjusting screw anticlockwise to decrease the pressure. Replace the capscrew after adjusting the pressure.

**Note:** The boiler is factory set to the maximum input. See Technical Data, page 3, for the boiler ratings and 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. Set the boiler thermostat switch to 'O' to turn the boiler off.
- 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

Ensure that the inner case seal is intact around the boiler chassis and replace the inner case, secure with three screws, 'B' in Fig. 15. Tighten sufficiently to form a seal.

## 9. Final water system check and addition of inhibitor

- When the system has been tested, ensure the boiler is off (boiler thermostat switch set 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 MB-1 (in 4 litre container) and Grace Dearborne Ltd. recommend Sentinel X100 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 inhibitor for the system volume.
- 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 10°C temperature drop across the individual radiators.
- Adjust the by-pass valve as necessary to give a temperature rise of 8°C across the boiler flow and return, i.e. measured before the by-pass.

## 3.2 Boiler Controls (Inner Case, Gas Valve Cover and Facia Panel Removed) Refer to Fig. 13.

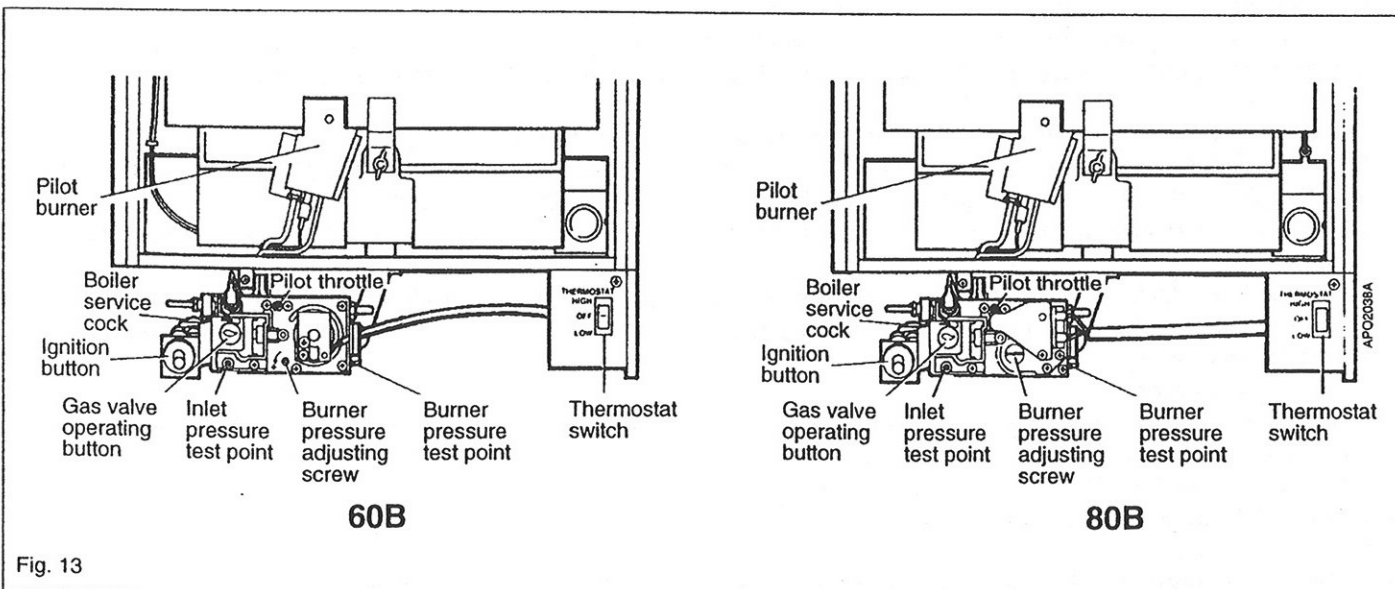
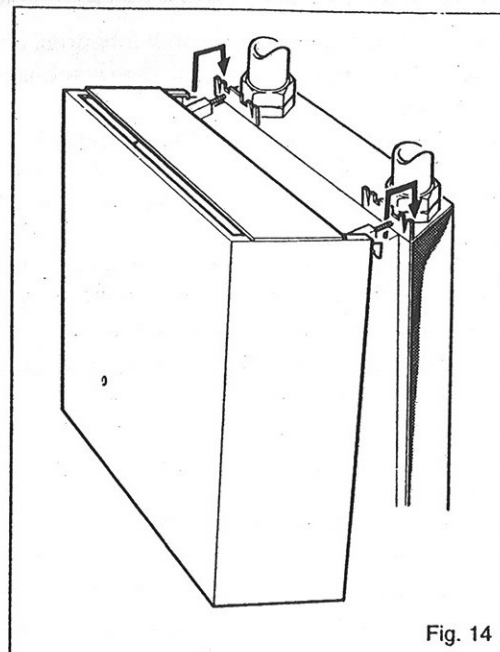


Fig. 13



### 3.3 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, as shown in Fig. 14.
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 the programme and 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.
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.
8. Inform the User that if the electricity supply is cut off for any reason, to check that the pilot is alight when it is restored.



## 4. Annual Servicing

To ensure continued efficient operation of the appliance, it is recommended that it is checked and cleaned as necessary at regular intervals. The frequency of servicing will depend upon the particular installation conditions and usage but in general once per year should be adequate. It is the law that any service work must be carried out by a competent person such as British Gas or other Corgi registered personnel.

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.

If it is necessary to dismantle the boiler the following checks should be made.

1. Remove the combustion chamber front and check if the burner or heat exchanger requires cleaning.
2. Examine the main injector orifice and ensure it is clear and undamaged.
3. Remove any build up of carbon deposits from the thermocouple tip.
4. If a sufficiently large pilot flame cannot be achieved examine the pilot injector orifice to ensure it is clear and undamaged.
5. 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.

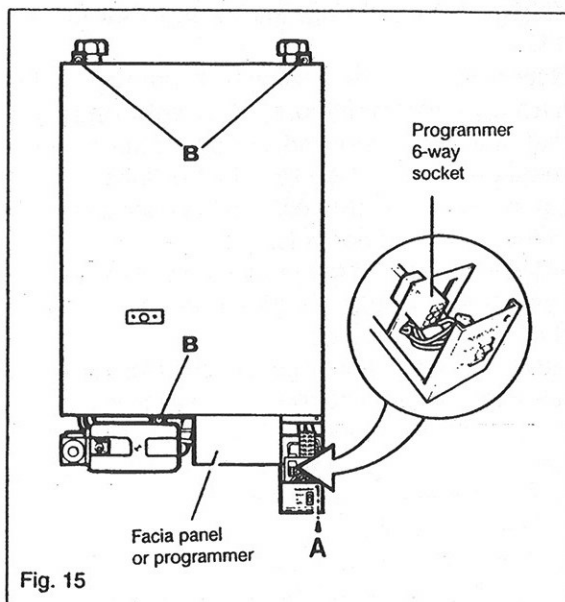
**WARNING:** Before commencing work slide off the bottom cover and slide the gas valve operating button in the direction of the arrow to turn off the boiler. Allow the boiler to cool and isolate the electricity supply. Turn off the gas supply at the gas service cock.

