



Kingfisher open flue gas fired boilers

INSTALLATION & SERVICE GUIDE

Potterton Kingfisher CF80
20.5 to 23.4 kW (70,000 to 80,000 Btu/h) Output

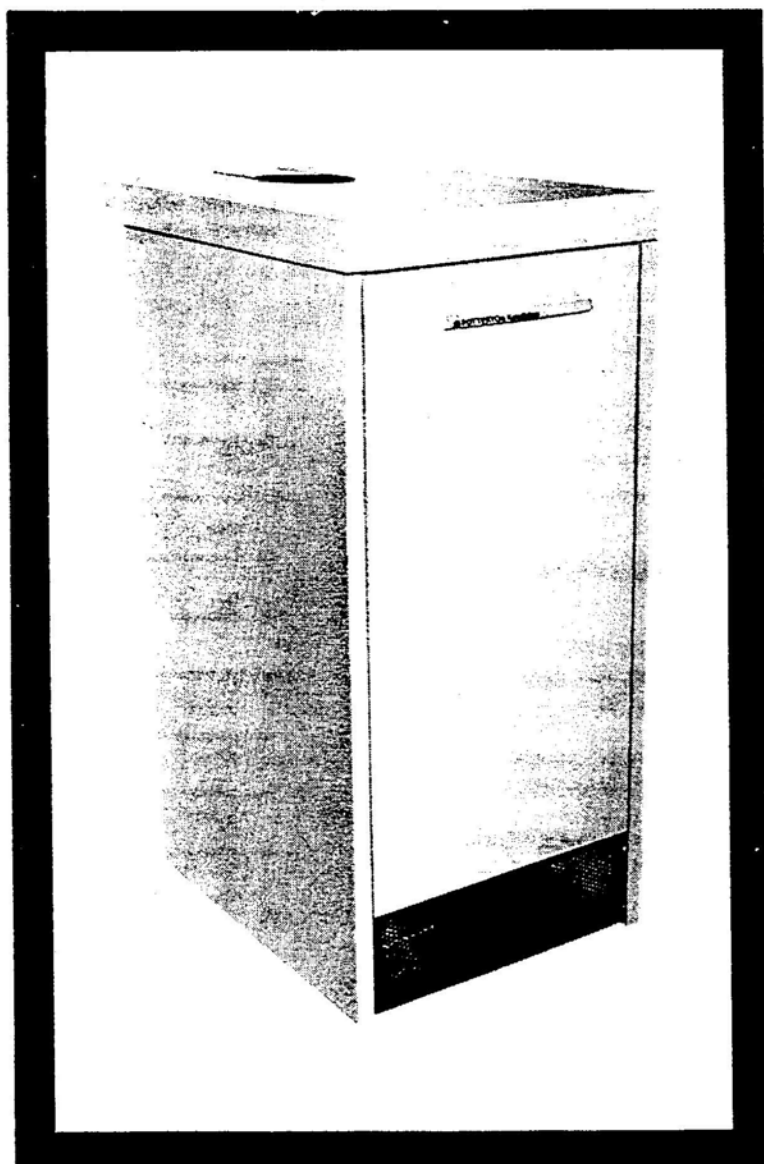
Potterton Kingfisher CF100
23.4 to 29.3 kW (80,000 to 100,000 Btu/h) Output

IMPORTANT

This appliance is for use with Natural Gas only. It must be installed by a competent person as stated in the Gas Safety (Installation and Use) Regulations 1984.

Leave these instructions adjacent to the gas meter.

- * Highly efficient, designed especially for natural gas operation.
- * Pipework can be run behind the boiler within its casing, from one side to the other, to suit particular site requirements.
- * No by-pass pipework required in the system.
- * A circulating pump can be mounted within the standard case (optional extra in kit form).



DATA SECTION

GENERAL

These Potterton open flued appliances are automatically controlled and have been designed for combined systems, e.g. small bore or microbore central heating with an indirect domestic hot water supply which can either have pumped or gravity circulation. The boilers can also be used on pumped central heating or domestic hot water only systems.

DESCRIPTION — See Figs. 2 and 3

Potterton Kingfisher boilers can be installed either in a kitchen or utility room or inside a suitably ventilated, purpose designed or modified compartment. The boilers are enclosed in white, stove enamelled, sheet steel casings, which conform in height with other kitchen furniture. A pump kit is available as an optional extra and can be supplied by the local distributor and fitted inside the boiler casing.

GENERAL DATA TABLE 1

	CF80	CF100
Input	27.4 to 30.8 kW 93,300 to 105,000 Btu/h	31.2 to 38.6 kW 106,600 to 131,600 Btu/h
Output into Water	20.5 to 23.4 kW 70,000 to 80,000 Btu/h	23.4 to 29.3 kW 80,000 to 100,000 Btu/h
Output into Air (Approx)	0.8 to 1.0 kW 2,900 to 3,300 Btu/h	1.0 to 1.3 kW 3,500 to 4,300 Btu/h
Weight, Empty	98.6 kg 217 lbs	124.4 kg 274 lbs
Water Content	9.3 litres 16.4 pints	11.5 litres 20.2 pints
Burner Pressure	12.4 to 15.5 mbar 5.0 to 6.2 in.wg.	9.4 to 14.2 mbar 3.8 to 5.7 in.wg.
Injector Size	3.1 mm	2.9 mm
Gas Rate: (1035 Btu/cu.ft.)	2.56 to 2.87 cu.m/h 90.1 to 101.4 cu.ft/h	2.92 to 3.60 cu.m/h 102.9 to 127.1 cu.ft/h
British Gas Code No.	41.601.39	41.601.42
Potterton Code Letters	GSC	GTT

MAXIMUM WORKING HEAD	: 2.7 bar (90 ft. wg.)
GAS CONNECTION	: TO ½ IN. BSP LOOSE KEY UNION COCK, Rc½
ELECTRICAL CONNECTION	: TO 3-WAY TERMINAL BLOCK IN CONTROL BOX.
COMBINATION GAS CONTROL	: ½ IN. BSP HONEYWELL V4600C 1029
THERMOSTAT	: RANCO C26
PILOT BURNER	: HONEYWELL Q359A
MAIN BURNER	: CF80 — FURIGAS (2 OFF) CF100 — FURIGAS (3 OFF)

THE SYSTEM — See Figs. 6 to 10

The boilers can be installed in most types of system but the following notes are given as a general guide. The general recommendations given in BS.5376 Part 2 and BS.5449 Part 1 should be observed.

1. All systems should be designed so that the static head at the boiler is between a minimum of 90 mbar (3 ft.wg.) and a maximum of 2.7 bar (90 ft.wg.).
2. If the head is at or near the 90 mbar (3 ft.wg.) minimum, extra care should be taken when designing the system to ensure that pumping over or sucking down at the vent pipe cannot occur.
3. All gravity systems should have a minimum effective head of 1.2 m (4 ft.) between the centre line of the boiler heat exchanger and the centre line of the domestic hot water cylinder.
4. Most types of system controls, such as two-way valves, three-way valves, diverter valves, twin pumps, zone valves and room, cylinder and frost thermostats can be used in conjunction with these boilers.
5. An indirect domestic hot water cylinder should be used, incorporating a coil type of heat exchanger. In a fully pumped system, the primary pipework should include a lockshield valve.
6. The circulating pump should be selected with reference to Fig. 1 The resistance through the boiler heat exchanger will not exceed 10.5 mbar (4.2 in.wg.) at a flow rate of 6.6 gall/min. on the CF80 or 19.0 mbar (7.6 in.wg.) at a flow rate of 8.3 gall/min. on the CF100 model.
7. The resistance through any other type of system control such as three-way valves, should also be taken into account when selecting a pump; refer to their manufacturers literature.

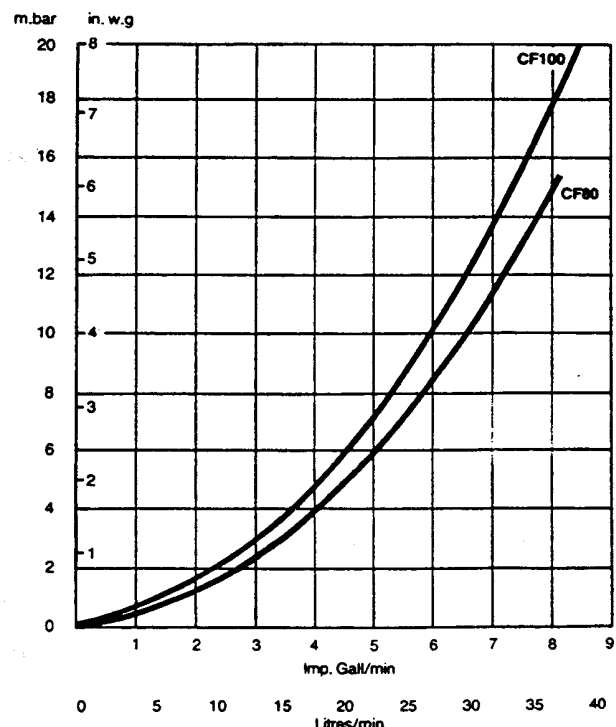


FIG. 1 PRESSURE LOSS ACROSS BOILER

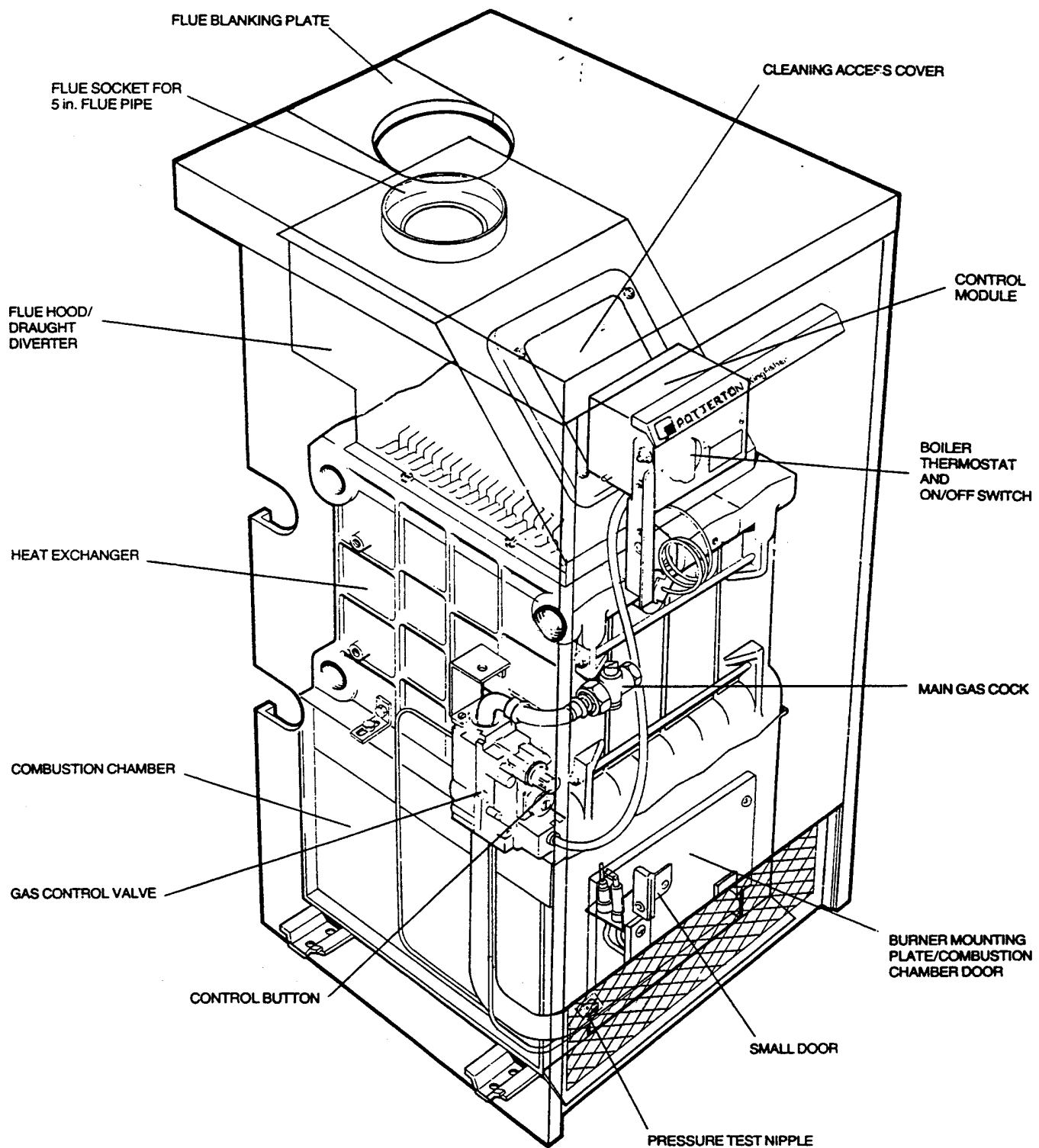


FIG. 2A GENERAL ARRANGEMENT CF80

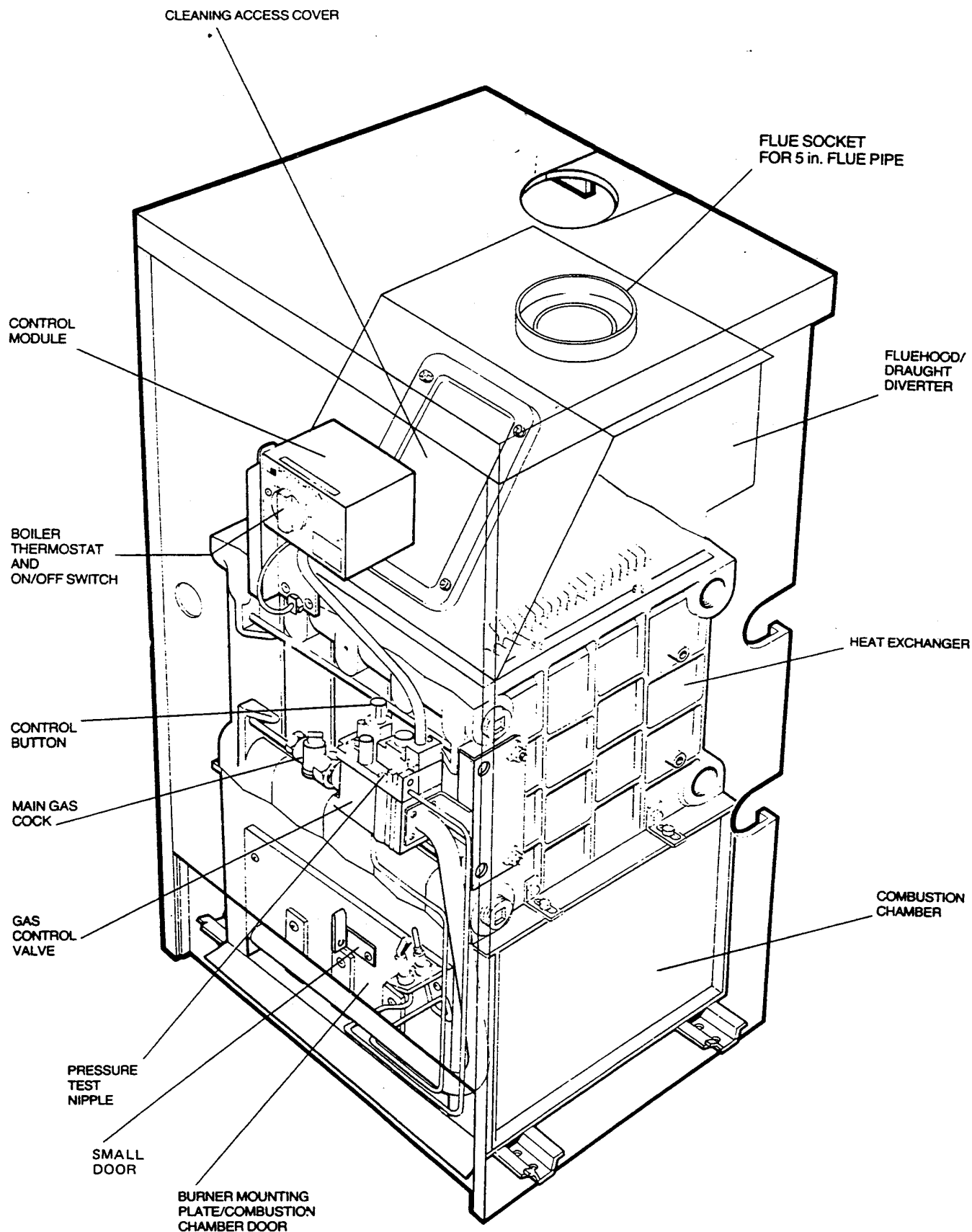


FIG. 2B GENERAL ARRANGEMENT CF100

8. If the optional circulating pump kit is not used then the circulating pump may be fitted on either the flow or return side of the boiler. If fitted on the flow and the open vent pipe is located between the boiler and the pump, the risk of air being drawn into the system is reduced. If fitted on the return, the cold feed pipe should be connected between the pump and the boiler, but extra care should be taken to ensure that air will not be drawn into the system. Ideally the static head on the inlet side of the pump should be at least a third of the maximum pump duty.
9. A drain cock(s) should be fitted at the lowest point(s) in the system, so that the whole system can be drained.
10. It is recommended that all pipework to the boiler should include union fittings at suitable points to facilitate connection of the gas and water supplies.

