

VULCAN

46

STELRAD



Continental

30/40, 45/60, 65/85 & 90/120

September, 1977

Installation & Servicing

B.G.C. Appliance No's

30/40	BE de Luxe BF	41. 349. 14	45/60	BE de Luxe BF	41. 349. 17
30/40	BE de Luxe CF	41. 349. 15	65/85	BE de Luxe CF	41. 349. 18
45/60	BE de Luxe CF	41. 349. 16	65/85	BE de Luxe BF	41. 349. 19
			90/120	BE de Luxe CF	41. 349. 20

PHOTOCOPY ONLY

Instructions for Installation and Maintenance of Vulcan Continental 30/40 CF & BF, 45/60 CF & BF and 65/85 CF & BF

General Data and Specification		Model 30/40	Model 45/60	Model 65/85	Model 90/120	
Heat Output	Kcal	7,560-10,080	11,340-15,120	16,380-21,420	22,694-30,258	
	kW	8.8-11.7	13.2-17.6	19.05-24.9	26.4-35.2	
	Btu/h	30,000-40,000	45,000-60,000	65,000-85,000	90,000-120,000	
Heat Input	Kcal	10,584-13,608	15,750-20,160	22,554-28,476	30,996-42,580	
	kW	12.3-15.8	18.5-23.4	26.2-33.1	36.0-48.3	
	Btu/h	42,000-54,000	63,000-80,000	89,500-113,000	123,000-165,000	
Weight (CF)	kg(lb)	84.5 (186)	109 (240)	124.5 (275)	161.5 (356)	
	(BF)	kg (lb)	96.8 (213)	119 (262)	142.2 (314)	
Injector Size	N.G.	(CF)	Cat. 23/600	Cat. 33/950	Cat. 23/850	Cat. 23/750
		(BF)	Cat. 23/600	Cat. 23/950	Cat. 23/850	
Flue Size	(CF)	mm (in)	102 (4)	102 (4)	127 (5)	127 (5)
	(BF)	mm (in)	197 x 197 (7.75 x 7.75)	267 x 267 (10.5 x 10.5)	280 x 280 (11 x 11)	
		mm (in)	Concentric terminal 229-355 (9-14) Telescopic adjustment	Concentric terminal 229-355 (9-14) Telescopic adjustment	Concentric terminal 229-355 (9-14) Telescopic adjustment	
		mm (in)	Extension pieces available for wall thicknesses			
		mm (in)	355-482 (14-19)	482-610 (19-24)	610-737 (24-29)	737-864 (29-34)
Maximum Heating Radiation surface m ² (ft ²) including pipework		19.5 (210)	28.6 (308)	40.5 (436)	57.2 (616)	
Radiation m ² (ft ²) in addition to normal hot water supply		14.7 (158)	24.0 (256)	35.7 (384)	53.5 (568)	
Dimensions						
Height	(CF)	mm (in)	750 (29.5)	750 (29.5)	850 (33.5)	850 (33.5)
	(BF)	mm (in)	810 (31.7/8)	810 (31.7/8)	850 (33.5)	
Width	(CF)	mm (in)	500 (19.75)	500 (19.75)	500 (19.75)	612 (24)
	(BF)	mm (in)	500 (19.75)	500 (19.75)	500 (19.75)	
Depth	(CF)	mm (in)	480 (19)	480 (19)	600 (23.5/8)	600 (23.5/8)
	(BF)	mm (in)	480 (19)	480 (19)	600 (23.5/8)	CF BF
Number of Injectors		2	2	3	5	
Pilot Injector Size						
Natural Gas		BCR 18	BCR 18	BCR 18	BCR 18	
Gas Supply Pipe (Internal)		Rc½ (½ in BSP)	Rc½ (½ in BSP)	Rc½ (½ in BSP)	Rc½ (½ in BSP)	
Gravity Flow Connection (Internal)		Rc1 (1 in BSP)	Rc1 (1 in BSP)	Rc1 (1 in BSP)	Rc1¼ (1¼ in BSP)	
Pump Flow (Internal)		Rc¾ (¾ in BSP)	Rc¾ (¾ in BSP)	Rc1 (1 in BSP)	Rc1 (1 in BSP)	
Gravity Return (Internal)		Rc1 (1 in BSP)	Rc1 (1 in BSP)	Rc1 (1 in BSP)	Rc 1¼ (1¼ in BSP)	
Pump Return (Internal)		Rc¾ (¾ in BSP)	Rc¾ (¾ in BSP)	Rc1 (1 in BSP)	Rc1¼ (1¼ in BSP)	
Maximum Static Head m (ft)		18.3 (60)	18.3 (60)	18.3 (60)	18.3 (60)	
NOT TO BE FITTED DIRECT TO MAINS WATER SUPPLY						
Electricity Supply		200-240v	50 Hz	Fused 3 amp		
Electricity Consumption		← 130 W → (including circulating pump)				

- This boiler is supplied either as a De LUXE unit, complete with time clock and programming switch, or as a BASIC unit supplied only with boiler thermostat.

On the De Luxe unit the facility for connecting in a room thermostat, if required, and pump is provided by plug and socket. On the Basic Electric model this facility is provided by a connecting block.

The boilers are supplied in two packages for CF models and three packages for BF models:

1. Boiler body, completely assembled, with flue hood, control valve and air duct, where applicable.
2. Casing components and control box (BE or De Luxe).
3. Terminal box (BF models only).

Note: CF refers to Open Flued (Conventionally Flued) and BF refers to Balanced Flue models.

GENERAL

The boiler should be installed taking into account the Building Regulations, Gas Safety Regulations and British Gas requirements. The recommendations of CP.332 Pt.2, and CP.331 Pts 2 and 3, should also be implemented.

It must only be fitted to indirect systems.

VENTILATION REQUIREMENTS

1. Central Heating Units or Boilers installed in Compartments. The compartment, whether modified or specially built, shall meet the following requirements:
 - (a) Have a half hour fire resistance from internal fire and the inside lining, or finishing should be non-combustible or a Class I finish. The door must have at least the fire resistance of the compartment walls.
 - (b) For good acoustic insulation, should preferably be built of brick or clinker block, plastered on at least one side and supplied with a well fitting door.
 - (c) Be of sufficient size to permit access for inspection

and servicing of the heater and compartments. It should not be made larger than necessary in order to avoid the use of the compartment as a storage cupboard. The makers' recommendations regarding minimum requirements should always be obtained and observed.

- (d) Be fitted with a door of sufficient size to permit the heater to be withdrawn from the compartment.
- (e) Be fitted with permanent openings for air for combustion and compartment ventilation as shown in the table below:

Note: These figures are based on heat input.

MINIMUM FREE AREAS OF OPENINGS TO BE PROVIDED INTO THE COMPARTMENT

	Position of Openings	Type of Appliance			
		Open Flued (Conventionally Flued)		Room Sealed	
		Open to Room	Open to Outside	Open to Room	Open to Outside
Metric Units	High Level	9 cm ² per kW	4.5 cm ² per kW	9 cm ² per kW	4.5 cm ² per kW
	Low Level	18 cm ² per kW	9 cm ² per kW	9 cm ² per kW	4.5 cm ² per kW
Imperial Units	High Level	2 in ² per 5000 Btu/h	1 in ² per 5000 Btu/h	2 in ² per 5000 Btu/h	1 in ² per 5000 Btu/h
	Low Level	4 in ² per 5000 Btu/h	2 in ² per 5000 Btu/h	2 in ² per 5000 Btu/h	1 in ² per 5000 Btu/h

Notes:

- (a) The figures quoted refer to the minimum acceptable free area when grilles are fitted to the openings.
- (b) If the output rating of a conventionally flued appliance exceeds 29.31 kW (10,000 Btu/h), the ventilation must be direct from outside air.
- (c) Range-rated or modulating appliances, and also combined central heating/water heating appliances, must be assessed at the upper limit of their rating.
- (d) The high level and low level openings must communicate with the same room or space, or must both be to outside air.
- (e) Where the appliance is an Open Flued (Conventionally Flued) appliance and the compartment is not

compartment must be provided with a ventilator as described in (2) below.

2. Ventilation of rooms in which are fitted open flued (conventionally flued) appliances or boilers, either free-standing or in compartments (not including contained appliances in living rooms)

A purpose-designed ventilation opening must be provided in an outside wall of the building; this opening may be either:

- (a) directly into the room or space containing the heater, or
- (b) (for appliances not exceeding 29.31 kW (100,000 Btu/h output) into an adjacent room or space which has an internal purpose-provided opening to the room

ventilation openings must be 4.5 cm² per kW (1 in² per 5000 Btu/h) of maximum input of the appliance.

In the case of these boilers the minimum free area will be:—

30/40	Model	71 cm ² (11 in ²)
45/60	Model	105 cm ² (16 in ²)
65/85	Model	149 cm ² (23 in ²)
90/120	Model	208 cm ² (32 in ²)

EXTRACTION FANS

If an extract fan is fitted in a room which contains any type of flued appliance, there is a possibility that, if adequate inlet openings are not provided, spillage of products from the flue will occur. If ventilators are fitted in accordance with the recommendations in the section above, the use of extract fans should not cause down-draught; but where such installations are found, tests for spillage of products from the draught diverter should be carried out with the fan running.

BASE

It is not necessary to prepare a special base, but further insulation is recommended if the floor is covered with Thermoplastic tiles.

Note: Local or Regional Gas Authority regulations may demand an additional fireproof base.

SITING

1. Open Flue (Conventional Flue Version)

The boiler should be fitted in such a position as enables the 102 mm (4 in), or 127 mm (5 in) (depending on boiler size), diameter flue pipe to be taken from the appliance to the outside in accordance with Codes of Practice. There should be a gap of 50 mm (2 in) down each side of the boiler casing to enable combustion air to reach the rear of the boiler. Alternatively a gap of 102 mm (4 in) on one side of the boiler only will be satisfactory. Access must be available at the front of the boiler to enable:

- normal setting operations to be carried out, and
- the appliance to be serviced.

FLUE CONNECTIONS

Trouble-free boiler operation greatly depends upon an efficient flue, and, with this in view, the Gas Authority should be consulted before deciding upon the site for the boiler. A draught diverter is incorporated in the flue hood to prevent interference with combustion by adverse wind conditions and the spigot end of the first length of appropriate size flue pipe should be inserted into the socket on this hood.

The first length should be a minimum length of 610 mm (2 ft). The flue should terminate above the ridge level of a pitched roof of the parapet of a flat roof with an approved G.C.1 type cap. The flue run should be kept as short as possible and all horizontal runs avoided. Where an existing flue is to be used, ensure that this has been thoroughly cleaned and is of the correct size with no obstructions. Existing brick flues should not be used unless lined with a proprietary flexible, or other suitable, liner. For further information on the subject of flueing, refer to "Flues for Gas Appliances", British Standard Code of Practice CP.337 : 1963.

2. Balanced Flue Version

The appliance must be sited with the terminal from outside

from the room so that no special ventilation of the room is required.

Where the appliance is installed in a cupboard, the openings required, based on paragraph 1 of Ventilation Requirements (Page 3), must be fitted.

Care should be taken in selecting the positions for balanced flue terminals. The following positions should be avoided:—

- immediately beneath eaves or a balcony
- at a re-entrant position on the face of the building
- adjacent to any projection on the face of the building
- at any point where wind effects may create a zone of high pressure.

A minimum of 610 mm (2 ft) from the above mentioned positions can be regarded as a guide for satisfactory siting.

In addition to the above, balanced flue terminals should not be fitted in any position which would allow combustion products to feed back into adjacent doors or windows, i.e. where the outlet is wholly or partly beneath any opening (that is to say, any part of a window capable of being opened or any ventilator, inlet to a ventilation system or similar opening), no part of the outlet is within 305 mm (1 ft) measured vertically from the bottom of that opening.

Where the outlet of the appliance is less than 1.829 m (6 ft) above the level of any ground, balcony, flat roof or place to which any person has access and which adjoins the wall in which the outlet is situated, the outlet is protected by a guard of durable material.