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

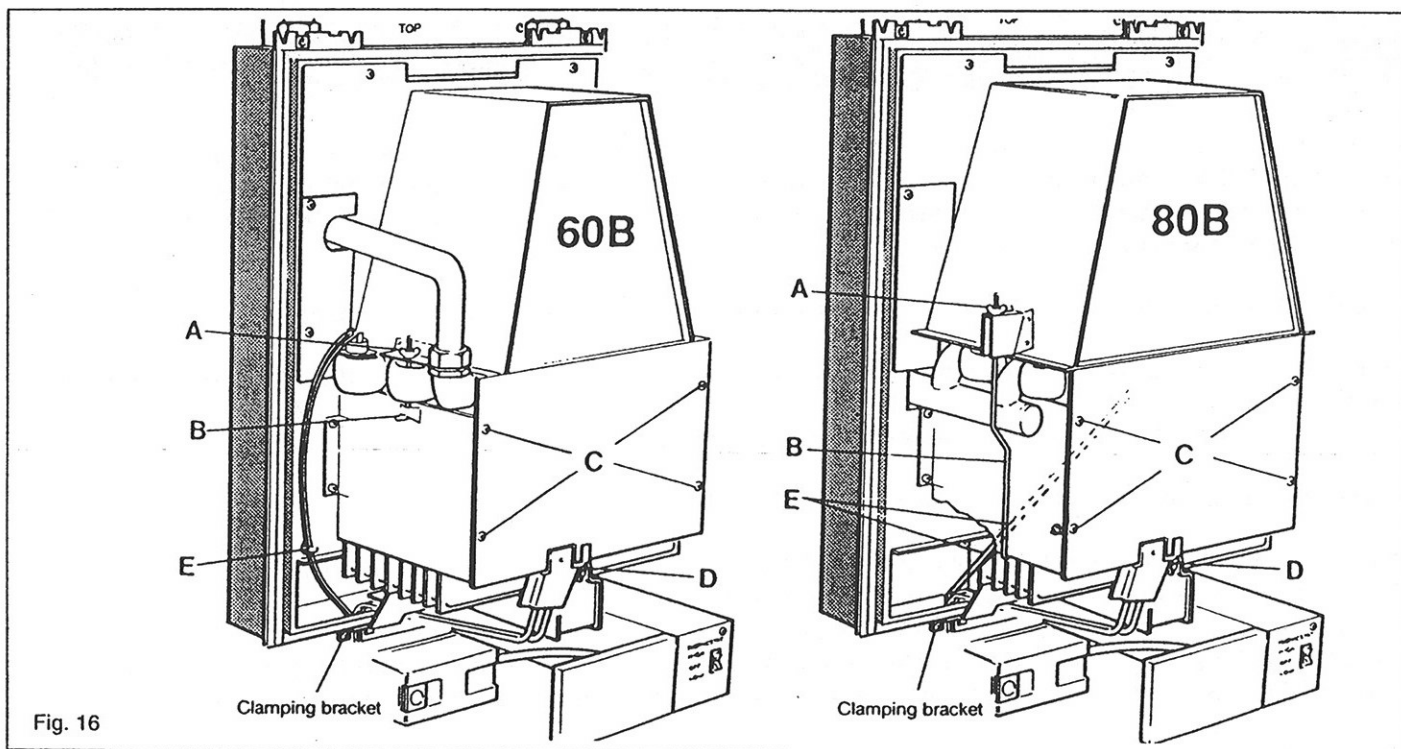
### 4.1 Dismantling - See Figs. 15, 16, 17 and 18.

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, 'B' in Fig. 15, two at the top and one at the bottom and remove the inner case.
3. Remove the one screw, 'A' in Fig. 15, above the boiler thermostat switch, securing the wiring centre and lower the wiring centre.
4. If a programmer is fitted, unplug the programmer plug, See Fig. 15, from the wiring centre and slide out the programmer. If a programmer is not fitted, slide out the facia panel.

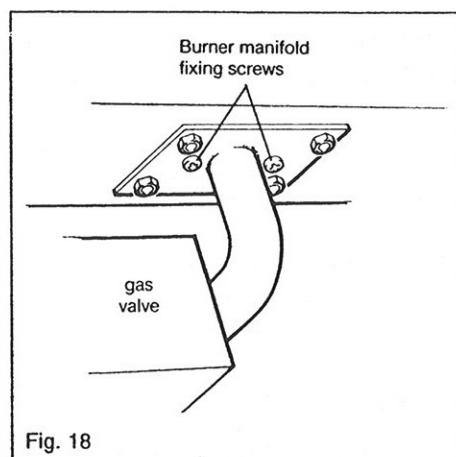
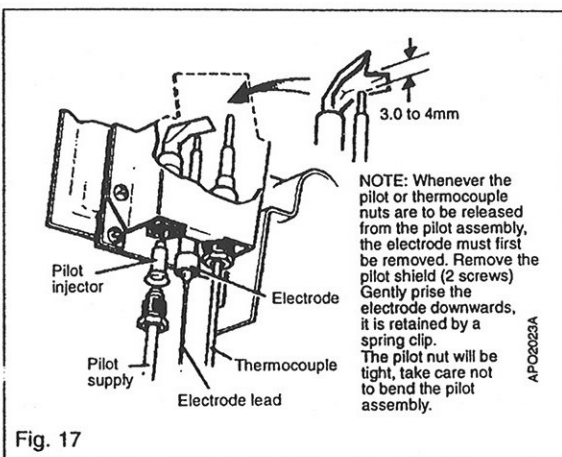
5. Remove the two wing nuts 'A' and tie rods 'B' in Fig. 16, securing the flue hood to the combustion chamber and remove the flue hood by withdrawing it forwards. **Note: 80B Only** - The two tie rods retaining the flue hood are to be located in the holes in the bottom of the combustion chamber sides re-assembling.
6. Remove the four screws 'C' and wing nut 'D' in Fig. 16, securing the combustion chamber front cover and withdraw the cover.
7. Carefully remove the spark electrode from the pilot assembly - see note in Fig. 15.
8. Remove the clamping bracket, See Fig. 16, which retains the pilot supply, electrode lead, thermocouple and the overheat cut-off device leads at the bottom left hand corner of the chassis.
9. Undo the nut and disengage the thermocouple, See Fig. 17, from the pilot assembly.
10. Remove the screw securing the gas valve cover and lift off the cover.
11. Undo the tubing nuts and disconnect the pilot supply, see Fig. 17, from both the pilot assembly and gas valve.
12. Carefully remove and retain the pilot injector, See Fig. 17.
13. From underneath the base of the chassis remove the two pozi screws, See Fig. 18, securing the burner manifold.
14. Carefully move the pilot supply to one side and lift out the burner assembly. Take care not to lose the burner flange 'O' ring.
15. Cover the exposed gas way in the base of the chassis.



#### 4.2 Cleaning the boiler.



1. Brush the heat exchanger from above and below using a suitable brush. Brush back to front **NOT** sideways. Remove any fallen deposits from the boiler base.
2. Turn the burner upside down and tap gently to remove any debris.
3. Clean the pilot burner and spark electrode with a fine wire brush if necessary.
4. 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.
5. Excessive build up of carbon on the thermocouple tip should be removed with a fine wire brush.





