

WARNING

This information is a copy of an original archive, therefore Aga cannot be held responsible for its continued accuracy.

This information refers to the following products

Rayburn Ranger

(models 1987 onwards with cut away front plate for burner access)

Rayburn Gas Nouvelle

(models 1987 onwards with cut away front plate for burner access)

Rayburn 365G/L

(all models)

Installation and Servicing Instructions for Rayburn Gas Nouvelle Open and Balanced Flue Natural Gas or Propane

RAYBURN NOUVELLE

Open Flue – G.C. No. 45.327.17

Balanced Flue – G.C. No. 45.327.18

Consumer Protection Act 1987

As manufacturers and suppliers of cooking and heating products, in compliance with Section 10 of the Consumer Protection Act 1987, we take every care to ensure, as far as is reasonably practicable, that these products are so designed and constructed as to meet the general safety requirement when properly used and installed. To this end, our products are thoroughly tested and examined before despatch.

Introduction

The Rayburn Gas combination appliance is a combined cooker and hot water boiler providing central heating and domestic hot water in addition to special cooking facilities.

Available in open or balanced flue form, operating on natural draught, the boiler being designed for use in an open vented water system only, operating with gravity D.H.W. primaries and pumped heating circulation or fully pumped systems, if desired.

The boiler burner will provide 32m² (344ft²) Open Flue and 29.1m² (313ft²) Balanced Flue, of heat to radiator surface and pipes exclusive of domestic hot water requirements. The recommended heating surface area is based on an average heat emission of 0.5kW/m² (160Btu/ft²h).

These appliances are suitable for either Natural or L.P.G. gases dependent upon model type. Two independently controlled gas burners separately provide heat to the central heating boiler section whilst the other burner provides heat to the cooker and domestic hot water only.

	Open Flue	Balanced Flue
Hot Water output with boiler burner ON and cooker burner at minimum setting.	17.0kW (58,000Btu/h)	15.8kW (54,000Btu/h)
Hot Water output with boiler burner ON and cooker burner at high setting (cooking taking place)	19.05kW (65,000Btu/h)	17.6kW (60,000Btu/h)

Installation Instructions

The installation of the appliance must be in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, Building Regulations, Building Standards (Scotland) Regulations, Current I.E.E. Wiring regulations and the byelaws of the local Water Undertaking.

It should be in accordance also with any relevant requirements of the local Gas Region and Local Authority and the relevant recommendations of the following current British Codes of Practice:-

- CP 331** Installation of pipes and meters for town gas Part 3. Low pressure installation pipes.
- BS 5376** Selection and installation of gas space heating. Part 2. Boilers of rated input not exceeding 60kW.
- BS 5449** Central heating for domestic premises Part 1. Forced circulation hot water systems.
- BS 5546** Code of Practice for installation of gas hot water supplies for domestic purposes (2nd family gases).

NATURAL GAS ONLY See back page for Propane Gas		OPEN FLUE				BALANCED FLUE			
		Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON	Cooker HIGH Boiler ON	Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON	Cooker HIGH Boiler ON
Heat Output	kW	3.04	9.0	25.3	30.3	3.22	9.2	24.0	27.8
	Btu/h	10,400	30,700	86,400	103,500	11,000	31,350	78,600	95,000
Heat Output Water	kW	0.88	2.9	17.0	19.05	0.88	2.9	15.8	17.6
	Btu/h	3,000	10,000	58,000	65,000	3,000	10,000	54,000	60,000
Burner Pressure	mbars	2.50	17.0	Ckr. Blr.	Ckr. Blr.	2.1	16.3	Ckr. Blr.	Ckr. Blr.
				2.5 15.0	17.0 15.0			1.75 15.5	16.3 15.9
	Ins w.g.	1.0	6.8	1.0 6.02	6.8 6.02	0.85	6.5	0.7 6.2	6.5 6.4
Burner Injector Size	Cooker	2.38mm				2.46mm			
	Boiler	3.75mm				3.75mm			
	Cooker Thermostat Bypass Size	1.25mm				1.3mm			

Boiler Water Connections

Flow (one) Rp 1 (1in BSP Int)
Return (one) Rp 1 (1in BSP Int)
Both connections are located towards the rear edge of the appliance LH side panel.

