

POTTERTON

Kingfisher open flued gas fired boilers

Potterton Kingfisher CF 125
36.6 kW (125,000 Btu/h) Output

Potterton Kingfisher CF 150
44.0 kW (150,000 Btu/h) Output

Potterton Kingfisher CF 180
52.8 kW (180,000 Btu/h) Output

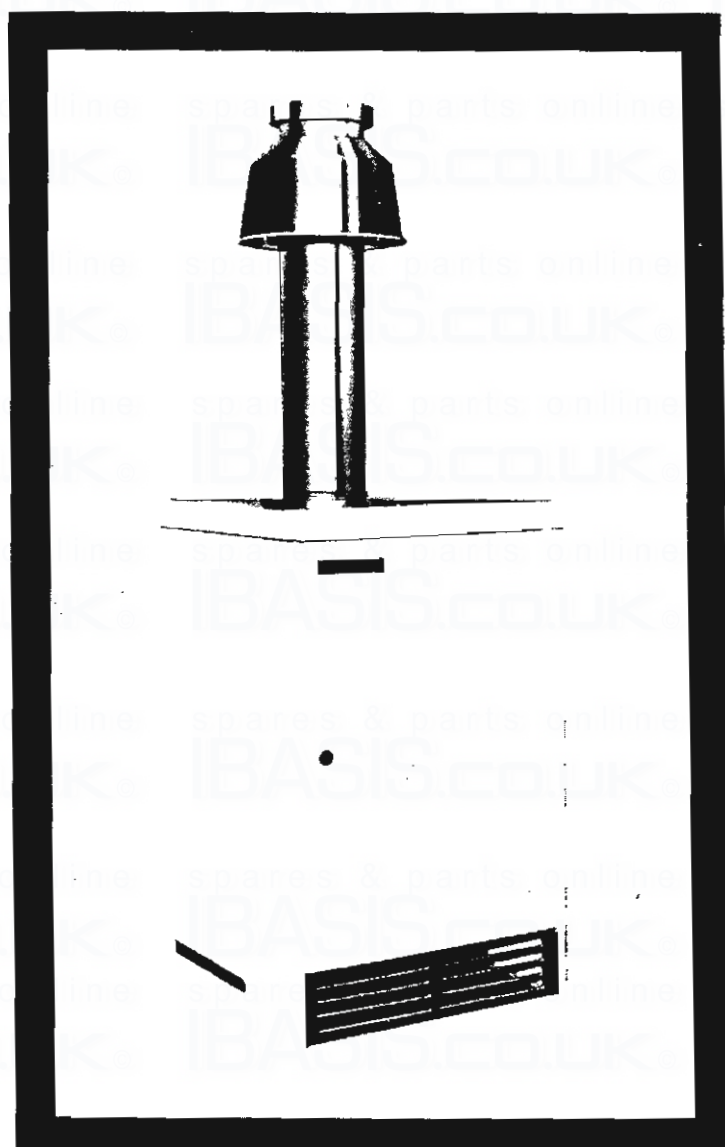
Potterton Kingfisher CF 220
64.5 kW (220,000 Btu/h) Output

IMPORTANT

THIS APPLIANCE IS FOR USE WITH NATURAL GAS ONLY. IT MUST BE INSTALLED AND SERVICED BY A COMPETENT PERSON AS STATED IN THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS 1984.

Leave these instructions adjacent to the gas meter.

- * Compact in size; a minimum of floor space required for a high output.
- * Light in weight for ease of handling.
- * Robust trouble-free design, giving easy installation and servicing.
- * Highly efficient; designed especially for natural gas operation in fully pumped systems.
- * Simple control system utilising composite control valve with push button operation incorporating a flame safety device.
- * Four models covering the range from 37 to 64 kW (125,000 to 220,000 Btu/h).
- * Delivered to site fully assembled and tested except for the casing and draught diverter which are packed separately.



GENERAL

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

DESCRIPTION - See figures 1 and 2

Potterton Kingfisher CF125 to 220 boilers are enclosed in attractive white, stove-enamelled sheet steel casings with a hinged door. The boilers can be installed in a utility room or a purpose designed/modified boiler room providing that the combustion air requirements overleaf and the requirements of BS 6798 and BS 6644 are met. If the boiler is fitted in a utility room, the casing top will conform in height with a standard height working surface.

HEAT EXCHANGER

The heat exchanger consists of monobloc castings interconnected by flow and return headers. Each casting has three waterways and two finned flueways; an additional flueway is formed in the space between each casting. A drain cock is fitted so the complete boiler can be drained. The boiler thermostat pocket is also fitted in the heat exchanger. A fluehood, mounted on top of the heat exchanger incorporates an access cover which allows cleaning of the flueways.

The flow header, which on CF125 and 150 boilers is located across the front of the appliance, incorporates a length of 1½ in. BSP pipe to take the flow to the rear of the boiler where it terminates in a male connection. The return header on these boilers is mounted at the rear and has a single, upward facing 1½ in. BSP connection.

On CF180 and 220 boilers, the flow header is located on the left-hand side and has two horizontal 2 in. B.S.P. connections and one similar vertical tapping. An identical header is used on the right-hand side for the return but as this is mounted at 90° to the flow, it has a single 2 in. BSP horizontal connection facing to the right and two vertical connections, one facing upwards and one downwards.

On CF180 and 220 models, the boiler flow headers also have tapings for the installer to fit a pressure relief valve, thermometer or pressure gauge if required.

COMBUSTION CHAMBER AND BURNER

The combustion chamber, in which the aerated main burner is fitted, is a rectangular shaped box secured to the underside of the heat exchanger. The pilot burner and thermocouple are mounted on the burner front plate with the burner bars running from front to back. The combustion chamber has an opening at the top to allow the products of combustion to pass through the heat exchanger, and others in its front, rear and sides to let in fresh air for combustion.

BOILER CONTROLS

The control system has been simply designed and is fail safe and easy to operate.

Once the main gas cock has been turned on, the control (CF125 and 150) or start (CF180 and 220) button on the gas control valve is pressed and held in to allow gas to pass to the pilot burner, where it is manually lit. As soon as the thermocouple heats up, the main burner is lit by turning on the electricity supply or boiler thermostat. On CF125 and 150 boilers, the thermostat knob can be set to 0, Min., 1, 2, 3, 4, and Max. The graduations Min. to Max. correspond approximately to a temperature range of 55°C. to 82°C. (130°F. to 180°F.). CF180 and 220

boilers feature a combined boiler and overheat thermostat. The boiler thermostat knob is graduated from 30° to 90°C. (86° to 194°F.); the overheat thermostat is pre-set and non-adjustable.

THE SYSTEM - See figures 11, 12 and 13.

The boilers can be installed in most types of fully pumped system but the following notes are given as a general guide.

1. All systems should be designed so that the static head at the boiler is between a minimum of 90 mbar (3ft. w.g.) and a maximum of 2.7 bar (90 ft. w.g.).
2. If the head is at or near the 90 mbar (3ft. w.g.) 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. 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.
4. An indirect domestic hot water cylinder should be used, incorporating a coil type of heat exchanger. The primary pipework should include a lockshield valve.
5. The circulating pump should be selected with reference to figure 3. The resistance through the boiler heat exchanger will not exceed 15 mbar (6in. w.g.) at a flow rate of 12.0gall/min on CF125 and 150 boilers or 24.9mbar (10.0in. w.g.) at a flow rate of 17.0gall/min. on CF180 and 220 boilers.
6. 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.
7. 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.
8. A drain cock(s) should be fitted at the lowest point(s) in the system, so that the whole system can be drained.
9. If the boiler is to be fitted as a replacement in an existing gravity system, the system will have to be converted to fully pumped. Figures 4 and 5 show the changes necessary to two typical gravity systems.
10. If the appliance is fitted in a system using modulating diverter valves in conjunction with temperature compensating controls, ensure that the water flow rate through the boiler exceeds 2.5 gall/min.
11. To prevent the possibility of nuisance shut-down on the CF180 and CF220, it is advised that a pump overrun thermostat be fitted to the system.

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 floor temperatures beneath conform 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.

- 760mm (2ft.6in.) at the front of the casing.
- 100mm (4in.) at each side of the casing.
- 12mm (½in.) behind the return header.