WATER SUPPLY

The 30/40 and 45/60 models are supplied with one Rc1 (1 in. BSP), two Rc $\frac{1}{2}$ ($\frac{1}{2}$ in. BSP) Flow, one Rc1 (1 in. BSP) Return and one Rc $\frac{1}{2}$ ($\frac{1}{2}$ in. BSP) Return. 65/85 models are supplied with three Rc1 (1 in. BSP) Flow and two Rc1 (1 in. BSP) Returns. The maximum working head of the appliance is 18.3 m (60 ft).

90/120 Model — 2 Rc1 $\frac{1}{2}$ (1 $\frac{1}{2}$ in. BSP) Flow, one Rc1 (1 in. BSP) Flow and two Rc1 $\frac{1}{2}$ (1 $\frac{1}{2}$ in. BSP) Returns.

Note: Some Area Gas Regions and Local Authorities insist that a safety valve be fitted in the circuit. This should be fitted as close as possible to the boiler.

The head loss through the boiler is negligible and, for all practical calculations of head loss, can be ignored.

CIRCULATING PUMPS

There are many proprietary pumps on the market which will be suitable. For your guidance the important factors in selecting a pump are that it is capable of coping with the maximum flow rate which can be expected through the appliance, i.e. at 11°C (20°F) differential, 1.364 litres (300 galls) per hour for the 45/60 model at the calculated head loss of the system (generally in the order of 914 to 1829 mm (3 ft to 6 ft)). Most variable head pumps cover this range. Valves should be fitted at either side of the pump for maintenance purposes.

The following method can be used for fitting the S.M.C. Commodore inside the boiler casing on the 30/40 and 45/60 models (Fig.1). A kit is available with all components necessary.

- Screw $\frac{3}{8}$ " M & F bend into $\frac{3}{8}$ " tapping on bottom/front of right hand end cap.
- Screw one half of the brass union and the $\frac{3}{8}$ " nipple (30/40) or $\frac{1}{2}$ " pipe (45/60) into the bend just fitted

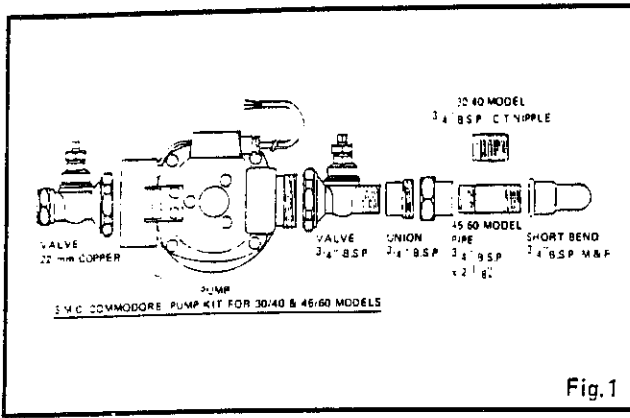


Fig. 1

- (c) Screw the other half of the brass union onto the 3/4" gate valve.
- (d) Assemble the pump and union gate valves together with the brass union on the outlet side of the pump so that the valve heads are angled slightly out from the boiler and fit assembly onto boiler by means of the brass union.

- (e) A 22 mm copper connection from the heating system can be made onto the valve on the inlet side of the pump.
- (f) Check assembly for soundness
- (g) Connect lead onto pump and into the connecting block (BE models), or into the plug provided (De Luxe models) — refer relevant wiring diagrams (Figs. 6(a) and 6(d)).

Note: In order to carry out the foregoing assembly it may be simpler to remove the burner/control assembly from the combustion chamber. In order to do this refer "Burner/Control Assembly" paragraph contained in the Maintenance Instructions.

GAS SUPPLY

The gas supply pipe and meter should be adequately sized to feed the new central heating boiler and any existing gas appliances. The appliance should have the correct injectors for the group of gas being supplied. The local Area Gas Region will advise on both these points.

INSTALLATION OF BOILER

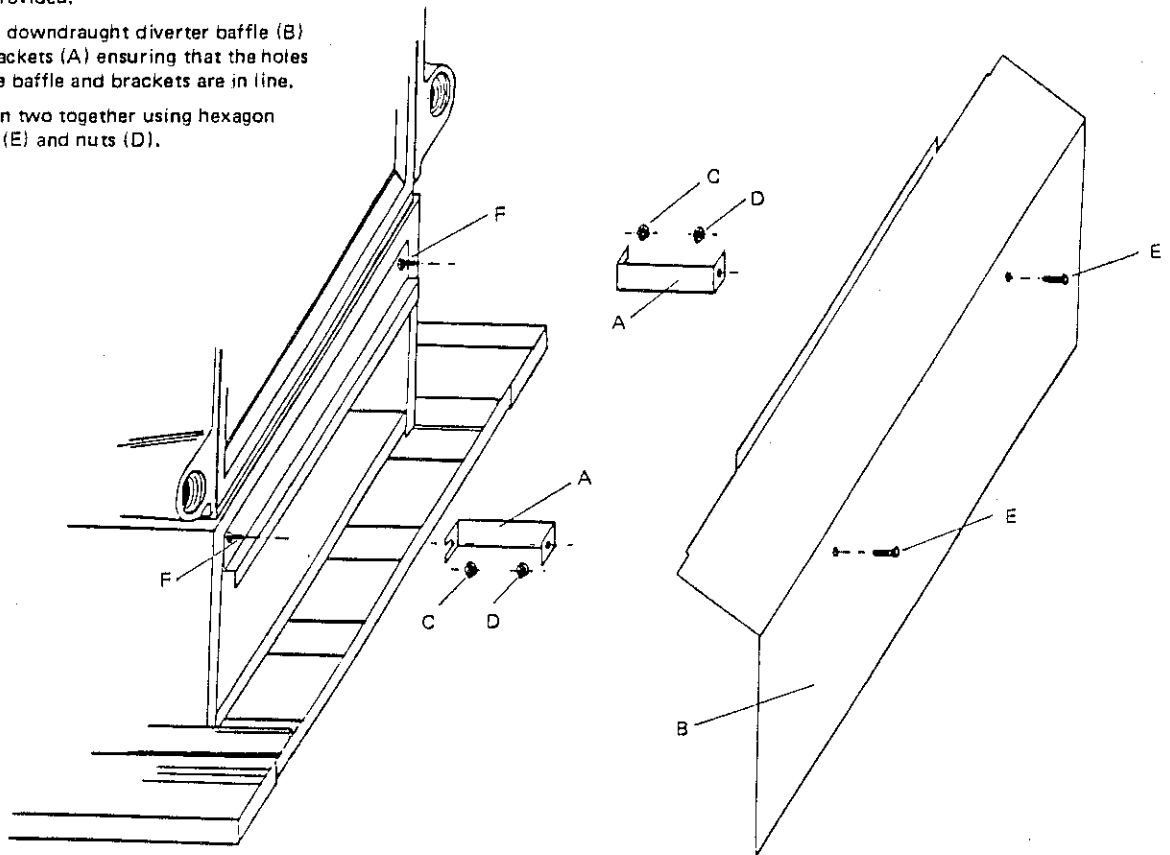
- 1. Place boiler on chosen site (refer notes on "Siting"). The casing is supplied separately. Before siting the boiler block, ensure the draught diverter baffle is fitted to the rear of the combustion chamber.

Remove nuts from two studs retaining the burner shield, fit baffle and replace nuts (65/85 model). For 90/120 model refer Fig. 2

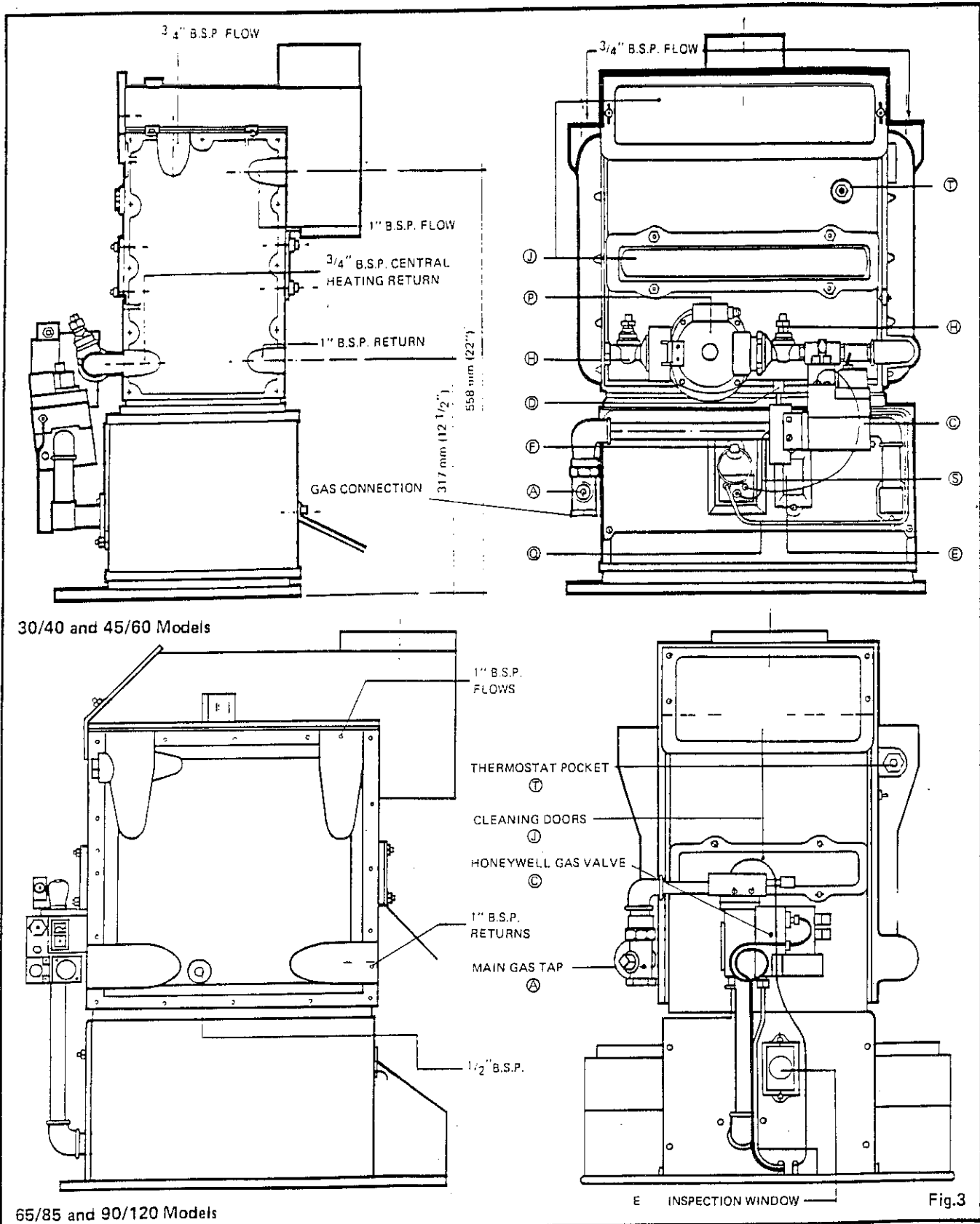
Note: On 30/40 and 45/60 models the baffle is already fitted.

Note: The brackets, nuts and bolts should be separated before the following operations:—

- 1. Fit slotted end of bracket (A) on to weldstuds (F) and secure with nuts (C) provided.
- 2. Offer draught diverter baffle (B) to brackets (A) ensuring that the holes of the baffle and brackets are in line.
- 3. Fasten two together using hexagon bolts (E) and nuts (D).