Gas Connections Rp ½ (½in BSP Int)
Open Flue Outlet Dia 150mm (6in Int)

Balanced Flue Adjustable for wall depths between 228mm (9in) and 355mm (14in).

Electrical Supply 240v ~ 50Hz 3 amp Fused.

Min Working Hydraulic pressure of boiler 0.23 bar (3.4 psi)
Max Working Hydraulic pressure of boiler 1.75 bars (25.75 psi)
Water Capacity of Boiler 12.5 litre (2.75 galls)
Weight of both appliance versions 320kg (705lb)
Appliance Overall Dimensions Height: 975mm (38¾")
Width: 962mm (37⅞")
Depth: 647mm (25½")



Installation and Servicing Instructions Rayburn Gas Nouvelle and Rayburn Gas Ranger Open and Balanced Flue

RAYBURN GAS RANGER

Open Flue – G.C. No. 45.372.15

Balanced Flue – G.C. No. 45.372.16

RAYBURN NOUVELLE

Open Flue – G.C. No. 45.372.17

Balanced Flue – G.C. No. 45.372.18

Health & Safety at Work Act 1974

As manufacturers and suppliers of cooking and heating products, in compliance with Section 6 of the Health & Safety at Work Act 1974, we take every care to ensure, as far as is reasonably practicable, that these products are so designed and constructed as to be safe and without risk to health when properly used and installed. To this end, our products are thoroughly tested and examined before despatch.

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Installation Requirements

The installation of the appliance must be in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, Building Regulations, Building Standards (Scotland) Regulations, Current I.E.E. Wiring regulations and the byelaws of the local Water Undertaking.

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Part 3. Low pressure installation pipes.

BS 5376 Selection and installation of gas space heating.
Part 2. Boilers of rated input not exceeding 60kW.

NATURAL GAS		OPEN FLUE				BALANCED FLUE			
		Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON	Cooker HIGH Boiler ON	Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON	Cooker HIGH Boiler ON
Heat Input	kW	3.04	9.0	25.3	30.3	3.22	9.2	24.0	27.8
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Burner Injector Size	Cooker	2.38mm				2.46mm			
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Flow (one) Rp 1 (1in BSP Int)
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Installation Instructions