BOILER BASE

A level floor, which conforms to the Local Authority and Building Regulations, should be provided. Normally, no insulation beneath the boiler is required as the floor temperature beneath conforms to the requirements of BS.5258. However, some composition floors which tend to soften or deform at low temperatures, may need insulating.

CLEARANCES AROUND THE BOILER

The position selected for the boiler must give the following minimum clearances for installation and maintenance:

610 mm (2 ft.) at the front

25 mm (1 in.) at each side

The correct minimum clearance at the back of the boiler is automatically obtained once the boiler is pushed up against the wall.

Both flow and return connections can be made from either side, there is room inside the casing to install a circulating pump.

COMBUSTION AIR AND VENTILATION

A. Ventilation of compartments containing gas boilers.

There should be two permanent air vents, one at low level and one at high level, both communicating either directly with outside air or with a room or space which is suitably ventilated. Each opening whether left free or furnished with a grille, must have a minimum effective area in accordance with Table 2.

**TABLE 2 —
COMBUSTION AIR AND VENTILATION REQUIREMENTS
OF COMPARTMENTS**

BOILER TYPE	LEVEL OF AIR VENT	AREA FOR AIR FROM ROOM	AREA FOR AIR FROM OUTSIDE
C.F.80	High	43 in. ² 277 cm ²	22 in. ² 142 cm ²
	Low	86 in. ² 555 cm ²	43 in. ² 277 cm ²
C.F.100	High	52 in. ² 335 cm ²	26 in. ² 168 cm ²
	Low	104 in. ² 670 cm ²	52 in. ² 335 cm ²

Any internal surface of the cupboard that is made of a combustible material and is nearer to the boiler than 75 mm (3 in.) should be insulated as described in British Gas publication "Material and Installation Specifications for Domestic Central Heating and Hot Water".

B. Ventilation of rooms containing gas boilers.

The ventilation of the room containing the boiler shall include air for combustion and draught diverter dilution. This applies also when the boiler is sited in a compartment, unless the air vents are both direct to outside.

A permanent air vent shall be provided in an outside wall of the building at either high or low level.

This opening may be:

- (a) Directly into the room or space containing the boiler, or
- (b) Via a duct through a wall or the roof into the room, (where such a method is considered, British Gas should be consulted), or
- (c) Into an adjacent room or space which has an internal permanent air vent of the same size to the room containing the boiler. It is undesirable to ventilate via a kitchen, bathroom or toilet.

The air vent should be sited as far as possible from any extract fan to avoid short circuiting. To avoid the possibility of freezing water pipes, the vent should not be sited near the pipes.

The minimum effective area of the permanent air vent must be as follows:—

C.F.80 — 106 cm² (16½ in.²)

C.F.100 — 139 cm² (21½ in.²)

If the room (e.g. a kitchen) from which air is drawn, has an extract fan fitted, then the opening size of the permanent air vent should take this into account to ensure that the operation of the boiler flue is not adversely affected when the extract fan is running with all doors and windows closed.

C. Grilles and Ducts.

Any grille and/or duct should be so sited and of a type not to become easily blocked or flooded and should offer low resistance to air flow.

FLUE

An efficient flue system must be provided to evacuate the products of combustion from the boiler. Reference should be made to The Building Regulations and British Standard 5440 Part 1. The following notes have been compiled for your guidance:—

- (a) Ideally a flue should rise vertically to a termination point which is unaffected by downdraught or wind eddies and is not in a pressure zone. Therefore, for practical purposes, the flue should have the shortest possible run to external atmosphere, with as near vertical rise as possible; 90° bends should be avoided. The terminal must be at least above roof edge level.
- (b) There should be at least 3 ft. (900 mm) of vertical flue from the boiler flue socket.

NOTE: Some Gas Regions insist on a split socket in this length.

- (c) Horizontal runs should be avoided. If a near horizontal flue run is unavoidable, the total vertical height necessary should be calculated in accordance with section 12.7.2 of BS.5440 Part 1.

- (d) Wherever possible internal stacks, lined if necessary, should be used.
- (e) All brick chimneys without an integral lining must be lined with either asbestos cement flue pipe to BS.567 or stainless steel flexible lining.
- (f) Where condensation is likely, a means of draining must be provided.
- (g) If an existing flue is being used, ensure that it has been thoroughly swept before lining or connecting the boiler.

ELECTRICITY SUPPLY

A 240 volts A.C., 50 Hz., single phase electricity supply fused to 3 amperes, must be provided in accordance with the latest edition of the Institute of Electrical Engineers Regulations for the Electrical Equipment of Buildings, Local Authorities and British Gas requirements. The current rating of the wiring to the boiler must exceed 3 amperes in accordance with BS.6500, and have a cross sectional area of at least 0.75 sq. mm. The supply to the boiler and its associated equipment should be controlled by an unswitched plug and socket or a double pole switch, so that complete isolation from the supply can be achieved to enable maintenance work to be carried out in safety.

GAS SUPPLY

The gas meter and installation pipe should be checked to ensure that they are large enough for the boiler and any other appliance already installed; the local Gas Regional Office will assist in this matter. The latest recommendations of CP.331, Parts 2 and 3, should be observed.

SAFETY VALVE

If the local authorities regulations stipulate that a safety valve should be fitted, this should be installed in the flow pipework as close to the boiler as possible.

MAINTENANCE

The efficient performance of this boiler is dependent upon regular servicing which should be carried out annually. Maintenance is best arranged by a contract placed with Potterton International Limited, and further details are available from the local Potterton Regional Service Office.

Maintenance is a simple matter, as once the casing front panel has been removed, all parts that are likely to require servicing are easily accessible.

SETTING UP

Each boiler has to be adjusted once it is installed and this is a skilled job which should only be undertaken by suitably qualified engineers. Potterton International offer this service on a chargeable basis.

ADDITIONAL CONTROLS

Potterton Electronic Programmers are available as optional extras. These electronic programmers have been developed to compliment your boiler and offer the user a variety of programmes to suit individual requirements and systems. They are attractively styled with a constant digital clock display, slider and push buttons which are easy to use and understand. This control is fully described in its own Data Sheet which is available on request.

LITERATURE

The following literature is supplied with each boiler:

Installation and Service Guide
User's Guide Card

NOTE: Illustrated parts catalogues for these boilers are available to installers and servicing agents on request to Potterton International Limited, Brooks House, Coventry Road, Warwick CV34 4LL.

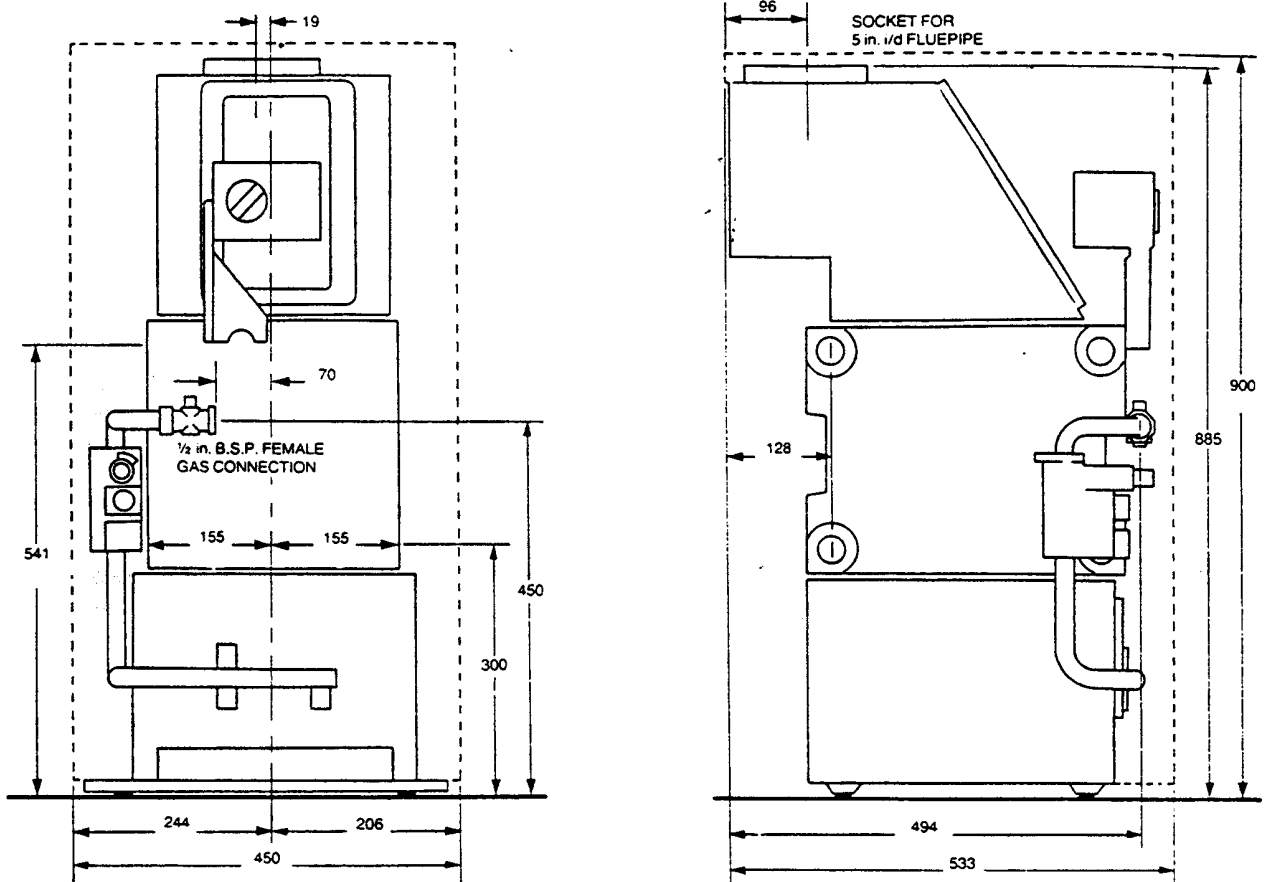


FIG. 3A CONNECTIONS AND DIMENSIONS CF80

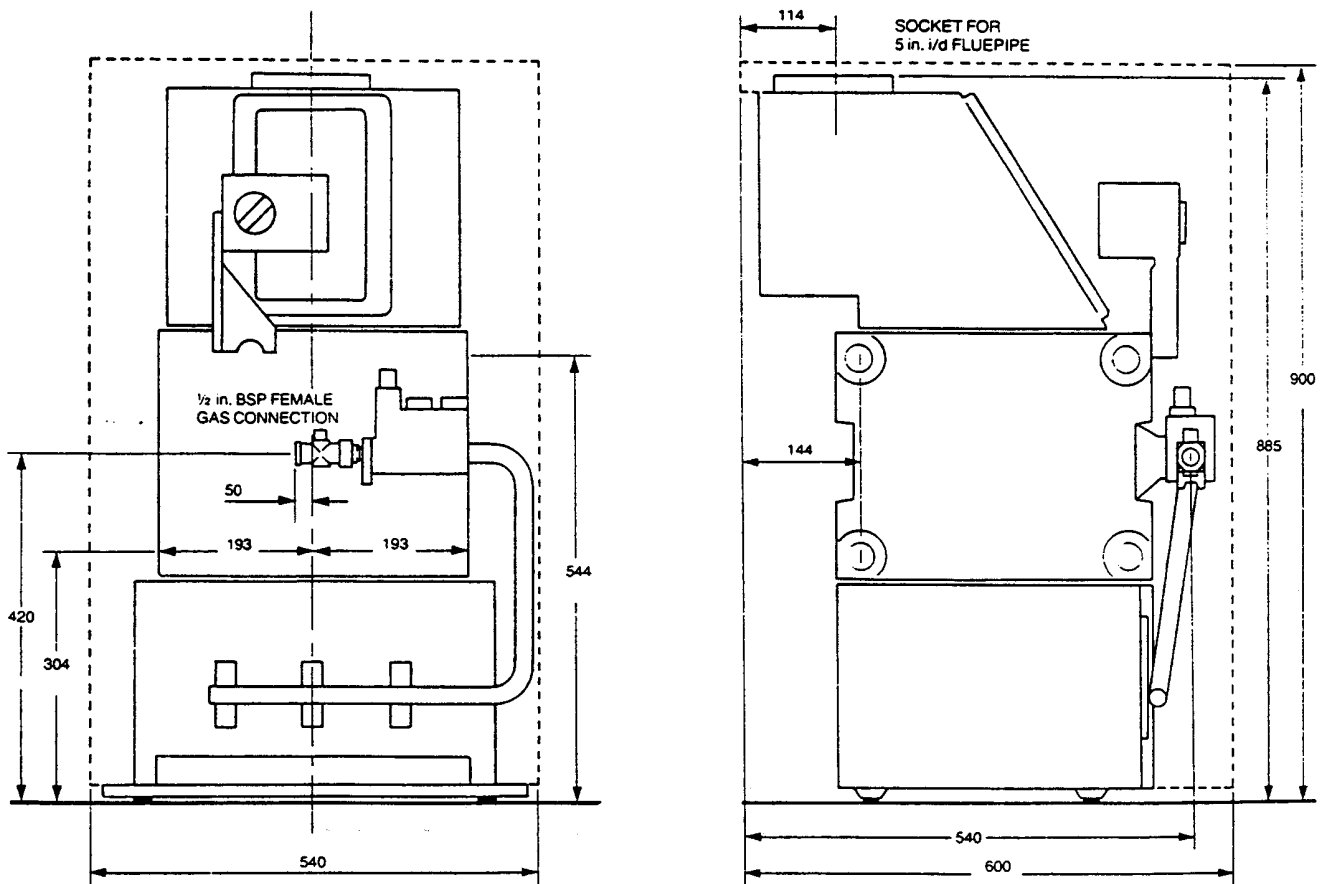


FIG. 3B CONNECTIONS AND DIMENSIONS CF100

INSTALLATION SECTION

INSTALLATION INSTRUCTIONS

Installation must be carried out in accordance with the relevant British Standard Codes of Practice and I.E.E. recommendations. Reference should also be made to British Gas Publication 'Material and Installation Specifications for Domestic Central Heating and Hot Water.

1. UNPACKING

A. The appliance will arrive on site in two cartons as follows:-

Carton 1: Boiler Assy. and Literature

Carton 2: a) Case Top; b) Side Panels; c) Case Front; d) Plinth Assy; e) Fastener Pack; f) Case Tie Bracket.

B. Open Carton No. 1 - Boiler Assy. There is no need to open the casing carton at this stage.

2. POSITIONING THE BOILER

A. CF80 only. For transportation purposes, the fluehood is packed unassembled and reversed on the top of the boiler heat exchanger. Remove the fluehood and fit it in its correct position to the studs on the heat exchanger, securing it with the four nuts and washers to be found already screwed on to the studs. Ensure a gas tight seal is made between the top of the heat exchanger and the fluehood.

B. Manoeuvre the boiler into position until the draught diverter touches the wall.

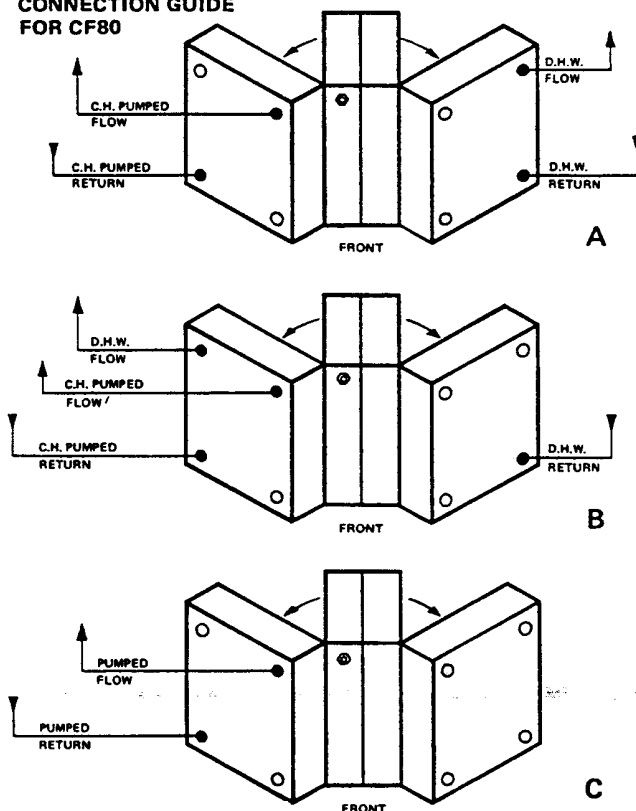
C. When the boiler has been finally positioned, check that it is level.