If the boiler is to be installed in a corner of the room, the

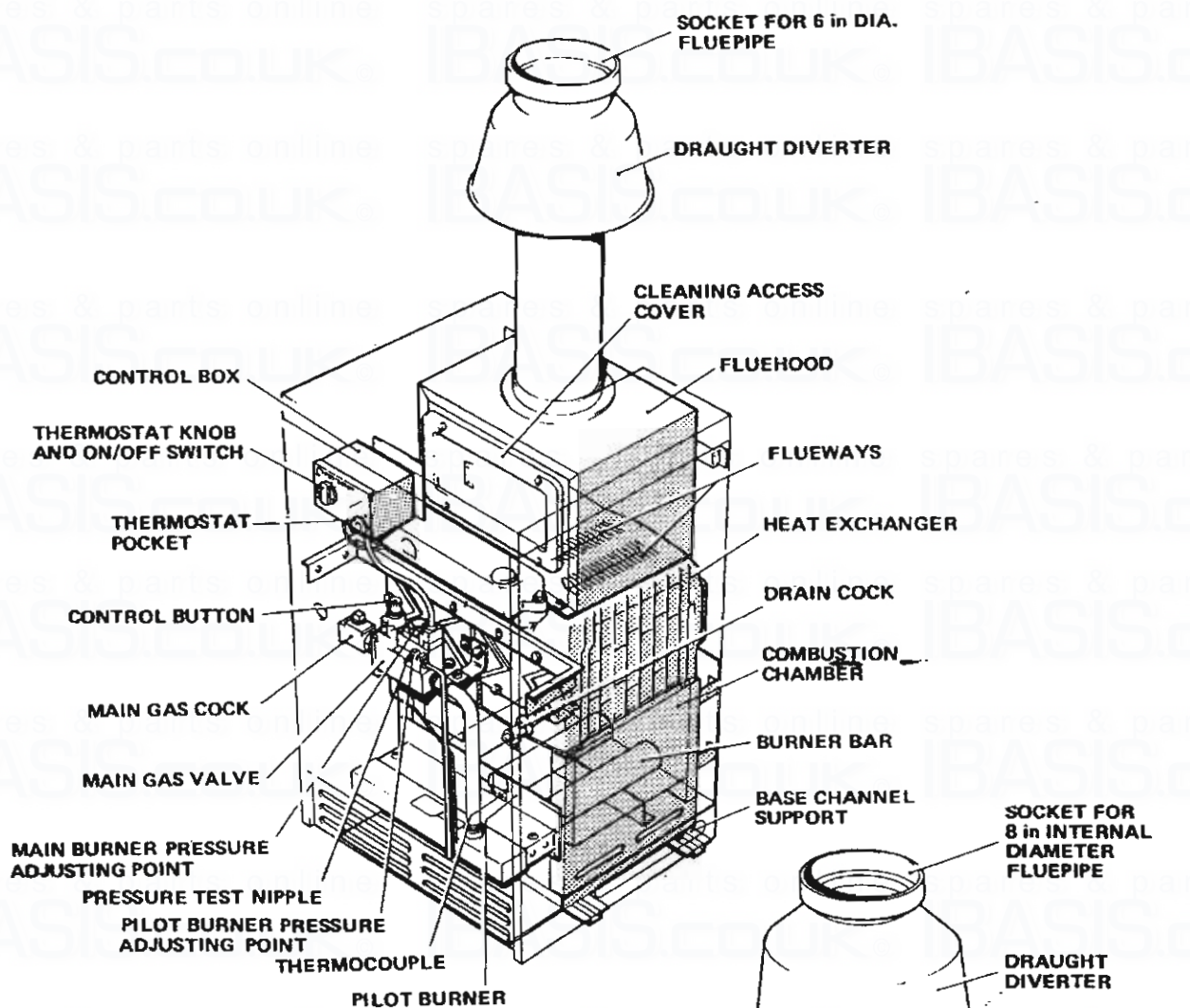


Fig. 1 GENERAL ARRANGEMENT – CF125 & CF150

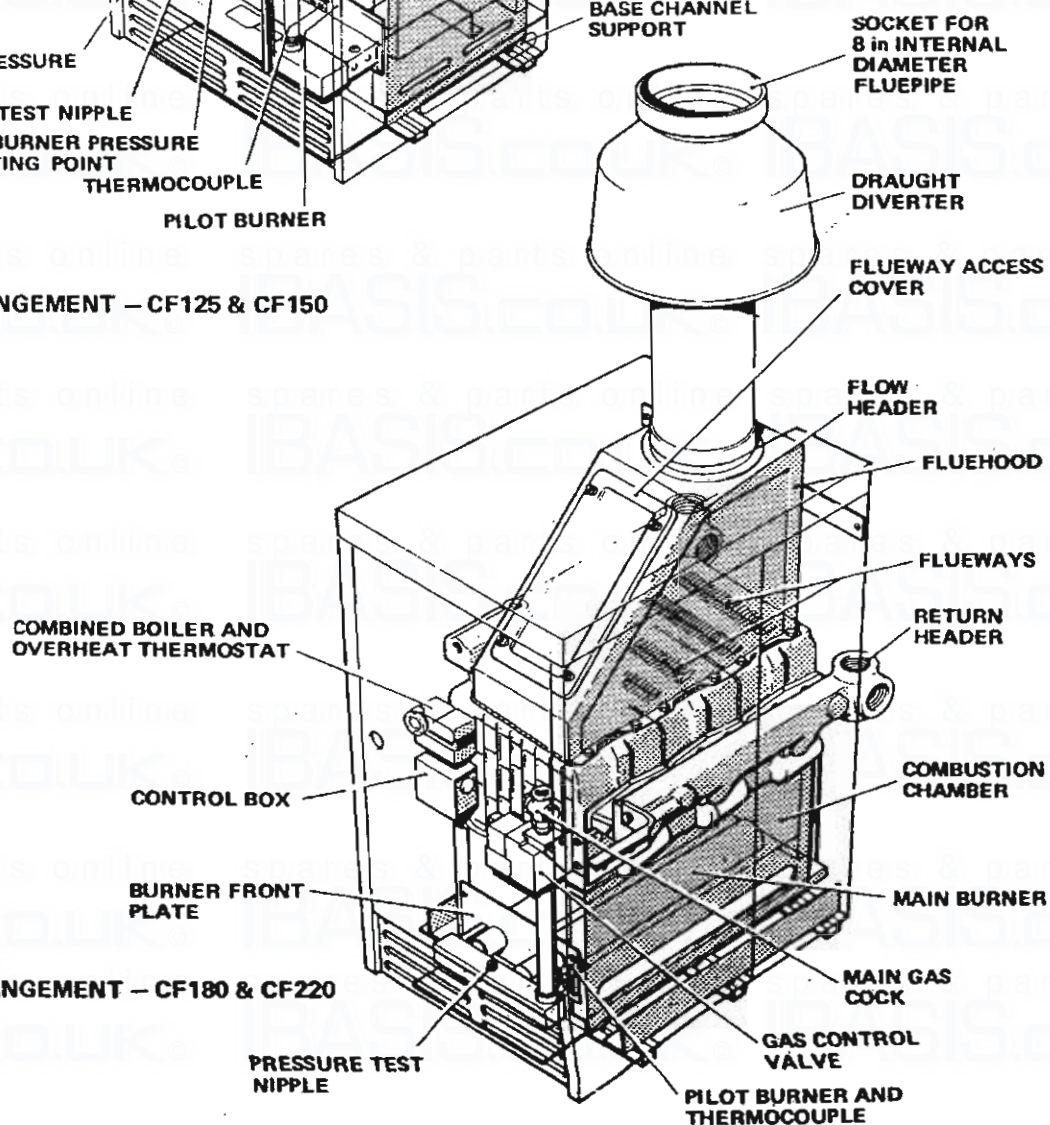


Fig. 2 GENERAL ARRANGEMENT – CF180 & CF220

100mm (4in.) clearance on one side can be reduced to only that necessary to fit the casing side panel as long as 200mm (8in.) is left on the other side.

If the boiler is to be fitted close to the wall behind the return header, connections to the boiler should be pre-piped before it is finally positioned.

COMBUSTION AIR AND VENTILATION REQUIREMENTS

A. Ventilation of compartments containing gas boilers. CF125 and CF150 only

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 1.

B. Ventilation of rooms containing gas boilers. CF125 and CF150 only

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:

- Directly into the room or space containing the boiler, or
- Via a duct through a wall or the roof into the room, (where such a method is considered, British Gas should be consulted).

The minimum effective area of the permanent air vent must be 181 sq.cm. (28 sq.in.) for the CF125, 226 sq.cm. (35 sq.in.) for the CF150. The CF180 and CF220 must only be installed in a ventilated room with two permanent air vents one at high level and one at low level, both communicating directly with outside air. Each opening whether left free or furnished with a grille must have a minimum effective free area in accordance with table 1.

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 for CF125 and CF150 or BS 6644 for CF180 and CF220. The following notes have been compiled for your guidance:-

- 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.

- There should be at least 3ft. (900 mm) of vertical flue from the boiler flue socket.

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

- 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. BS.5440 Part 1 for CF125 and CF150 or BS 6644 for CF180 and CF220.
- Wherever possible internal stacks, lined if necessary, should be used.
- All brick chimneys without an integral lining must be lined with either asbestos cement flue pipe to BS. 567 or a stainless steel flexible lining.
- Where condensation is likely, a means of draining must be provided.
- 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 and Local Authorities and British Gas requirements. The current rating of the wiring to the boiler must exceed 3 amperes in accordance with BS 6500, 1975 and have a cross sectional area of at least 0.75 sq.mm.

TABLE 1

Boiler Type	Level of Air Vent	Area For Air From Outside
CF125	High	33 in ² 212 cm ²
	Low	66 in ² 423 cm ²
CF150	High	41 in ² 264 cm ²
	Low	82 in ² 573 cm ²
CF180	High	50 in ² 323 cm ²
	Low	100 in ² 645 cm ²
CF220	High	60 in ² 387 cm ²
	Low	120 in ² 774 cm ²

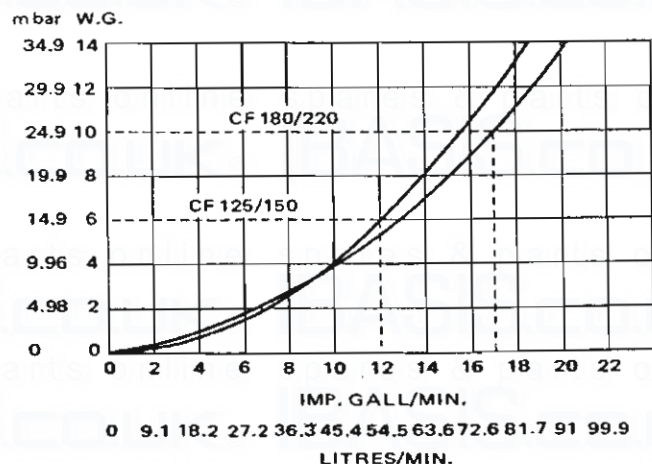


Fig. 3 PRESSURE LOSS ACROSS BOILER

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 the matter. The recommendations of CP331 Pts. 2 and 3 should be observed.

SAFETY VALVE AND THERMOMETER

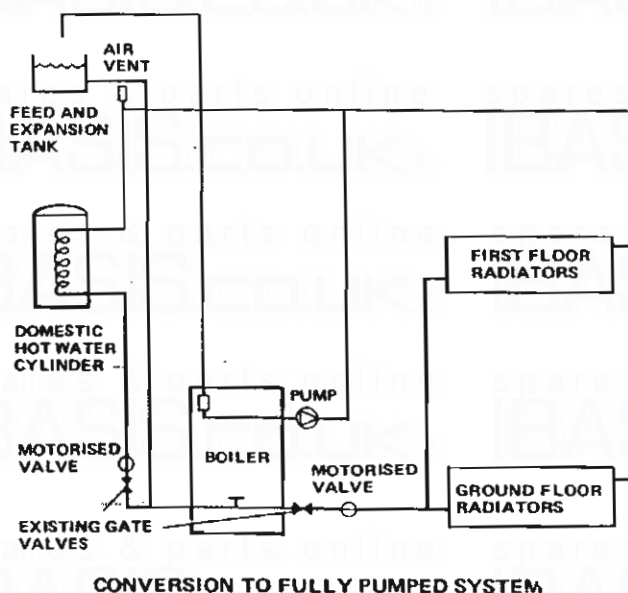
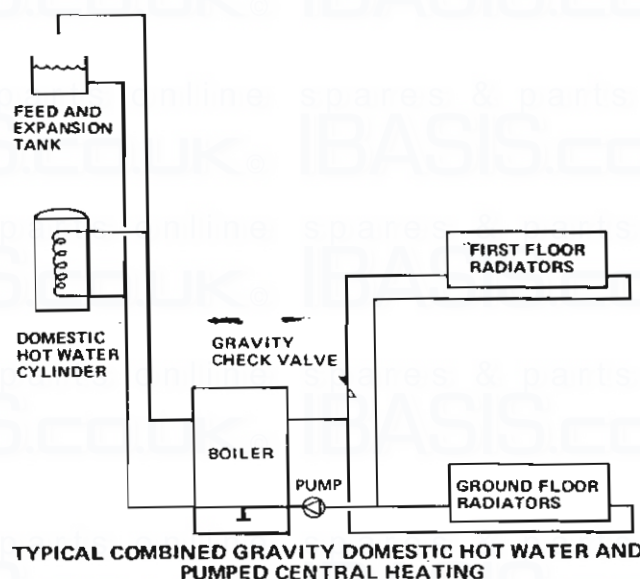
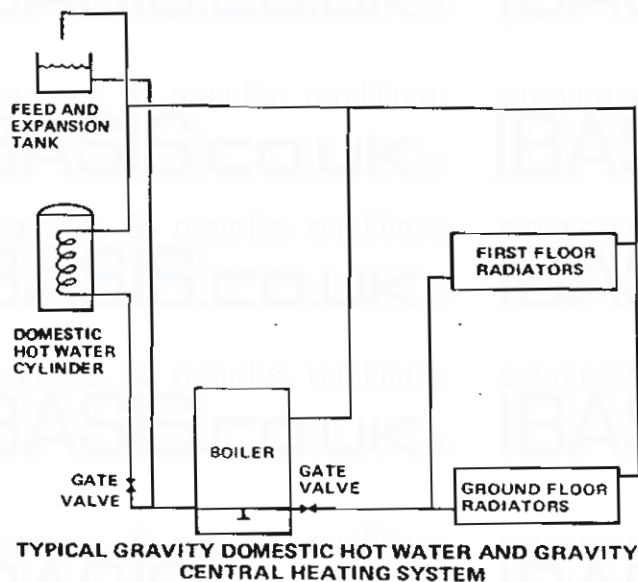
If the Local Authorities regulations stipulate that a safety valve should be fitted, this should be installed in the flow pipework as close to the boiler as possible. If a thermometer is to be installed, preferably of the immersion type, this should also be fitted in the flow pipework as close to

the boiler as possible. There are plugged tappings provided on the boiler flow header, which can be used for fitting these items (CF 180 and CF 220 only).