Fig. 1a – Open Flue

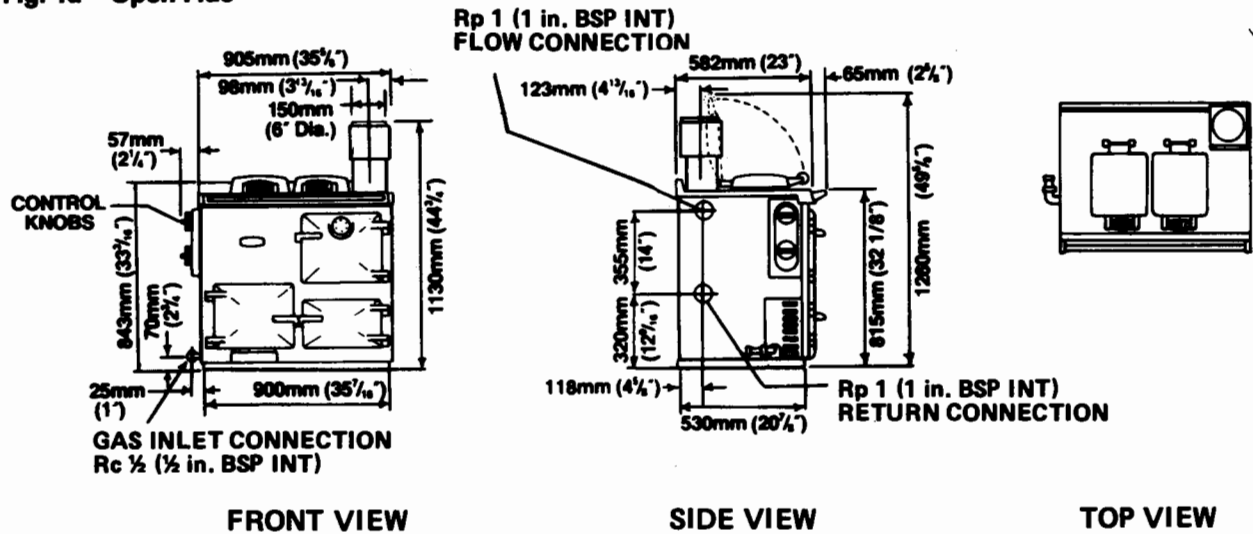
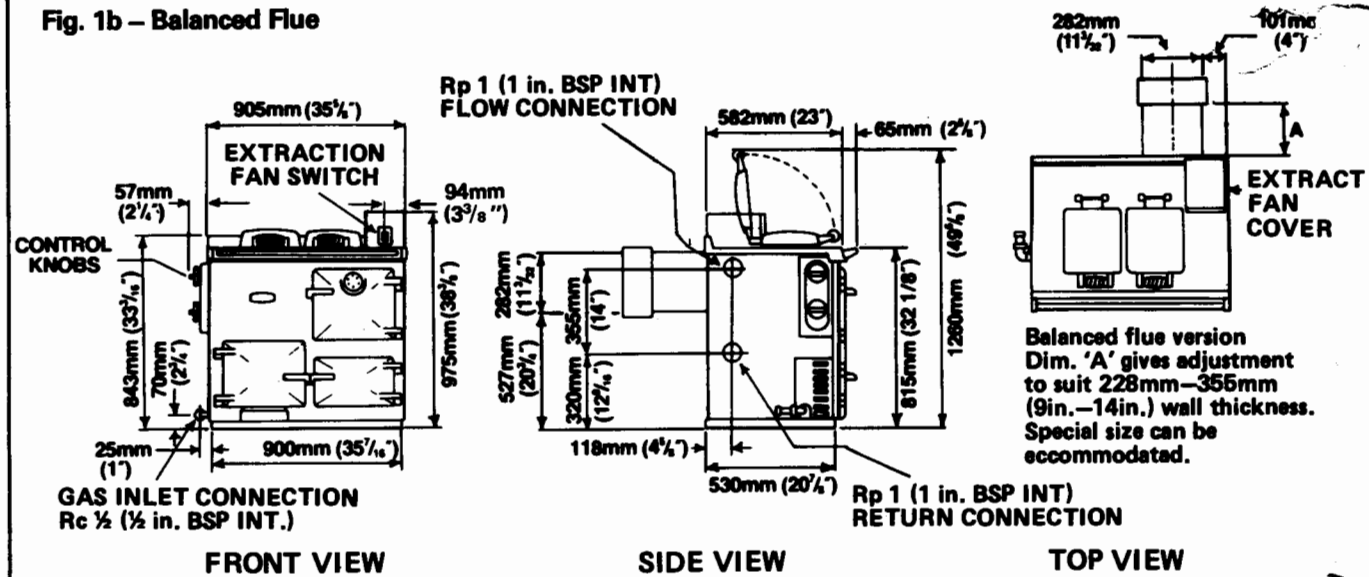


Fig. 1b – Balanced Flue



- BS 5440** Flues and air supply for gas appliances of rated input not exceeding 60kW.
Part 1. Flues. Part 2. Air Supply.
- BS 6172** Code of Practice for installation of domestic cooking appliances.

In your own interest, and that of safety to comply with the law, all gas appliances should be installed by competent persons, in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution.

Appliance
The appliance must be installed on a solid level floor or base of incombustible material which is capable of supporting the total weight.

Location – Open Flue
The location chosen for the appliance must permit installation and the provision of a satisfactory flue and an adequate air supply. The location must also provide adequate space for servicing and air circulation around the appliance. See Section 16 – **General**. Should the installation of the appliance be in an unusual position or restricted space, special procedures may be necessary and BS 6798:1987 gives detailed guidance on this aspect.

Location – Balanced Flue
The location chosen for the appliance must permit installation and the provision of a satisfactory flue termination. The location must also provide adequate space for servicing, and air circulation around the cooker. See Section 16 – **General**. Should the installation of the appliance be in an unusual position or restricted space, special procedures may be necessary and BS 5376:2 gives detailed guidance on this aspect.

Gas Supply
Service Pipes
The local Gas Region should be consulted at the installation planning stage in order to establish the availability of an adequate supply of gas. An existing service pipe must not be used without prior consultation with the local Gas Region.

Meters
A gas meter is connected to the service pipe by the Gas Region or a local Gas Region contractor. An existing meter should be checked, preferably by the Gas Region, to ensure that the meter is adequate to deal with the total rate of gas supply required.