3. CONNECTIONS — See Connection Guide A, B & C

A. 1. The thermostat pocket is positioned in the Heat Exchanger to provide satisfactory operation for the pipework options shown in Connection Guide A, B & C. No attempt should be made to alter the position of the thermostat pocket.

2. The Heat Exchanger represented in the Connection Guide is the CF 80 but the same principle of connection applies also to the CF 100.

CONNECTION GUIDE FOR CF80



B. Make the flow and return connections in accordance with normal practices. Do not obstruct the opening beneath the draught diverter at the rear of the boiler.

C. On certain combined systems, i.e. pumped central heating and gravity hot water, it may be necessary to install a check valve to prevent gravity circulation in the heating circuit when the pump is not working. The valve must be installed with the arrow on it pointing vertically upwards in the direction of flow.

D. The circulating pump can be fitted in any position on either the flow or return, to suit the particular installation. Refer to "The System" and the pump manufacturers instructions.

E. Connect the gas supply pipe to the boiler main gas cock.

F. Ensure the drain cock(s) is fitted.

G. Open all water valves and thoroughly flush the system.

H. Fill and vent the system and test for leaks; rectify if necessary.

4. FLUE

Make the flue connection to the boiler draught diverter, sealing the joint with a suitable compound.

5. WIRING — See Figs. 4 to 10

Care must be taken to ensure that all wiring to the boiler is kept clear of sharp edges and hot surfaces. Cable clips are provided to secure the input cable to the boiler casing.

Unscrew the two screws and remove the control module from its housing to expose the terminal strip.

The boiler terminal strip is not designed to accept wiring from all the on-site system controls and therefore, the installer will need to incorporate a suitable junction box. The principle of wiring up the boiler and its controls is shown in Fig. 4. However, the layout of a particular system

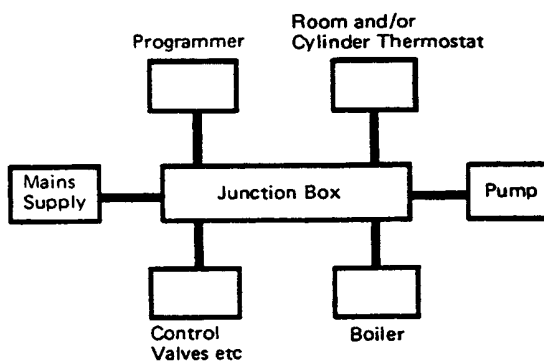


FIG. 4 PRINCIPLE OF WIRING

will itself govern the most economical location for the junction box and its terminals.

Wire up the boiler and system controls as illustrated in Figs. 6, 7, 8, 9 or 10 depending on the type of system installed. The wiring arrangements shown, outline only the basic control requirements and will therefore require on-site interpretation of the various boiler installation arrangements. Fig. 9 illustrates a system with a zone valve which requires an electrical supply to motor it both to the open and closed positions. Zone valves which require an electrical supply to open them but not to close them, should be wired in a similar manner but ignoring the closed connection from the room thermostat. For this type of valve, a room thermostat with a single pole contact may be used. Certain zone valves may require an additional con-

nection to the auxiliary switch (shown dotted). This would apply to those valves which internally are not suitable for giving an open signal from the normal opening voltage supply.

If a Potterton EP 2000/3000 Programmer is not being fitted, but a three terminal time clock is to be installed to control the systems illustrated in Fig. 6, 7, 8, 9 and 10 the time clock should be wired as follows:—

Live to Time Clock Live
Neutral to Time Clock Neutral
Earth to Time Clock Earth
Wires normally connected to EP 2000/3000
Terminals 3 & 4 to Time Clock Switch

A low limit thermostat can be installed to override the "OFF" setting of the time control. Where an EP 2000/3000 or other programmer is installed, a double pole or a single pole thermostat with change over contacts may be necessary; for the electrical connections and type required, see the relevant system wiring diagram.

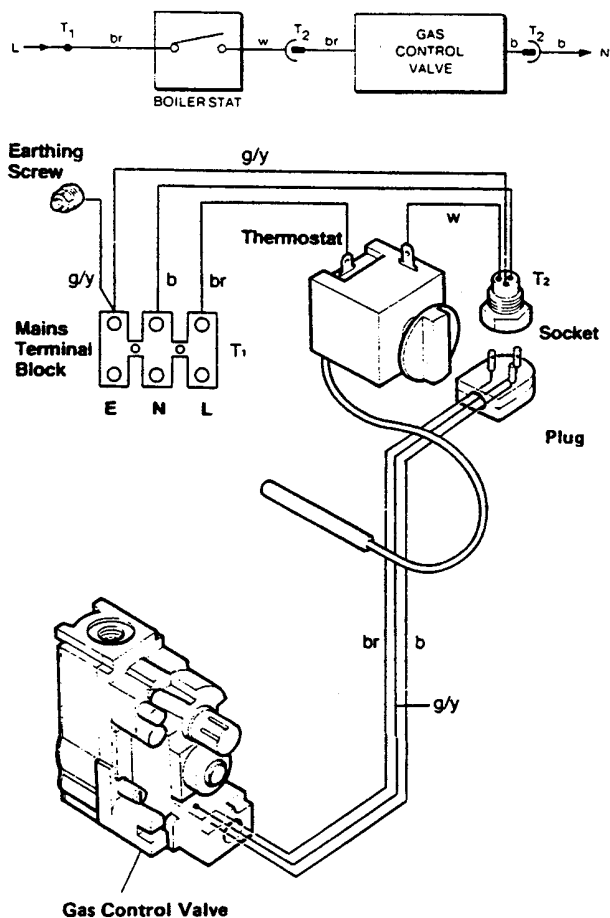


FIG. 5 WIRING DIAGRAMS

Where only a time clock is fitted, the thermostat need only be a single pole type with its contact wired in parallel with the clock switch.

If a three-way (proportioning diverter) valve with a mid-position is being fitted in the system, the following must be adhered to in addition to the valve manufacturer's wiring information:

1. Neutral and earth connections must be made to boiler terminals N and E.
2. The switched supply from the system control circuit must be connected to boiler terminal L.
3. The live supply to the pump must be taken from the supply to boiler terminal L.

When all wiring is complete, refit the control module into its housing and secure it with the two screws and shake-proof washers.

6. FIRST LIGHTING

NOTE: Before lighting the boiler, the gas installation must be tested for soundness in accordance with CP.331, Part 3 1974. The electrical installation must be checked as follows:—

PRELIMINARY ELECTRICAL SYSTEM CHECKS (See Figs. 5, 11)

A. Earth Continuity Check — appliance must be electrically disconnected — meter set on Ω (ohms) $\times 1$ scale and adjust zero if necessary.

- a) Test leads from any appliance earth point to earth pin on plug — resistance should be less than 1 Ω (ohm). If the resistance is greater than 1 Ω (ohm) check all earth wires for continuity and all contacts clean and tight.

If resistance of earth is still greater than 1 Ω (ohm) then this should be reported to your supervisor.

B. Short Circuit Check — appliance electrically disconnected, all switches ON (including stats) —

- a) Meter set on Ω (ohms) $\times 1$ scale.
Test leads from L to N in appliance terminal strip/block — if meter reads '0' then there is a short circuit.
- b) Meter set on Ω (ohms) $\times 100$ scale.

Repeat test with leads from L to E. If meter reads less than ∞ (infinity) there is a fault.

NOTE: Should it be found that the fuse has failed but no fault is indicated — a detailed continuity check (i.e. by disconnecting and checking each component) is required to trace the faulty component. It is possible that a fault could occur as a result of local burning/arcing but no fault could be found under test. However, a detailed visual inspection should reveal evidence of burning around the fault.

C. Polarity Check — appliance connected to mains supply and meter set on 300 Vac scale. Test at appliance terminal strip:—

- a) Test leads from L to N — meter reads approx. 240 Vac.
- b) Test leads from L to E ($\neq$) — meter reads approx. 240 Vac.
- c) Test leads from N to E ($\neq$) — meter reads from 0.15 Vac*

Thus the terminal marked L is the live terminal. If the low* Vac reading is given on terminals other than N to E ($\neq$) there is an electrical fault.

Repeat the test at the appliance plug/inlet spur to check the wiring system up to the appliance and rectify any fault. If necessary repeat the test at the supply system socket/spur — if the fault also occurs at this stage then there is a house system fault which requires attention by the Electrical Authority. The customer should be warned not to use the appliance until this examination has been carried out.

D. Resistance to Earth Check — appliance must be disconnected from mains supply and meter set on Ω (ohms) $\times 100$ scale. All switches, including stats, ON — Test leads from L to E — if meter reads other than infinity (∞) there is a fault which should be isolated. A detailed continuity check is required to trace the faulty component.

IMPORTANT — This series of checks 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.

FIG. 6 GRAVITY HOT WATER WITH PUMPED CENTRAL HEATING

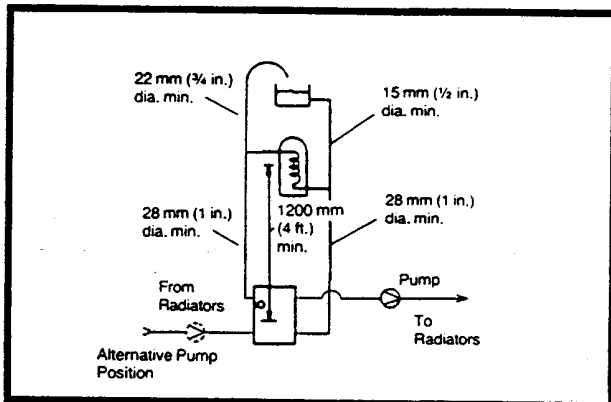


FIG. 7 GRAVITY HOT WATER WITH TEMPERATURE CONTROL AND PUMPED CENTRAL HEATING

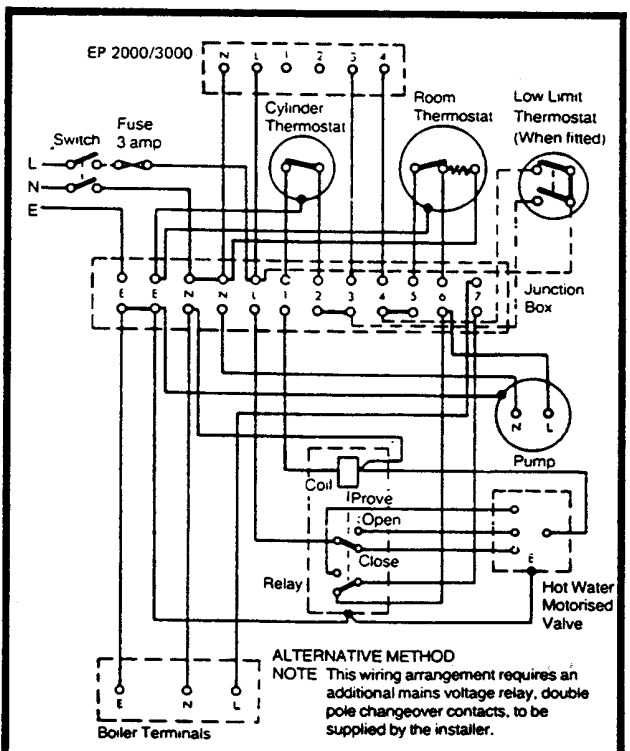
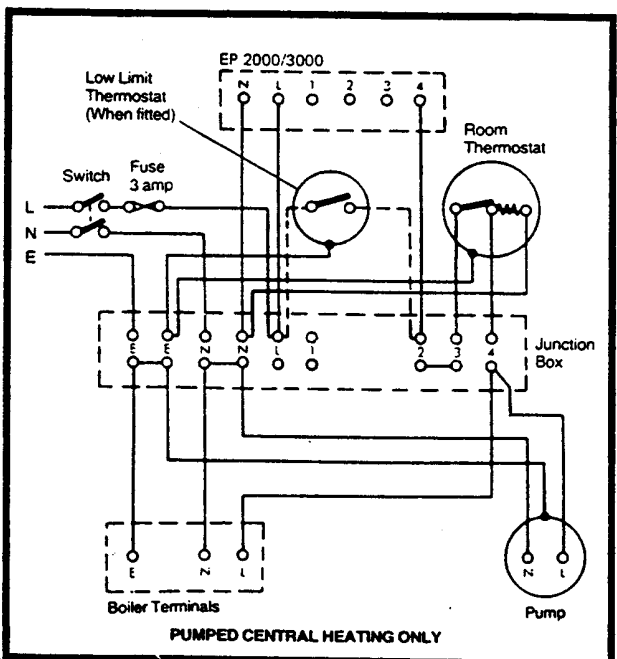
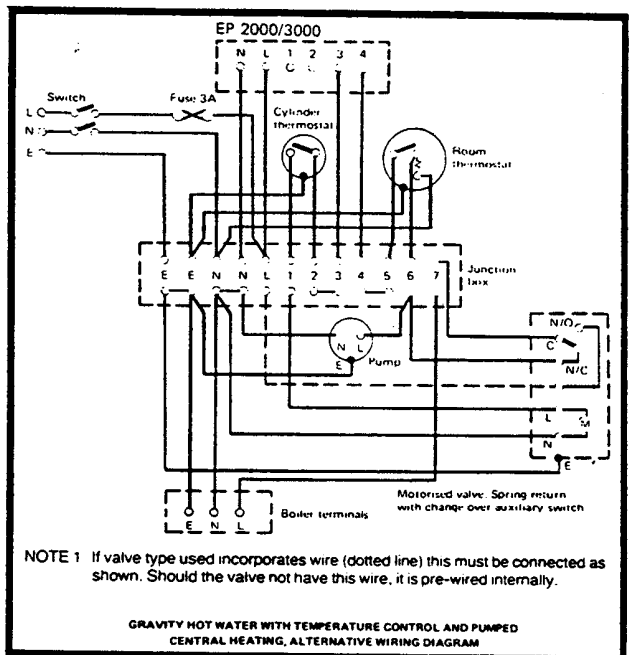
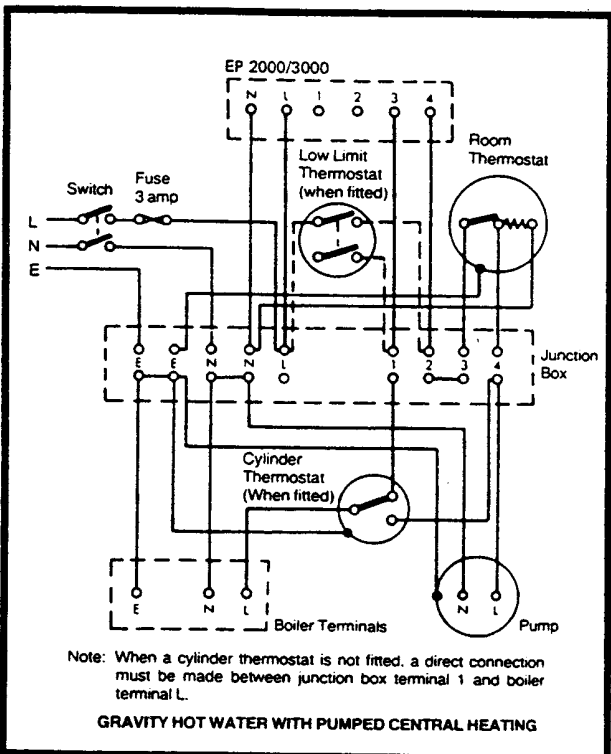
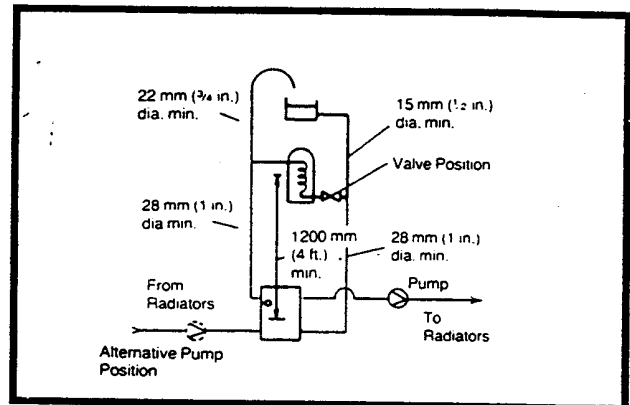