### 4.3 Reassemble the boiler.

1. Replace the burner injector using a small amount of jointing compound.
2. Remove the protective covering from the gas way in the base of the chassis.
3. Check that the 'O' ring is in position in the burner flange.
4. Replace the burner assembly and secure with two screws previously removed.
5. Replace the pilot injector and reconnect the pilot supply to the pilot assembly and gas valve.
6. Re-engage the thermocouple and secure with nut.
7. Replace the spark electrode ensuring it is pushed fully home. Check that the spark gap is 3.0 to 4.0 mm, See Fig. 17.
8. Replace the clamping bracket, See Fig. 16. Ensure that the pilot supply, electrode lead, thermocouple and overheat cut-off device leads are behind the clamping bracket.
9. Replace the combustion chamber front ensuring that the burner stud locates in the bracket. Secure with four screws and one wing nut.
10. Replace the flue hood, inserting the spigot on the rear of the flue hood into the primary flue, engage the tie rods through the top clamping bracket and secure with two wing nuts.  
**80B Only** - Ensure that the two tie rods retaining the flue hood are located in the holes in the bottom of the combustion chamber sides.
11. 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 one screw.
12. Refer to the Commissioning Instructions, Section 3. Light the pilot and check the flame, test the pilot and main burner supplies for gas soundness, check the main burner setting pressure and reassemble in reverse order.
13. 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 retightening the bottom fixing screw.
14. If a programmer is fitted, set the clock to the correct time (do not rotate the dial anti-clockwise) and the programme and selector switches to their previous settings.
15. Replace the bottom cover.

### 4.4 Lighting Instructions

#### See Section 3.2 for Boiler Controls.

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

1. Fully depress the gas valve operating button and keep it pressed. 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 remains alight, 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:

3. Switch on the electricity supply, set the programme switch to 'CONT', if a programmer is fitted and check that all system controls are calling for heat.
4. Set the boiler thermostat switch to 'HIGH' 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 anti-clockwise) and that the programme and selector switches are set to their previous settings.

## 5. Replacement of Parts

### 5.1 REPLACEMENT OF PARTS

**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.

#### 5.1 To Replace the Spark Electrode - See Fig. 17.

1. Remove the outer and inner cases as described in Section 4.1, Paras 1 and 2.
2. Disconnect the electrode lead, See Fig. 17, from the spark electrode.
3. Carefully remove the electrode from the pilot assembly - see note in Fig. 17.
4. Insert a new spark 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 as shown in Fig. 17.
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, ensure that the inner case seal is intact around the boiler chassis, then replace the outer case.
9. Refer to the lighting instructions, Section 4.4. Light the boiler and replace the bottom cover.

### 5.2 To Replace the Pilot Injector - See Fig. 17.

1. Remove the outer and inner cases as described in Section 4.1, Paras 1 and 2.
2. Remove the screw securing the gas valve cover and lift off the cover.
3. Carefully remove the spark electrode from the pilot assembly - See note in Fig. 17.
4. Remove the clamping bracket, See Fig. 16, which retains the pilot supply, electrode lead, thermocouple and the overheat cut-off device leads at the bottom left hand corner of the chassis.
5. Undo the tubing nuts and disconnect the pilot supply, See Fig. 17, from both the pilot assembly and gas valve.
6. Remove the pilot injector from the pilot assembly, See Fig. 17.
7. Fit a new injector, reconnect the pilot supply and replace the spark electrode.
8. Replace the clamping bracket, See Fig. 16. Ensure that the pilot supply, electrode lead, thermocouple and overheat cut-off device leads are behind the clamping bracket.
9. Refer to the Commissioning Instructions, Section 3. Light the pilot and check the flame, test the pilot supply for gas soundness and reassemble in reverse order.
10. Replace the outer case.
11. Refer to the Lighting Instructions, Section 4.4. Light the boiler and replace the bottom cover.

### 5.3 To Replace the Pilot Burner - See Fig. 17.

1. Remove the outer and inner cases as described in Section 4.1, Paras 1 and 2.
2. Remove the screw securing the gas valve cover and lift off the cover.
3. Carefully remove the spark electrode from the pilot assembly - See note in Fig. 17.
4. Remove the clamping bracket, See Fig. 16, which retains the pilot supply, electrode lead, thermocouple and the overheat cut-off device leads at the bottom left hand corner of the chassis.
5. Undo the nut and disengage the thermocouple, See Fig. 17, from the pilot assembly.
6. Undo the tubing nuts and disconnect the pilot supply, See Fig. 17, from both the pilot assembly and gas valve.
7. Remove the pilot injector from the pilot assembly, See Fig. 17.
8. Remove the two screws securing the pilot shield and lift off the pilot shield.
9. Remove the remaining screw securing the pilot burner and remove the pilot burner.
10. Fit a new pilot burner and secure with two screws. Replace the pilot injector, pilot supply, thermocouple and spark electrode. Check that the spark gap is 3.0 to 4.0 mm as shown in Fig. 17.
11. Remove the uppermost screw securing the pilot burner and replace the pilot shield securing it with two screws.
12. Replace the clamping bracket, See Fig. 16. Ensure that the pilot supply, electrode lead, thermocouple and overheat cut-off device leads are behind the clamping bracket.
13. Refer to the Commissioning Instructions, Section 3. Light the pilot and check the flame, test the pilot supply for gas soundness and reassemble in reverse order.
14. Replace the outer case.
15. Refer to the Lighting Instructions, Section 4.4. Light the boiler and replace the bottom cover.

### 5.4 To Replace the Thermocouple.

1. Remove the outer and inner cases as described in Section 4.1, Paras 1 and 2.
2. Remove the screw securing the gas valve cover and lift off the cover.
3. Remove the clamping bracket, See Fig. 16, which retains the pilot supply, electrode lead, thermocouple and the overheat cut-off device leads at the bottom left hand corner of the chassis.
4. Carefully remove the spark electrode from the pilot assembly - See note in Fig. 17.
5. Disconnect the thermocouple, See Fig. 17, 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 in the gas valve before the thermocouple is secured to the gas valve, See Fig. 19.
8. Replace the spark electrode ensuring it is pushed fully home.
9. Replace the clamping bracket, See Fig. 16. Ensure that the pilot supply, electrode lead, thermocouple and overheat cut-off device leads are behind the clamping bracket.
10. Replace the gas valve cover and inner case as described in the Commissioning Instructions, Section 3.
11. Replace the outer case.
12. Refer to the Lighting Instructions, Section 4.4. Light the boiler and replace the bottom cover.

### 5.5 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 facia panel as described in Section 4.1, Paras 1 to 4.
2. Slacken the two wing nuts, 'A' in Fig. 16, securing the flue hood and remove the burner as described in Section 4.1, Paras 6 to 15.
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 Section 4.3, Paras 2 to 9.
5. Fully tighten the wing nuts securing the flue hood.
6. 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 one screw.
7. Refer to the Commissioning Instructions, Section 3. Light the pilot and check the flame, test the pilot and main burner supplies for gas soundness and reassemble in reverse order.
8. Replace the outer case and bottom cover.