Installation Pipes

Installation pipes should be fitted in accordance with CP 331.3. Pipework from the meter to the appliance must be of adequate size. Do not use pipes of a smaller size than the appliance gas connection.

The complete installation must be tested for soundness and purged as described in the above Code.

Flue System – Open Flue

Detailed recommendations for fluing are given in BS 5440:1.

The following notes are intended to give general guidance:

The cross-sectional area of the flue serving the cooker must be not less than the area of the flue outlet of the cooker, and at least 3m (10ft) high from the floor level.

If flue pipe is to be used it must be not less than 130mm (6in) internal diameter.

Flue pipes and fittings should be constructed from one of the following materials:-

- (a) Cement to BS 567
- (b) Aluminium or stainless steel to BS 715
- (c) Cast iron or mild steel to BS 41 acid resistant vitreous enamel lined.

A double walled flue pipe is used it should be of a type acceptable to British Gas.

If a chimney is to be used, it preferably should be one that is composed of or lined with a non-porous acid resistant material. (Chimneys lined with salt glazed earthenware pipes are acceptable if the pipes comply with BS 65:1981). A flue pipe constructed to one of the standards in (a) to (c) above, should form the initial connection to lined chimneys.

Where a chimney is to be used which is not composed of or lined with a non-porous acid resistant material it should be lined with a stainless steel flexible flue liner or any other liner of a type that is acceptable to British Gas. The internal diameter of the liner must be not less than 150mm (6in) and the number of joints must be kept to a minimum. If the flue liner is not to be connected directly to the appliance draught diverter, a flue pipe which is manufactured from one of the materials in (a) to (c) above should form the connection between the draught diverter and flue liner.

Before connecting the appliance to or inserting a liner into, has been previously used the flue must be thoroughly swept clean of any soot and loose material. If a register plate, restrictor plate, damper, etc., is fitted in the flue it must be removed before connecting the appliance to, or inserting a liner into the flue.

The flue should terminate in accordance with the relevant recommendations given in BS 5440:1, Table 4.

A terminal of a type that has been tested and found satisfactory by British Gas should be fitted at the flue outlet.

The point of termination must not be within 600mm (2ft) of an openable window, air vent or any other ventilation opening.

Flue System – Balanced Flue

Detailed recommendations for fluing are given in BS 5440:1.

The following notes are intended to give general guidance.

The cooker must be installed so that the flue terminal is exposed to the external air.

Termination should be on a clear expanse of wall; the terminal being preferably not less than 600mm (2ft) away from a corner, recess or projection.

DO NOT install the terminal:

- (a) within 300mm (1ft), measured vertically, from the bottom of an openable window, air vent or any other ventilation opening.

- (b) Less than 300mm (1ft) above adjacent ground level, roof or balcony level.
- (c) Less than 600mm (2ft) below balconies, or car port roof.
- (d) Less than 300mm (1ft) below eaves, gutters, soil pipes, or drain pipes.
- (e) Less than 75mm (3in) from vertical drain pipes and soil pipes.
- (f) Less than 600mm (24in) from internal or external corners.
- (g) Less than 600mm (24in) from a surface facing a terminal or a terminal facing a terminal.
- (h) Less than 1200mm (48in) from an opening in the car port (e.g. door, window) into dwelling.
- (i) Less than 1500mm (60in) vertically from a terminal on the same wall.
- (k) Less than 300mm (12in) horizontally from a terminal on the same wall.

When the lowest part of the terminal is less than 2m (6.6ft) above the level of any ground, balcony, flat roof or place to which people have access, the terminal must be protected by a guard of durable material.

A terminal protective guard is available as an optional extra upon request to suit the appliance terminal from your Rayburn Stockist.

The air inlet/products outlet duct and the terminal of the appliance must be not closer than 25mm (1in) to combustible material. Detailed recommendations on protection of combustible materials are given in BS 5440:1.

Air Supply

Detailed recommendations for air supply are given in BS 5440:2.

The following notes are intended to give general guidance:-

Kitchen or Internal Space Air Supply

Wherever an open flue appliance is to be installed it must have a permanent air vent. This vent must be either direct to outside air or to an adjacent room or internal space which must itself have a permanent air vent of at least the same size direct to outside air.

The minimum effective area of the permanent air vent in the outside wall must be 105cm² (16in²).