FIG. 8 FULLY PUMPED WITH TWO POSITION DIVERTER VALVE

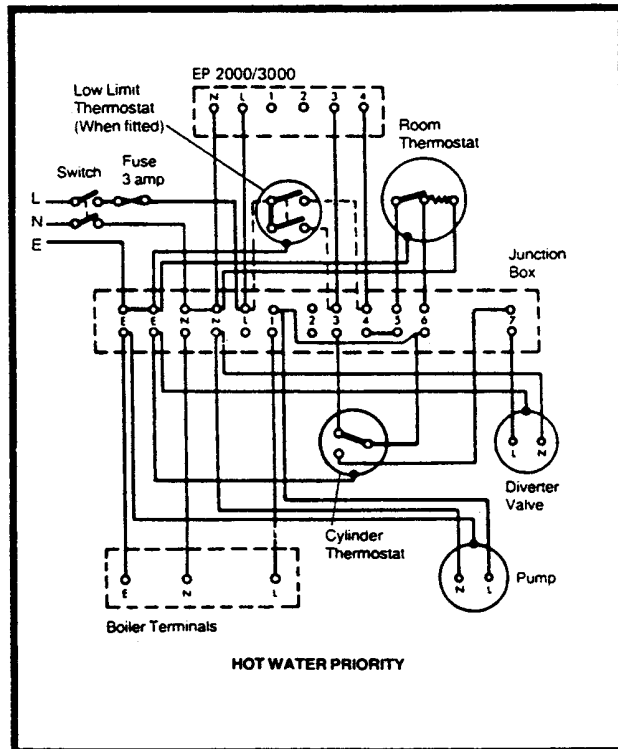
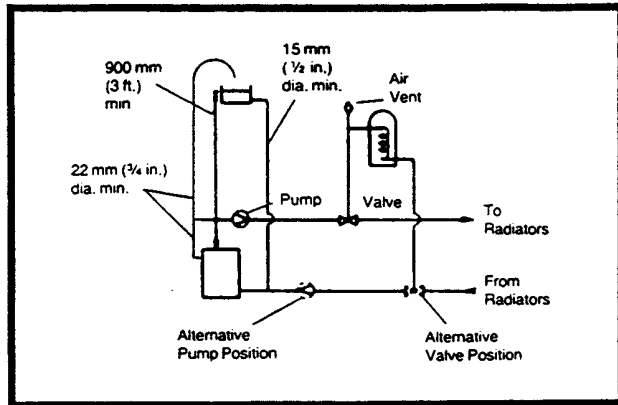


FIG. 9 FULLY PUMPED WITH ONE OR TWO ZONE VALVES

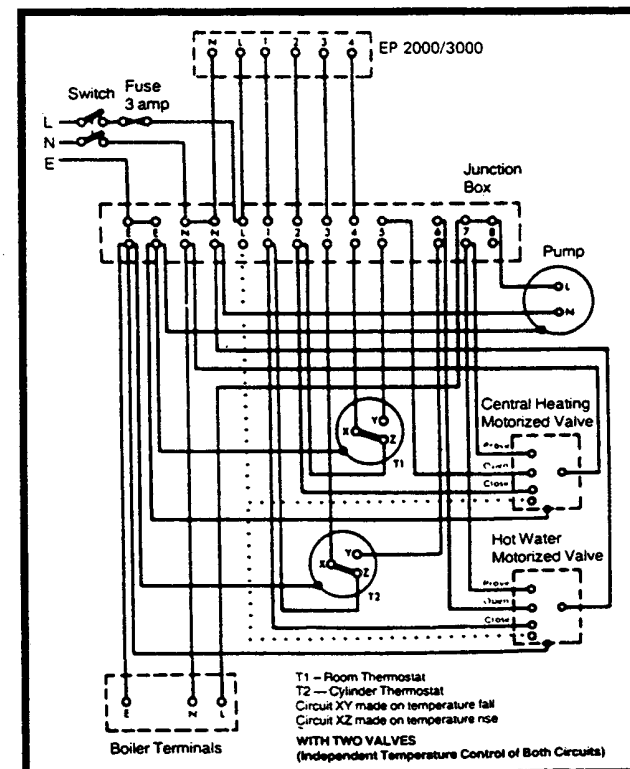
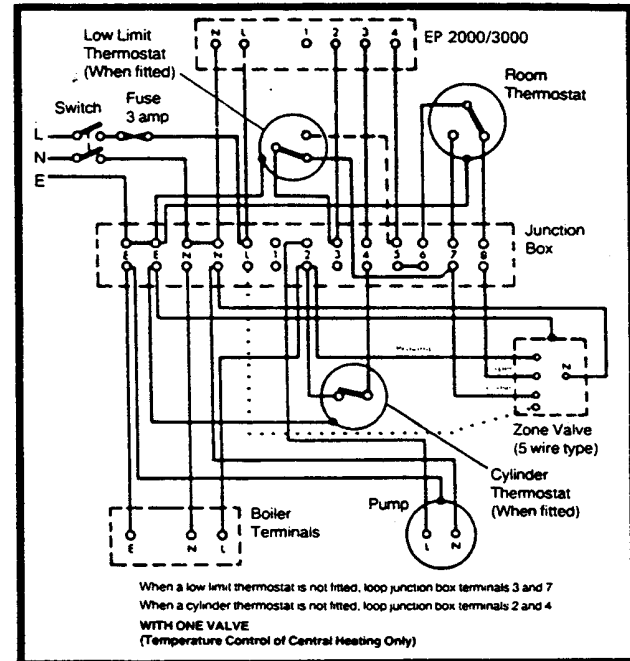
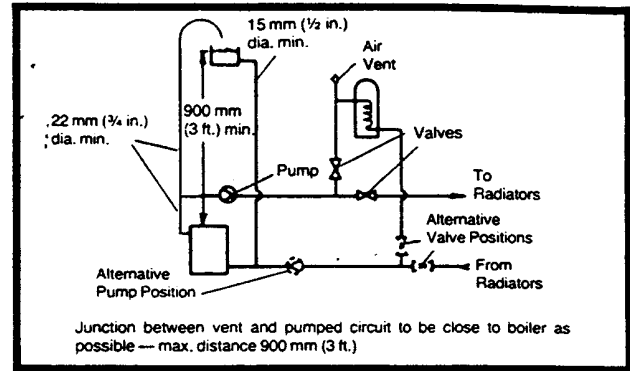
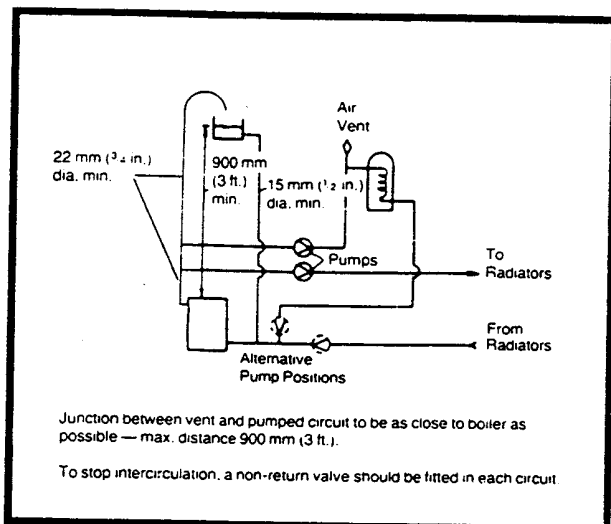


FIG. 10 FULLY PUMPED USING TWO PUMPS



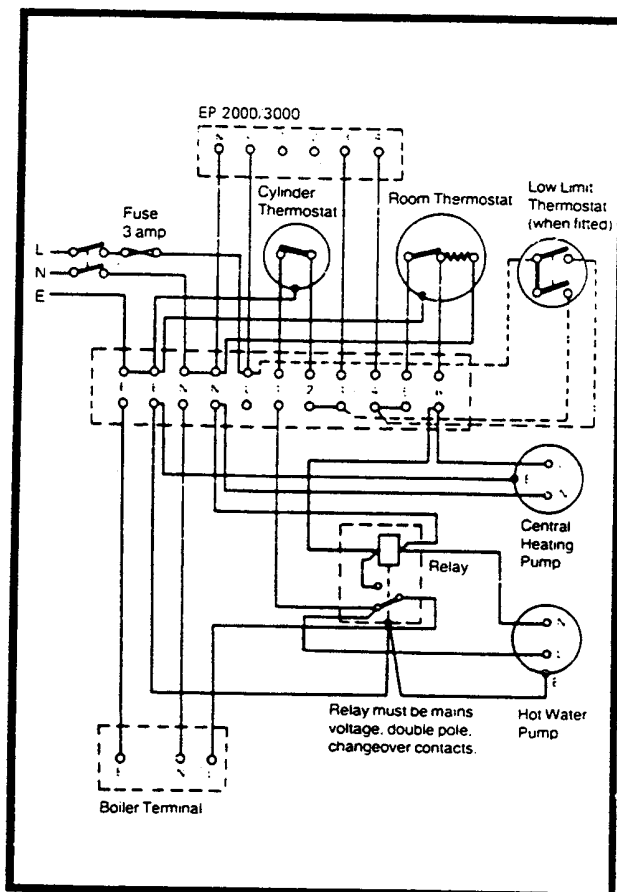
7. LIGHTING

- Check that the main electricity supply to the boiler is switched on and that the boiler thermostat is in the off position.
- Turn on the main gas supply.

WARNING: OPEN ALL WINDOWS AND EXTINGUISH ANY NAKED LIGHTS IN THE ROOM AND PUT OUT PIPES AND CIGARETTES.

- Break the union at the boiler main inlet cock, then open the cock and purge any air from the supply pipe. See CP.331, Part 3.
- Close the cock, remake the union then re-open the cock and test for gas soundness using a soap solution.

WARNING: DO NOT USE A NAKED FLAME.



- Ensure that the system is full of water and that the pump and radiator isolating valves are open.
 - Ensure that the time control, if fitted, is in an on condition, and that the room and/or cylinder thermostats, where fitted, are set to high temperatures.
 - Turn the control button on the gas control valve clockwise as far as possible (approximately 1/12th of a turn) and release it. This ensures that the valve is in the off condition.
 - Lift the tab and swing aside the small door above the pilot burner, then press and hold in the control button on the gas control valve whilst applying a light to the exposed burner. Continue to hold in the control button and check that the pilot has lit; hold in the control button for a further 20 seconds, then release it and the pilot should remain alight. Swing back the door to cover the pilot burner.
- NOTE:** On first lighting, establishment of the pilot flame may be slightly delayed due to the presence of air in the pipework. If the pilot fails to light or goes out at any time, immediately turn the control button clockwise as far as possible (approximately 1/12th of a turn), then release it and wait three minutes before repeating the lighting procedure. The control button should not be touched during this period.
- Turn the boiler thermostat on and to a high setting and the main burner will light.
 - Set the boiler thermostat and the room and/or cylinder thermostat(s) and time control, where installed, to their required operating conditions.
 - Check that there is no spillage or leakage of combustion products in accordance with BS.5440, Part 1.
 - Switch off the boiler, using the thermostat knob.
 - Allow the system to reach maximum working temperature and examine for leaks. Drain the system whilst it is still hot, then refill and vent and make a final examination for leaks.

NOTE: If any difficulty is experienced in lighting the boiler, refer to the fault finding chart at the end of this booklet.

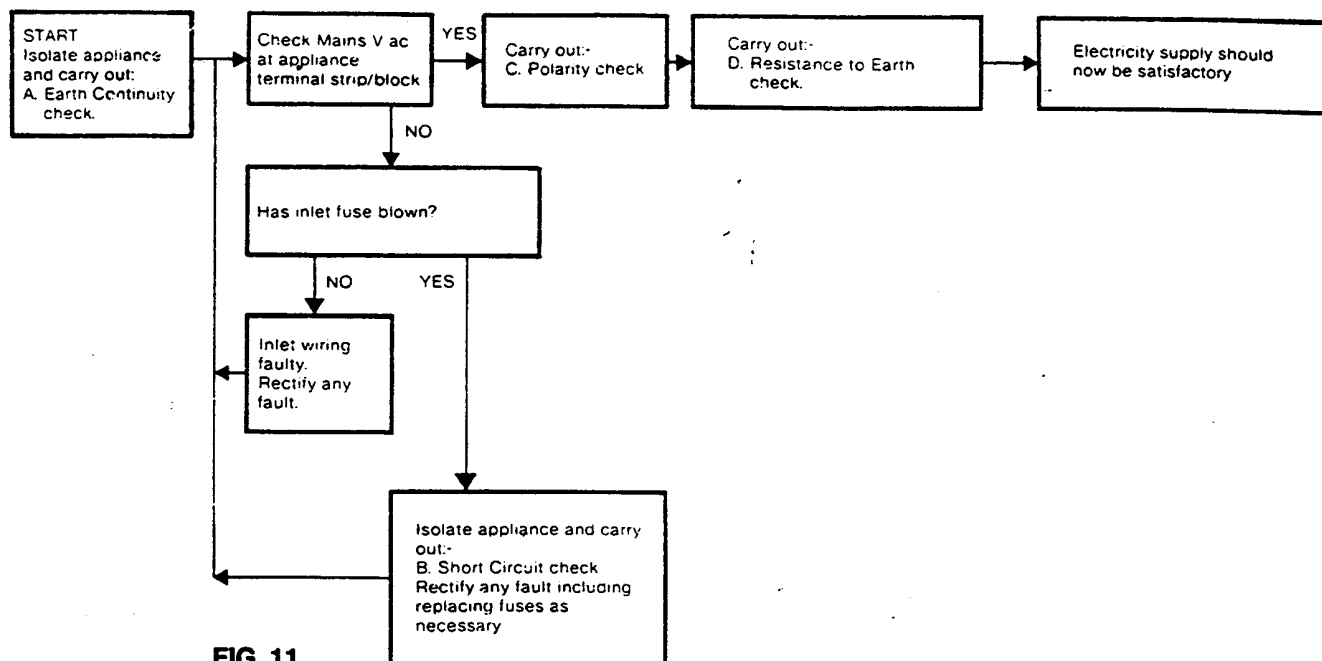


FIG. 11

8. FINAL ADJUSTMENT

A. Gas Rate and Main Burner Pressure Setting.

1. Fit a pressure gauge to the pressure test nipple (See Figs. 2A, 2B).
2. Turn on the boiler thermostat, then check that the burner pressure is in accordance with Table 1.
3. If burner pressure adjustment is necessary, remove the screwed cap on the top of the control valve and turn the screw beneath clockwise to increase pressure or anti-clockwise to decrease. Refit the screwed cap when the pressure is correct. Shut down the boiler, remove the pressure gauge and refit the screw in the pressure test nipple.
4. With the burner set to its correct pressure, the firing rate given in Table 1 should also be obtained and this should be checked by meter reading over a period of at least 10 minutes once the boiler is hot.

B. Pilot Burner

When correctly set, the pilot flame must be sufficient to heat the thermocouple so that the pilot safety device is "held in" but must not cause the thermocouple to glow bright red. If the pilot needs adjustment, turn the self sealing pilot adjustment screw, located adjacent to the pilot connection on the gas control valve, clockwise until closed then anti-clockwise four full turns.

The correct adjustment when the pilot flame completely envelops the top 15 mm (approximately 0.5 in.) of the thermocouple, see Fig. 12. When the pilot is set to the above instructions the E.M.F. generated by the thermocouple should be of the order of 18 — 32 mV open circuit, 10 — 15 mV closed circuit. Drop out should occur between 2 — 4 mV closed circuit.

C. Boiler Thermostat

1. At its minimum and maximum settings, the thermostat should control the water flow temperature at approximately 55°C to 82°C (130°F — 180°F) respectively.

2. The thermostat has been calibrated by the makers and no attempt should be made to recalibrate it on site. Turn the thermostat to the off position and check that the main burner shuts down.

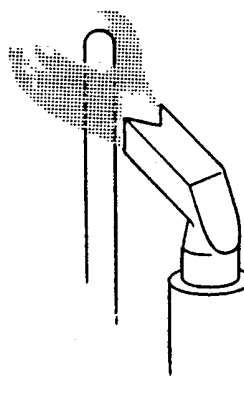


FIG. 12 PILOT FLAME

D. Combination Control

Solenoid:

Check the operation of the valve by turning off the electricity supply either by the isolating switch or the time control, where installed. The main burner must shut down immediately.