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.

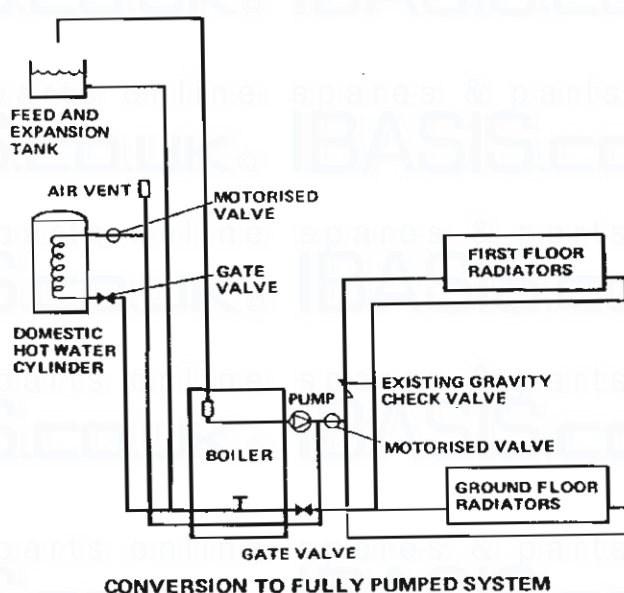
Maintenance is a simple matter, as once the casing door and plinth have been removed, all parts that are likely to require servicing are easily accessible.



SYSTEM MODIFICATIONS REQUIRED

1. Remove pipework adjacent to boiler
2. Replace open vent with auto. air vent.
3. Connect open vent into boiler flow header
4. On CF.125 and 150 boilers only, remove and invert return header.
5. Connect return pipework to return header
6. Fit pump in common flow pipe adjacent to boiler
7. Fit zone controls in heating and primary circuits

Fig.4. PIPEWORK CONVERSION - FULL COMBINED GRAVITY TO FULLY PUMPED



SYSTEM MODIFICATIONS REQUIRED

1. Remove pipework adjacent to boiler
2. Remove open vent and cold feed connections adjacent to cylinder and fit air vent.
3. On CF.125 and 150 boilers only, remove and invert return header.
4. Connect heating and primary returns and cold feed into return header. Fit balancing gate valves.
5. Fit pump in common flow pipe adjacent to boiler and connect to heating and primary flow pipes.
6. Fit zone controls in heating and primary circuits.
7. Connect open vent pipe to boiler flow header.

Fig.5. PIPEWORK CONVERSION - GRAVITY H.W. AND PUMPED C.H. TO FULLY PUMPED

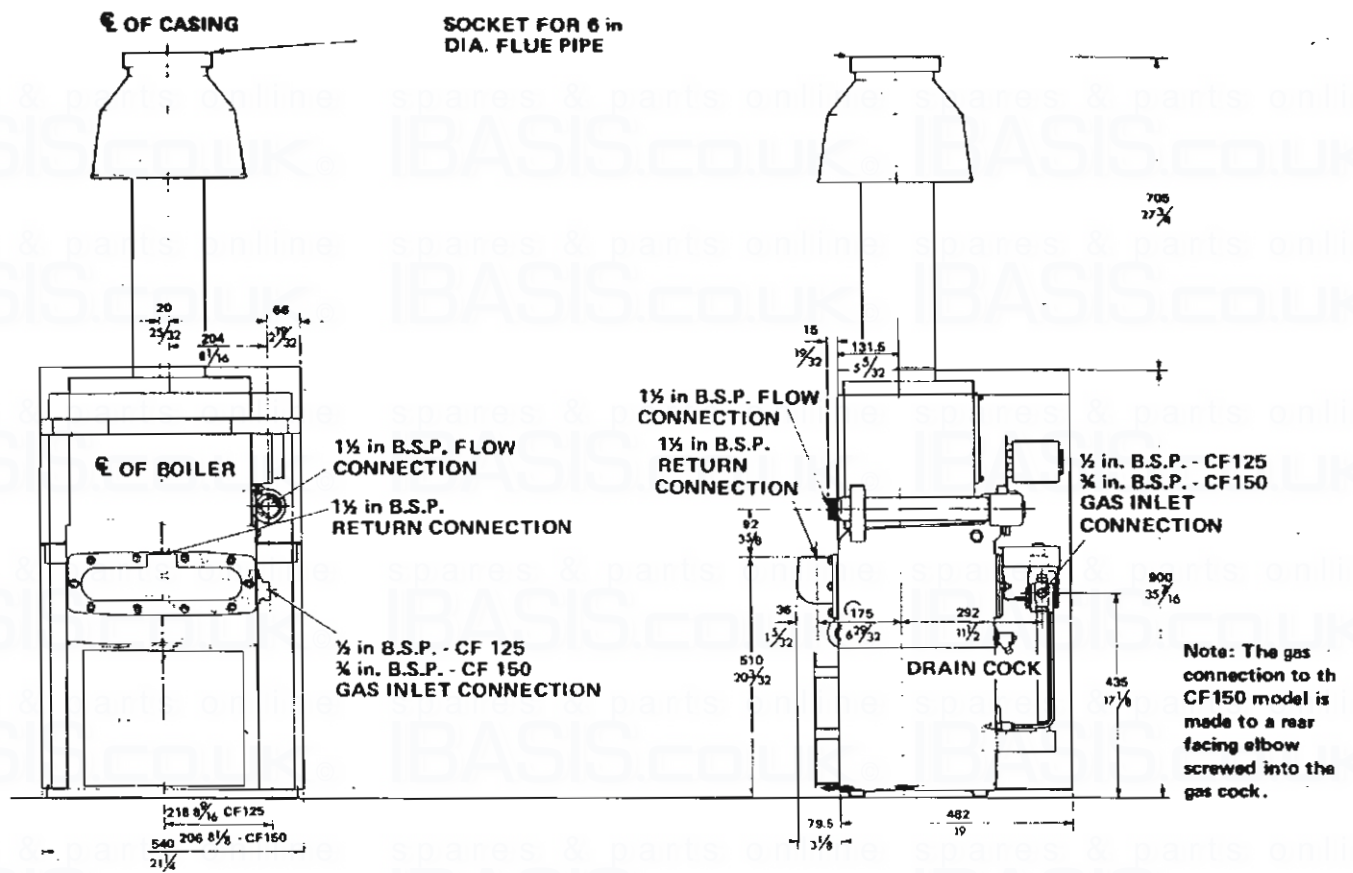


Fig.6. CONNECTIONS AND DIMENSIONS - CF125 & 150

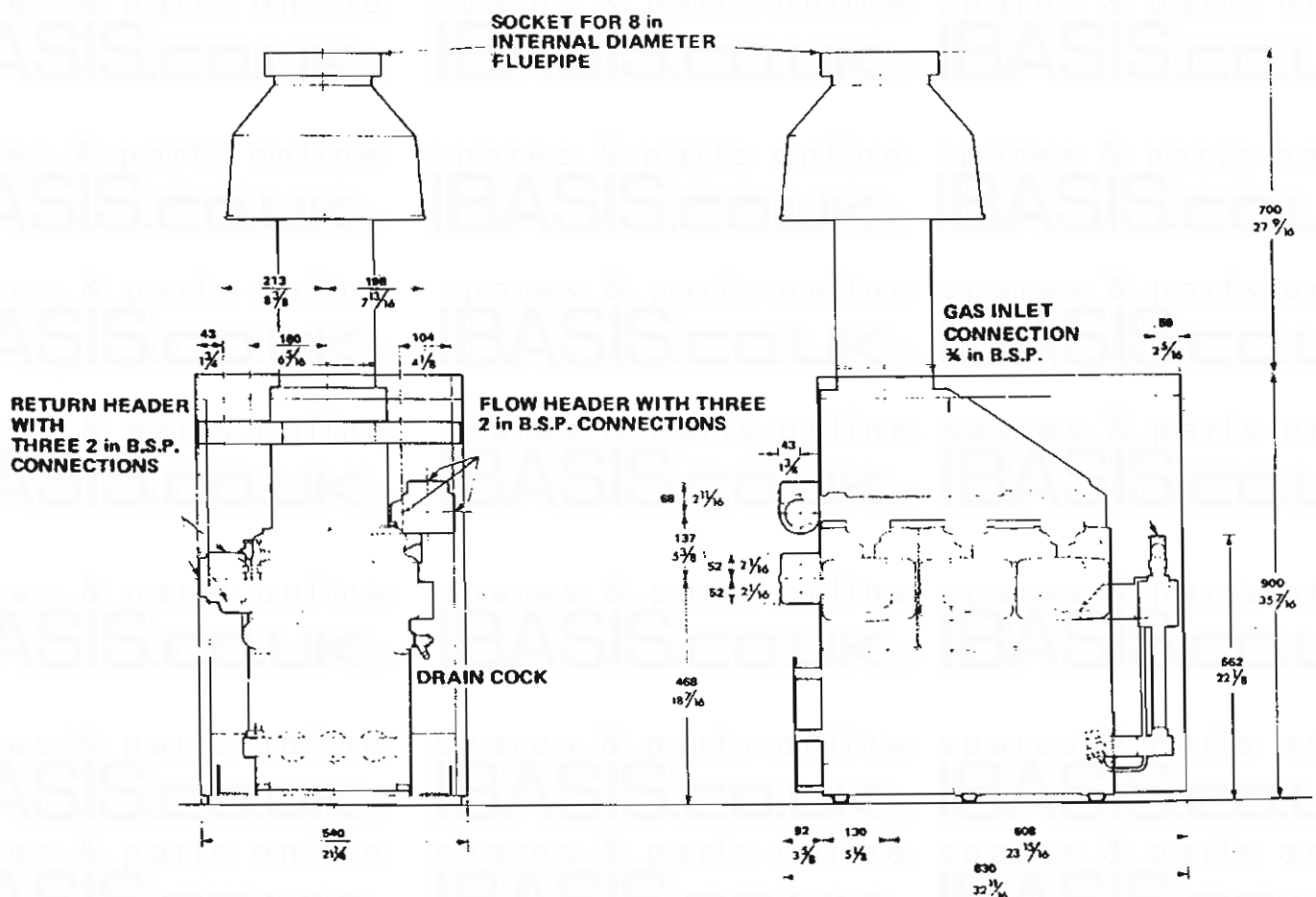


Fig.7. CONNECTIONS AND DIMENSIONS - CF180 & 220

LITERATURE

The following literature is supplied with each boiler:

Data and Installation Instructions
Users 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.