A balanced flue appliance does not require a permanent air vent in the room or space in which it is installed.

Effect of an Extract Fan

If there is any type of extract fan fitted in the same room as an open flue appliance there is a possibility that if adequate air inlet area from outside is not provided, spillage of the products from the appliance flue could occur when the extract fan is in operation. Where such installations occur, a spillage test as detailed in BS 5440:1 must be carried out and any necessary remedial action taken.

Water Circulation System

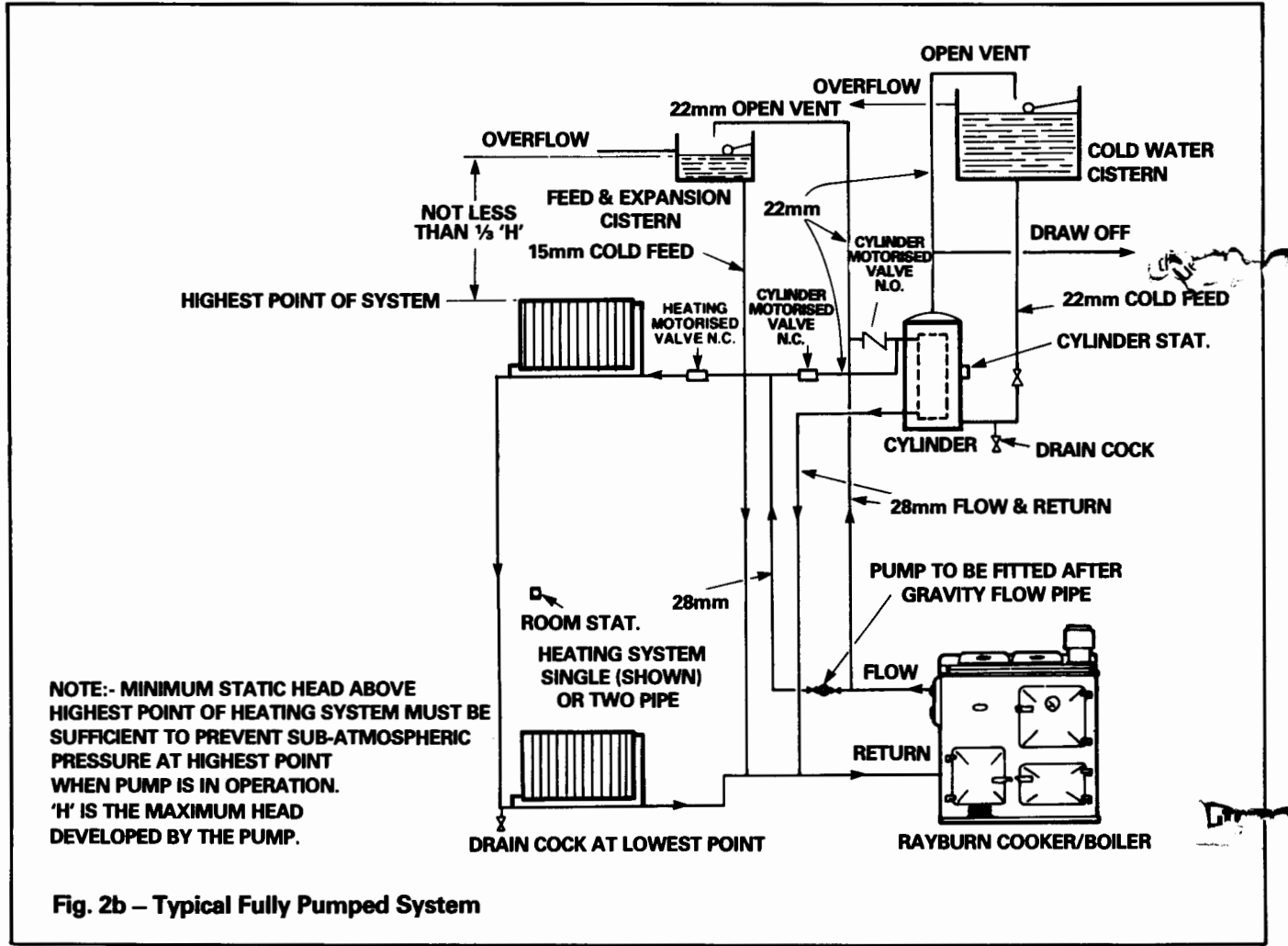
Detailed recommendations for the water circulation system are given in BS 6798:1987, BS 5449:1 (for small-bore and microbore central heating systems) and CP.342.