Flame Safety Valve:

Check the operation of the valve as follows with the boiler running normally:— Turn the control button clockwise as far as possible and a distinct click should be heard within 60 seconds indicating that the valve has closed.

E. Remote Controls

Check that any other remote control connected in the system such as time clocks and thermostats, control the boiler as required.

9. CASING ASSY. CF80

A. Unpack the casing

NOTE: The fastener pack will be found inside the top panel.

- B. Fit two tie brackets to the lower studs and one to the front stud on the fluehood sides, using M5 nuts and shakeproof washers. Do not fully tighten the nuts at this stage.
- C. Position the casing side panels on the boiler base supports, locating the holes in the bottom edge of each panel over the raised knibs on the supports.
- D. Using M5 screws and shakeproof washers secure the rear edge of each side panel to the rear tie brackets and the right-hand side panel to the front tie bracket. Use one screw to secure the earth lead from the control module. Fully tighten all screws and nuts.
- E. Fit the nylon connectors to the underside of the casing top panel. Holding the flue blanking plate behind the flue pipe, slide the top panel onto it, engaging the plate in the channels provided. Fit the top panel to the side panels.
- F. Fit the captive nuts to each side panel, then secure the plinth with its two pins uppermost between the two side panels using four self tapping screws.
- G. Use the cable clips provided and secure the electrical supply lead to the control module to the top edge of the relevant side panel. Also clip the lead from the gas control valve to the control module, to the casing side panel with the cable clip.
- H. Affix the boiler wiring diagram, supplied loose in the literature pack, on the inside of the casing front panel.
- J. Indicate the set burner pressure in the space provided on the lighting instruction plate.
- K. Fit the two nylon snap bushes to the holes in the bottom edge of the front panel.
- L. Fit the two nylon studs into the flanges on the side panels. These are secured in position by pressing the exposed part of the stem into the stud base. Position and secure the front panel locating it over the two pins on the plinth.

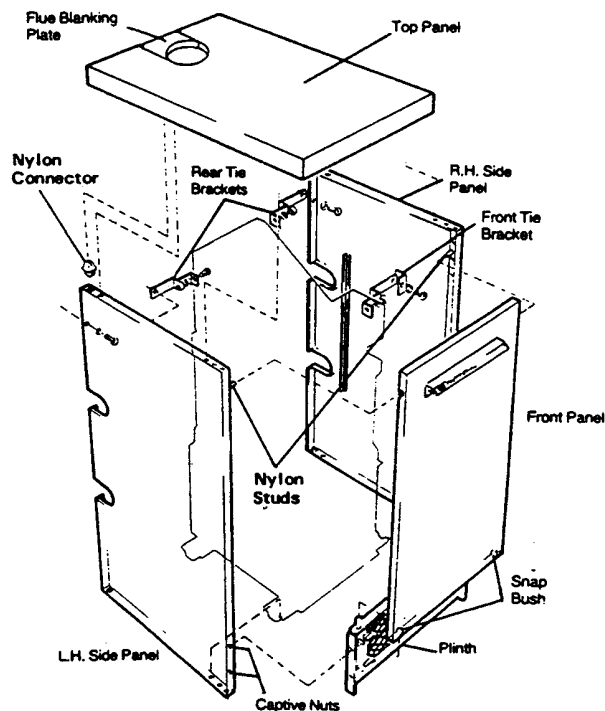


Fig. 13A Casing CF80

CASING ASSY. CF100

A. Unpack the casing.

NOTE: The fastener pack will be found wrapped with the plinth.

- B. Fit two tie brackets to the upper studs and one to the front stud on the fluehood sides, using M5 nuts and shakeproof washers. Do not fully tighten the nuts at this stage.
- C. Position the casing side panels on the boiler base supports, locating the holes in the bottom edge of each panel over the raised knibs on the supports.
- D. Using M5 screws and shakeproof washers secure the rear edge of each side panel to the rear tie brackets and the right-hand side panel to the front tie bracket. Use one screw to secure the earth lead from the control module. Fully tighten all screws and nuts.
- E. Fit a nylon bush to the upper and lower hinge holes in front panel.
- F. Fit the captive nuts to each side panel, then secure the plinth with its hinge pin uppermost between the two side panels using four self-tapping screws.
- G. Use the cable clips provided and secure the electrical supply lead to the control module to the top edge of the relevant side panel.
- H. Assemble the casing hinge plate to the top of the front panel. Fit the front panel to the bottom hinge pin on the plinth and secure the hinge plate to the right hand side panel with two M5 screws, locating the plate beneath the top flange on the panel.
- J. Fit the nylon connectors to the underside of the casing top panel. Holding the flue blanking plate behind the flue pipe, slide the top panel onto it, engaging the plate in the channels provided. Fit the top panel to the side panels.
- K. Affix the boiler wiring diagram, supplied loose in the literature pack, on the inside of the casing front panel.
- L. Indicate the set burner pressure in the space provided in the lighting instruction plate.
- M. Fit the two magnetic catches to the brackets on the left hand side panel.

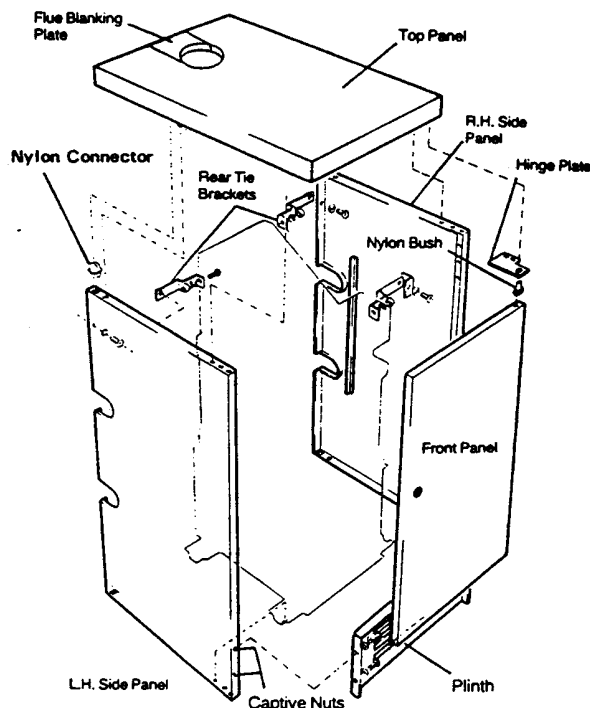


Fig. 13B Casing CF100

10. USER'S GUIDE

A User's Guide is provided with this boiler, but, if possible, the installer should explain the operation of the boiler and system to the householder.

SERVICE SECTION

SERVICE INSTRUCTIONS

To ensure continued efficient operation of the boiler, it is necessary to carry out maintenance and cleaning at regular intervals. Only competent people may install or service gas appliances or systems.

The frequency of cleaning will depend upon the particular installation conditions, and the use to which the boiler is put, but in general, once per year should be adequate.

The following notes apply to the boiler and its controls, but, it should be remembered that attention must also be paid to the heating circuit itself including radiator valves, thermostats, the time control and the expansion and feed water system. In all cases prior to maintenance, light up the boiler and check the pilot and main burners have a clean, even flame and that the gas rate and main burner pressure is correctly set.

Before the start of any maintenance work, switch off the main electricity supply and disconnect the plug at the main isolating switch and socket. Turn off the boiler main gas inlet cock.

NOTE:

Where it is required to break any seal during maintenance, the seal should be examined carefully for damage and if necessary replaced. It is important to obtain the correct Potterton approved part for the seal replacement which is available from Interpart spares stockists, or where difficulty in supply is experienced, directly from Potterton International Limited.

1. PREPARING THE BOILER (CF 80 only)

- A. Lift off the front panel.
- B. Remove the four securing screws, then remove the plinth.
- C. The top panel may be removed if necessary for easier access.

PREPARING THE BOILER (CF 100 only)

- A. Remove the four securing screws, then remove the plinth together with the front panel.

2. MAIN BURNER ASSEMBLY — REMOVAL AND CLEANING

- A. Disconnect the union in the main gas supply pipe at the gas cock.
- B. Remove the single forward facing screw (CF 80), two screws (CF 100), securing the bracket on the gas valve to the bracket on the side of the heat exchanger.
- C. Unplug the lead from the gas valve from the socket beneath the control box.
- D. Remove the four screws securing the combustion chamber front cover and remove the cover complete with the burner and gas arrangement.
- E. Remove all deposits from the main and pilot burners, and the thermocouple.
- F. Unscrew and remove the screws securing the burner end plates then remove the plates and withdraw the metal gauzes from inside the burners. Clean the gauzes and remove any deposits from inside the burners. Refit gauzes and end plates renewing the gaskets if necessary.
- G. Do not attempt to refit the main burner assembly into the combustion chamber at this stage, as the flueways in the heat exchanger have first to be cleaned.

3. HEAT EXCHANGER

- A. Unscrew the four nuts and remove the flue hood cover plate. Loosen the nuts on the left-hand side of the control box and swing the box into a lower position.

- B. Working from above and below the heat exchanger, use a suitable brush and remove all deposits from between the fins of the castings.

- C. Refit the flue hood coverplate ensuring that a good seal is made. Fit and tighten the four nuts, then swing the control box into its correct position and re-tighten its two securing nuts.

- D. Remove all deposits from inside the boiler combustion chamber.

4. MAIN BURNER ASSEMBLY — REPLACEMENT

- A. Replace the main burner assembly in position and secure the combustion chamber front cover with the four screws.
- B. Secure the bracket on the gas valve to the bracket on the heat exchanger with the single screw (CF 80), two screws (CF 100).
- C. Reconnect the main gas pipe at the union adjacent to the gas cock.
- D. Plug the lead from the gas valve into the socket on the underside of the control box.

5. OTHER BOILER COMPONENTS

No further maintenance has to be carried out on any other unit. Repair is by replacement and instructions on this are given later.

6. FINAL ADJUSTMENT

- A. Remove or loosen screw and fit a pressure gauge to the pressure test nipple in the burner manifold (CF 80), or on the gas valve (CF 100).
- B. Switch on the main electricity supply to the boiler and check that the boiler thermostat is in the off position.
- C. Turn on the main gas supply.
- D. Ensure that the system is full of water and that the pump and radiator isolating valves are open.
- E. Ensure that the time control if fitted, is in an on condition, and that the room and/or cylinder thermostats, where fitted, are set to high temperatures.
- F. Turn the control button on the gas control valve clockwise as far as possible (approximately 1/12th of a turn) and release. This ensures the valve is in the off condition.
- G. Swing aside the small door above the pilot burner, press and hold in the control button on the gas control valve and apply a light to the burner. Hold in the control button and check that the pilot has lit; hold in the control button for a further 20 seconds, then release it and the pilot should remain alight.

NOTE: On first lighting, establishment of the pilot flame may be slightly delayed due to the presence of air in the pipework. If the pilot fails to light or goes out at any time, immediately turn the control button clockwise as far as possible (approximately 1/12th of a turn) then release it and wait three minutes before repeating the lighting procedure. The control button should not be touched during this period.

- H. Swing back the small door to cover the pilot burner once the pilot has lit.

- J. When correctly set, the pilot flame must be sufficient to heat the thermocouple so that the pilot safety device is "held in" but must not cause the thermocouple to glow

bright red. If the pilot needs adjustment, turn the self sealing pilot adjustment screw, located adjacent to the pilot connection on the gas control valve, clockwise until closed then anti-clockwise four full turns.

The correct adjustment is achieved when the pilot flame completely envelops the top 15 mm (approximately 0.5 in.) of the thermocouple, see Fig. 12. When the pilot is set to the above instructions the E.M.F. generated by the thermocouple should be of the order of 18 — 32 mV open circuit, 10 — 15 mV closed circuit. Drop out should occur between 2 — 4 mV closed circuit.

K. Turn on the boiler thermostat and the main burner will light. Check that the burner pressure is in accordance with Table 1.

L. If burner pressure adjustment is necessary, remove the screwed cap on top of the gas control valve and turn the screw beneath clockwise to increase pressure or anti-clockwise to decrease. Refit the screwed cap when the pressure is correct. Shut down the boiler, remove the pressure gauge and refit or tighten the screw in the pressure test nipple. With the burner set to its correct pressure, the heat input given in Table 1 should also be obtained and this should be checked by meter reading over a period of at least 10 minutes once the boiler is hot.

M. Refit the casing plinth, (CF 100 only, plinth and front panel).

N. Fit the casing front panel.

7. REMOVAL/REPLACEMENT OF BOILER COMPONENTS

A. Main Burner and Injector

- (1) Switch off the main electricity supply to the boiler.
- (2) Carry out operations A and B under 1. "PREPARING THE BOILER".
- (3) Turn off the boiler main gas cock.
- (4) Remove the main burner assembly as described under 2. "MAIN BURNER ASSEMBLY — REMOVAL AND CLEANING".
- (5) Remove the four screws, CF 80 or six screws, CF 100, securing the burners to the combustion chamber front plate.
- (6) Unscrew the main burner injector from the main gas supply pipe.
- (7) Replacement is the reverse of removal.
- (8) Test the boiler as described in 6. "FINAL ADJUSTMENT".

B. Pilot Burner and Injector

- (1) Switch off the main electricity supply to the boiler.
- (2) Carry out operations A and B under 1. "PREPARING THE BOILER".
- (3) Turn off the boiler main gas cock.
- (4) Remove main burner assembly as described under 2.
- (5) Disconnect the pilot supply pipe at the pilot.
- (6) Disconnect the thermocouple lead from the pilot assembly, then withdraw the thermocouple. Ensure that the thermocouple is clean and undamaged.
- (7) Remove the screws securing the pilot assembly to the pilot bracket, then withdraw the pilot. The pilot injector may be extracted using a blunt tool such as an Allen key.
- (8) Replacement is the reverse of removal.

- (9) Test the boiler as described in 6. "FINAL ADJUSTMENT".

C. Thermocouple

- (1) Carry out operations (1) to (6) under "B. Pilot Burner and Injector".
- (2) Disconnect the thermocouple lead from the gas control valve, noting the route the lead takes from the pilot assembly. The replacement lead must be routed in a similar manner, so that sharp bends in the lead are eliminated.
- (3) Replacement is the reverse of removal.
- (4) Test the boiler as described in 6. "FINAL ADJUSTMENT".

D. Gas Control Valve

- (1) Switch off the main electricity supply to the boiler.
- (2) Carry out operations A and B under 1. "PREPARING THE BOILER".
- (3) Turn off the boiler main gas cock.
- (4) Remove the main burner and gas valve assembly as described under 2. "MAIN BURNER ASSEMBLY — REMOVAL AND CLEANING".
- (5) Disconnect the pilot supply tube and the thermocouple lead from the gas valve.
- (6) On CF 80 remove the gas inlet pipework and the bracket from the inlet end of the valve and fit them to the new valve. On CF 100 remove the gas cock union nut and sleeve from the inlet end of the valve and the bracket from the outlet end and fit them to the new valve.
- (7) Unscrew the old valve from the gas supply pipe.
- (8) Replacement is the reverse of removal.
- (9) Test the boiler as described in 6. "FINAL ADJUSTMENT".

E. Boiler Thermostat

- (1) Remove/open the casing front panel.
- (2) Turn off the boiler main gas cock.
- (3) Switch off the main electricity supply to the boiler.
- (4) Unscrew the two screws securing the control module in its housing and pull the assembly from the housing.
- (5) Remove the clip then withdraw the thermostat phial from its pocket in the heat exchanger.
- (6) Disconnect the two wires from the thermostat.
- (7) Pull off the thermostat knob, then unscrew the backnut from around the spindle of the thermostat. Remove the thermostat complete with its capillary.
- (8) Replacement is the reverse of removal. Ensure that the new thermostat phial is inserted to the full depth of its pocket.
- (9) Test the boiler as described in 6. "FINAL ADJUSTMENT".

8. FAULT FINDING

As well as the fault finding chart given, reference should be made to the wiring diagram Fig. 5. Electrical procedures described are in accordance with the Instructions for British Gas Multimeter booklet.