2. Boiler Connections (Fig.3)



- | | | |
|------------------------|----------------------------|------------------------|
| A. Main Gas Tap | F. Secondary Lighting Plug | Q. Pilot |
| C. Honeywell Gas Valve | H. Pump Isolating Valves | S. Electrode H.T. Lead |
| D. Igniter Push Button | J. Cleaning Doors | T. Thermostat Pocket |
| E. Inspection Window | P. Pump | |

(a) 30/40 and 45/60 Models.
 Two flow tappings on the RH end cap are provided, 1-Rc $\frac{3}{4}$ ($\frac{3}{4}$ in.BSP) on top and 1-Rc1 (1 in.BSP) top back. An alternative Rc $\frac{3}{4}$ ($\frac{3}{4}$ in.BSP) flow tapping is provided on the top of the LH end cap. Any of the flow tappings can be used for which ever services are required from the boiler.

hand end cap - Rc $\frac{3}{4}$ ($\frac{3}{4}$ in.BSP).

Note: When this connection is made, the pipework involved should not foul the flue cleaning doors or combustion chamber front plate as access to these is required for servicing.
 With the pump kit two valves (H) are supplied in the pipe-

A drain tap should be fitted to the lowest point of the system in order that the **complete** system and boiler can be drained.

(b) **65/85 and 90/120 Models.**

Either of the top rear flow tappings can be used for the gravity system (domestic hot water) and it is suggested that the front top flow tappings always be used for the heating system. The tappings on the rear of the end caps provide for gravity and heating return connections. Either can be used for each service.

An Rc1: (½ in. BSP) tapping is available for fitting a drain tap to, but it should be remembered that this may not necessarily be the lowest point in the system, and a further drain tap should be fitted at the lowest point.

- Once the system has been completed it should be thoroughly flushed out to ensure that all foreign matter has been removed.

Note: Failure to remove foreign matter can result in premature circulating pump failure.

4. **Gas Connections**

The gas supply should be connected to the connection on the lower left hand side of the boiler.

(a) **30/40 and 45/65 Models.**

When operating on natural gas a ½" dia. pipe may be adequate. The local Gas Authority will advise on this point.

(b) **65/85 and 90/120 Models.**

The gas supply pipe to these boilers should be a minimum of ¾" dia. Where there is a long run of pipework or a large number of bends, elbows etc., it may be necessary to increase this size. The local Gas Authority will advise on this point.

6. **Flue Connections (C.F. Models)**

This should be carried out in a 102 or 127 mm (4 or 5 in.) flue pipe of approved type depending on the size of the boiler. The notes preceding under "Flue Connections" should be observed. The flue pipe should be sealed into the socket on the boiler with a suitable fire proof sealing compound.

BALANCED FLUE MODELS ONLY

- Place boiler on site and offer duct up to the wall surface, mark off round flue terminal duct.
- Move boiler away from wall and, allowing an inch clearance around the marked off area, cut hole through to the outside wall.
- Alternatively, the area to be cut away in the wall can be marked off from the dimensions given in Fig.4.
- Once the hole has been cut in the wall, the boiler should be offered into position allowing the duct attached to the boiler to slide into the prepared opening.
- Slide separate terminal unit through the wall from the outside and locate into the duct attached to the boiler, ensuring that the word "TOP" is uppermost.
- Make good around terminal box on both inside and outside walls. Fix the two brackets provided to hold

Note: The terminal unit is telescopic and will accommodate wall thicknesses from 229 to 355 mm (9 in. to 14 in.).

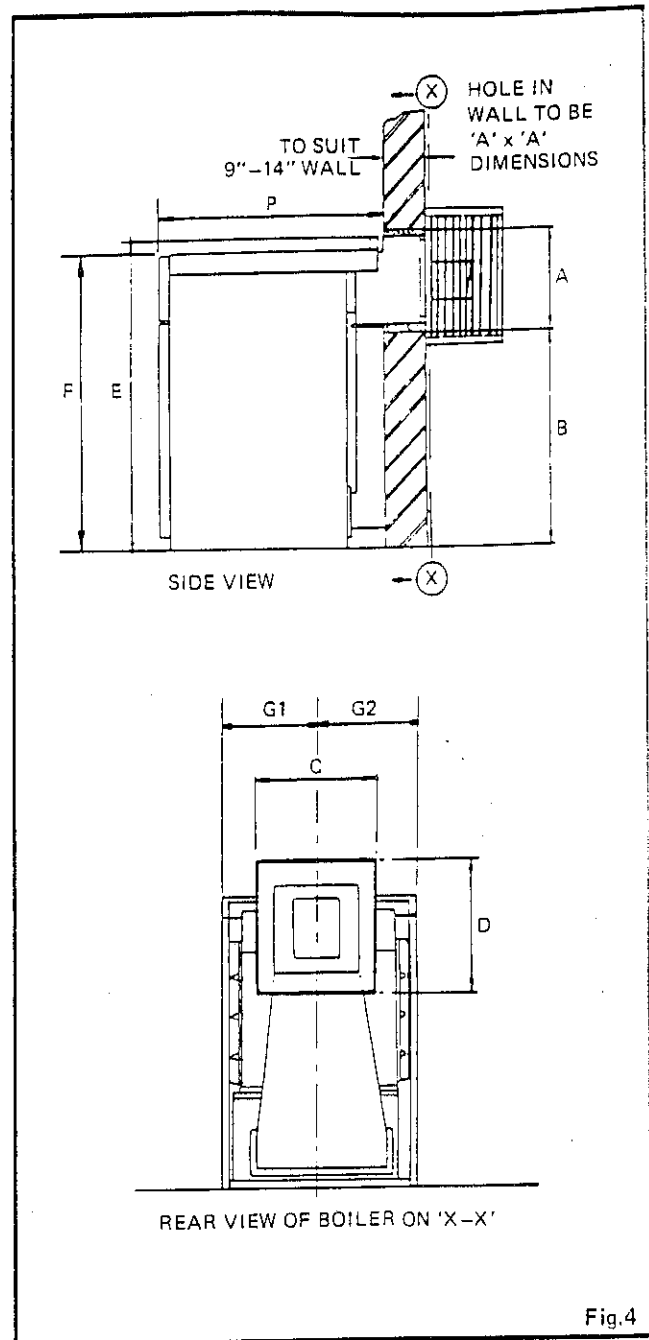
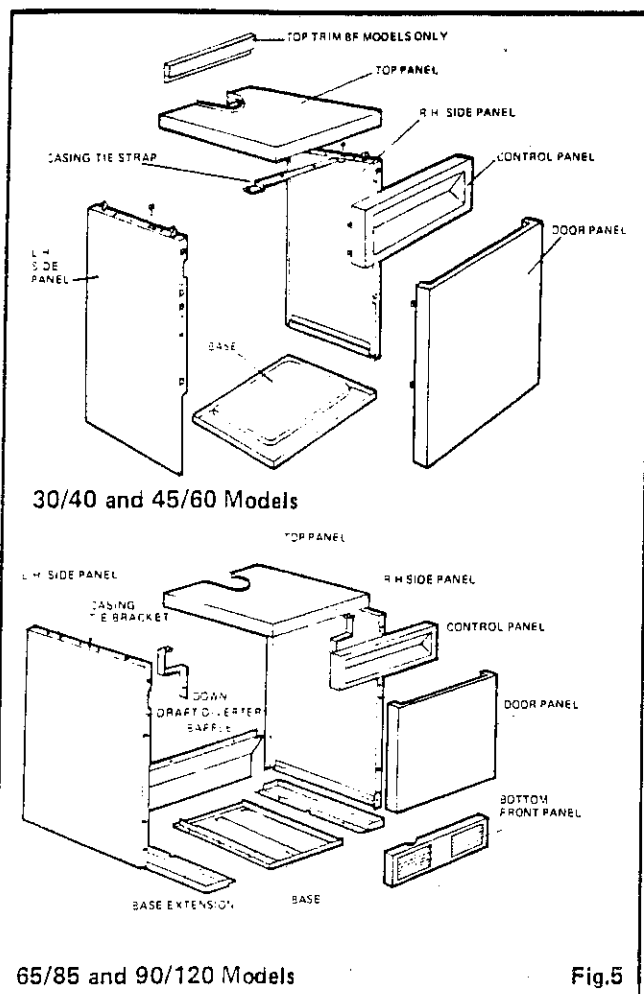


Fig.4

Model		30/40	45/60	65/85
A	mm	244	317	334
	in	9.5/8	12½	13.1/8
B	mm	535	495	502
	in	21	19½	19¾
C	mm	280	340	407
	in	11	13.3/8	16
D	mm	280	340	407
	in	11	13.3/8	16
E	mm	810	810	N/A
	in	31.7/8	31.7/8	N/A
F	mm	750	750	850
	in	29½	29½	33½
G1	mm	207	250	250
	in	8¼	9.7/8	9.7/8
G2	mm	293	250	250
	in	11½	9.7/8	9.7/8
	mm	480	480	600

Extension pieces are available to use in conjunction with the standard terminal for wall thicknesses 355–482 mm (14 to 19 in.), 482–610 mm (19 to 24 in.), 610–737 mm (24 to 29 in.) and 737–864 (29 to 34 in.).

FITTING OF OUTER CASING (Fig.5)



1. On the 65/85 and 90/120 models fit and secure the two base side extensions with the studs and nuts provided.
2. Take the two side panels and slot the bottom of each panel into the side of the sheet metal base plate. The return edges of the casing should point upwards.
3. (a) **30/40 and 45/60 Models**
Take the casing tie strap and screw onto the mounting supports on the top of the flue hood. Screw the ends of the tie strap to the top of the side panels.
(b) **65/85 and 90/120 Models**
On these boilers there are two casing tie brackets which are screwed to the mounting supports on the sides of the flue hood. Vertical adjustment can be carried out to suit the height of the side panels. Locate the side panels at the bottom on the base side extensions and screw the tie brackets to the top of the panels.
4. Fit control panel between mounting brackets on side panels with the bottom studs located in the holes in the brackets. Swing panel back so that the top studs pass to the back of the slots. Tighten the nuts on the studs to lock panel in position. Slide thermostat phial into pocket in front of the boiler. Route the capillary round the back of the panel. Retain phial with tab provided on head of pocket.
5. Take the top panel and locate this onto the plastic

section "Electrical Connections" following.

6. Take the front facia panel and locate this onto the latches provided in the side panel (top four latches). The spindles for the thermostat and programming switch should protrude through the front facia panel (**Note:** Programming switch is only applicable to De Luxe models). Fit the thermostat knob (51 mm, 2 in. diameter) onto the right hand spindle and the programming knob on the spindle at the centre of the panel. Ensure that the 'D' on the spindle registers with that in the plastic knob.
7. Fit the door panel by locating the panel on the plastic catches. Push the door to engage in the latches provided. On 65/85 and 90/120 models, fit the black plinth.
8. Square up the casing. Remove the top by pulling off and tighten the fixing strap firmly to both the flue hood and to the side panels. On 30/40 and 45/60 BF models fit the top trim by means of two clips provided. Replace top.

ELECTRICAL CONNECTIONS

WARNING:

This appliance must be earthed.

1. Connect the copper earth wire from the control panel onto the earth stud provided on the boiler body.
2. Connect the three core cable provided on the control panel to a suitable 240 v fused supply. It is essential that this supply should be fused to a rating of 3 amp. The cable should pass down the right hand side of the boiler.

A double pole switch should be used in the installation or the appliance should only be plugged into an unswitched socket should a plug and socket be used for the mains input connection.

IMPORTANT:

Ensure that all electric cables are fastened in the clips or straps provided and that no cable is in contact with hot surfaces.

3. De Luxe Models only

The circulating pump (P) and Honeywell Gas Valve (C), plugs (K) and (N) respectively, should be connected to the sockets provided. If a roomstat is required, this should be connected to the plug (L) provided, by removing the plug cover (held by two screws) and disconnecting the shorting link in this plug. The roomstat should then be wired as in the wiring diagram (Fig.6 (d)). The cover should be refitted and the plug reconnected to the socket in the control panel. The cable used for the room thermostat should be either three core or four core cable, depending on the type of thermostat. It should have conductors of minimum cross sectional area of 0.75 mm².