### 5.6 To replace the overheat cut-off device - see Fig. 19.

The overheat cut-off device is mounted on the left hand side of the heat exchanger on the 60B and on the flow pipe on the 80 B and it is marked with orange paint.

1. Remove the outer and inner cases as described in Section 4.1, Paras 1 and 2.
2. Remove the screw securing the gas valve cover and lift off the cover.
3. Remove the clamping bracket, see Fig. 16, which retains the pilot supply, electrode lead, thermocouple and the overheat cut-off device leads at the bottom of the chassis.
4. 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 Fig. 19.
5. **60 B only** - Remove the clip, 'E' in Fig. 16, securing the cut-off device leads to the chassis.
6. **60 B only** - unscrew the fixing screws and remove the overheat cut-off device from the mounting plate on the heat exchanger.

- 80 B only** - Remove the screw securing the thermostat cover, see Fig. 20 and remove the cover. Unscrew the fixing screws and remove the overheat cut-off device from the mounting plate on the flow pipe.
7. Ensure that the mounting plate is clean and fit the new cut-off device. **60B Only**, ensure that the leads are secured to the chassis with the cable clip. **80B Only**, ensure that the leads are routed behind the chassis heat shield. Re-assemble in reverse order.

Ensure that the pilot supply, electrode lead, thermocouple and overheat cut-off device leads are behind the clamping bracket, see Fig. 16, at the bottom of the chassis. Ensure that the inner case seal is intact around the boiler chassis before replacing the inner case and ensure that the cable clamp is located correctly in the gas valve cover.

8. Refer to the Lighting Instructions, Section 4.4. Light the boiler and replace the bottom cover.

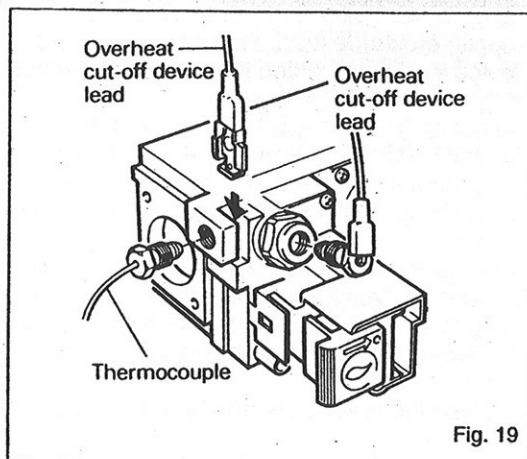


Fig. 19

### 5.7 To replace the 'Hi' or 'Lo' thermostats - see Fig. 20.

The 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. On the 80B, the overheat cut-off device is mounted on the same pipe but marked with orange paint.

1. Remove the outer and inner cases as described in Section 4.1, Paras 1 and 2.
2. Remove the screw securing the thermostat cover, see Fig. 20, and remove the cover.
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 a brown and yellow wire goes to the 'Hi' thermostat and a white and yellow wire to the 'Lo' thermostat.
7. Replace the thermostat cover.
8. Ensure that the inner case seal is intact around the boiler chassis and replace the inner case then the outer case.
9. Refer to the lighting instructions, Section 4.4. Light the boiler and allow it to heat up. Check that the 'Hi' thermostat switches the boiler off and on 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 off and on.
10. Replace the bottom cover.

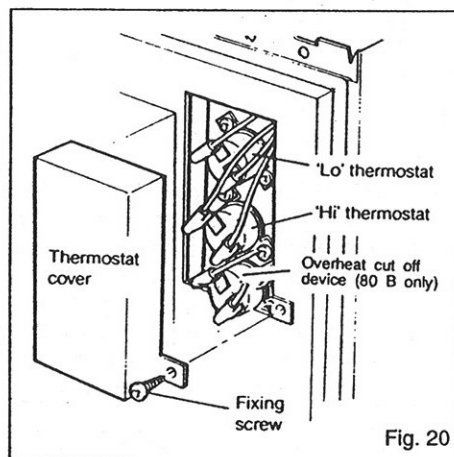


Fig. 20

### 5.8 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, Section 4.4. Light the boiler and replace the bottom cover.

### 5.9 To replace the gas valve - see Fig. 21.

Ensure that the gas supply is off.

1. Remove the outer case, inner case and programmer or fascia panel as described in Section 4.1, Paras 1 to 4.
2. Remove the screw securing the gas valve cover and lift off the cover.
3. Disconnect the push-on terminals (the polarity of these wires is not important) and unscrew the earth terminal from the gas valve.
4. Carefully prise the spark electrode out of the pilot assembly with a flat bladed screwdriver - see note in Fig. 17.
5. Remove the clamping bracket, see Fig. 16, which retains the pilot supply, electrode lead, thermocouple and the overheat cut-off device leads at the bottom of the chassis.
6. Disconnect the pilot supply and thermocouple from both the gas valve and pilot assembly. Take care not to lose the pilot injector, see Fig. 17.
7. Disconnect the overheat cut-off device leads from the gas valve, see Fig. 19.
8. Disconnect the electrode lead from the piezo unit. Unscrew the piezo unit from the retaining nut on its bracket and remove the 3 mm socket screw securing the bracket to the gas valve.
9. Remove the eight 3 mm socket screws securing the gas valve (four to the service cock and four to the burner manifold).
10. Withdraw the gas valve and discard the 'O' rings in the service cock and burner manifold flanges.
11. Using new 'O' rings in the service cock and burner manifold flanges (both 'O' rings are the same size) reassemble the new



valve to the boiler in reverse order. Ensure that the pilot supply, electrode lead, thermocouple and overheat cut-off device leads are behind the clamping bracket, see Fig. 16, at the bottom of the chassis.

Do not replace the gas valve cover at this stage.

12. 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 one screw.
13. Refer to the Commissioning Instructions, Section 3. 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 and reassemble in reverse order.
14. Replace the outer case and bottom cover.

#### 5.10 To replace the burner injector.

1. Remove the outer case, inner case and programmer or fascia panel as described in Section 4.1, Paras 1 to 4.
2. Slacken the two wing nuts, 'A' in Fig. 16, securing the flue hood and remove the burner as described in Section 4.1, Paras 6 to 15.
3. Unscrew the injector from the manifold.
4. Screw in a replacement injector using a small amount of jointing compound.
5. Replace the burner and reassemble as described in Section 4.3, Paras 2 to 9.
6. Fully tighten the wing nuts securing the flue hood.
7. 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 one screw.
8. Refer to the Commissioning Instructions, Section 3. Light the boiler, test the pilot and main burner supplies for gas soundness and reassemble in reverse order.
9. Replace the outer case and bottom cover.

#### 5.11 To replace the 60 B gas valve solenoid - see Fig. 22.

1. Remove the screw securing the gas valve cover and lift off the 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, see Fig. 22.
4. Position the new solenoid into the mounting bracket and reassemble in reverse order. Ensure that the cable clamp is located correctly in the gas valve cover.
5. Refer to the Lighting Instructions, Section 4.4. Light the boiler and replace the bottom cover.