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.

GENERAL DATA

Input:	CF125 166,700 Btu/h – 48.9 kW CF150 200,000 Btu/h – 58.6 kW CF180 239,650 Btu/h – 70.2 kW CF220 292,700 Btu/h – 85.8 kW
Output into Water	CF 125 125,000 Btu/h – 36.6 kW CF 150 150,000 Btu/h – 44.0 kW CF 180 180,000 Btu/h – 52.8 kW CF220 220,000 Btu/h – 64.5 kW
Output into Air:	CF125 2,700 Btu/h – 0.8 kW CF150 3,000 Btu/h – 0.9 kW CF180 4,000 Btu/h – 1.2 kW CF220 4,000 Btu/h – 1.2 kW
Max Working Head:	2.7 bar (90ft w.g.)
Water Content:	CF125 12.8 litres (22.5 pts) CF150

	CF180 CF220 17.3 litres (30.3 pts)
Main Gas Cock:	CF125 ½ in. BSP Loose Key Union Cock CF150 to CF220 ¾ in. BSP Loose Key Union Cock
Combination Gas Control:	CF125 and 150, ½ in. BSP Honeywell Compact V4600C 1029 CF180 and CF220 ¾ in. BSP Honeywell ICGC V4400C 1211
Thermostat:	CF125 Ranco: C26 CF150 CF180 Honeywell L 6191 CF220
Main Burner:	Furigas
Pilot Burner:	CF125 CF150 Honeywell Q314A CF180 CF220
Thermocouple:	Honeywell, Q 309 A
Weight (Empty):	CF125 285 lbs (129 kg) CF150 CF180 435 lbs (198 kg) CF220

ADDITIONAL CONTROLS

Potterton Electronic Programmers are available as optional extras. These electronic programmers have been developed to complement 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.

INSTALLATION INSTRUCTIONS

It is the law that all gas appliances are installed and serviced by competent persons as stated in Gas Safety (Installation and Use) Regulations 1984. For Health and Safety information see insert sheet

These appliances should be installed in accordance with the following:

The relevant British Standard and Codes of Practice, BS 6798 and BS 5449 - CF125 and 150 only.

CP331 Part 3.

BS 6644 – CF180 and 220 only

CP342 – CF180 and 220 only

The gas Safety Regulations

The model water by-laws

The Building standards (Scotland) consolidation regulations issued by the Scottish Development Department. I.E.E. recommendations.

Reference should also be made to British Gas publications "Material and Installation Specifications for Domestic Heating and Hot Water", and "Technical notes on the Design of Flues for non-domestic Gas Boilers".

1. UNPACKING

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

CARTON 1 – Boiler Assembly and Literature

CARTON 2 –:

- | | |
|------------------|-------------------------|
| a) Casing Sides | f) Casing Tie Plate |
| b) Case Top | g) Side Panel Brace |
| c) Door Panel | h) Flue Brush |
| d) Plinth | i) Extension Side Panel |
| e) Fastener Pack | (180/220 only) |

CARTON 3 – Draught Diverter Assembly

B. Open Carton No. 1 – Boiler Assembly – and remove it from the wooden pallet – there is no need to open Cartons 2 or 3 at this stage.

2. POSITIONING THE BOILER

- Manoeuvre the boiler into position, leaving the clearances already specified.
- When the boiler has been finally positioned, check that it is level.
- On CF125 and 150 models only, remove and discard the nut securing the control box to the fluehood where it has been attached for transportation purposes only. Fit the box in its correct position on the left-hand side of the flow header, securing it with the screws and washers to be found already screwed in position on the headers. Plug the lead from the gas valve into the socket in the bottom of the control box. Use one screw to secure the earth lead from the control box.

3. CONNECTIONS – See Figure 6 and 7

- Make the flow and return connections in accordance with normal practices, taking the following notes into account when applicable. Do not obstruct the flue cleaning access on the fluehood.
- Connect the combined flow pipework to the flow connection at the rear of the boiler. The system vent pipe should be connected into the pipework as close to the boiler as possible.
- Connect the combined return pipework to the return header.
- Connect the gas supply pipe to the boiler main gas cock and on CF180 and 220 boilers only, use the pipe support clip adjacent to the gas cock to support the incoming pipework.
- Ensure the drain cock(s) is fitted in the lowest point in the system.

- F. Open all water valves and thoroughly flush the system. The pump should not be fitted at this stage as any deposits in the system would damage the pump.
- G. 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.
- H. Fill and vent the system and test for leaks; rectify if necessary.

4. FLUE

- A. Fit the draught diverter to the socket on the boiler fluehood. The draught diverter is a push fit into the socket and does not need sealing.
- B. Make the flue connection to the boiler draught diverter, sealing the joint with asbestos rope and boiler cement.

5. WIRING — See fig. 8 to 13

Care must be taken to ensure that all wiring to the boiler is kept clear of sharp edges and hot surfaces. Unscrew the two (CF125 and 150) or one (CF180 and 220) screws and remove the front of the control box, thus exposing the mains terminal connections. The boiler terminals are 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 Figure 8. However, the layout of a particular system will itself govern the most economical location for the junction box and its terminals. Wire up the boiler and system controls using Fig. 11, 12 or 13 or as a guide, 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 requirements. Figure 12 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 only should be used. Certain zone valves may require an additional connection 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 Figures 11, 12 and 13, 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 equivalent 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.

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.

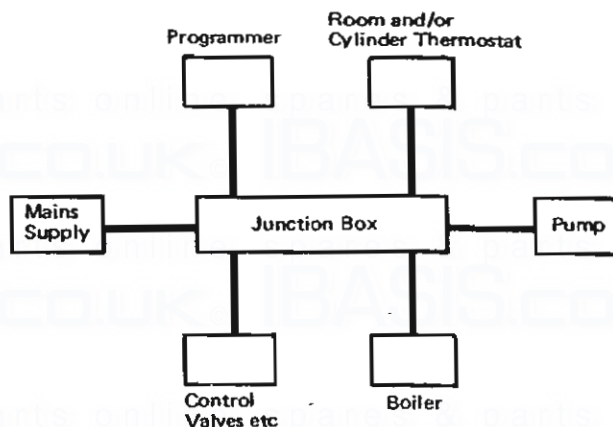


Fig. 8 PRINCIPLE OF WIRING

If a three-way (proportioning diverter) valve with a mid-position is being fitted in the system, the following instructions must be adhered to in addition to the valve manufacturers 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 front of the control box and secure it with the screw(s).

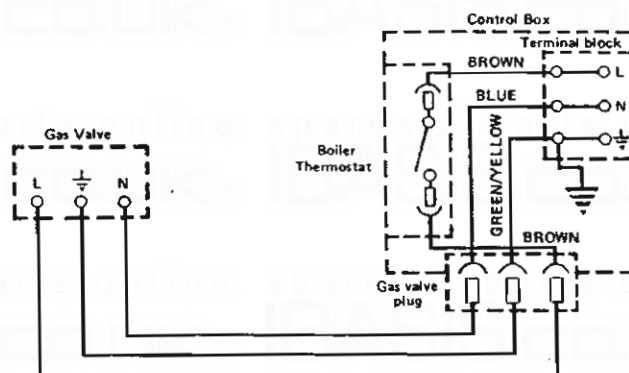


Fig. 9 BOILER WIRING — CF125 & 150

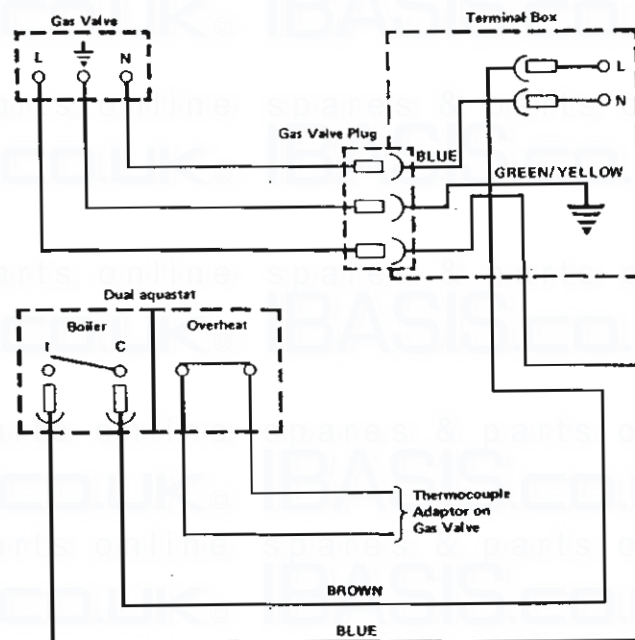


Fig. 10 BOILER WIRING — CF180 & 220

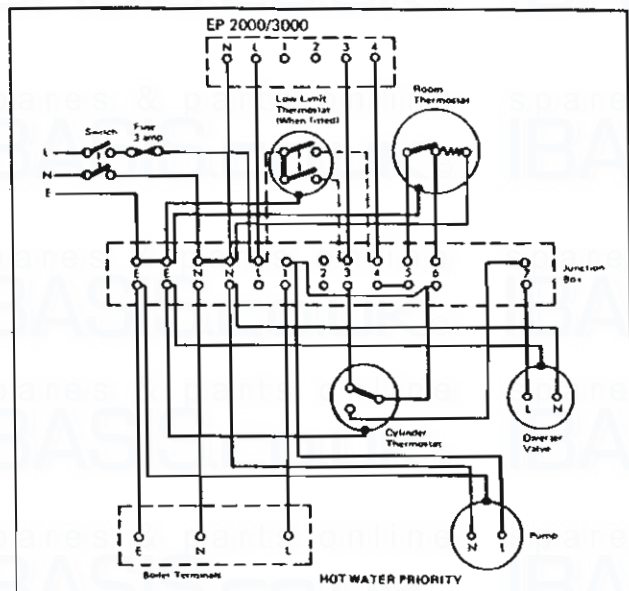
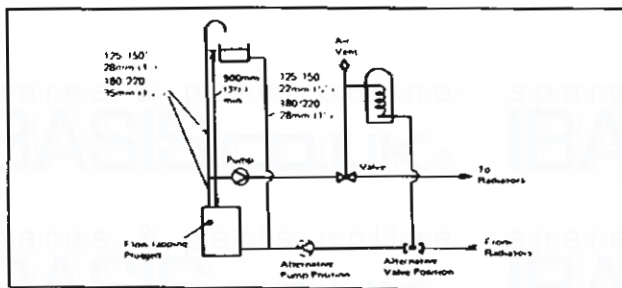