4. Basic Electric Models only

The mains cable should be connected as described above. Pump connections, thermostat connections and clock connections should be carried out in suitable cable, rated at 240v A.O. 3 amp. Wiring diagrams are shown in Figures 6 (a), 6 (b) and 6 (c) according to system and ancillary equipment utilised.

Access to the connecting block in the control panel is achieved by slackening the nuts on the sides of the control

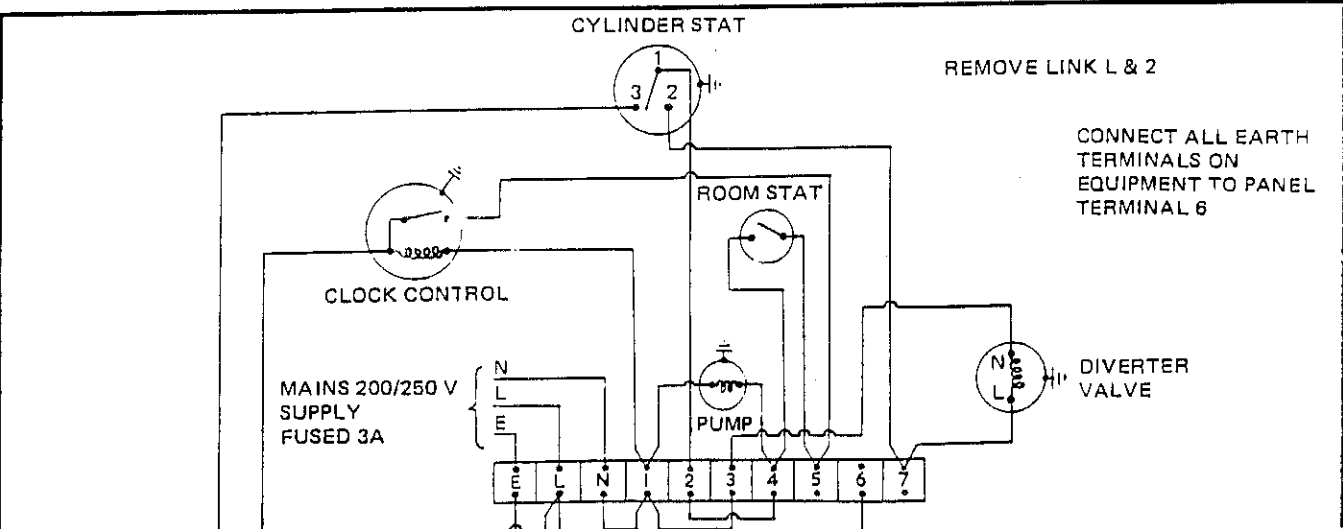
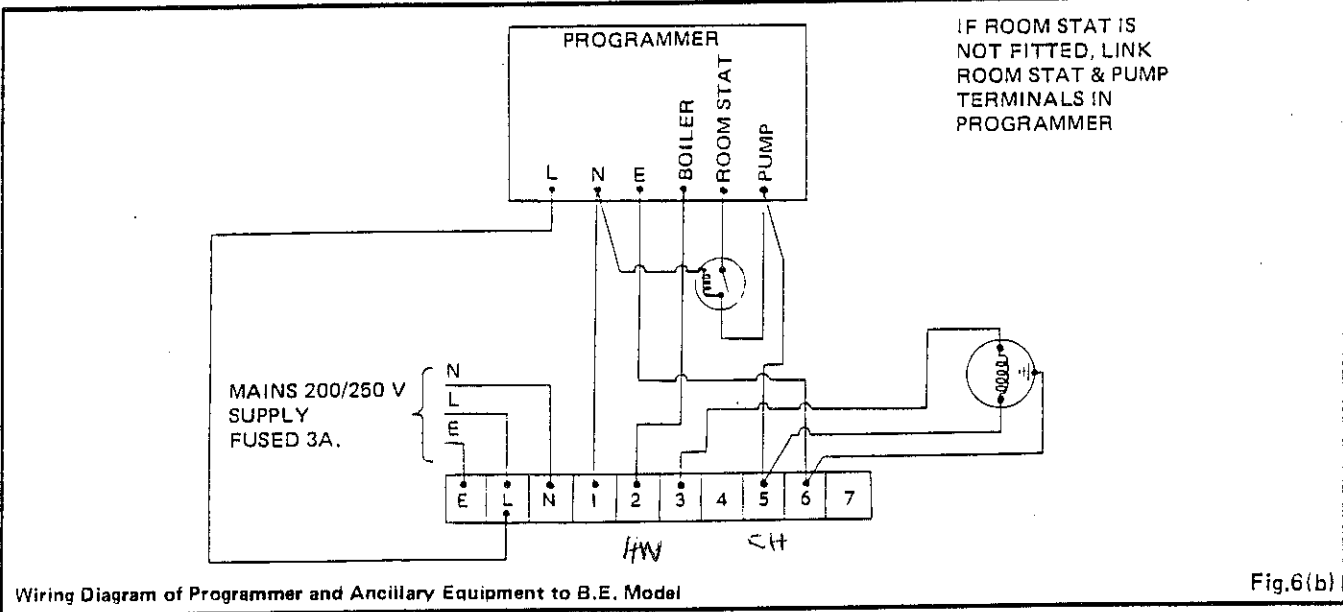
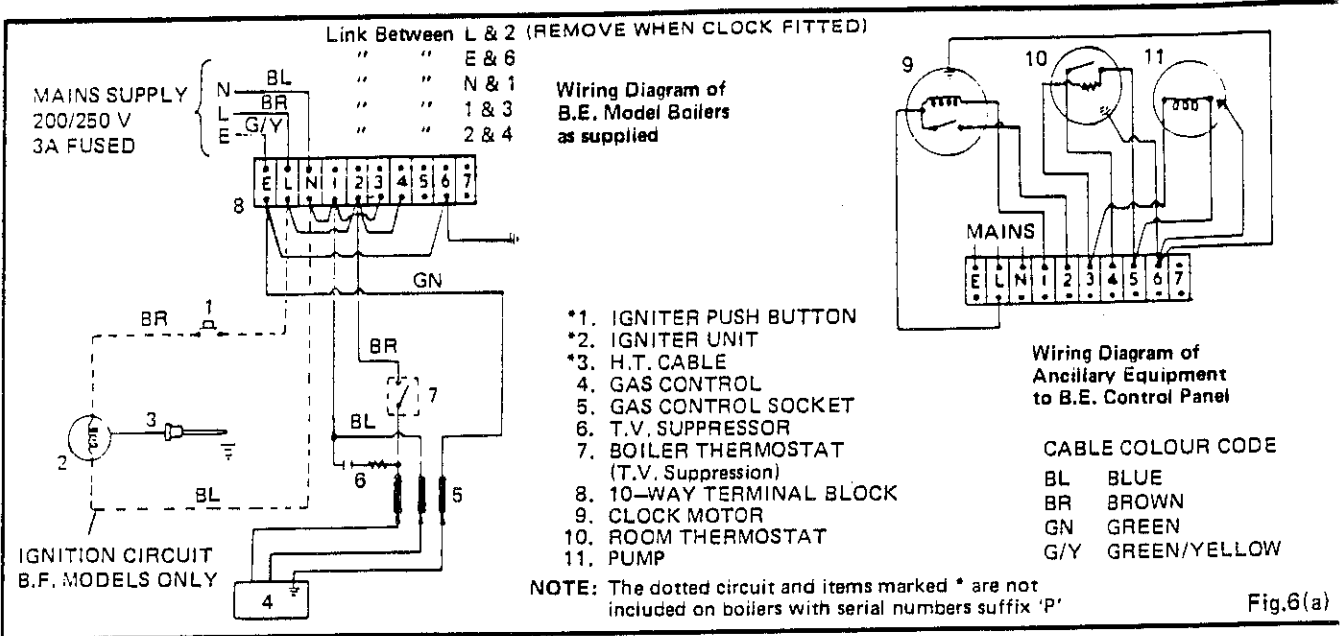
control panel, should be removed and the cover plate lifted off (Fig.7). The cables should be passed through the grommets provided in the Basic panel and wired into the connecting block.

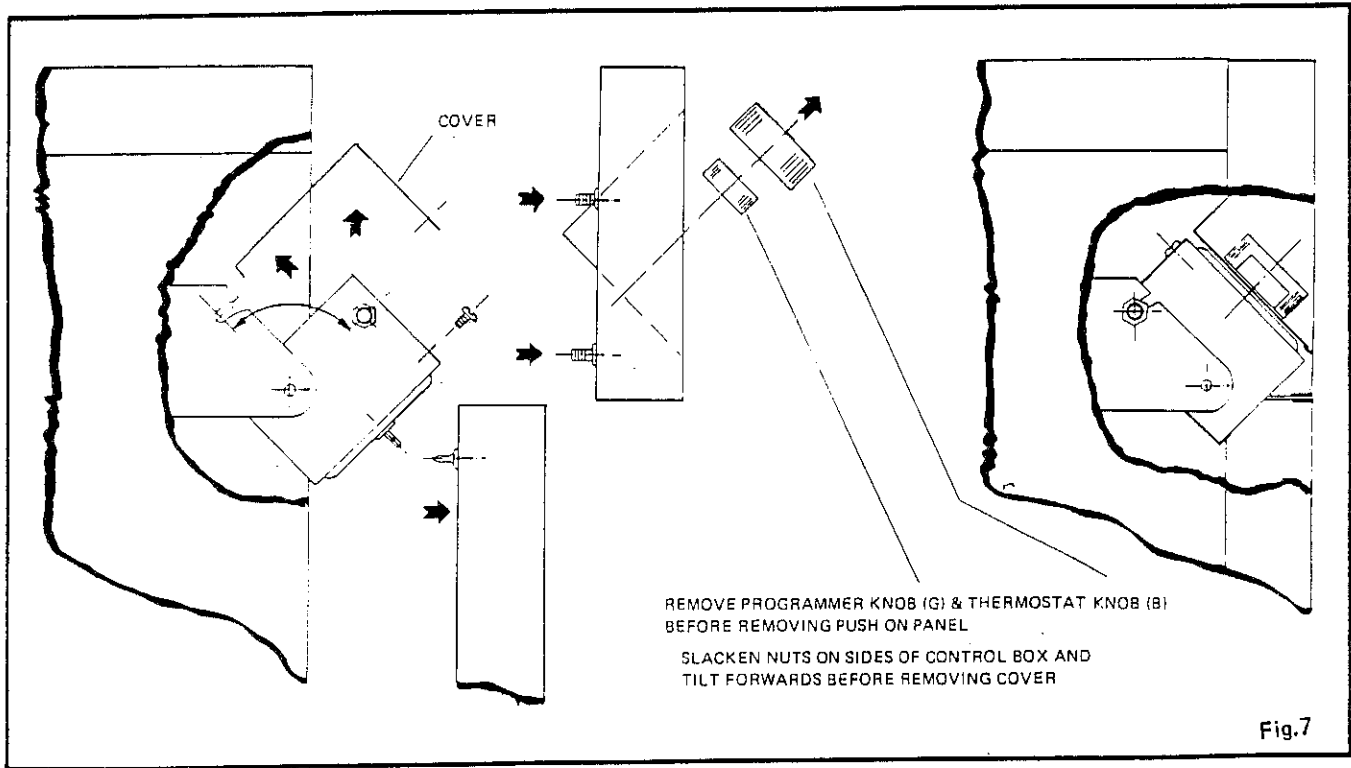
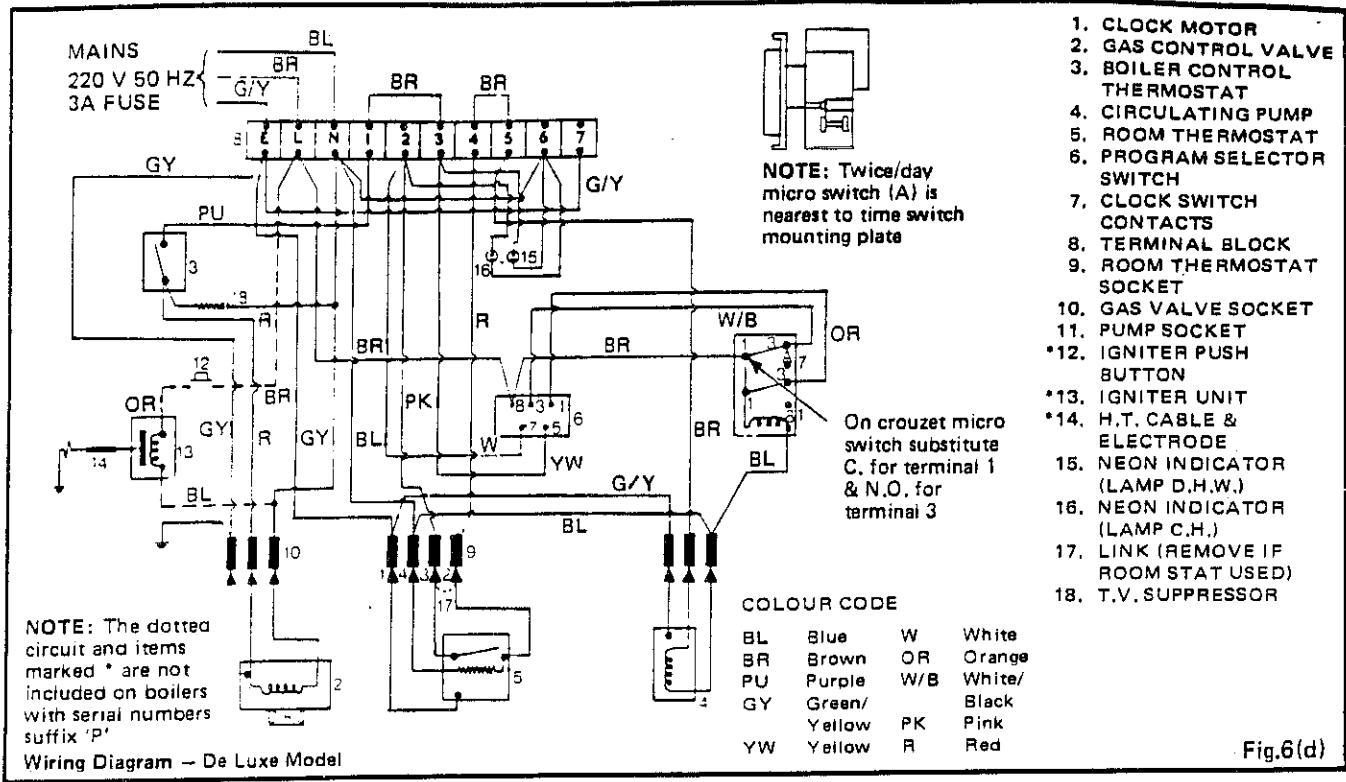
The cover plate should then be replaced and the panel swung back into position.