#### 5.12 To replace the 80 B gas valve operator - see Fig. 23.

1. Remove the screw securing the gas valve cover and lift off the 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. Remove the two operator fixing screws, see Fig. 23, lift off the operator and remove the rubber diaphragm (note which way it is fitted).
4. Position the new diaphragm, supplied with the operator, on the valve, fit the new operator, reconnect the wires and replace the gas valve cover. Ensure that the cable clamp is located correctly in the gas valve cover.
5. Refer to the Lighting Instructions, Section 4.4. Light the boiler and replace the bottom cover.

#### 5.13 To replace the pump overrun thermostat - see Fig. 24.

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

1. Remove the outer case, inner case and programmer or fascia panel as described in Section 4.1, Paras 1 to 4.
2. Remove the one screw, see Fig. 24, 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 wires 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 wires to the thermostat - red to terminal 1, yellow to terminal 2 and brown to terminal 3 and reassemble in reverse order.
6. Ensure that the inner case seal is intact around the boiler chassis before replacing the inner case.
7. Refer to the Lighting Instructions, Section 4.4. Light the boiler and replace the bottom cover.

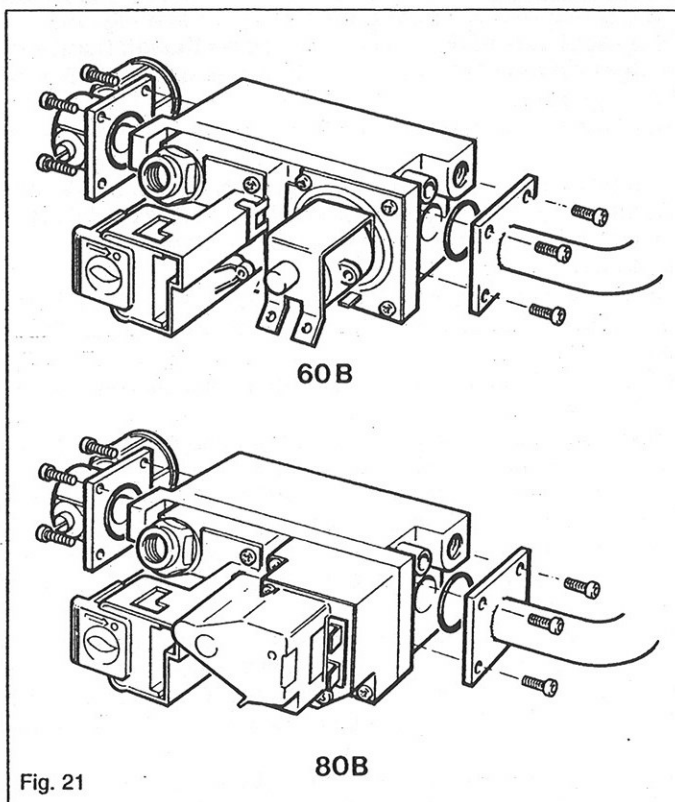


Fig. 21

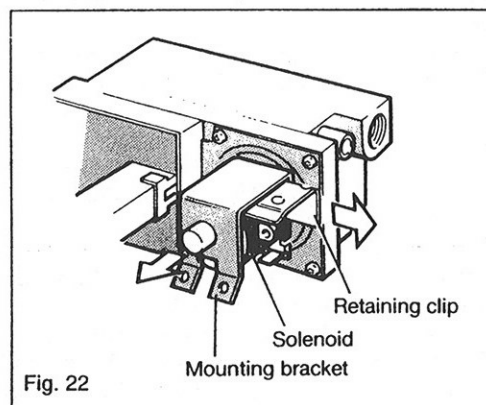


Fig. 22

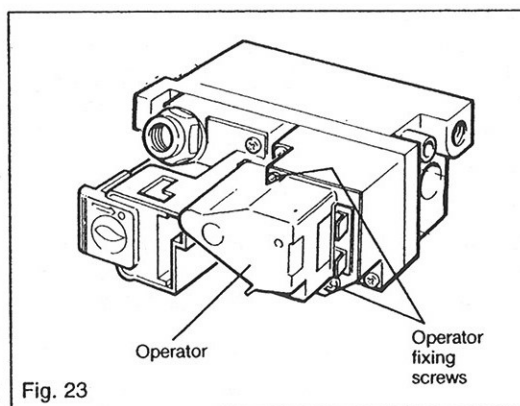
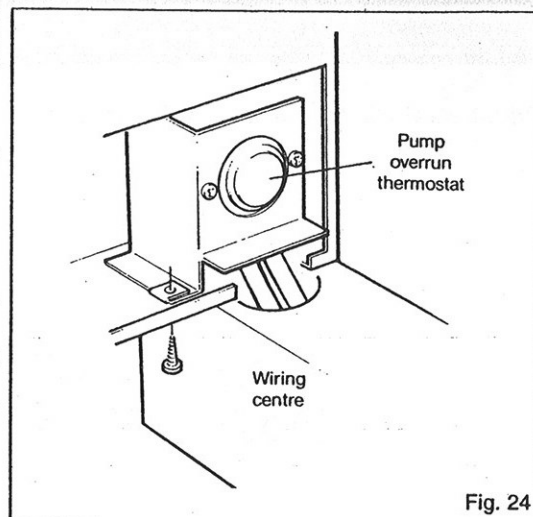


Fig. 23

7. Allow the boiler to heat up fully then switch it off at the programmer or external controls and check that the pump continues to run for a period until the temperature inside the boiler casing has dropped.

#### 5.14 To replace the programmer (if fitted).

1. Remove the screw securing the front of the wiring centre and carefully lower it.
2. Unplug the programmer plug, see Fig. 15, 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, close the wiring centre and secure in position with the fixing screw.
6. Refer to the Lighting Instructions, Section 4.4. Light the boiler and check the controls.
7. Set the programmer clock to the correct time and the switches to their previous settings.
8. Replace the bottom cover.



#### 5.15 To replace the combustion chamber insulation.

1. Remove the outer case, inner case and programmer or fascia panel as described in Section 4.1, Paras 1 to 4.
2. Remove the burner as described in Section 4.1, Paras 6 to 15.
3. Remove the two wing nuts 'A' and tie rods 'B' in Fig. 16, securing the flue hood to the combustion chamber.  
**Note: 80 B only** - The two tie rods retaining the flue hood are to be located in the holes in the bottom of the combustion chamber sides when reassembling.
4. Remove the four screws (two each side) securing the combustion chamber to the chassis. Carefully lower the combustion chamber to clear the heat exchanger and remove.
5. Slide out the front insulation panel and carefully replace with a new one.
6. Slide out the two side panels and remove the rear panel by pulling forwards at the top then lifting out.
7. Fit a new panel, lower edge first and push back into position. Slide in two new side panels.
8. Reassemble in reverse order. Ensure that the pilot supply, electrode lead, thermocouple and overhear device cut-off leads are behind the clamping bracket, see Fig. 16, at the bottom of the chassis.
9. Refer to the Commissioning Instructions, Section 3. Test the pilot and main burner supplies for gas soundness and reassemble in reverse order.
10. Replace the outer case and bottom cover.