CONDITION	POSSIBLE CAUSE	REMEDY
A. Pilot fails to light.	(1) No gas supply. (2) Control button not pressed fully down. (3) Blocked pilot filter (4) Blocked pilot injector.	Check all cocks are open in the supply to the boiler. Control button must be pressed fully down. (a) Remove plastic electrical terminal cover from top of gas control valve by unscrewing the screw. (b) Remove the four screws securing the solenoid valve to the top of the control valve. (c) Lift off the solenoid valve and the gasket beneath. (d) Unscrew and remove the single screw securing the flat plate to the main valve body, then lift off the plate and the gasket beneath. (e) Lift out the filter and replace as necessary. (f) Re-assemble in the reverse order. Remove and change the injector as described in Section 7.B.
B. Main burner fails to light and pilot is extinguished when pressure on the control button is released.	(1) Control button not held down long enough. (2) Loose thermocouple connection into control valve. (3) Pilot rate too low. (4) Partially blocked pilot filter or pilot injector. (5) Failure of thermocouple, power unit or latching mechanism.	Control button must be fully pressed down for 20 seconds before main valve can be energised. Tighten thermocouple union nut finger tight plus $\frac{1}{4}$ turn only. Ensure connection is clean and dry. TOO MUCH PRESSURE MAY DAMAGE INSULATION AND CAUSE FAILURE. Adjust the pilot flame, see Section 6. As item A(3) and A(4). After pilot has been on for 20 seconds, release control button. If pilot goes out: (a) Check F.F.D. and thermocouple using procedure given in Fig. 14 (b) If thermocouple has failed, replace as described in 7.C. Similarly, if control valve has failed replace as described in 7.D.
C. Main burner fails to light, pilot burning.	(1) Boiler thermostat set to 'off' or low setting. (2) Additional controls not calling for heat. (3) Honeywell control solenoid valve failed. (4) Thermostat out of calibration or faulty.	Note setting of thermostat dial and check temperature of flow pipe. Check programmer or clock is ON and that room thermostat or other distant control is not closed down. Carry out preliminary electrical system checks. Check solenoid using procedure given in Fig. 15. If solenoid valve has failed; replace as described in A(3) above. Check thermostat using procedure given in Fig. 16. If faulty, replace thermostat as detailed in 7.E.

CONDITION	POSSIBLE CAUSE	REMEDY
	(5) Blocked main burner injector.	Clean or replace injector as detailed in 7.A.
D. Main burner fails to shut down when water reaches predetermined temperature.	(1) Thermostat out of calibration or faulty. (2) Dirt on valve seat of Honeywell control.	Remedy as in item C(4). Clean the valve seat as follows: (a) Remove the solenoid valve and the plate beneath as described in A(3). (b) Clean the valve seat and the valve chamber. (c) Re-assemble in the reverse order.

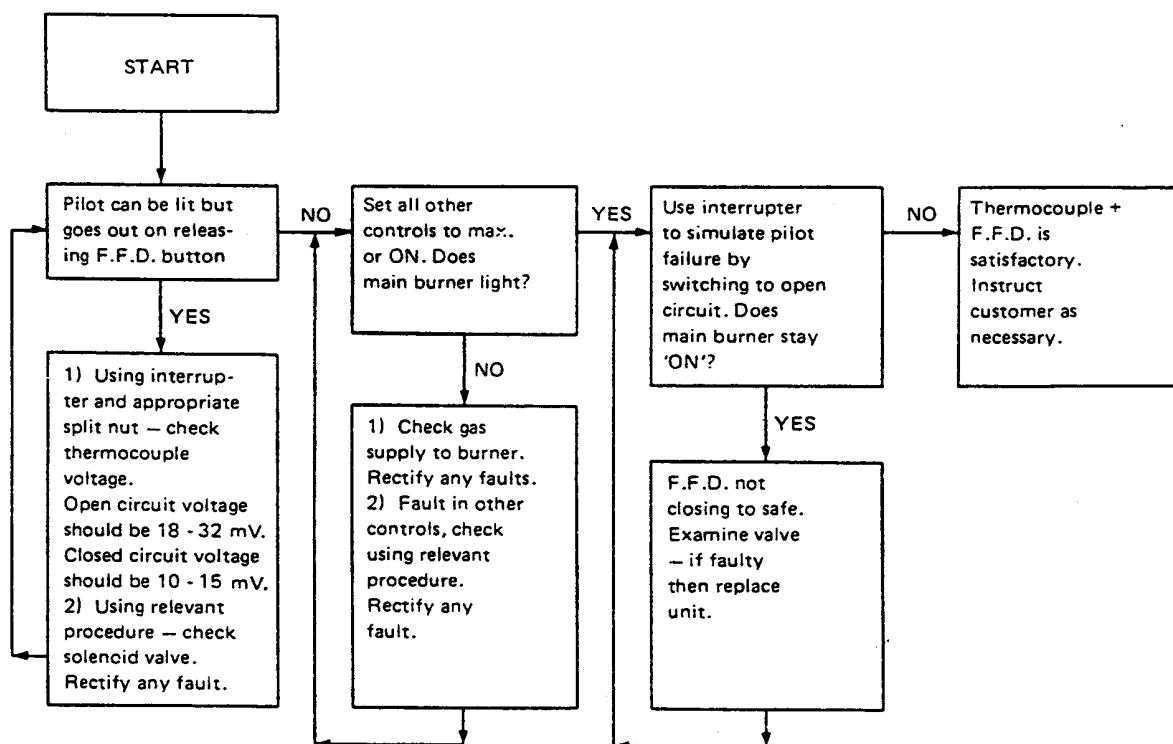


FIG. 14 F.F.D. AND THERMOCOUPLE

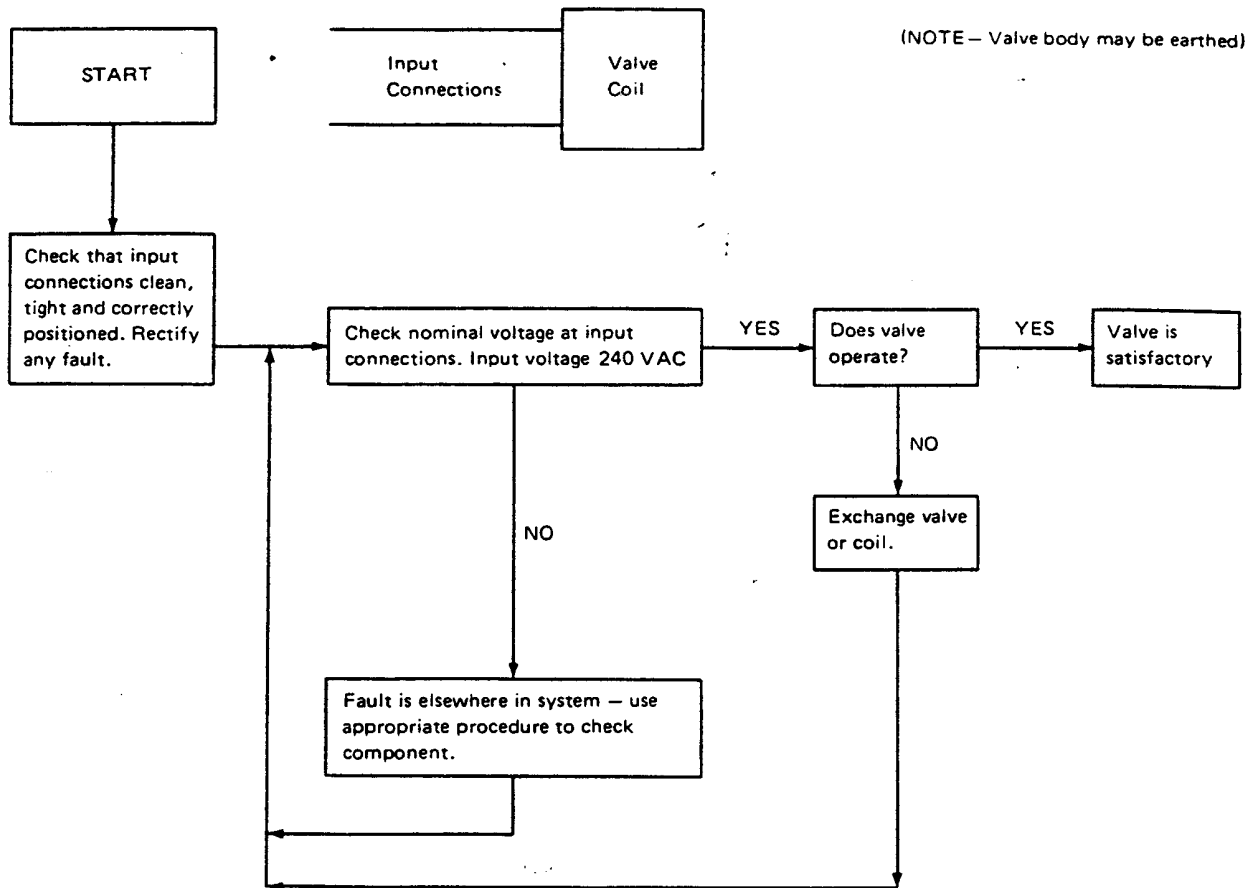


FIG. 15 SOLENOID VALVE

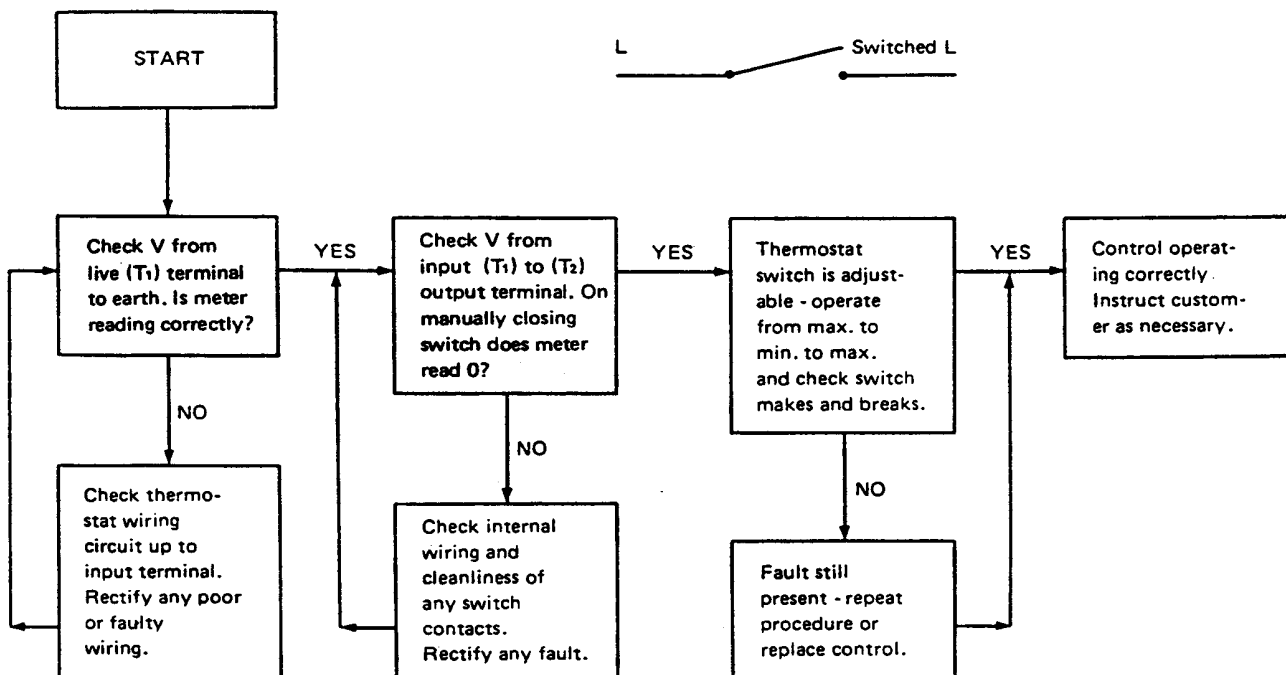
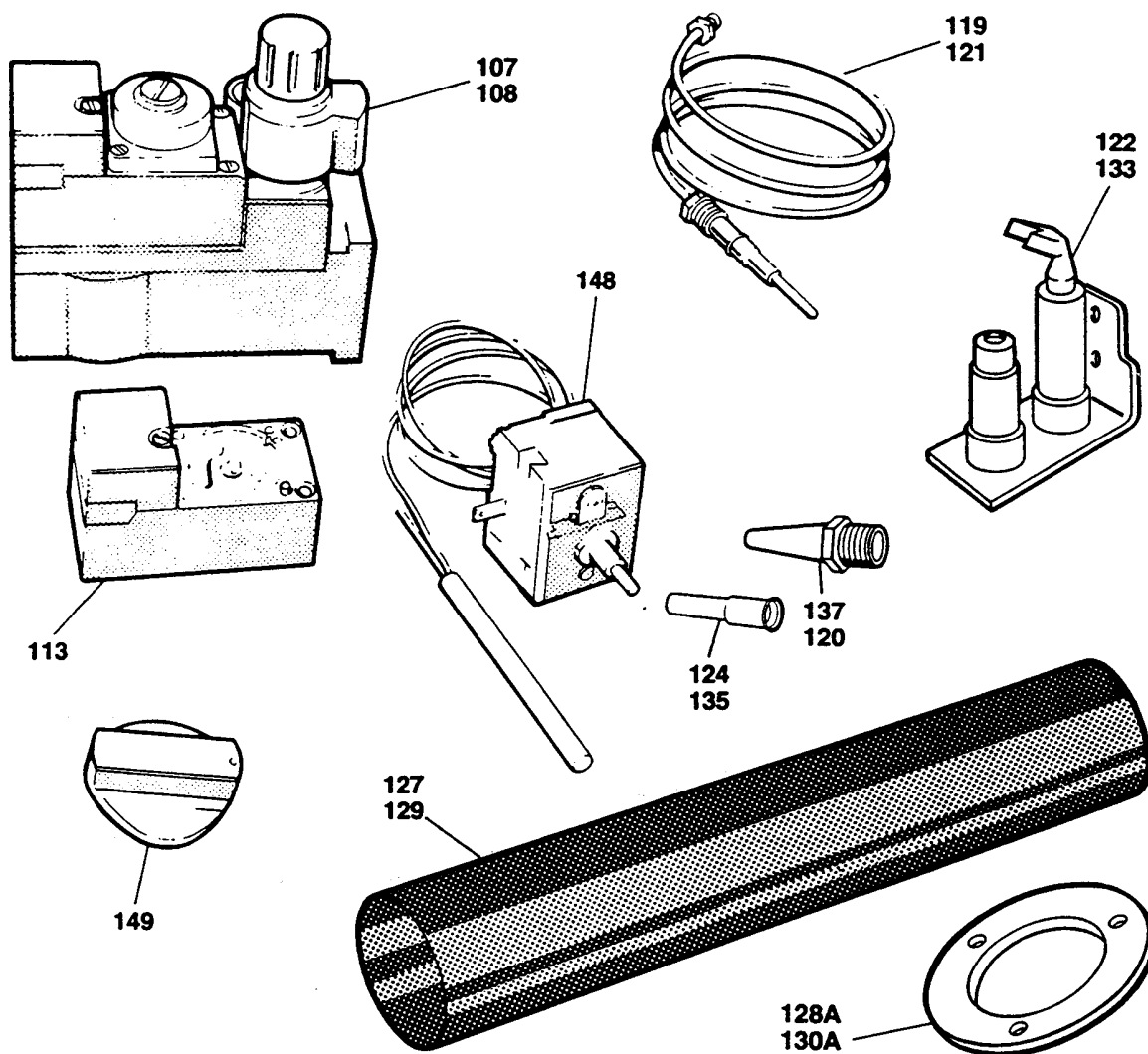


FIG. 16 THERMOSTAT

9. SHORT PARTS LIST

C.F.80 KEY NO.	C.F.100 KEY NO.	DESCRIPTION	POTTERTON PART NO.	BRITISH GAS PART NO.
122	133	Pilot Burner, Honeywell Q359A 1017	410498	391 667
124	135	Pilot Burner Injector, Honeywell 38/36A	410917	358232
108	107	Gas Control Valve, Honeywell C4600C 1029	402809	393 180
113	113	Solenoid Operator V404A 1006	904750	396 693
121	119	Thermocouple, Honeywell Q309A 1244	402257	390 038
148	148	Thermostat Ranco P 0610	404456	382 291
149	149	Thermostat Knob	202125	357 808
137	—	Main Burner Injector 3.1 mm C.F.80	410908	358 425
—	120	2.9 mm C.F.100	410912	358 607
129	127	Main Burner Lint Resistant Gauze	906155	384 684
130A	128A	Burner End Plate Gasket	905377	358 718



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

POTTERTON MYSON
PART OF BLUE CIRCLE

Registered Office :

Myson House, Railway Terrace, Rugby, Warwickshire CV31 2JH
Registered No. 412935

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POTTERTON KINGFISHER CF 80 AND 100 GAS FIRED BOILERS

To ensure continued efficient operation of the boiler, it is necessary to carry out maintenance and cleaning at regular intervals. Only competent people may install or service gas appliances or systems.