Fig. 11 FULLY PUMPED WITH TWO POSITION DIVERTER VALVE

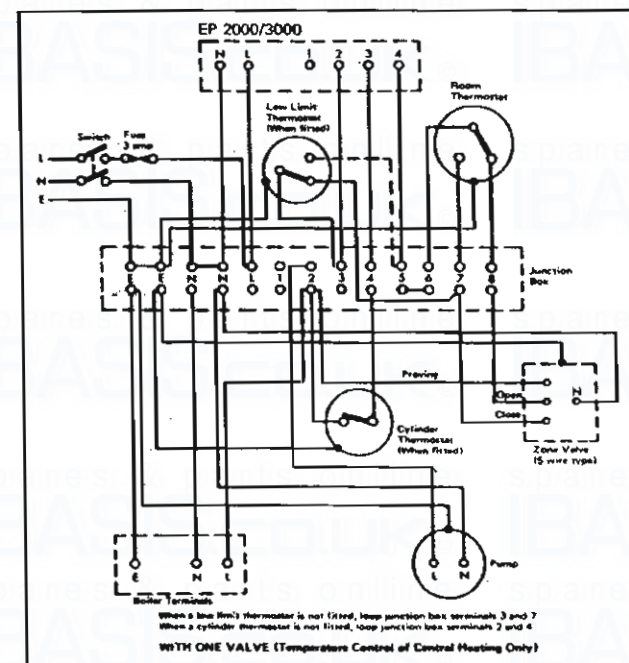
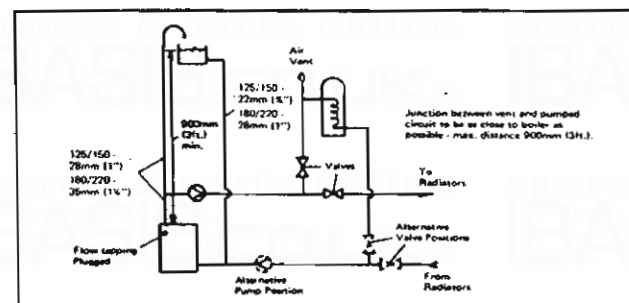


Fig. 12 FULLY PUMPED WITH ONE OR TWO TWO-WAY VALVES

6. FIRST LIGHTING

Before lighting the boiler, the gas installation must be tested for soundness in accordance with CP331 Part 3, 1974.

A. Turn on the main gas supply.

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

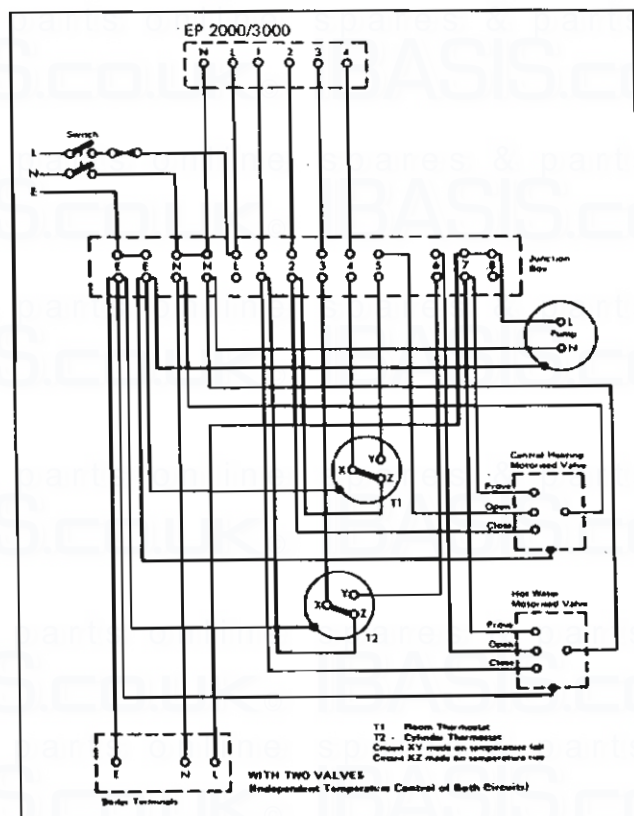
B. Break the union at the boiler main inlet cock, then open the cock and purge any air from the supply pipe. See CP331 Part 3.

C. Close the cock, remake the union then re-open the cock.

D. Ensure that the system is full of water and that the pump and radiator isolating valves are open.

CF125 and 150 Boilers only

1. Check that the main electricity supply to the boiler is switched on and that the boiler thermostat is in the off "O" position.
2. 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 a high temperature.
3. 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.
4. Push aside the small plate in front of 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



3. If burner pressure adjustment is necessary, on CF125 and 150 boilers, remove the screwed cap on the top of the control valve, or on CF180 and 220 boilers, remove the small, cheese headed screw on top of the control valve, then turn the screw beneath clockwise to increase pressure or anti-clockwise to decrease. Refit the screwed cap or screw 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 2 should also be obtained and this should be checked by meter reading over a period of at least 5 minutes once the boiler is hot.

B. Pilot Burner — See Figure 1 or 2

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, on CF125 and 150 boilers, 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. On CF180 and 220 boilers, rotate the exposed adjusting screw clockwise to reduce, or anti-clockwise to increase the flame.

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. to 180°F) on CF125 and 150 boilers or at 30°C. to 82°C. (86°F. to 180°F.) on CF180 and 220 boilers.
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 (CF125 and 150 boilers) or to its lowest setting (CF180 and 220 boilers) and check that the main burner shuts down

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:- For CF125 and 150 boilers, 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. On CF180 and 220 boilers, press in the off button 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.

8. CASING — See figures 14 and 15

A. Unpack the casing.

Note: The fastener pack will be found wrapped with the plinth, flue brush and brackets.

- B. Fit the rear tie bracket to the studs (and spacing nuts CF 125/150 only) on the rear of the fluehood, using M5 nuts and paint cutting washers. On CF 180 and 220 boilers, do not fully tighten the nuts at this stage.

NOTE: On CF 125/150 do not fit left hand nut at this stage. (see operation G).

- C. On CF 125 and 150 boilers, fit the front tie bracket to the extended studs on the front of the boiler heat exchanger, using M8 nuts and flat washers. On CF 180 and 220 boilers, fit the front tie bracket to the front of the return header, using an M5 screw and paint cutting washer. Do not tighten the nuts/screw at this stage.
- D. On CF 125 and 150 boilers, fit two captive nuts to the bracket on the inside of each side panel. On CF 180 and 220 boilers, fit two captive nuts to the bracket on the inside of the right hand side panel.
- E. On the CF 180 and 220 boilers, assemble the side panels by joining together a large and small panel, using M5 screws, nuts and paint cutting washers. The upper screw in the left-hand side panel assembly should not be fully tightened at this stage. Note: The top flange of the small side panel has elongated slots.
- F. Position the side panels on the boiler base channel supports, locating the holes in the bottom edge of each panel over the raised knibs on the supports.
- G. Secure the rear edge of each side panel to the rear tie bracket, using M5 screws and paint cutting washers. On CF 125 and 150 boilers, secure the two earth leads from the control box. One earth lead is fitted to the screw in the left hand side panel, the second earth lead is fitted over the left hand stud at the rear of the fluehood and secured with the rear tie bracket fixing nut. On CF 180 and 220 boilers, secure the earth lead to the screw left loose in operation E.
- H. On CF 125 and 150 boilers, secure each side panel to the front tie bracket, using two No. 10 self-tapping screws. On CF 180 and 220 boilers, secure the right-hand side panel to the front tie bracket, using two No. 10 self-tapping screws. Fully tighten all screws and nuts.
- J. Use the cable clips to secure the incoming electrical cable beneath the top edge of the appropriate side panel.
- K. Fit two captive nuts to the bottom of the front flange of each side panel, then secure the plinth, hinge pin uppermost, between the side panels using four No. 8 self-tapping screws.
- L. Fit a nylon bush to the upper and lower hinge holes in the door.
- M. Assemble the hinge plate to the top of the door, then fit the door to the bottom hinge pin on the plinth. Secure the hinge plate to the right-hand side panel using two M5 screws and paint cutting washers, locating the plate beneath the top flange of the panel.
- N. Fit the two magnetic catches to the brackets on the brackets on the left-hand side panel.
- P. Fit the nylon panel fastener to the top panel, then fit the top panel in position.

9. USER'S GUIDE

A user's guide is provided with this boiler but the installer should explain the operation of the boiler and system to the user. The user should be advised that, for continued safe and efficient operation it is important that regular skilled servicing is carried out on the boiler.

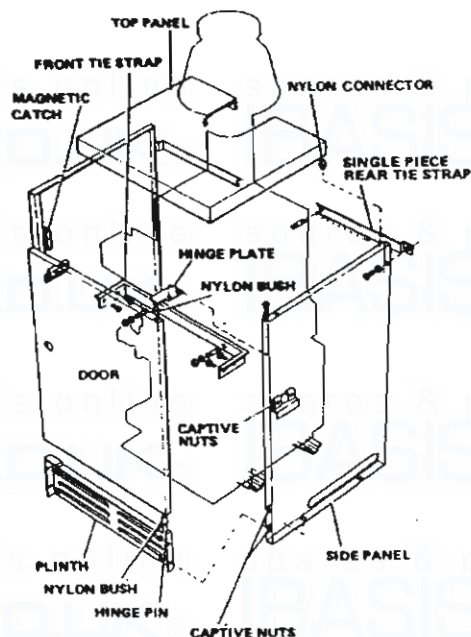


Fig. 14 CASING - CF125 & 150

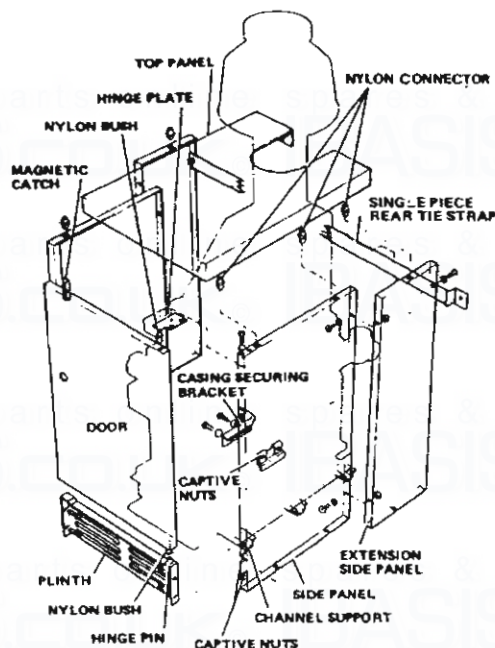


Fig. 15 CASING - CF180 & 220

TABLE 2

	CF125	CF150	CF180	CF220
Input:	166,700 Btu/h 48.9kW	200,000 Btu/h 58.6 kW	239,650 70.2kW	292,700 Btu/h 85.8kW
Output into Water:	125,000 Btu/h 36.6kW	150,00 Btu/h 44.0kW	180,000 Btu/h 52.8kW	220,000 Btu/h 64.5kW
Output into Air (approx):	2,700 Btu/h 0.8 kW	3,000 Btu/h 0.9 kW	4,000 Btu/h 1.2 kW	4,000 Btu/h 1.2 kW
Burner Pressure:	12.5 mbar 5.0 in.wg.	12.3 mbar 4.9 in.wg.	9.4 mbar 3.8 in.wg.	11.2 mbar 4.5 in.wg.
Injector Size:	3.3mm	3.6mm	5.1mm	4.3mm
Gas Rate:	4.42 cu.m/h 156 cu.ft/h	5.47 cu.m/h 193 cu. ft/h	6.56 cu.m/h 232 cu.ft/h	8.01 cu.m/h 283 cu.ft/h
Potterton Serial No.	GQY	GQZ	GSY	GSZ
British Gas Appliance No.	41.601.15	41.601.16	41.601.19	41.601.20