#### 5.16 To replace the heat exchanger.

**Ensure that the system is drained.**

**Take care when removing the heat exchanger as even with the system drained there will still be water in the heat exchanger and its connecting pipes.**

1. Remove the outer case, inner case and programmer or fascia panel as described in Section 4.1, Paras 1 to 4.
2. Remove the burner as described in Section 4.1, Paras 6 to 15.
3. Remove the two wing nuts 'A' and tie rods 'B' in Fig. 16, securing the flue hood to the combustion chamber and remove the flue hood.  
**Note: 80 B only** - The two tie rods retaining the flue hood are to be located in the holes in the bottom of the combustion chamber sides when reassembling.
4. Remove the four screws (two each side) securing the combustion chamber. Carefully lower the combustion chamber to clear the heat exchanger and remove.
5. **60 B only** - Remove the overhear cut-off device from the side of the heat exchanger. Undo the fittings securing the inlet and outlet pipes to the heat exchanger and carefully lower the heat exchanger to disengage it from the pipes.
6. **80 B only** - Remove the two cover plates (one each side) adjacent to the heat exchanger inlet and outlet pipes, see Fig. 9. Remove the two screws securing the flue spigot to the flue outlet mounting plate and withdraw the spigot. Remove the remaining two screws, at the top, securing the flue outlet mounting plate, see Fig. 9, and carefully withdraw the plate. Remove the thermostat cover - top right hand corner of the chassis, see Fig. 20 and remove the three thermostats from the pipe. Disconnect the inlet and outlet pipes from the top of the boiler and remove the nuts securing the heat exchanger inlet and outlet pipes to the top of the chassis. Carefully lower and remove the heat exchanger.
8. Reassemble in reverse order using a new heat exchanger. Ensure that the pilot supply, electrode lead, thermocouple and overhear cut-off device leads are behind the clamping bracket, see Fig. 16, at the bottom of the chassis.
9. Fill and vent the system.
10. Refer to the Commissioning Instructions, Section 3. Light the boiler, test the pilot and main burner supplies for gas soundness and reassemble in reverse order.
11. Replace the outer case and bottom cover.



## 6. Wiring Diagrams

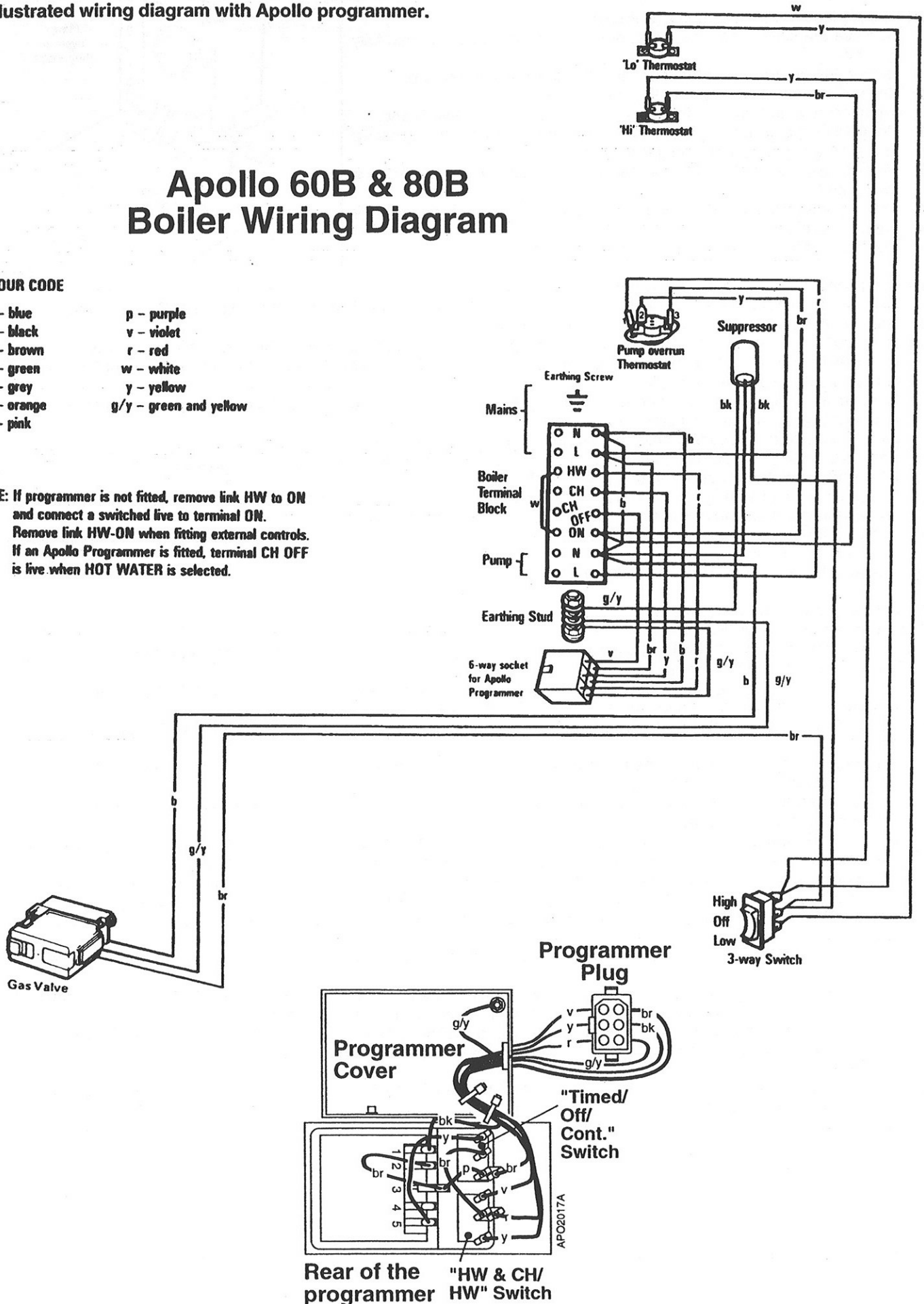
a. Illustrated wiring diagram with Apollo programmer.