The frequency of cleaning will depend upon the particular installation conditions, and the use to which the boiler is put, but in general, once per year should be adequate.

The following notes apply to the boiler and its controls, but, it should be remembered that attention must also be paid to the heating circuit itself including radiator valves, thermostats, the time control and the expansion and feed water system. In all cases prior to maintenance, light up the boiler and check the pilot and main burners have a clean, even flame and that the gas rate and main burner pressure is correctly set.

Before the start of any maintenance work, switch off the main electricity supply and disconnect the plug at the main isolating switch and socket. Turn off the boiler main gas inlet cock.

1. PREPARING THE BOILER (CF 80 only)

- A. Lift off the front panel.
- B. Remove the four securing screws, then remove the plinth.
- C. The top panel may be removed if necessary for easier access.

PREPARING THE BOILER (CF 100 only)

- A. Remove the four securing screws, then remove the plinth together with the front panel.

2. MAIN BURNER ASSEMBLY — REMOVAL AND CLEANING

- A. Disconnect the union in the main gas supply pipe at the gas cock.
- B. Remove the single forward facing screw (CF 80), two screws (CF 100), securing the bracket on the gas valve to the bracket on the side of the heat exchanger.
- C. Unplug the lead from the gas valve from the socket beneath the control box.
- D. Remove the four screws securing the combustion chamber front cover and remove the cover complete with the burner and gas arrangement.
- E. Remove all deposits from the main and pilot burners, and the thermocouple.
- F. Unscrew and remove the screws securing the burner end plates then remove the plates and withdraw the metal gauzes from inside the burners. Clean the gauzes and remove any deposits from inside the burners. Refit gauzes and end plates renewing the gaskets if necessary.
- G. Do not attempt to refit the main burner assembly into the combustion chamber at this stage, as the flueways in the heat exchanger have first to be cleaned.

3. HEAT EXCHANGER

- A. Unscrew the four nuts and remove the flue hood cover plate. Loosen the nuts on the left-hand side of the control box and swing the box into a lower position.
- B. Working from above and below the heat exchanger, use a suitable brush and remove all deposits from between the fins of the castings.
- C. Refit the flue hood coverplate ensuring that a good seal is made. Fit and tighten the four nuts, then swing the control box into its correct position and re-tighten its two securing nuts.
- D. Remove all deposits from inside the boiler combustion chamber.

4. MAIN BURNER ASSEMBLY — REPLACEMENT

- A. Replace the main burner assembly in position and secure the combustion chamber front cover with the four screws.
- B. Secure the bracket on the gas valve to the bracket on the heat exchanger with the single screw (CF 80), two screws (CF 100).
- C. Reconnect the main gas pipe at the union adjacent to the gas cock.
- D. Plug the lead from the gas valve into the socket on the underside of the control box.

5. OTHER BOILER COMPONENTS

No further maintenance has to be carried out on any other unit. Repair is by replacement and instructions on this are given later.

6. FINAL ADJUSTMENT

- A. Remove or loosen screw and fit a pressure gauge to the pressure test nipple in the burner manifold (CF 80), or on the gas valve (CF 100).
- B. Switch on the main electricity supply to the boiler and check that the boiler thermostat is in the off position.
- C. Turn on the main gas supply.
- D. Ensure that the system is full of water and that the pump and radiator isolating valves are open.
- E. Ensure that the time control if fitted, is in an on condition, and that the room and/or cylinder thermostats, where fitted, are set to high temperatures.
- F. Turn the control button on the gas control valve clockwise as far as possible (approximately 1/12th of a turn) and release. This ensures the valve is in the off condition.

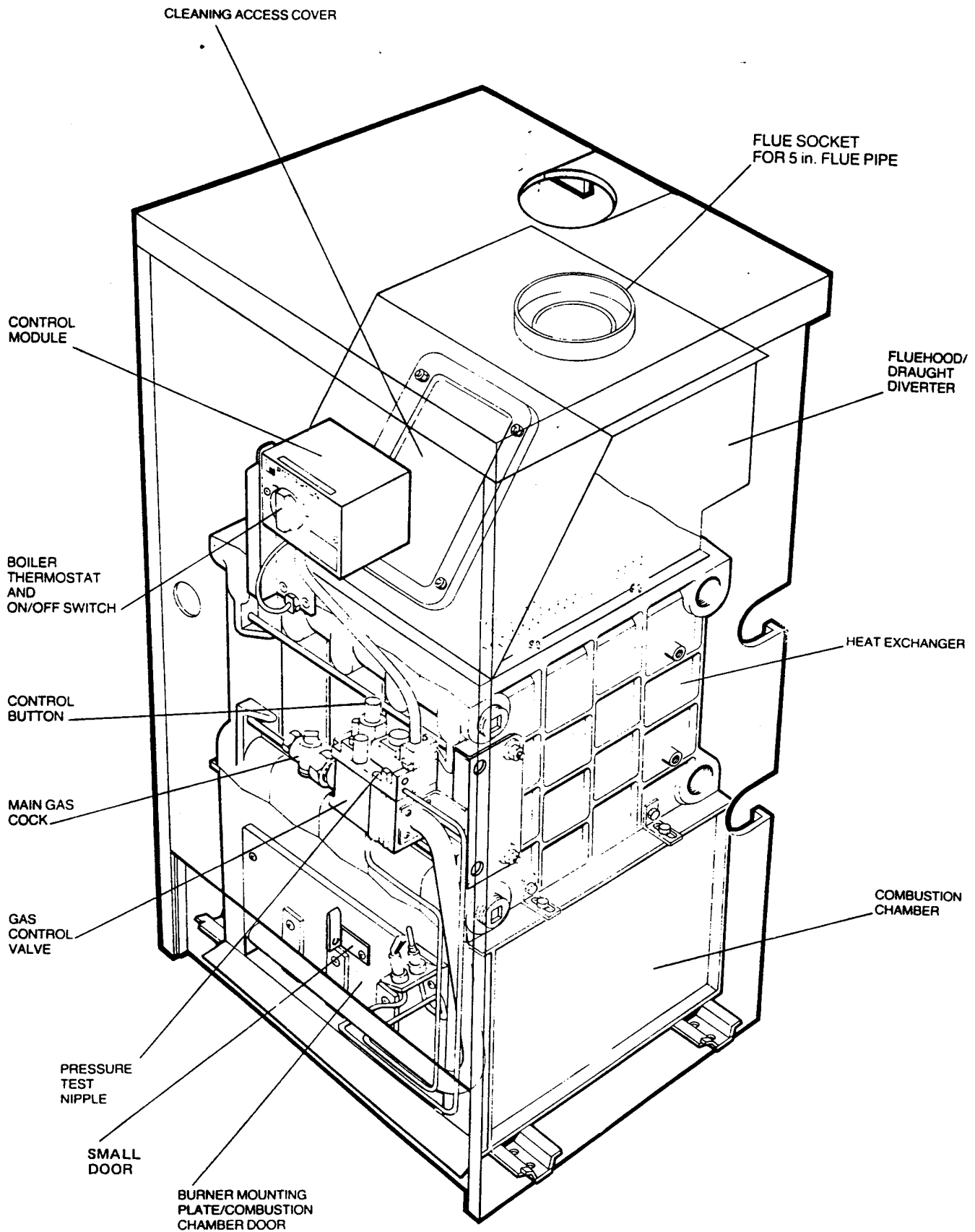


FIG. 1 GENERAL ARRANGEMENT

G. Swing aside the small door above the pilot burner, press and hold in the control button on the gas control valve and apply a light to the burner. Hold in the control button and check that the pilot has lit; hold in the control button for a further 20 seconds, then release it and the pilot should remain alight.

NOTE: On first lighting, establishment of the pilot flame may be slightly delayed due to the presence of air in the pipework. If the pilot fails to light or goes out at any time, immediately turn the control button clockwise as far as possible (approximately 1/12th of a turn) then release it and wait three minutes before repeating the lighting procedure. The control button should not be touched during this period.

H. Swing back the small door to cover the pilot burner once the pilot has lit.

J. When correctly set, the pilot flame must be sufficient to heat the thermocouple so that the pilot safety device is "held in" but must not cause the thermocouple to glow bright red. If the pilot needs adjustment, turn the self sealing pilot adjustment screw, located adjacent to the pilot connection on the gas control valve, clockwise to

reduce or anti-clockwise to increase the flame.

The correct adjustment is achieved when the pilot flame completely envelops the top 15 mm (approximately 0.5 in.) of the thermocouple, see Fig. 3. When the pilot is set to the above instructions the E.M.F. generated by the thermocouple should be of the order of 18 — 32 mV open circuit, 10 — 15 mV closed circuit. Drop out should occur between 2 — 4 mV closed circuit.

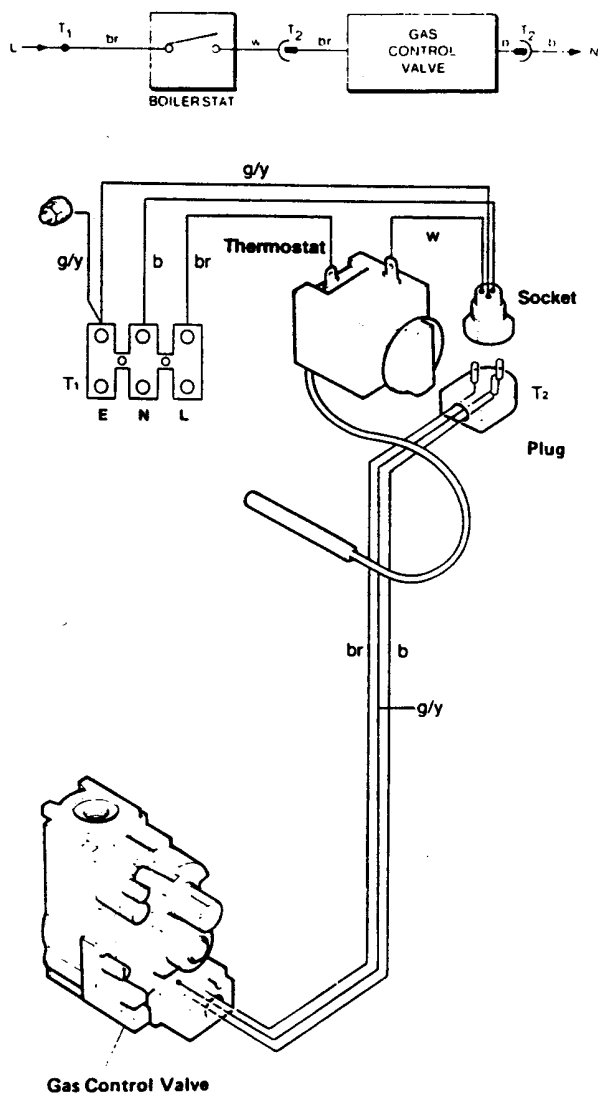
K. Turn on the boiler thermostat and the main burner will light. Check that the burner pressure is in accordance with Table 1.

L. If burner pressure adjustment is necessary, remove the screwed cap on top of the gas control valve and turn the screw beneath clockwise to increase pressure or anti-clockwise to decrease. Refit the screwed cap when the pressure is correct. Shut down the boiler, remove the pressure gauge and refit or tighten the screw in the pressure test nipple. With the burner set to its correct pressure, the heat input given in Table 1 should also be obtained and this should be checked by meter reading over a period of at least 10 minutes once the boiler is hot.

M. Refit the casing plinth, (CF 100 only, plinth and front panel).

N. Fit the casing front panel.

FIG. 2 WIRING DIAGRAMS



7. REMOVAL/REPLACEMENT OF BOILER COMPONENTS

A. Main Burner and Injector

- (1) Switch off the main electricity supply to the boiler.
- (2) Carry out operations A and B under 1. "PREPARING THE BOILER".
- (3) Turn off the boiler main gas cock.
- (4) Remove the main burner assembly as described under 2. "MAIN BURNER ASSEMBLY — REMOVAL AND CLEANING".
- (5) Remove the four screws, CF 80 or six screws, CF 100, securing the burners to the combustion chamber front plate.
- (6) Unscrew the main burner injector from the main gas supply pipe.
- (7) Replacement is the reverse of removal.
- (8) Test the boiler as described in 6. "FINAL ADJUSTMENT".

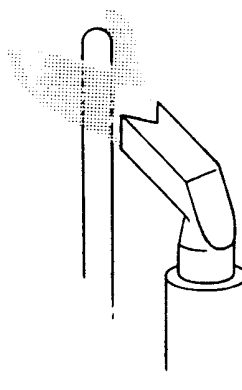


FIG. 3 PILOT FLAME

B. Pilot Burner and Injector

- (1) Switch off the main electricity supply to the boiler.
- (2) Carry out operations A and B under 1. "PREPARING THE BOILER".
- (3) Turn off the boiler main gas cock.
- (4) Remove main burner assembly as described under 2.
- (5) Disconnect the pilot supply pipe at the pilot.
- (6) Disconnect the thermocouple lead from the pilot assembly, then withdraw the thermocouple. Ensure that the thermocouple is clean and undamaged.
- (7) Remove the screws securing the pilot assembly to the pilot bracket, then withdraw the pilot. The pilot injector may be extracted using a blunt tool such as an Allen key.
- (8) Replacement is the reverse of removal.
- (9) Test the boiler as described in 6. "FINAL ADJUSTMENT".

C. Thermocouple

- (1) Carry out operations (1) to (6) under "B. Pilot Burner and Injector".
- (2) Disconnect the thermocouple lead from the gas control valve, noting the route the lead takes from the pilot assembly. The replacement lead must be routed in a similar manner, so that sharp bends in the lead are eliminated.
- (3) Replacement is the reverse of removal.
- (4) Test the boiler as described in 6. "FINAL ADJUSTMENT".

D. Gas Control Valve

- (1) Switch off the main electricity supply to the boiler.
- (2) Carry out operations A and B under 1. "PREPARING THE BOILER".

- (3) Turn off the boiler main gas cock.

- (4) Remove the main burner and gas valve assembly as described under 2. "MAIN BURNER ASSEMBLY — REMOVAL AND CLEANING".

- (5) Disconnect the pilot supply tube and the thermocouple lead from the gas valve.

- (6) On CF 80 remove the gas inlet pipework and the bracket from the inlet end of the valve and fit them to the new valve. On CF 100 remove the gas cock union nut and sleeve from the inlet end of the valve and the bracket from the outlet end and fit them to the new valve.

- (7) Unscrew the old valve from the gas supply pipe.

- (8) Replacement is the reverse of removal.

- (9) Test the boiler as described in 6. "FINAL ADJUSTMENT".

E. Boiler Thermostat

- (1) Remove/open the casing front panel.

- (2) Turn off the boiler main gas cock.

- (3) Switch off the main electricity supply to the boiler.

- (4) Unscrew the two screws securing the control module in its housing and pull the assembly from the housing.

- (5) Remove the clip then withdraw the thermostat phial from its pocket in the heat exchanger.

- (6) Disconnect the two wires from the thermostat.

- (7) Pull off the thermostat knob, then unscrew the backnut from around the spindle of the thermostat. Remove the thermostat complete with its capillary.

- (8) Replacement is the reverse of removal. Ensure that the new thermostat phial is inserted to the full depth of its pocket.