9. SHORT PARTS LIST

Description	Potterton Part No.	British Gas Part No.
Pilot Burner Honeywell Q314A - CF125, 150, 180, 220	402464	-
Pilot Burner Injector BCR 18	410209	-
Gas Control Valve, Honeywell V4600C, 3/8in.BSP - CF125 - CF150	402809	393 180
Gas Control Valve, Honeywell V4400C, 3/8in.BSP - CF180- 220	402813	392 607
Thermocouple, Honeywell Q309A	402174	390 210
Thermostat, Ranco C26 - CF125 and 150	404456	382 253
Honeywell, L6191 - CF180 and 220	402833	-
Thermostat knob - CF125 and 150 only	202125	375 808
Main burner injector, 3.3mm - CF125	410457	393 237
3.6mm - CF150	410458	393 238
5.1mm - CF180	410460	-
4.3mm - CF220	410459	-
Main burner lint resistant gauze - (CF125 & 150 only)	203244	358 123

"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

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POTTERTON KINGFISHER CF125, 150, 180 AND 220 BOILERS

To ensure continued efficient operation of the boiler, it is necessary to carry out maintenance and cleaning at regular intervals.

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.

If there has been any delay in cleaning and the boiler has been switched off, it is desirable to operate the boiler for a short time to dry out deposits in the flueways which, if they are left in the cold state, will absorb moisture and become both corrosive and difficult to remove.

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 that 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

- A. Ensure that the gas and electricity supplies to the boiler are turned off at the main inlet cock and main isolating switch respectively.
- B. Lift off the casing top panel.
- C. Unscrew and remove the two screws securing the door hinge plate to top of the right-hand panel.
- D. Lift off the casing door.
- E. Unscrew and remove the four screws securing the plinth to the casing side panels and remove the plinth.

2. Main Burner Assembly - Removal and Cleaning

- A. Disconnect the union at the boiler main gas cock.
- B. On CF125 and 150 boilers, unscrew and remove the nut and bolt securing the retaining bracket around the gas pipework, adjacent to the gas control valve. On CF180 and 220 boilers, remove the two screws securing the retaining bracket on the gas control valve to the support bracket on the boiler.
- C. Unplug the electrical lead from the gas control valve at the control box.
- D. On CF180 and 220 boilers only, disconnect the thermocouple at the gas control valve, then move aside the clip and withdraw the connector on the leads to the overheat thermostat.
- E. Unscrew and remove the four screws securing the burner front plate to the combustion chamber.
- F. Remove the burner and control assembly from the boiler.
- G. On CF125 and 150 boilers only, unscrew and remove the two nuts and bolts securing the burner gauze assembly and upper blanking plate between the gas header and burner front plate. Clean any fluff or dirt from the gauze. CF180 and 220 boilers do not have a gauze and blanking plate fitted.
- H. Disconnect the thermocouple, CF125 and 150 boilers only, and pilot supply tube at the gas control valve.
- J. Unscrew and remove the four screws securing the gas header to the burner front plate and separate the burners from the assembly.
- K. Remove all deposits from the outside of the burners, then use a vacuum cleaner and remove any dirt from inside the burners.
- L. Use a soft brush and remove any visible deposits from the pilot and thermocouple assembly. The pilot injector need not be removed and cleaned unless the pilot flame is distorted or reduced in any way.
- M. Examine the orifice in the main injectors to ensure they are not blocked. The injectors need not be removed unless they need cleaning. If however, an injector requires

cleaning, it should be removed and cleaned using a suitable solvent e.g. acetone.

- N. Refit the burners to the header assembly, securing the parts with the four screws.
 - P. Reconnect the thermocouple, CF125 and 150 boilers only, and the pilot supply tube at the gas control valve.
- NOTE: Do not overtighten the thermocouple connection. 1/4 turn of the nut beyond finger tightness is adequate.
- Q. On CF125 and 150 boilers only, refit the gauze and blanking plate to the assembly, securing them with the two nuts, bolts and washers. Ensure that the gauze is fitted the correct way up as marked on the assembly.
 - R. Do not refit the assembly to the boiler 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 access cover from the fluehood.
- B. Working from above and below the heat exchanger, use the brush supplied and remove all deposits from between the fins of the casting.
- C. Refit the fluehood cover, ensuring that a good seal is made. Tighten the four nuts.
- D. Remove all deposits from inside the boiler combustion chamber.

4. Main Burner Assembly - Replacement

- A. Refit the burner and control assembly to the boiler, securing the burner front plate to the combustion chamber with the four screws.
- B. On CF125 and 150 boilers, refit the piped clip around the gas pipework adjacent to the gas control valve, securing the clip with the nut and bolt. On CF180 and 220 boilers, secure the retaining bracket on the gas valve to the support bracket on the boiler using the two screws.
- C. Reconnect the union at the main gas cock.
- D. Plug the lead from the gas control valve into the control box.
- E. On CF180 and 220 boilers only, reconnect the leads from the overheat thermostat and the thermocouple to the gas control valve.

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

Before lighting the boiler, the gas installation must be tested for soundness in accordance with CP331 Part 3, 1974.

- A. Fit a pressure gauge to the pressure test nipple on the gas control valve CF125/150 or on the burner manifold, CF180/220.
- B. Turn on the main gas inlet cock.
- C. Ensure that the system is full of water and that the pump and radiator isolating valves are open.
- D. CF125 Only
 - (1) Check that the main electricity supply to the boiler is switched on and that the boiler thermostat is in the off "O" position.
 - (2) 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 a high temperature.
 - (3) 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.

(4) Push aside the small plate in front of 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.

(5) Push back the plate 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.

(6) 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.

E. CF150 Boilers Only

(1) Check the main electricity supply to the boiler is switched on and that the boiler thermostat is in the off "O" position.

(2) 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 a high temperature.

(3) Press in and release the off button on the gas control valve. This ensures that the valve is in the off position.

(4) Push aside the small plate in front of the pilot burner, then press and hold in the start button on the gas control valve whilst applying a light to the exposed pilot burner. Continue to hold in the start button, and check that the pilot has lit; hold in the start button for a further 20 seconds, then release it and the pilot should remain alight.

(5) Push back the plate 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 press in the off button, then release it and wait three minutes before repeating the procedure. The buttons on the control valve should not be touched during this period.

(6) 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, remove the round headed screw on the gas control valve, then rotate the exposed adjusting screw clockwise to reduce or anti-clockwise to increase the flame.

F. CF180 and 220 Boilers Only

(1) Ensure that the electricity supply is switched off.

(2) 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 a high temperature.

(3) Turn the boiler thermostat up to a high temperature.

(4) Press in and release the off button on the gas control valve. This ensures that the valve is in the off condition.

(5) Push aside the small plate in front of the pilot burner, then press and hold in the start button on the gas control valve whilst applying a light to the exposed pilot burner. Continue to hold in the start button and check that the pilot has lit; hold in the start button for a further 20 seconds, then release it and the pilot should remain alight.

(6) Push back the plate 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 press in the off button, then release it and wait three minutes before repeating the lighting procedure. The buttons on the control valve should not be touched during this period.

(7) 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, remove the round headed screw on the gas control valve, then rotate the exposed adjusting screw clockwise to reduce or anti-clockwise to increase the flame.

G. Turn on the boiler thermostat, CF125 and 150 boilers, or switch on the electricity supply, CF180 and 220 boilers and the main burner will light.

H. Check the boiler gas pipework, from the gas cock to the main burner, for gas soundness using a soap solution.

J. Check that the burner pressure is in accordance with Table 1. If main burner pressure adjustment is necessary,

remove the screwed cap on CF125 boilers, or cheese headed screw, CF150 to 220 boilers, on the top of the control valve and turn the screw beneath clockwise to increase pressure or anti-clockwise to decrease. Refit the screw or screwed cap when the pressure is correct. Shut down the boiler, remove the pressure gauge and refit 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 5 minutes once the boiler is hot.

K. Refit the plinth, securing it with the four screws.

L. Refit the door to the hinge pin on the plinth, fit the hinge plate to the top of the door and secure the plate to the right-hand side panel with the two screws, locating the plate beneath the top flange of the panel.

M. Fit the casing top panel in position and close the door.

7. Removal/Replacement of Boiler Components

A. MAIN BURNER AND INJECTORS

(1) Remove the main burners as described in "1. PREPARING THE BOILER" and "2. MAIN BURNER ASSEMBLY - REMOVAL AND CLEANING" operations A to H inclusive.

(2) Unscrew the injectors from the gas manifold.

(3) Replacement is the reverse of removal.

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

B. PILOT BURNER AND INJECTOR

(1) CF125 and 150 Boilers only with Bray Pilot.

(a) Ensure that the electricity supply to the boiler is switched off at the main isolating switch, then open the casing door and turn off the main inlet gas cock.

(b) Unscrew the thermocouple from the pilot assembly, then ease it out and away from the boiler.

(c) Unscrew the pilot gas supply tube from the pilot assembly, then ease it away from the boiler.

(d) Unscrew the two screws securing the pilot assembly to the burner front plate, then withdraw the assembly, taking care not to loose the small spacer on each screw.

(e) Remove the spring and jet from the pilot assembly then unscrew and remove the injector from the pilot. Clean or replace the injector as necessary.

(f) Replacement is the reverse of removal.

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

(2) CF125 - 150 - 180 - 220 with Honeywell Pilot.

(a) Remove the main burner and gas control assembly as described in "1. PREPARING THE BOILER" and "2. MAIN BURNER ASSEMBLY - REMOVAL AND CLEANING", operations A to E inclusive.