Note:
It is important to leave sufficient cable to allow the panel

to swing about its pivot point but there should be an excess of cable which could touch hot surfaces on the boiler. All cables should be taken down the right hand side of the boiler and strapped to the top edge of the right hand side panel with the straps provided. Ensure cables are clear of surfaces which will get hot in operation.

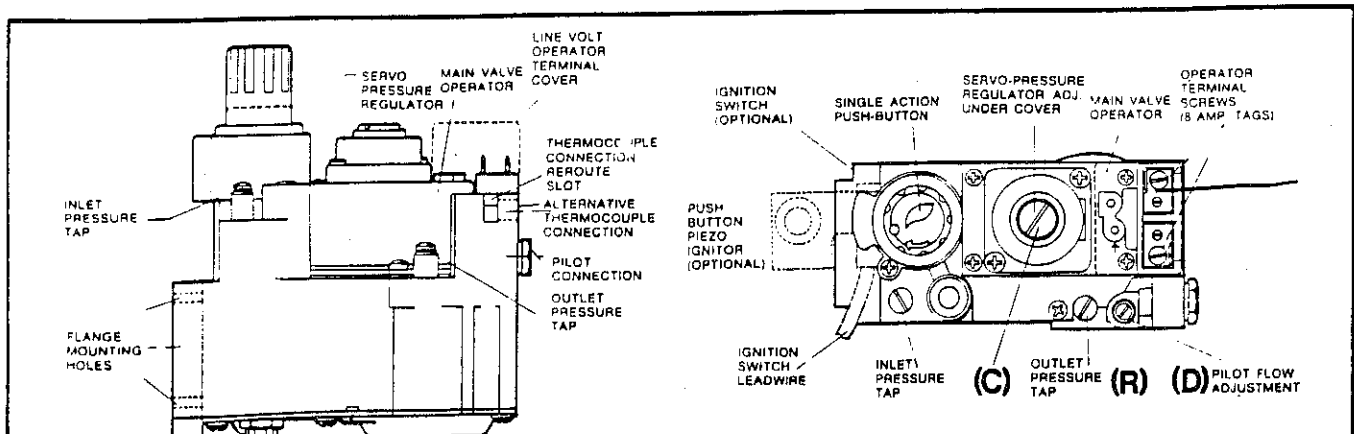
Now continue from "Fitting of Outer Casing", paragraph 5.





INITIAL LIGHTING OF THE BOILER

(reference Figs.3,5 and 8)

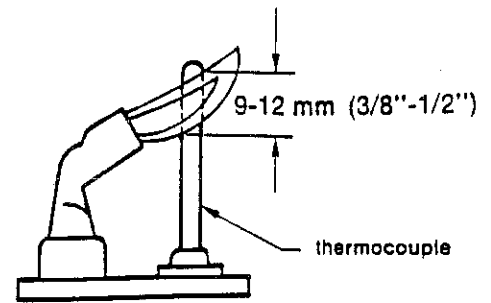


This should be carried out in accordance with the Operating Instructions given in the User's Instructions, and also given on the adhesive label at the back of the boiler door.

The added precaution of purging the gas supply should be taken. The operating pressure should be checked with that given below at the test point (R)* provided.

Note: * Slacken grub screw in test point (R) before fitting pressure gauge. Tighten grub screw after removal of gauge.

Any pressure adjustment should be carried out at the pressure regulator adjustments screw on the Honeywell control valve (Fig.8). Access to this screw is gained by removing the cap screw (C) in the pressure regulator chimney assembly. Switch off the main burner at the thermostat and adjust the pilot burner. The pilot flame should envelop 10 to 13 mm (3/8 to 1/2 in.) of the thermocouple tip.



Flow rate can be adjusted by means of the self-sealing pilot adjustment screw (D) on top of the control (Fig.8). To decrease pilot flame, turn clockwise. To increase pilot flame, turn anti-clockwise. Set the boiler thermostat (B) to the required temperature and programme or clock, if fitted, to the correct time and the required programme setting.

SETTING PRESSURES AND HEAT INPUTS

30/40 Model

Heat Input	Kcal/h	10,584	12,096	13,608
	kW	12.3	14.1	15.8
	Btu/h	42,000	48,000	54,000
Heat Output	Kcal/h	7,560	8,820	10,080
	kW	8.8	10.3	11.7
	Btu/h	30,000	35,000	40,000
Manifold Pressure	mbar (inWG)	8.8 (3.5)	10.9 (4.4)	13.6 (5.5)
Injector	CF/BF	Bray Cat. 23 600		

45/60 Model

Heat Input	Kcal/h	15,876	17,136	18,648	20,160
	kW	18.5	19.9	21.7	23.4
	Btu/h	63,000	68,000	74,000	80,000
Heat Output	Kcal/h	11,340	12,600	13,860	15,120
	kW	13.2	14.65	16.1	17.6
	Btu/h	45,000	50,000	55,000	60,000
Manifold Pressure	mbar (inWG)	7.8 (3.1)	9.5 (3.8)	11.3 (4.5)	13.0 (5.2)
Injector	CF/BF	Bray Cat. 33 950 Bray Cat. 23 950			

65/85 Model

Heat Input	Kcal/h	22,554	24,318	25,578	27,216	28,476
	kW	26.2	28.3	29.8	31.7	33.1
	Btu/h	89,500	96,500	101,500	108,000	113,000
Heat Output	Kcal/h	16,380	17,640	18,900	20,160	21,420
	kW	19.6	20.0	22.0	23.4	24.9
	Btu/h	65,000	70,000	75,000	80,000	85,000
Manifold Pressure	mbar (inWG)	9.7 (3.9)	11.3 (4.5)	12.0 (4.8)	13.5 (5.4)	15.4 (6.1)
Injector	CF/BF	Bray Cat. 23 850				

90/120 Model

Heat Input	Kcal/h	30,995	34,523	37,800	41,580
	kW	36.05	40.15	43.96	48.34
	Btu/h	123,000	137,000	150,000	165,000
Heat Output	Kcal/h	22,680	25,200	27,720	30,240
	kW	26.38	29.31	32.24	35.17
	Btu/h	90,000	100,000	110,000	120,000
Manifold Pressure	mbar (inWG)	8.5 (3.4)	10.5 (4.2)	12.75 (5.1)	15.0 (6.0)

It is important, once the system has been commissioned, to instruct the user in the basic operation of their new central heating system. These notes are for your guidance on the type of information which is required by the user.

1. How to light the gas boiler.
2. How to control boiler water temperature using the boiler thermostat.

Note: It is important to explain that the thermostat should not be set below 60°C (140°F) in order to prevent condensation problems. It is also important to explain that, when the boiler is used for domestic hot water, the thermostat should be set 60°C to 11°C (10°F to 20°F) above the temperature of the water required at the taps. The latter point is particularly important when a cylinder thermostat is fitted.

3. Venting of radiators.
4. How to turn off individual radiators and hence gain economy when rooms are not in use.
5. Simple explanation of any additional controls fitted and how they should be used to best advantage, i.e. room thermostat, clock control or programme control.

More information on all the above is given in the Operating Instruction booklet which must be left with the user.

MAINTENANCE INSTRUCTIONS

This should be carried out once a year by a qualified heating engineer or by the local Gas Region.

WARNING: Before any maintenance or servicing is carried out it is essential to isolate the electricity supply to the boiler.

BURNER/CONTROL ASSEMBLY (Figs. 3 and 5)

- (a) Remove door by pulling forward and lifting clear (Fig.5), (also plinth on 65/85 and 90/120 models).
- (b) Turn off the gas supply to the burner at the main gas tap (A).
- (c) Undo brass union on gas service tap (A).
- (d) Remove control valve plug (N) from control panel and remove H.T. cable (if fitted) from electrode (S) on pilot assembly.
- (e) Unscrew four hexagon nuts, one at each corner of combustion chamber cover plate.
- (f) The Honeywell control valve, burner and combustion chamber cover plate assembly can now be lifted out of the combustion chamber.
- (g) Brush loose deposits from burner rails and from burner carrier tray. Check for deposits in venturi throat of burner. Clean out any deposit present.

Not: All burner rails marked LR, fitted with removable end plates are Lint Resistant Burners.

CONVENTIONALLY FLUED APPLIANCES fitted with LINT RESISTANT BURNERS (marked LR) MUST be cleaned as follows: -

- (i) Take off the end plate by removing the two retaining screws (Pozidrive No.2).
- (ii) Remove all traces of lint from inside the burner, particularly that adhering to the underside of the burner rails. Ensure that all surfaces are clean

(Bray Part No. AB12351 Key 45A in Parts List) if required. Ensure the threads on the locating screws are not crossed or damaged and that a gas tight seal is made.

- (h) Clean Pilot and thermocouple tip by replacing them if showing signs of severe deterioration.
- (i) Servicing of the Honeywell control valve should only be carried out by an engineer fully conversant with this type of control.
- (j) Re-assemble the burner in reverse order.