The following notes are of particular importance:-

In a combined central heating and domestic hot water system the hot water storage vessel must be of the indirect cylinder or calorifier type.

The hot water storage vessel should be insulated, preferably, with not less than 75mm (3in) thick mineral fibre, or its equivalent.

Pipework not forming part of the useful heating surface should be insulated to help prevent heat loss and possible freezing, particularly where pipes are run through roof space and ventilated under floor spaces. Cisterns situated in areas which may be exposed to freezing conditions should also be insulated.



Draining taps must be located in accessible positions which permit the draining of the whole system, including appliance and hot water storage vessel. Draining taps should be at least 1/2in BSP nominal size and be in accordance with BS 2879.

The appliance boiler section should be connected to a cistern water supply, subject to a maximum head of 18.25m (60ft). Central heating systems should be in accordance with the relevant recommendations given in BS 6798:1987. In addition, a smallbore or microbore system should comply with the recommendations of BS 5449:Part 1 and water carrying copper tubes should be to BS 2871:1.

The heating system must be designed (and adjusted if necessary) to give a temperature differential across the boiler at full output of 10°-14°C (18-25°F).

The use of horizontal pipe runs should be avoided wherever possible in order to prevent the collection of air in the system. If horizontal runs are unavoidable, the pipes should rise upwards in the direction away from the appliance.

Hot water systems should be in accordance with the relevant recommendations given in BS 6700:1987.

Controls

Independent temperature controls with time switch control are recommended for providing temperature comfort from radiators.

Typical controls can be motorised valves operated by room thermostat and cylinder thermostat.

Thermostatic radiator valves may be fitted if required and consideration should be given to fitting a frost thermostat which should be set to operate at a temperature of approximately 4°C (39°F).

Circulating Pump

It is recommended that the selected pump be of a type and manufacture acceptable to British Gas and be adequate to give the required temperature differential between the flow and return.

The pump should be able to meet the requirements of the system design and be fitted in a readily accessible position (See Fig 2a and 2b). It may be positioned either on the boiler section flow or the return depending on the system design. The boiler section pressure loss curve (See Fig. 3) indicates the loss of head across the boiler section and should be considered when selecting the correct pump size.

Typical recommended selection is as follows:-
Grundfos UPS 15/50 or equivalent.

	OPEN FLUE	BALANCED FLUE
Boiler Output	17.0kW (58,000Btu/h)	15.8kW (54,000Btu/h)
Temperature differential across the boiler	10°C-14°C (18°F-25°F)	
Water Flow Rate	1,055-1,464 litres/hr (232-322 g.p.h.)	981-1,363 litres/hr (216-300 g.p.h.)

Refer to boiler section pressure loss curve – Fig. 3.

Isolating Valves

Isolating valves (preferably of the keyless type) must be fitted to the inlet and outlet of the circulating pump to facilitate service and replacement of pump without draining the system.