(b) Unscrew the pilot gas supply tube from the pilot assembly and the pilot injector should drop out.

(c) Unscrew the thermocouple from the pilot assembly and remove it.

(d) Remove the two screws securing the pilot assembly to its mounting bracket and remove the pilot.

(e) Replacement is the reverse of removal.

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

C. THERMOCOUPLE

(1) CF125 and 150 Boilers with Bray Pilot.

(a) Ensure that the electricity supply to the boiler is switched off at the main isolating switch, then open the casing door and turn off the main inlet gas cock.

(b) Unscrew the thermocouple from the pilot assembly, then ease it out and away from the boiler.

(c) Unscrew the thermocouple capillary from the gas control valve.

(d) Replacement is the reverse of removal.

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

(2) CF125 - 150 - 180 - 220 with Honeywell Pilot.

(a) Remove the main burner and gas control assembly as described in "1. PREPARING THE BOILER" and "2. MAIN BURNER ASSEMBLY - REMOVAL AND CLEANING", operations A to E inclusive.

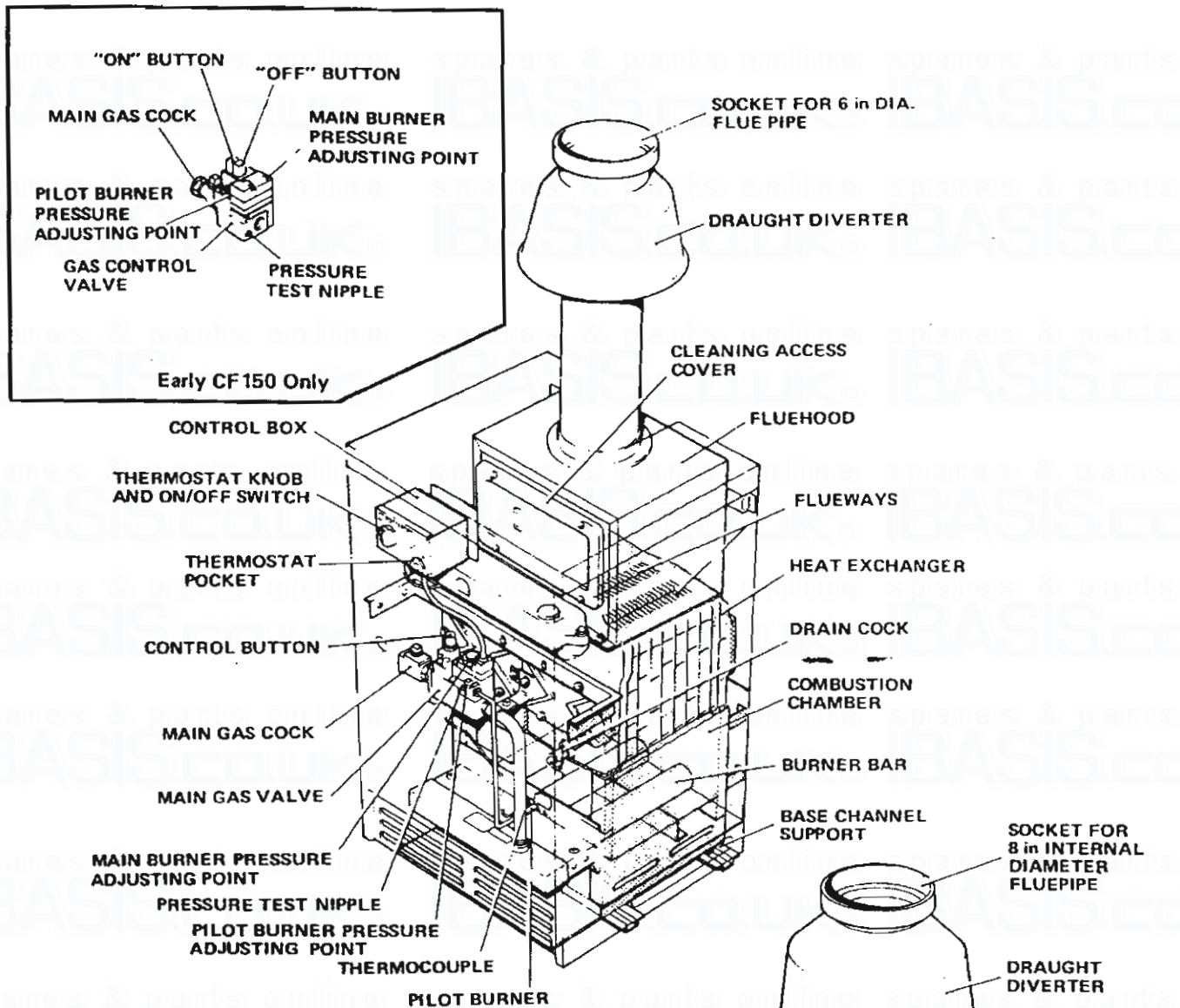
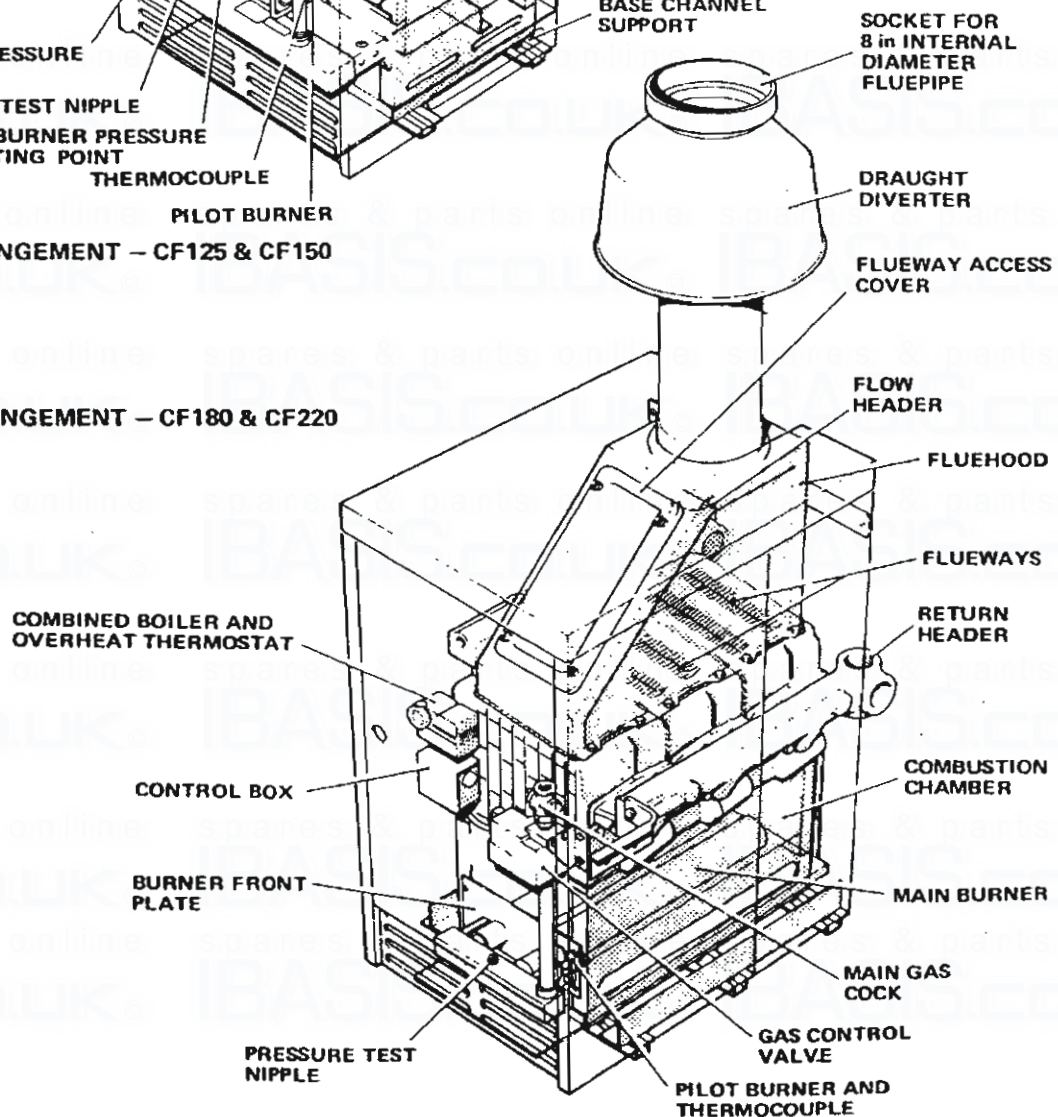


Fig. 2 GENERAL ARRANGEMENT - CF180 & CF220



- (b) Unscrew the thermocouple from the pilot assembly and remove it.
- (c) Unscrew the thermocouple capillary from the gas control valve.
- (d) Replacement is the reverse of removal.
- (e) Test the boiler as described in "6. FINAL ADJUSTMENT".

D. GAS CONTROL VALVE

- (1) Remove the burner and gas control assembly as described in "1. PREPARING THE BOILER" and "2. MAIN BURNER ASSEMBLY - REMOVAL AND CLEANING" operations A to E inclusive.
- (2) Disconnect the pilot supply tube and thermocouple lead from the gas valve. On CF180 and 220 boilers, once the thermocouple lead has been disconnected, the leads to the overheat thermostat must also be disconnected by moving aside the clip on top and pulling away the connector.
- (3) Unscrew and remove the half union of the main gas cock from the valve. On CF180 and 220 boilers only, also remove the retaining bracket from the valve.
- (4) Unscrew the valve from the pipework.
- (5) Screw the new valve on to the gas assembly pipework.
- (6) Screw the half union, removed in (3) to the inlet side of the new valve. On CF180 and 220 boilers only, fit the retaining bracket also removed in (3) to the new valve.
- (7) Replacement of the burner and gas control assembly is the reverse of removal.
- (8) Test the boiler as described in "6. FINAL ADJUSTMENT".

E. BOILER THERMOSTAT

(1) CF125 and 150 Boilers Only

- (a) Ensure that the electricity supply to the boiler is switched off at the main isolating switch, then open the casing door and turn off the main inlet gas cock.

- (b) Unscrew the two screws securing the control box facia and ease the assembly from the housing.
- (c) Remove the clip, then withdraw the thermostat phial from its pocket in the heat exchanger.
- (d) Disconnect the two wires from the thermostat.
- (e) Pull off the thermostat knob, then unscrew the backnut from around the spindle of the thermostat. Remove the thermostat complete with its capillary.
- (f) Replacement is the reverse of removal. Ensure that the thermostat phial is inserted to the full depth of its pocket.
- (g) Test the boiler as described in "6. FINAL ADJUSTMENT".

(2) CF180 and 220 Boilers Only.