### Apollo 60B & 80B Boiler Wiring Diagram

#### COLOUR CODE

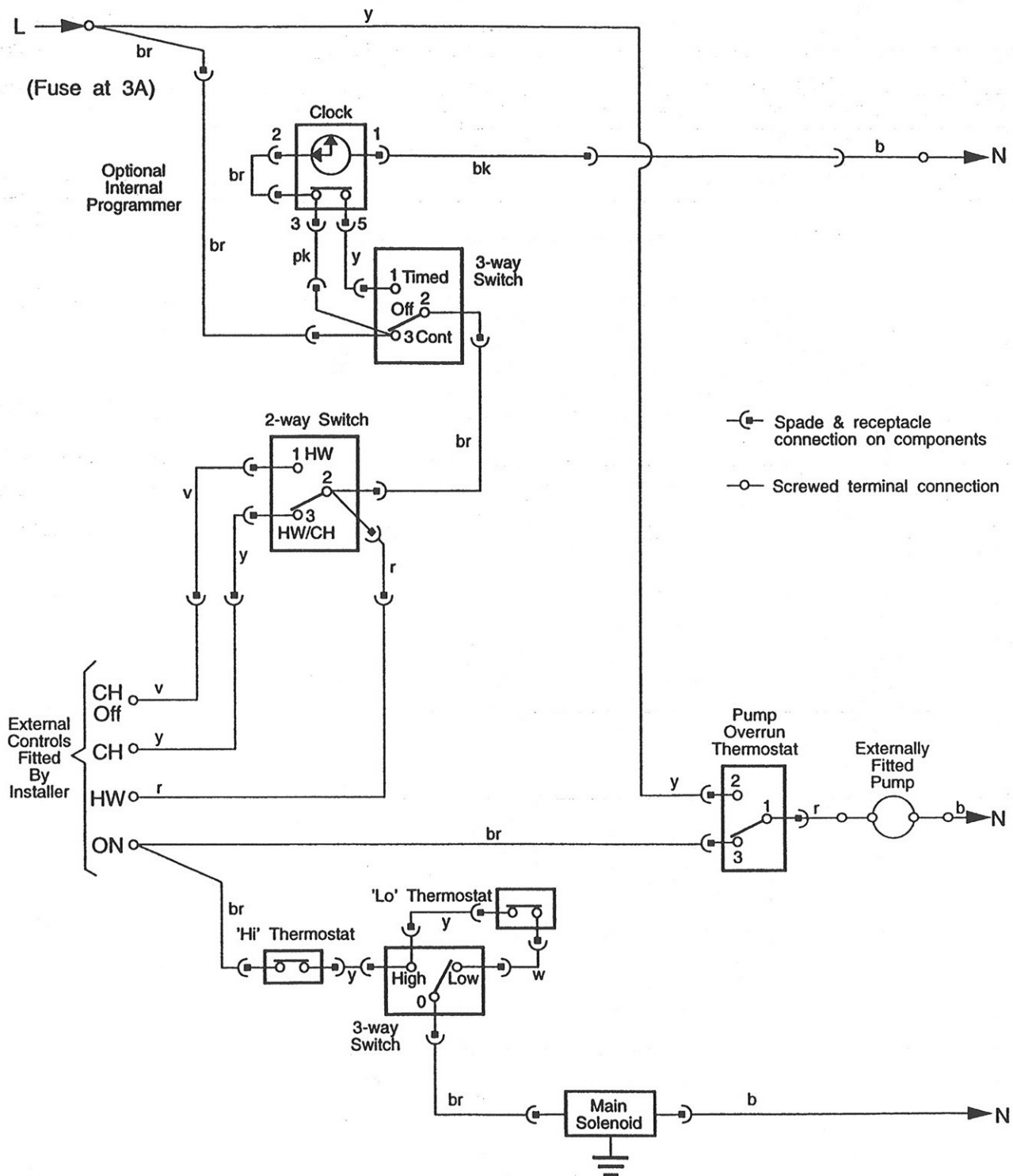
b - blue	p - purple
bk - black	v - violet
br - brown	r - red
g - green	w - white
gy - grey	y - yellow
o - orange	g/y - green and yellow
pk - pink	

**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.



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c. Functional flow wiring diagram with Apollo programmer.