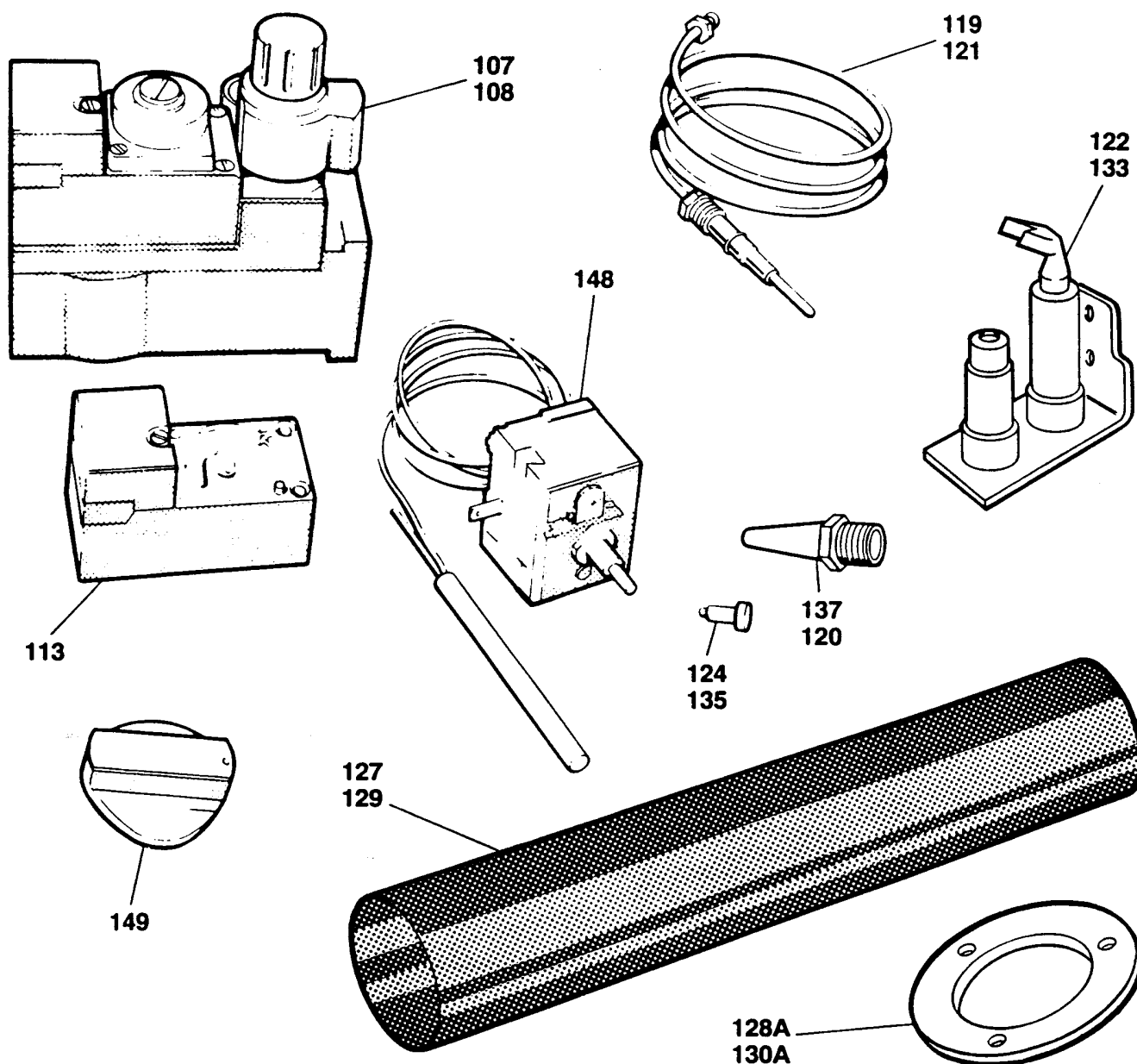
- (9) Test the boiler as described in 6. "FINAL ADJUSTMENT".

TABLE 1

Input		CF 80	CF 100
	kW Btu/h	27.4 to 30.8 93,300 to 105,000	31.2 to 38.6 106,600 to 131,600
Output into Water	kW Btu/h	20.5 to 23.4 70,000 to 80,000	23.4 to 29.3 80,000 to 100,000
Burner Pressure	m.bar in.wg	12.4 to 15.5 5.0 to 6.2	9.4 to 14.2 3.8 to 5.7
Injector Size	mm	3.1	2.9
Gas Rate assumed CV of 1035 Btu/cu.ft.	cu.m/h cu.ft/h	2.56 to 2.87 90.1 to 101.4	2.92 to 3.60 102.9 to 127.1
British Gas Code Number		41.601.39	41.601.42
Potterton Code Letters		GSC	GTT

9. SHORT PARTS LIST

C.F.80 KEY NO.	C.F.100 KEY NO.	DESCRIPTION	POTTERTON PART NO.	BRITISH GAS PART NO.
122	133	Pilot Burner, Honeywell Q359A 1017	410498	391 667
124	135	Pilot Burner Injector, Honeywell 45.000062.010	410499	391 665
108	107	Gas Control Valve, Honeywell C4600C 1029	402809	393 180
113	113	Solenoid Operator V404A 1006	904750	396 693
121	119	Thermocouple, Honeywell Q304A 1244	402257	390 038
148	148	Thermostat Ranco P 0610	404456	382 291
149	149	Thermostat Knob	202125	357 808
137 —	— 120	Main Burner Injector 3.1 mm C.F.80 2.9 mm C.F.100	410908 410912	358 425 358 607
129	127	Main Burner Lint Resistant Gauze	906155	384 684
130A	128A	Burner End Plate Gasket	905377	358 718



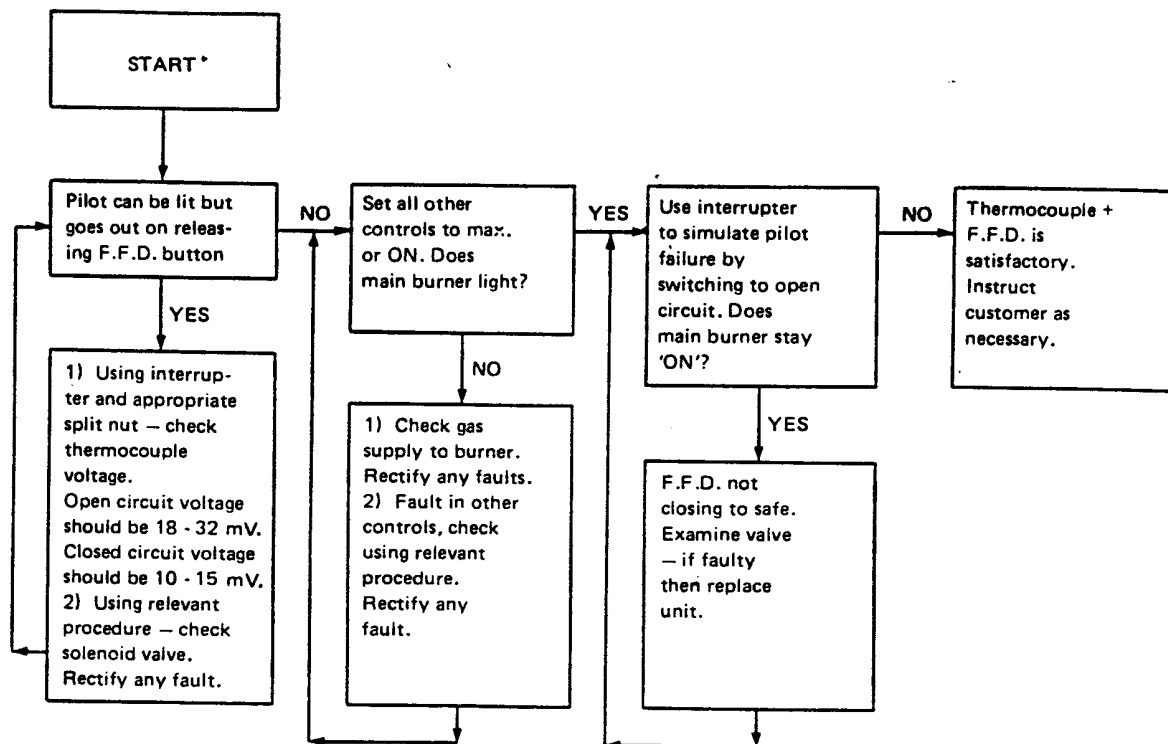


FIG. 4 F. F. D. AND THERMOCOUPLE

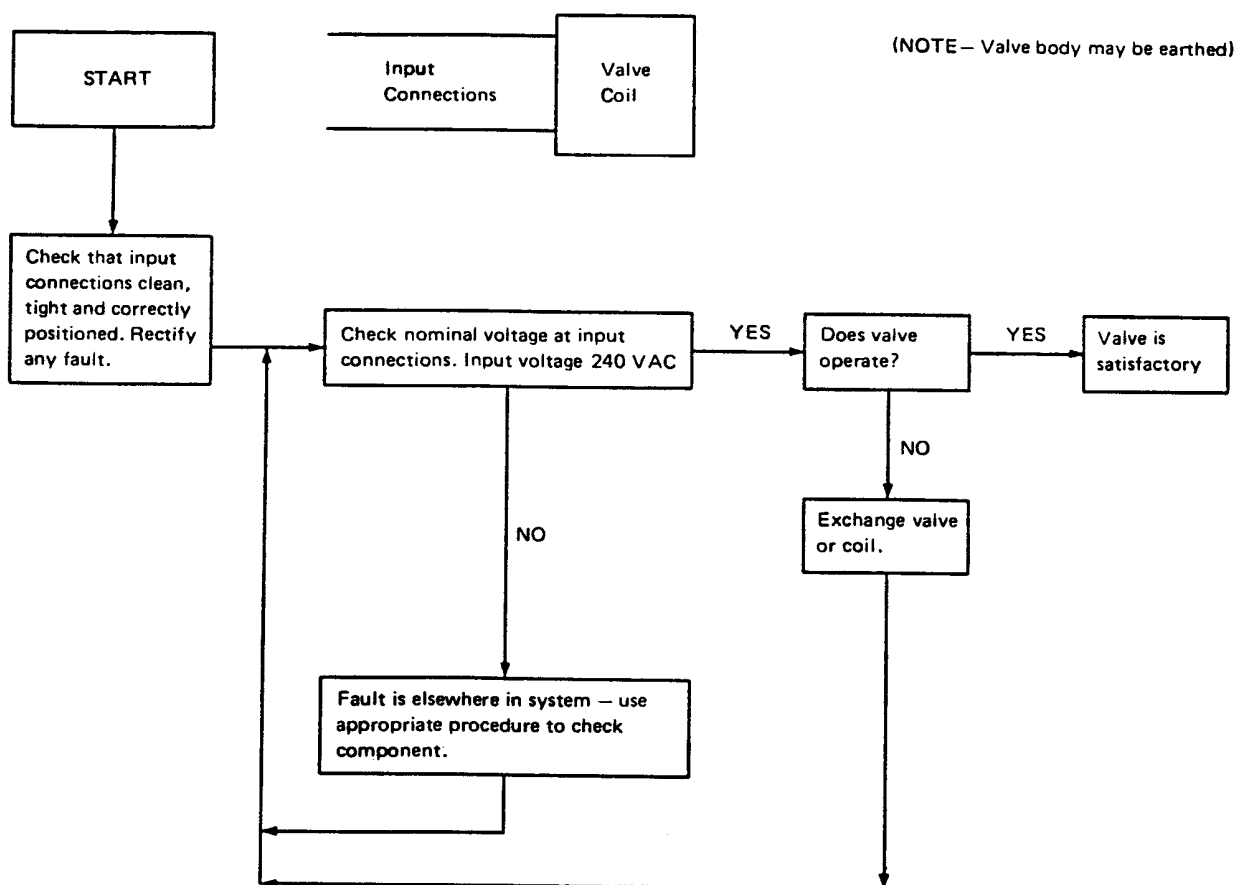


FIG. 5 SOLENOID VALVE

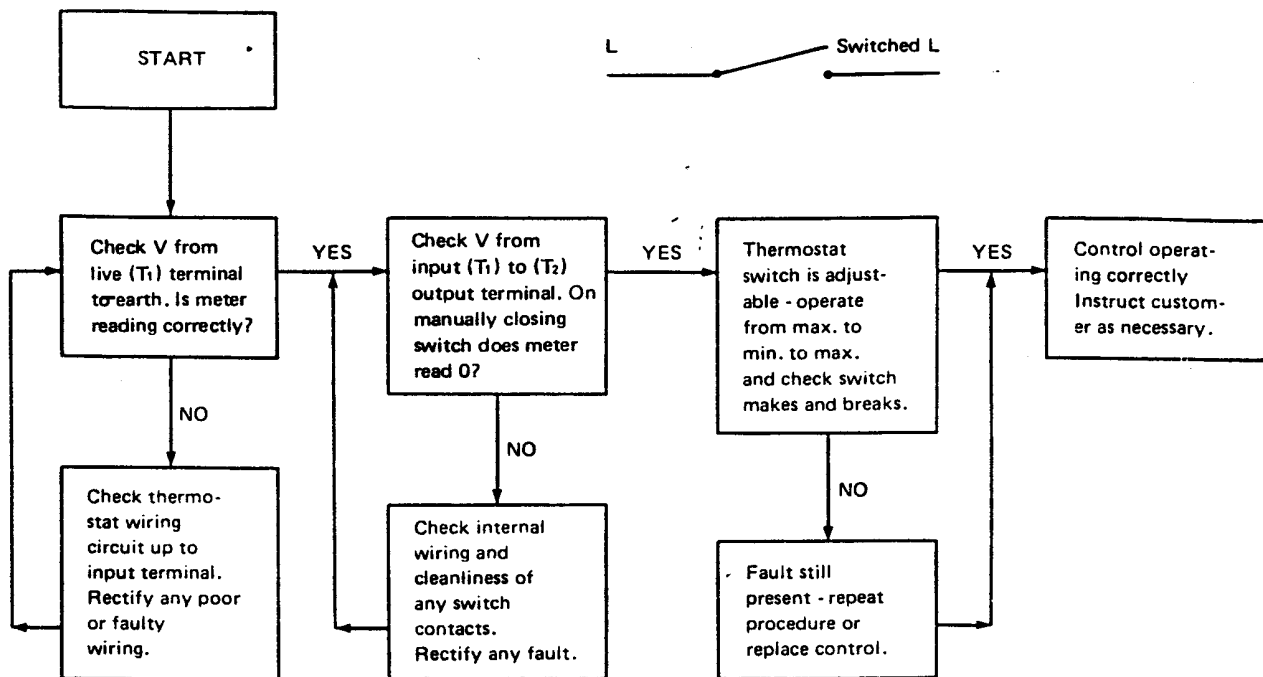


FIG. 6 THERMOSTAT

8. FAULT FINDING

As well as the fault finding chart given, reference should be made to the wiring diagram Fig. 2. Electrical procedures described are in accordance with the Instructions for British Gas Multimeter booklet.

CONDITION	POSSIBLE CAUSE	REMEDY
A. Pilot fails to light.	(1) No gas supply. (2) Control button not pressed fully down. (3) Blocked pilot filter (4) Blocked pilot injector.	Check all cocks are open in the supply to the boiler. Control button must be pressed fully down. (a) Remove plastic electrical terminal cover from top of gas control valve by unscrewing the screw. (b) Remove the four screws securing the solenoid valve to the top of the control valve. (c) Lift off the solenoid valve and the gasket beneath. (d) Unscrew and remove the single screw securing the flat plate to the main valve body, then lift off the plate and the gasket beneath. (e) Lift out the filter and replace as necessary. (f) Re-assemble in the reverse order. Remove and change the injector as described in Maintenance Instructions, Section 7.B.
B. Main burner fails to light and pilot is extinguished when pressure on the control button is released.	(1) Control button not held down long enough. (2) Loose thermocouple connection into control valve. (3) Pilot rate too low.	Control button must be fully pressed down for 20 seconds before main valve can be energised. Tighten thermocouple union nut finger tight plus ¼ turn only. Ensure connection is clean and dry. TOO MUCH PRESSURE MAY DAMAGE INSULATION AND CAUSE FAILURE. Adjust the pilot flame, see Section 6.

CONDITION	POSSIBLE CAUSE	REMEDY
B. Main burner fails to light and pilot is extinguished when pressure on the control button is released.	(4) Partially blocked pilot filter or pilot injector. (5) Failure of thermocouple, power unit or latching mechanism.	As item A(3) and A(4). After pilot has been on for 20 seconds, release control button. If pilot goes out: (a) Check F.F.D. and thermocouple using procedure given in Fig. 4. (b) If thermocouple has failed, replace as described in Maintenance Instructions, Section 7.C. Similarly, if control valve has failed replace as described in Maintenance Instructions, Section 7.D.
C. Main burner fails to light, pilot burning.	(1) Boiler thermostat set to 'off' or low setting. (2) Additional controls not calling for heat. (3) Honeywell control solenoid valve failed. (4) Thermostat out of calibration or faulty. (5) Blocked main burner injector.	Note setting of thermostat dial and check temperature of flow pipe. Check programmer or clock is ON and that room thermostat or other distant control is not closed down. Carry out preliminary electrical system checks. Check solenoid using procedure given in Fig. 5. If solenoid valve has failed; replace as described in A(3). Check thermostat using procedure given in Fig. 6. If faulty, replace thermostat as detailed in Maintenance Instructions, Section 7.E. Clean or replace injector as detailed in Maintenance Instructions, Section 7.A.
D. Main burner fails to shut down when water reaches predetermined temperature.	(1) Thermostat out of calibration or faulty. (2) Dirt on valve seat of Honeywell control.	Remedy as in item C(4). Clean the valve seat as follows: (a) Remove the solenoid valve and the plate beneath as described in A(3). (b) Clean the valve seat and the valve chamber. (c) Re-assemble in the reverse order.

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

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