FLUEWAYS (Fig.9)

- (a) Remove burner/control assembly as given above.
- (b) Remove thermostat knob and programme control knob (if fitted) by pulling off from the spindle. Pull off black and grey fascia panel and place carefully on one side. Slacken nuts on sides of control panel and tilt forward.
- (c) Remove two flue cover plates (J), one in centre of boiler and one on the front of the flue hood. On the 65/85 model temporarily disengage the control box from the side panel brackets to remove and replace top flue cover plate. The flueways are now accessible for cleaning.
- (d) Brush flueways in direction as shown in Fig.8, ensuring that each individual channel receives attention.
- (e) Remove deposits from combustion chamber and from top of boiler casting.
- (f) Refit flue cleaning doors and replace burner assembly into combustion chamber. Ensure that all seals are correctly air tight.

WATERWAYS

Maintenance of the waterways should not be necessary since this unit should only be fitted to indirect systems.

REPLACING THERMOCOUPLE

- (a) Remove front panel by pulling off and lifting clear, (also plinth on 65/85 models).
- (b) Slacken hexagon nut retaining thermocouple into connection on Honeywell gas valve.
- (c) Unscrew hexagon nut holding thermocouple tip in position in pilot burner mounting.
- (d) Lift thermocouple out of connection on Honeywell valve and slide tip out of pilot burner assembly. Replace new thermocouple in reverse order.

REPLACING THERMOCOUPLE - 65/85 and 90/120 MODELS

- (a) Carry out instructions given in (a), (b), (c), (d), (e) and (f) under preceding 'Burner Control Assembly'
- (b) Slacken hexagon nut retaining thermocouple into connection on Honeywell gas valve.
- (c) Unscrew hexagon nut holding thermocouple tip in position in pilot burner mounting.
- (d) Lift thermocouple out of connection on Honeywell valve and slide tip out of pilot burner assembly. Replace new thermocouple in reverse order.

REPLACING IGNITION ELECTRODE

- (a) Carry out (a) as above. Remove pilot burner as detailed following in 'Pilot Injector' (a), (b) and (c).
- (b) Slacken nut locating electrode into position in the

pilot burner assembly.

- (c) Slide electrode out of pilot assembly and replace with new electrode in reverse order. Re-assemble.

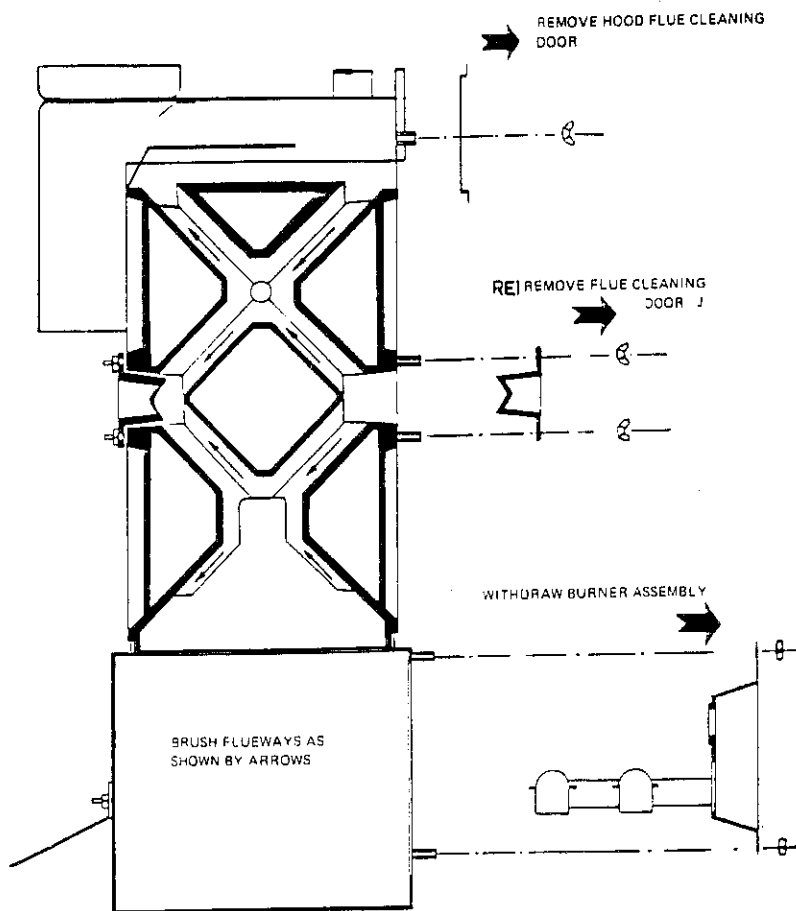
REPLACING IGNITION ELECTRODE – 65/85 and 90/120 MODELS

- (a) Carry out instructions given in (a), (b), (c), (d), (e)

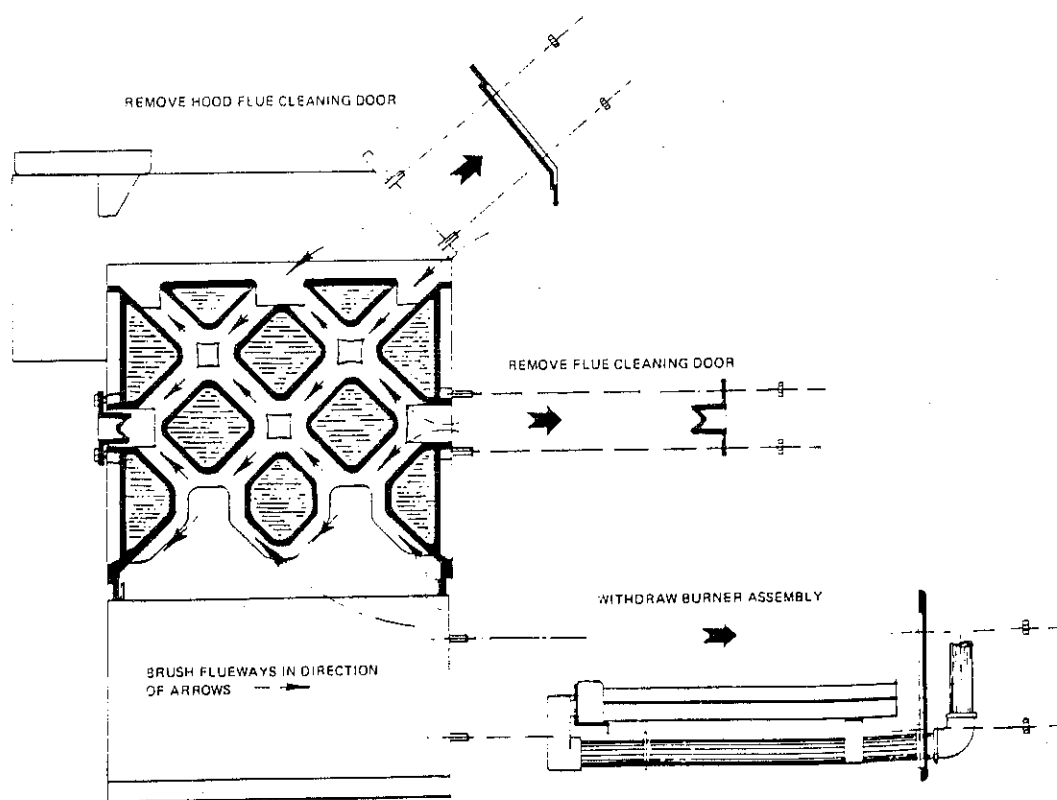
and (f) under preceding 'Burner Control Assembly'.

- (b) Remove burner from either side of pilot assembly.
- (c) Remove brass screw and nut fixing electrode to mounting bracket.
- (d) Withdraw electrode and replace in reverse order. Fit igniter lead.

30/40 & 45/60 Models



65/85 & 90/120 Models



TO REMOVE INJECTORS MAIN BURNER

- (a) Remove burner/control assembly as detailed in preceding instructions.
- (b) (1) **30/40 and 45/60 Models:**
Undo two nuts fastening burners to cast iron burner manifold.
- (2) **65/85 and 90/120 Models:**
Undo the nuts fastening the burners to the cast iron manifold, and the nuts fastening the burners underneath to the front support bracket.
- (c) (1) **30/40 and 45/60 Models:**
Slide burner, complete with mounting tray, from the injectors.
- (2) **65/85 and 90/120 Models:**
Slide burners from injectors.
- (d) Injectors can now be unscrewed from cast iron manifold.
- (e) Care should be taken to retain the fibre seal washers, and to replace them on refitting injectors. Injectors should only be cleaned with a soft brush and should NOT be cleaned with a wire.
- (f) Re-assemble in reverse order.

PILOT INJECTOR

- (1) **30/40 and 45/60 Models:**
 - (a) Remove H.T. connection from ignition electrode. Undo pilot tube nut and remove pilot tube from pilot burner.
 - (b) Undo hexagon nut, holding thermocouple into pilot assembly, and slide out thermocouple tip.
 - (c) Undo the two screws, holding pilot bracket into combustion chamber front plate, and remove pilot burner.
 - (d) The pilot injector can now be removed from the pilot tube connection port.
 - (e) If it is lodged in position it can be pushed out from within the pilot shield with a piece of wire.
 - (f) Re-assemble in reverse order.
- (2) **65/85 and 90/120 Models:**
 - (a) Remove burner/control assembly as detailed in preceding instructions.
 - (b) Remove H.T. connection from ignition electrode. Undo pilot tube nut and remove pilot tube from Pilot burner.
 - (c) Undo hexagon nut, holding thermocouple into pilot assembly, and slide out thermocouple tip.
 - (d) and (e) — as for 30/40 and 45/60 models detailed above.
 - (f) Re-assemble with new injector in reverse order.

Gas Control Valve (Refer Fig.8)

It is not intended that the complete gas control valve should be exchanged on failure under normal circumstances. Each section of the valve can be exchanged separately without disturbing the main gas connections.

Replacing the Thermo-Electric Device

Unscrew thermo-magnetic unit from valve body at the thermocouple connection in Fig.8

the valve. Replace with new thermo-magnetic unit.

Pressure Regulator

Remove two screws holding pressure regulator (C) in position on valve body. Replace with new pressure regulator.

Replacing Piezo Ignition Unit

- (a) Disconnect H.T. lead from Piezo unit.
- (b) Unscrew, and remove, two nuts and screws which hold ignition unit on to mounting bracket.
- (c) Use same two nuts and screws to remount new ignition unit.
- (d) Reconnect H.T. lead.

Solenoid Operator

After removing pressure regulator, remove plastic cover from electrical terminal unit (two screws) and undo four screws holding the solenoid operation unit in position on the valve body. Lift off unit from valve body and replace with new unit. Refit plastic cover and pressure regulator.

REPLACING CIRCULATING PUMP

(where applicable) (Refer Fig.3)

1. Remove door from outer casing by pulling off (30/40 and 45/60 models).
2. Switch off electricity supply to boiler.
3. Unplug the pump plug lead from control panel.
4. Turn off isolating valves at each side of the circulating pump.
5. Unscrew the unions on each end of the pump body.
6. Lift off the pump, taking care to ensure that the water contained therein is caught in a suitable container. Ensure water does not foul the gas control valve or electrical wiring.
7. Replace with exchanged pump unit in reverse order to above.
8. Turn on isolating valves and vent pump at the vent screw on top of the circulating pump (SMC Models).
9. Ensure the joints of the union connections are sound.
10. Plug in pump lead to control panel, switch on electricity supply and test new pump.

REPLACING BOILER THERMOSTAT (Ref.Fig.7)

1. Pull off casing door.
2. Pull off thermostat knob (B) and programmer knob (G) before pulling off grey facia panel.
3. Switch off electricity supply to the control panel.
4. Slacken retaining tab on thermostat pocket and slide thermostat from pocket.
5. Slacken nuts on sides of control panel using a spanner.
6. Swing panel forward on mounting brackets as shown in Fig. 6.
7. Remove rear cover from control panel held by two screws.
8. Release capillary from clipping arrangement on control box.
9. Pull off electrical connections from thermostat.

- holding thermostat in position.
11. Lift thermostat out of control box.
 12. Replace with new thermostat in reverse order to above.
 13. On re-assembly, check new thermostat for correct operation.