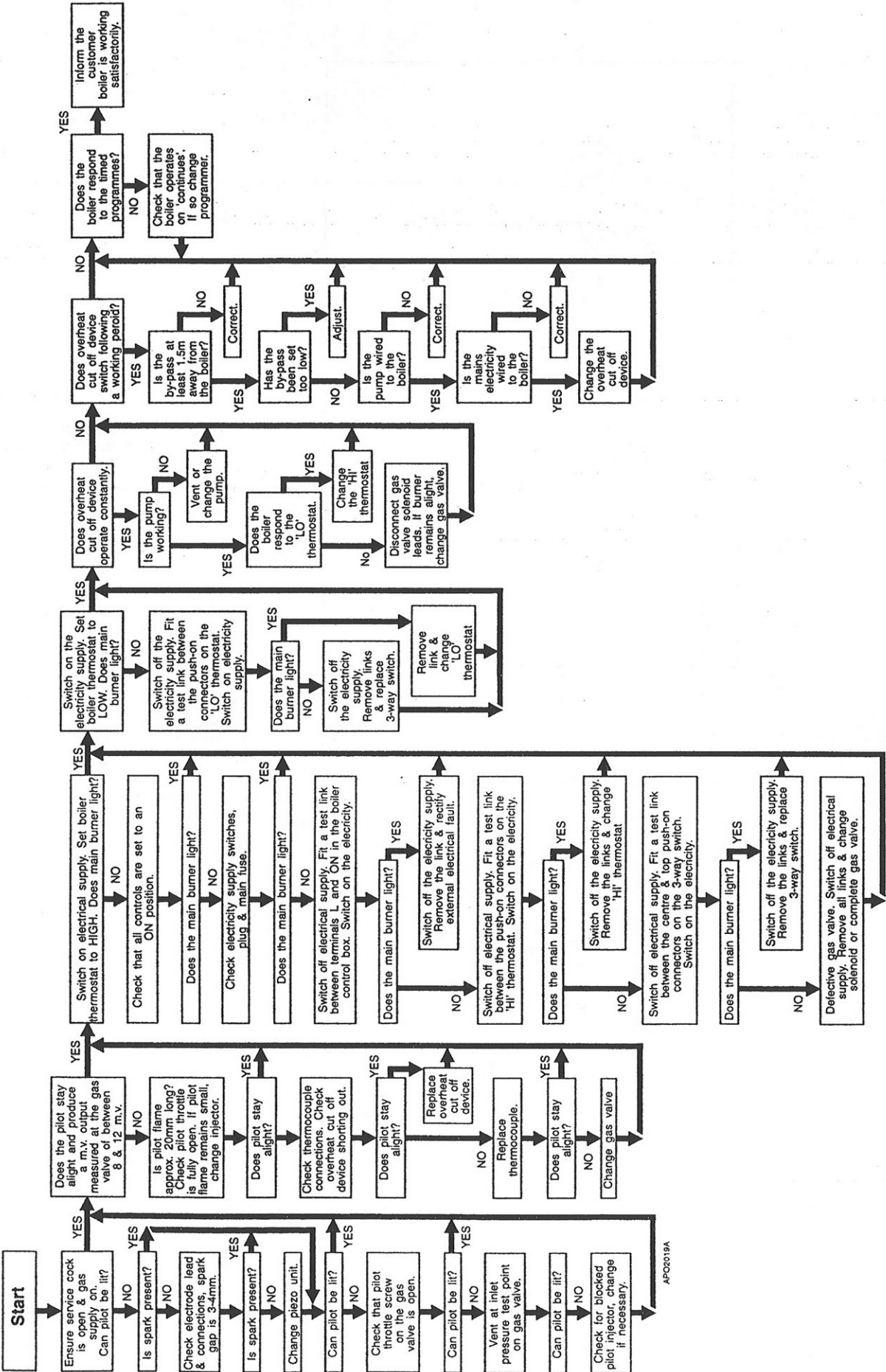


Apollo B & C  
Functional Flow Diagram

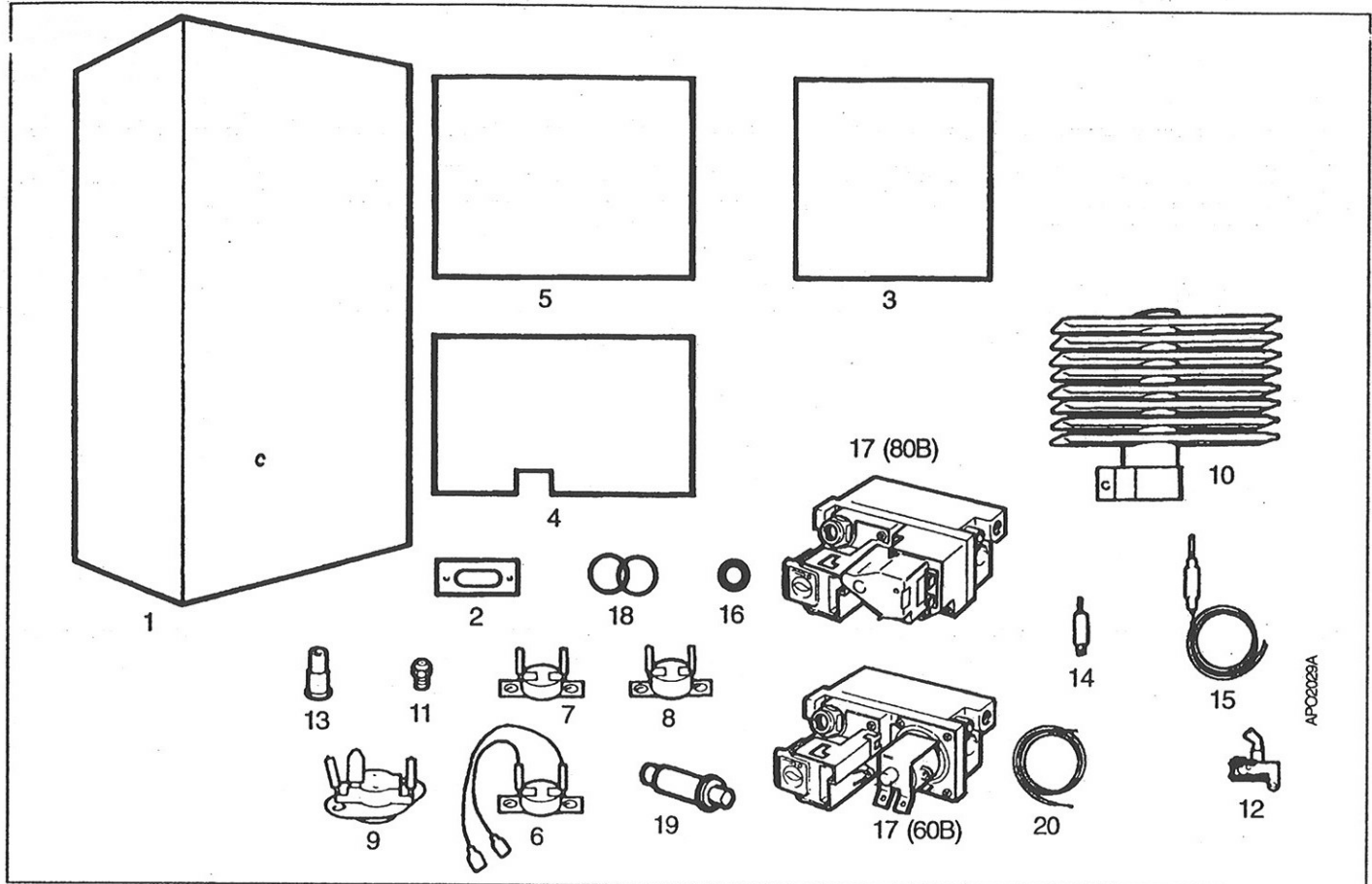
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## 7. Fault Finding

Preliminary electrical system checks i.e. Earth Continuity, Short Circuit, Polarity & Resistance to Earth are the first electrical checks to be carried out during fault finding procedure. On completion of the service/fault finding task which has required the breaking & remaking of electrical connections, then the checks - Earth Continuity, Short Circuit, Polarity & Resistance to Earth - must be repeated.



## 8. Short Spares List



Drg. Ref.	G.C. No.	Description	No. Off.	Makers Part No.
1	323 489	Outer Case	1	402A2393
2	377 000	Inspection Window Assembly	1	402A2476
3	323 342	Combustion Chamber Insulation (Sides) - 60B	2	402C104
	377 367	Combustion Chamber Insulation (Sides) - 80B	2	402C3304
4	377 368	Combustion Chamber Insulation (Front) - 60B	1	402C3232
	377 369	Combustion Chamber Insulation (Front) - 80B	1	402C3305
5	377 370	Combustion Chamber Insulation (Rear) - 60B	1	402C3233
	377 371	Combustion Chamber Insulation (Rear) - 80B	1	402C3306
6	377 380	Overheat Cut-Off Device - 60B	1	402A3310
	377 381	Overheat Cut-Off Device - 80B	1	402A3383
7	382 394	'Hi' Thermostat	1	402S184
8	382 395	'Lo' Thermostat	1	402S185
9	384 208	Pump Overrun Thermostat	1	402S088
10		Burner - 60B	1	402S3627
		Burner - 80B	1	402S3628
11	398 060	Main Injector, CAT 10 Size 1800 - 60B	1	402S3427
	398 064	Main Injector, CAT 10 Size 2200 - 80B	1	402S644
12		Pilot Burner	1	402S3754
13	381 656	Pilot Injector, 38/36A	1	208S485
14		Spark Electrode	1	402S3761
15	386 515	Thermocouple	1	309S189
16	323 361	Burner 'O' Ring	1	402S098
17	386 691	Gas Valve - 60B	1	402S1063
	385 894	Gas Valve - 80B	1	402S2727
18	359 211	Gas Valve 'O' Ring	2	400-0016-7-32
19		Piezo Unit	1	402S3578
20	206 518	Spark Electrode Lead	1	212S519

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**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 Operations  
Brooks House,  
Coventry Road,  
Warwick.  
CV34 4LL

Tel: 01926 496896

Fax: 01926 410006

**Spares Enquiries:**

Parts Division  
Queensway,  
Royal Leamington Spa,  
Warwickshire.  
CV31 3RG.

Tel: 01926 880600

Fax: 01926 880680

**Technical Enquiries:**

Technical Helpline  
Brooks House,  
Coventry Road,  
Warwick.  
CV34 4LL.

Tel: 01926 409135  
(Oil Installer Helpline)

Tel: 01926 410044  
(General)

Fax: 01926 410006

**Training Administration:**

Unit 5, Titan Business Centre,  
Spartan Close,  
Tachbrook Park,  
Royal Leamington Spa,  
Warwickshire. CV34 6RS.

Tel: 01926 430481

Fax: 01926 882971

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