- (a) Ensure that the electricity supply to the boiler is switched off at the main isolating switch, then open the casing door and turn off the main inlet gas cock.
- (b) Unscrew the two screws securing the thermostat casing to the main body, then pull off the casing.
- (c) Unscrew the two cable clamps around the incoming cables at the base of the thermostat.
- (d) Pull the two connectors off their tags on the overheat thermostat, noting their positions for reconnection.
- (e) Disconnect the three wires from the terminals on the boiler thermostat, noting their positions for reconnection.
- (f) Unscrew the screw on the thermostat pocket securing the thermostat phials, then withdraw the thermostat.
- (g) Replacement is the reverse of removal. Ensure that the thermostat phials are inserted as far as possible into the pocket.
- (h) Test the boiler as described in "6. FINAL ADJUSTMENT".

TABLE 1

	CF125	CF150	CF180	CF220
Input:	161,500 Btu/h 47 kW	196,000 Btu/h 57 kW	239,650 Btu/h 70 kW	292,700 Btu/h 86 kW
Output into Water:	125,000 Btu/h 37 kW	150,000 Btu/h 44 kW	180,000 Btu/h 53 kW	220,000 Btu/h 64 kW
Output into Air (Approx.)	2,700 Btu/h 0.8 kW	3,000 Btu/h 0.9 kW	4,000 Btu/h 1.2 kW	4,000 Btu/h 1.2 kW
Burner Pressure:	12.5 mbar 5.0 in.w.g.	12.3 mbar 4.9 in.w.g.	9.4 mbar 3.8 in.w.g.	11.2 mbar 4.5 in.w.g.
Injector Size:	3.3mm.	3.6mm.	5.1mm.	4.3mm.
Gas Rate:	4.55 cu.m/h 161 cu.ft/h	5.55 cu.m/h 196 cu.ft/h	6.76 cu.m/h 239 cu.ft/h	8.26 cu.m/h 292 cu.ft/h
Potterton Serial No.	GQY	GQZ	GSY	GSZ
British Gas Appliance No.	41.601.15	41.601.16	41.601.19	41.601.20

8. FAULT FINDING

As well as the fault finding chart given, reference should also be made to the wiring diagram Fig. 3

CONDITION	POSSIBLE CAUSE	REMEDY
A. Pilot fails to light. CF125 boilers with V4600 gas control valve. CF150 to 220 boilers with V4400 gas control valve.	(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 two screws. (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 clean the injector as described in Section 7.B.
	(1) No gas supply. (2) Start button not pressed fully down. (3) Blocked pilot filter. (4) Blocked pilot injector.	Check all cocks are open in the supply to the boiler. Start button must be pressed fully down. (a) Disconnect the thermocouple lead and pilot supply tube, from the control valve. (b) Remove the four screws from the base of the control. (c) Lift off the top half of the control, lift out the filter and replace as necessary. (d) Re-assemble in the reverse order. Remove and clean the injector as described in 7.B.
B. Main burner fails to light and pilot is extinguished when pressure on the control/start button is released. CF125 boilers with V4600 gas control CF150 to 220 boilers with V4400 gas control valve.	(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 injector. (5) Failure of thermocouple power unit or latching mechanism.	Control button must be fully pressed 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) or A(4). After pilot has been on for 30 seconds release control button. If pilot goes out: (a) Change thermocouple, See Section 7.C. and try to light pilot; if still failed then: power unit or latching mechanism has failed therefore: (b) Change control valve. See Section 7.D.
	(1) Start button not held down long enough. (2) Loose thermocouple connection at control valve. (3) Loose connection on leads to overheat thermostat. (4) Pilot rate too low. (5) Partially blocked pilot filter or pilot injector. (6) Failure of thermocouple or power unit.	Button must be fully pressed down for 20 seconds before main valve can be energised. Tighten thermocouple union nut $\frac{1}{4}$ of a turn only. TOO MUCH PRESSURE MAY DAMAGE INSULATION AND CAUSE FAILURE. Remove cover on thermostat and connect leads. (CF180 & 220 only). Adjust the pilot flame, See Section 6. As Item A(3) or A(4). After pilot has been on for 30 seconds, release button, slacken the thermocouple union nut on pilotstat and withdraw thermocouple. A distinct 'click' should be heard if the valve is functioning; if not, then: (a) Change thermocouple, see 7.C. and repeat; if still failed then: (b) Change the power unit as follows. Disconnect the thermocouple, unscrew the power unit which is the large hexagonal nut that the thermocouple is screwed into, then screw in the new power unit and reconnect thermocouple. NOTE: On CF180 and 220 boilers, once the thermocouple lead has been disconnected, the leads to the overheat thermostat will also have to be disconnected by moving the clip to one side and pulling out the connector, before the power unit can be unscrewed.

CONDITION	POSSIBLE CAUSE	REMEDY
C. Main burner fails to light. CF125 boilers with V4600 gas control valve. CF150 to 220 boilers with V4400 gas control valve.	(1) Check that boiler controls are calling for heat. (2) Additional controls not calling for heat. (3) Honeywell control magnetic valve not energising. (4) Thermostat out of calibration. (5) Blocked main burner injector. (6) Dirt on valve seat of Honeywell control.	Note reading 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. Where electrical controls are used, check for current failure. Check for electrical supply at control valve terminals. If no supply, check contacts on programmer or clock. Check fuses. If correct then: Solenoid valve has failed; replace as described in A(3). Replace thermostat see Section 7.E. Clean or replace injector as detailed in section 7.A. 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.
	(1) Check that boiler controls are calling for heat. (2) Additional controls not calling for heat. (3) Honeywell control magnetic valve not energising. (4) Thermostat out of calibration.	Note reading of thermostat dial and temperature of flow pipe. Check programmer or clock is ON and that room thermostat or other distant control is not closed down. Where electrical controls are used, check for current failure. (a) Check current at control valve terminals. If no current, check contacts on programmer or clock. Check fuses. If correct then:— (b) Solenoid valve has failed replace as follows:— (i) Remove the two screws securing the plastic cover over the cable connections. (ii) Disconnect and remove the cables with the plastic cover. (iii) Release and remove the main burner pressure adjuster. (iv) Remove the four screws and lift off the solenoid. (v) Re-assemble the new solenoid in the reverse order. (vi) Adjust the main burner pressure as detailed in Section 6. Replace thermostat, see Section 7.E.
D. Burner fails to shut down when water reaches predetermined temperature.	(1) Dirt on valve seat of Honeywell control. (2) Thermostat out of calibration or faulty.	Remove top half of valve unit as in A(3). This exposes the valve which may now be wiped clean with a soft cloth. Replace thermostat, see Section 7.E. calibration or faulty.
E. Burner fails to light when water temperature is too low with controls calling for heat.	(1) Thermostat out of calibration or faulty.	Replace thermostat, see Section 7.E.
F. Pilot burner goes out after normal operation, CF180 & 220 boilers only.	(1) Overheat thermostat out of calibration or faulty.	Change thermostat.

Description	Potterton Part No.	British Gas Part No.
Pilot Burner Bray Cat No. 864 – CF125 and 150	402808	358 145
Honeywell Q359A – CF180 and 220	402821	
Honeywell Q314A – CF125, 150, 180 and 220		
Pilot Burner Bray Cat No. 968 – CF125 and 150	410448	—
Injector Honeywell 4500062-010 – CF180 and 220	410449	—
Honeywell B.C.R. 18 – CF125, 150, 180 and 220	—	—
Gas Control Valve, Honeywell V4600C, ½in. BSP – CF125	402812	392 180
Gas Control Valve, Honeywell V4400C, ¾in. BSP – CF150-220	402813	392 607
Thermocouple, Honeywell Q309A	402174	390 210
Thermostat, Ranco C26 – CF125 and 150	404456	382 253
Honeywell, L6191 – CF180 and 220	402833	—
Thermostat knob – CF125 and 150 only	202125	375 808
Main burner injector, 3.3mm. – CF125	410457	393 237
3.6mm. – CF150	410458	393 238
5.1mm. – CF180	410460	—
4.3mm. – CF220	410459	—
Main burner lint resistance gauze – CF120 and 150 only	203224	358 123

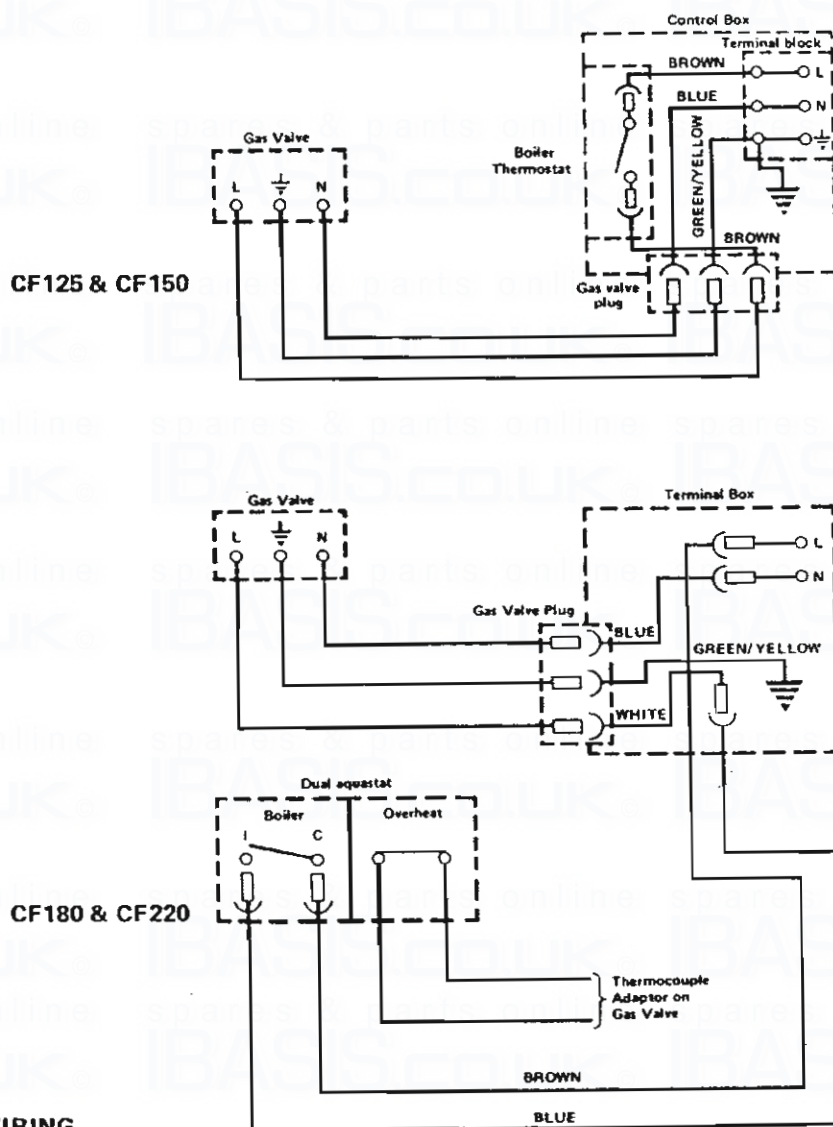


Fig. 3 BOILER WIRING

"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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