REPLACING CLOCK UNIT (De Luxe Models)

1. Carry out instructions 1 to 7 given above in preceding 'Replacing Boiler Thermostat' above.
2. Disconnect grey and orange leads connecting clock motor to supply at the terminal block in the control panel.
3. Pull off electrical connections on micro switches mounted on the clock unit.
4. Remove four screws from front of panel holding clock unit to the mounting bracket in control panel.
5. Slide clock unit out from rear of control panel.

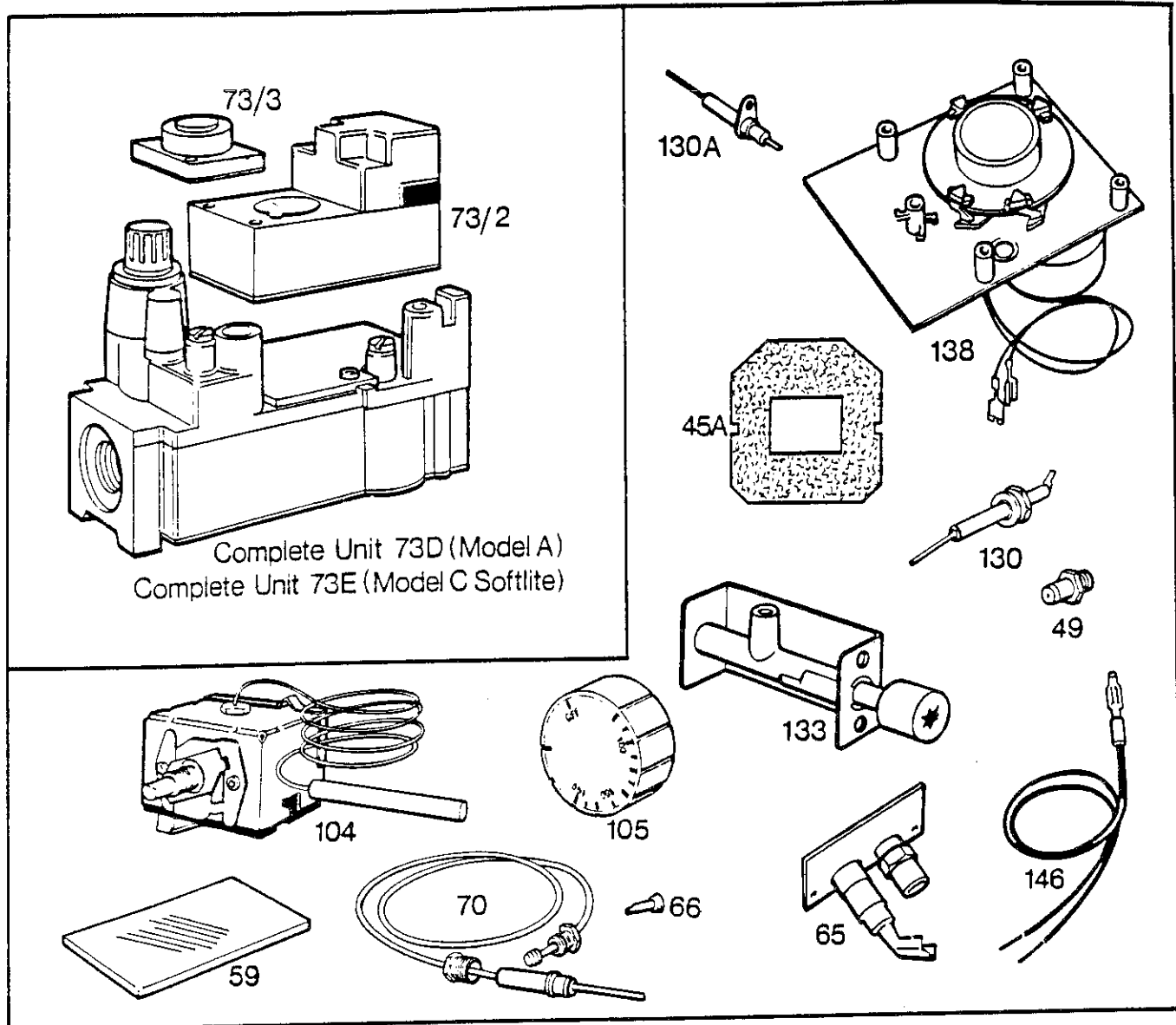
6. Replace in reverse order with new clock unit, using the colour coded wiring diagram to ensure correct electrical connections.
7. Test new clock for correct operation after re-assembly. Set tappets, and time, to required settings. (Refer 'Operating Instructions').

REPLACING PROGRAMME SELECTOR SWITCH

1. Carry out instructions 1 to 7 given in preceding section 'Replacing Boiler Thermostat'.
2. Pull off electrical connections from selector switch.
3. Remove two screws, retaining switch on control panel from front of panel.
4. Lift out switch from control panel and replace with new switch in reverse order, using colour coded wiring diagram to ensure correct replacement of electrical connections.
5. Test new switch after re-assembly for correct sequences of operation.

VULCAN CONTINENTAL BOILER RANGE

Short Parts List

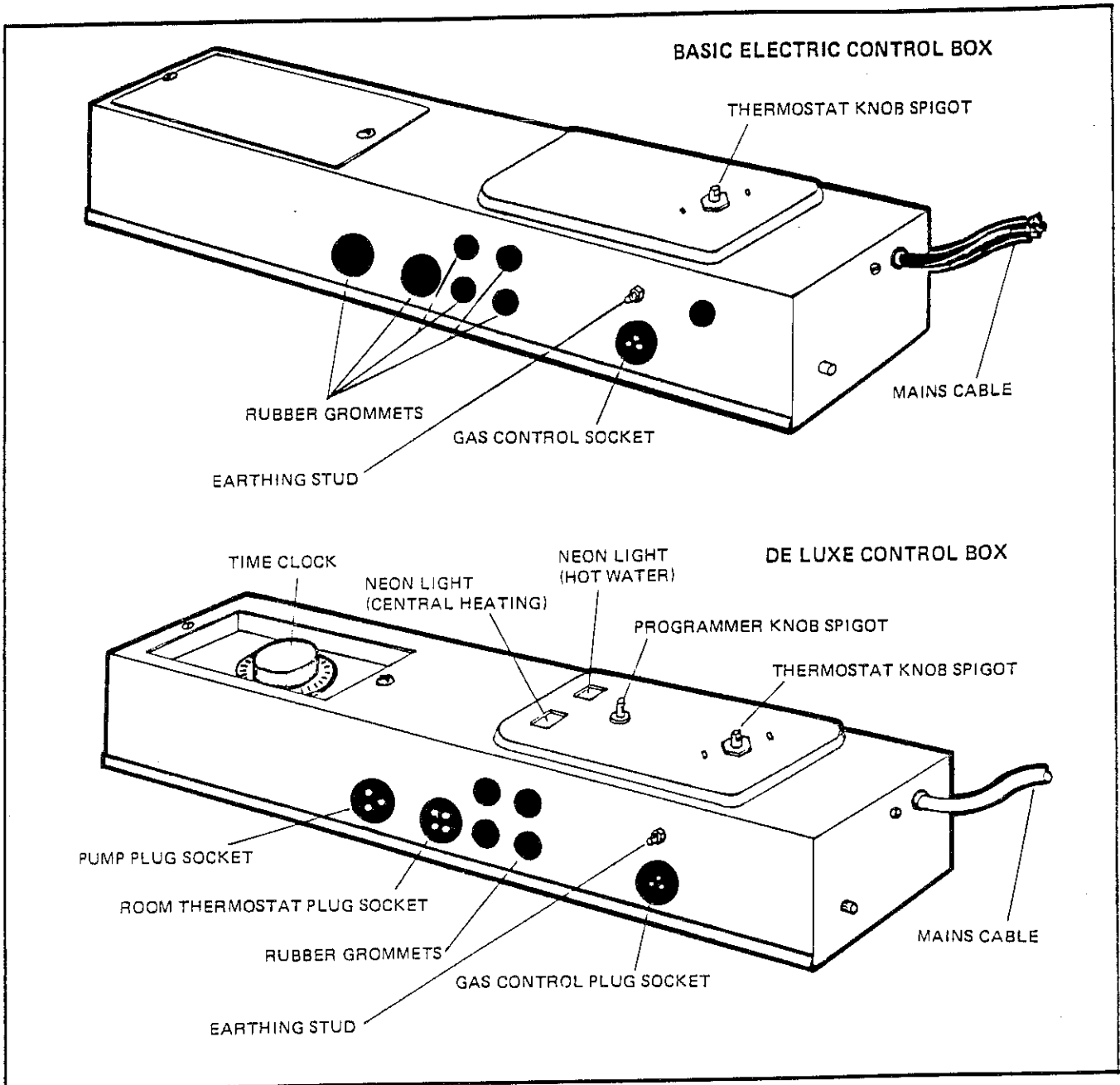


SHORT PARTS LIST VULCAN CONTINENTAL 30/40, 45/60 & 65/85 & 90/120 MODELS

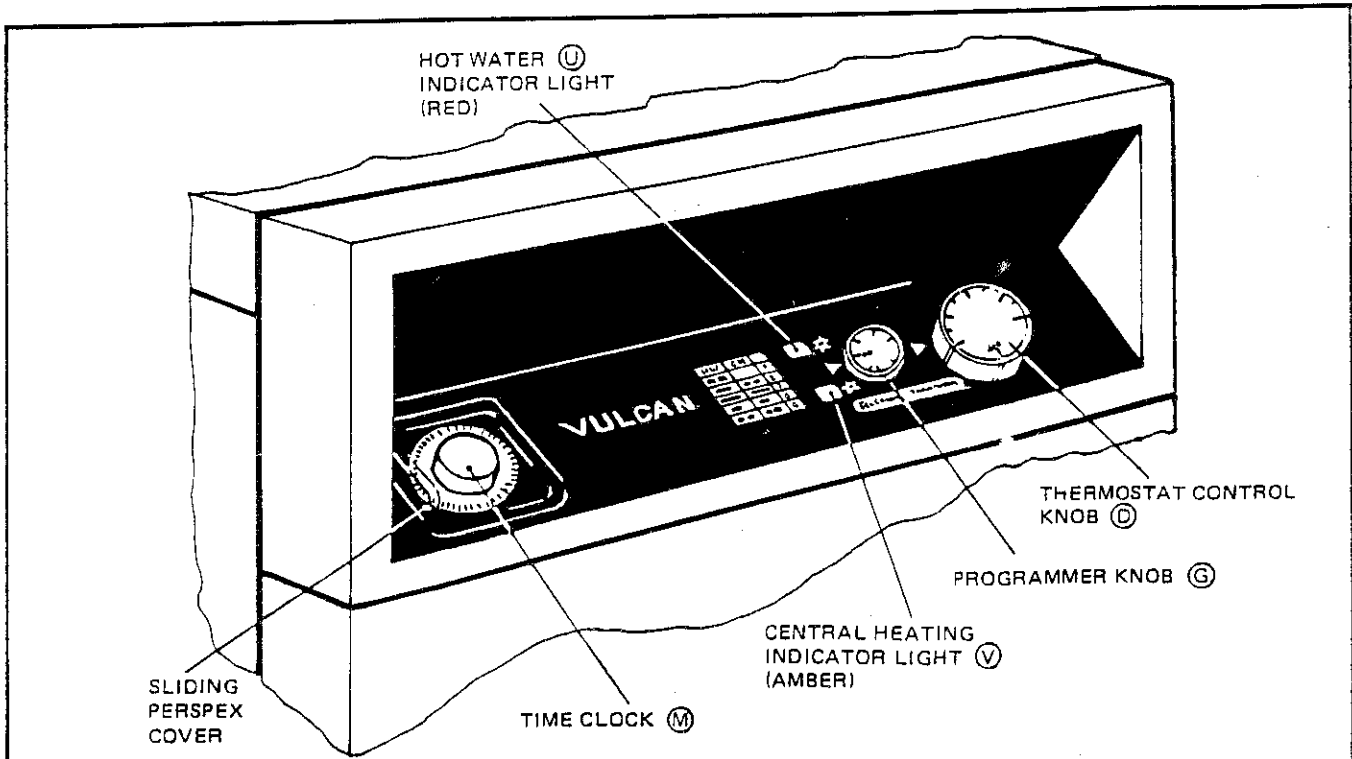
Key No.	G.C. No.	Maker's Part No.	Description	No.off
73D		959	Honeywell Gas Valve ½" BSP, V.4600A (30/40,45/60 Models)	1
73E		954	Honeywell Gas Valve Softlite ½" BSP, V.4600C. (65/85, 90/120 Models)	1
73/3		790	Pressure Regulator Honeywell	1
73/2		789	Solenoid Operator Honeywell	1
70	390 038	166	Thermocouple Honeywell Q.309A 1244 36" long	1
49		922	Injectors Bray Cat.23 Size 750 Nat.Gas (90/120 CF Model)	5
49	398 435	583	Injectors Bray Cat.33 Size 350 Nat.Gas. (45/60 CF Model)	2
49	398 351	743	Injectors Bray Cat.23 Size 600 Nat.Gas (30/40 CF and BF Models).	2
49		819	Injectors Bray Cat.23 Size 850 Nat.Gas. (65/85 BF and CF Models).	3
49	398 376	781	Injectors Bray Cat.23 Size 950 Nat.Gas. (45/60 BF Model)	2