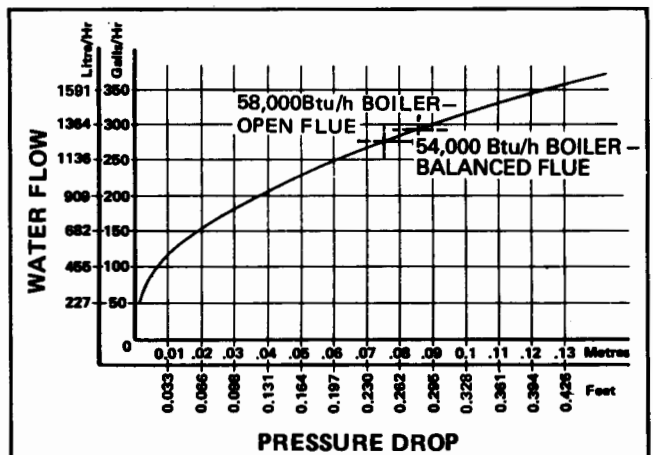


Fig. 3 – Pressure Loss Curve

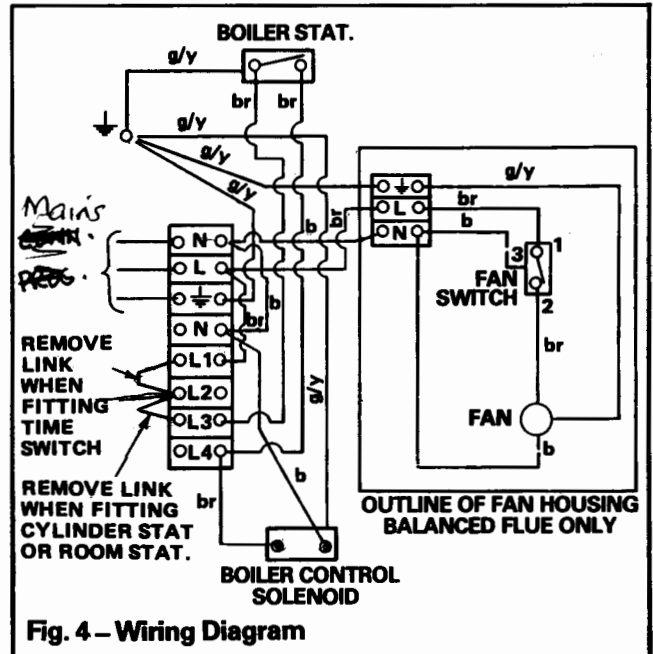


Fig. 4 – Wiring Diagram

Hot Water Storage Vessel

It is recommended that an indirect 190 litre (40 gallon) hot water storage cylinder of the double feed type complying with BS 1566 Part 1: DF Type 10, should be lagged and fixed vertically as near as possible to the appliance when radiators are fitted.

In combined systems, the water draw-off pipes to the taps must be dead leg connection from the vent/expansion pipe.

A drain tap must be fitted at the lowest point of the system.

Electrical Supply

Wiring external to the appliance must be installed in accordance with the current I.E.E. Wiring Regulations and any local regulations which apply.

The boiler is supplied for 240 volt ~ 50Hz and fuse rating of 3A.

The method of connection to the mains electricity supply must facilitate complete electrical isolation of the appliance, preferably by the use of an unswitched shuttered socket-outlet in conjunction with a fused three-pin plug both complying with the requirements of BS 1363.

Alternatively, a fused double-pole switch having a contact separation of at least 3mm in both poles serving only the appliance may be used.

The point of connection to the mains should be readily accessible and adjacent to the appliance. For wiring instructions See Fig. 4.

Installation Instructions

Installation of Appliance

General

The combined appliance is floor-mounted and the space in which the appliance is to be fitted must have the following minimum dimensions:-

Width: 1,187mm (46³/₄in)

Depth: 647mm (25¹/₂in)

Height: 1,320mm (52in).

This space includes the following minimum clearances for servicing:-

Between wall and L.H. side of appliance	200mm (8in)
Between wall and R.H. side of appliance	25mm (1in)
Above the raised insulating cover handle	60mm (2 ³ / ₈ in).

In addition, adequate clearance must be available at the front of the appliance to enable it to be operated and serviced. Flue pipes and fittings must not be closer than 25mm (1in) to combustible materials and where passing through a combustible partition such as a ceiling or roof, must be enclosed in non-combustible sleeve providing an air space of at least 25mm (1in).

Spaces around flue pipes passing through walls or floors should be sealed against the passage of smoke and flame.

Preliminary Installation

The appliance is delivered assembled with the exception of the following items which are supplied separately packed and require assembly:-

Open Flue Appliance

1. Draught Diverter Assembly — See Fig. 5
2. Special Injector Tee — (For use with gravity primaries only).
3. Appliance Rear Distance Bracket — (For use when appliance is installed 25mm (1in) away from a rear wall of combustible material). See Fig. 10.

Balanced Flue Appliance

1. Balance Flue Assembly Set — See Fig. 5a.
2. Special Injector Tee — (For use with gravity primaries only).
3. Balanced Flue Sealing/Distance Plate — (For use when appliance terminal is installed through a rear wall of combustible material) See Fig. 11.
4. Oven Extractor Fan Housing Extension — (For use when appliance is installed 25mm (1in) away from a rear wall of combustible material See Fig. 10.