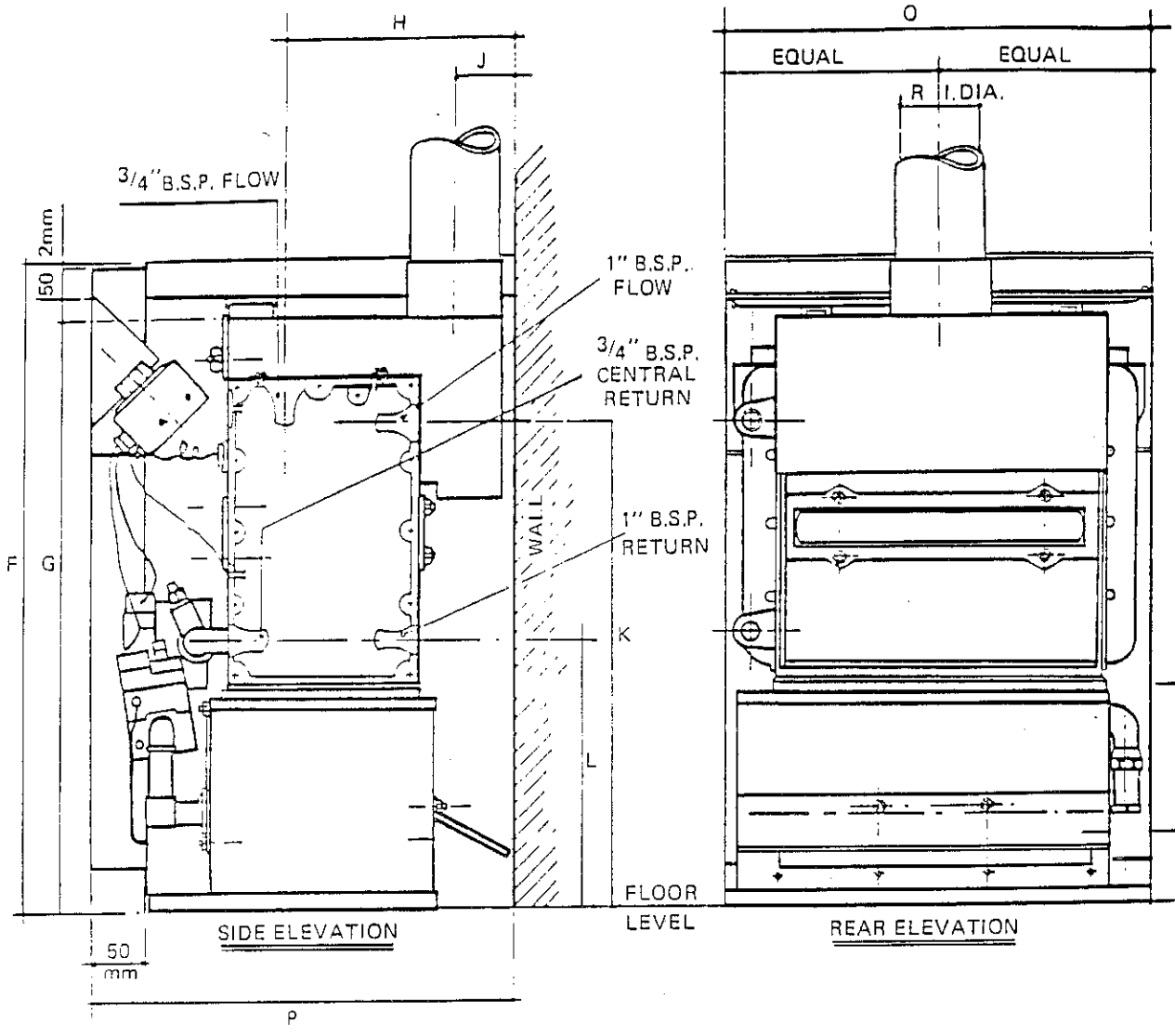
Key No.	G.C. No.	Maker's Part No.	Description	No.off
45A		931	Gasket Burner End Plate Bray Part No.AB 12351 30/40,45/60 CF and BF 65/85 CF and BF 90/120 CF	2 3 5
138	396 625	584	Time Switch Randall Mk.III, 3100 series 3105	1
146	348 316	585	Neon Arcoletric SL.233200/250 volts	2
65	391 222	724	Pilot Burner Honeywell Q.314A special 5641 (N.G.)(30/40 and 45/60)	1
65		379	Pilot Burner Honeywell Q.314A 5823 (65/85 and 90/120)	1
66	390 794	363	Pilo. Injector BCR 18 N.G.	1
59	314 420	389	Glass 76 mm x 51 mm (3" x 2") armour plated	1
104	382 329	723	Thermostat Ranco C.26 -521	1
105	382 081	527	Knob Thermostat	1
130	388 396	588	Electrode Honeywell 42001342.001	1
133		892	Piezo Electric Ignitor Unit Vernitron	1
130A		958	Electrode Vernitron	1

CONTROL BOXES



FRONT FACIA PANEL - DE LUXE MODELS

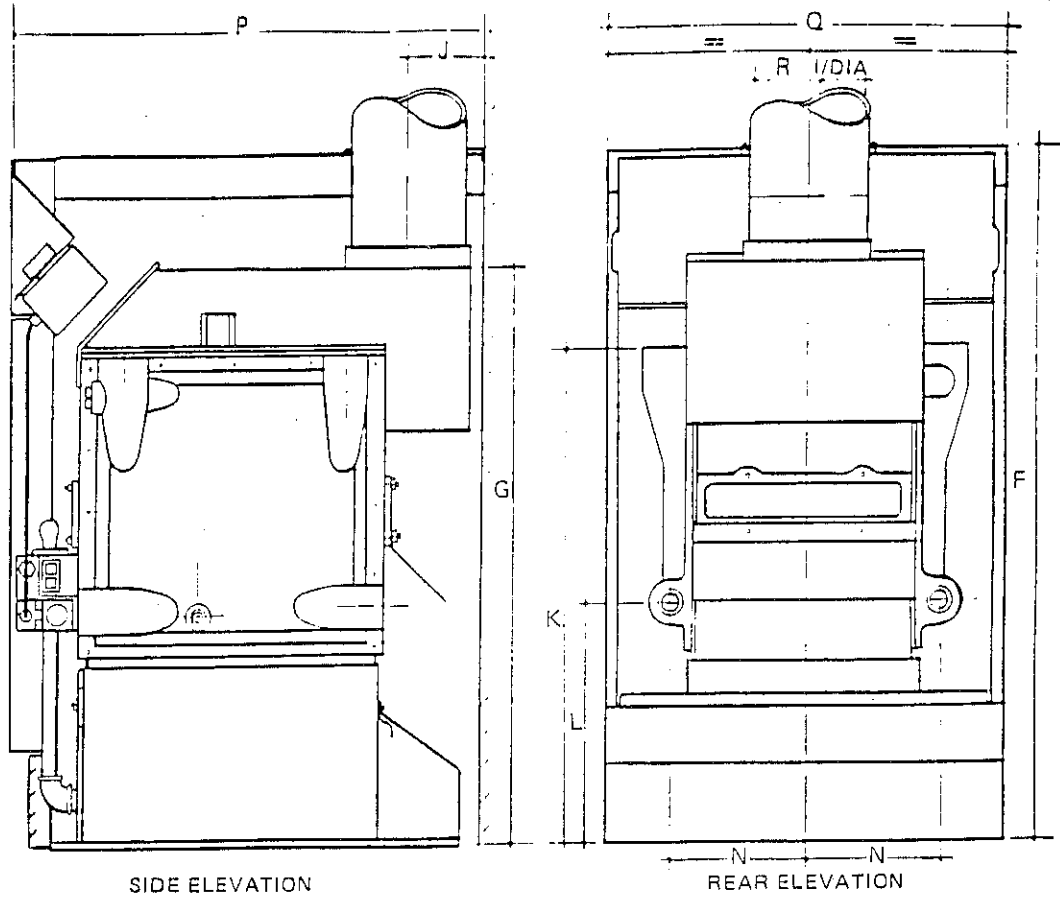




Model		A	B	C	D	E	F	G
Vulcan	mm	244	535	280	280	810	750	675
	in	9.5 ⁷ / ₈	21	11	11	31.7 ⁷ / ₈	29 ¹ / ₂	26.5 ⁷ / ₈
Continental 30/40		H	J	K	L	P	Q	R
	mm	268	70	558	317	480	500	102
	in	10 ¹ / ₂	2 ³ / ₄	22	12 ¹ / ₂	19	19 ³ / ₄	4

Model		A	B	C	D	E	F	G
Vulcan	mm	317	495	340	340	810	750	675
	in	12 ¹ / ₂	19 ¹ / ₂	13.3 ³ / ₈	13 ³ / ₈	31.7 ⁷ / ₈	29 ¹ / ₂	26.5 ⁷ / ₈
Continental 45/60		H	J	K	L	P	Q	R
	mm	268	73	558	317	480	500	102
	in	10 ¹ / ₂	2.7 ⁷ / ₈	22	12 ¹ / ₂	19	19 ³ / ₄	4

Note: Dimensions A, B, C, D and E apply to B.F. Models only (Ref. Fig.4)
 Dimensions J and R apply to C.F. Models only.



FLOW and RETURN TAPPINGS

65/85 Model:

- Flow 1" BSP
- Return 1" BSP

90/120 Model:

- Flow 2 x 1 1/4" BSP
- 1 x 1" BSP
- Return 2 x 1 1/4" BSP

Model		A	B	C	D	E	F	G	I	K	L
Vulcan	mm	334	502	407	407		850	710	85	600	303
	in	13.1/8	19 3/8	16	16	N/A	33 3/8	28	3.3/8	23.5/8	11.7/8
Continental 65/85			N	P	Q	R	S	T	U	V	W
	mm		170	600	500	127	280	173	120	378	180
	in		6.11/16	23.5/8	19 3/8	5	11	6 3/8	4 3/8	14.7/8	7.1/8

Model			F	G	J	K	L			
Vulcan	mm		850	710	85	600	303			
	in		33 3/8	28	3.3/8	23.5/8	11.7/8			
90/120		N	P	Q	R	S	T	U	V	W
	mm	226	600	612	127	280	173	120	378	236
	in	8.7/8	23.5/8	24	5	11	6 3/8	4 3/8	14.7/8	9 3/8

* Dimensions A, B, C, D and E apply to BE Models only (Ref Fig 4)