The standard flue assembly set supplied with the appliance is suitable for non-combustible walls having a thickness of 228mm to 335mm (9in to 14in). The maximum extension possible is 395mm (15¹/₂in) which allows for 335mm (14in) thick walls having additional external/internal surface renderings.

Wherever possible, it is recommended that skirting board be removed for the width of the appliance to enable the rear edge of the appliance top plate to make contact with the vertical wall, and avoid a rear air gap. (Combustible walls excepted).

Flue assembly sets for all thicknesses between 335mm (14in) and 510mm (20in) are available to special order.

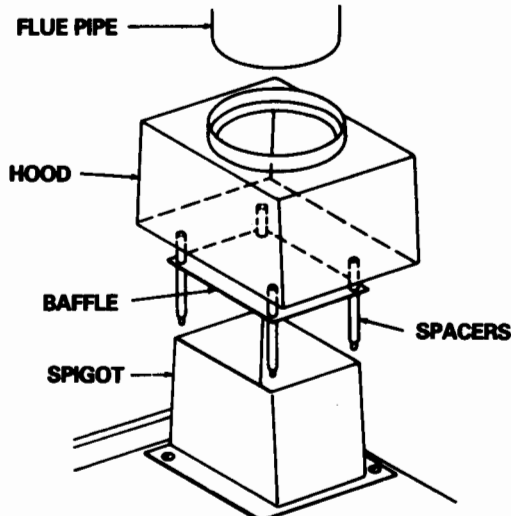


Fig. 5 – Appliance Draught Diverter Open Flue

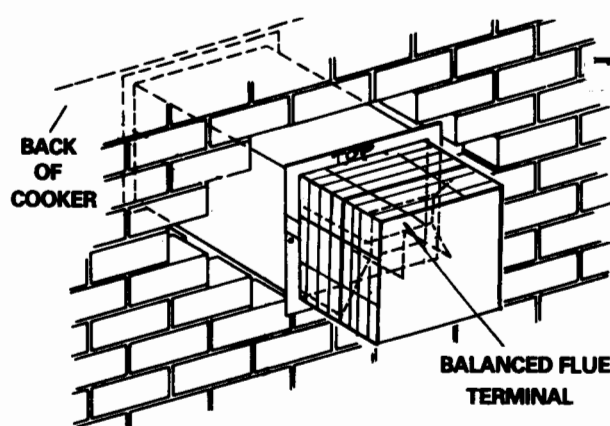


Fig. 5a – View From Outside Of Building – Balanced Flue

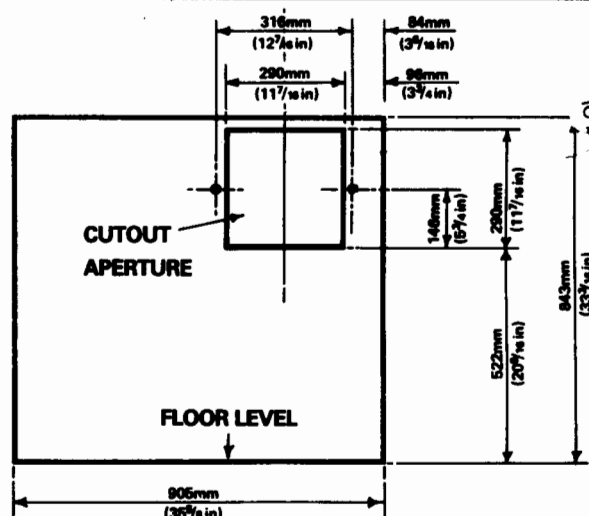


Fig. 5b – Flue Template Balanced Flue

Templates of the terminal aperture position are printed on the appliance carton box. See Fig. 5b.

Site Location – Open Flue

1. Remove the appliance assembly from its transit wooden pallet by the temporary location of a sloping ramp board between the pallet and the floor. With the appliance on the floor, lift the front of the appliance (manually or crowbar) and insert a 1in BSP x 1m long tube between the front of the appliance base plate and the floor.

Draw the tube balanced appliance forward until the tube is at the rear of the appliance and then insert a second similar tube at the front of the appliance, between the base plate and floor. The tube supported appliance can now be slowly "rolled" across the floor and positioned with its back against the wall, and in its intended position for flue connection.

Using a crowbar at the rear corner of the appliance base plate, take the weight of the appliance on the crowbar and remove the rear roller tube, followed by similar action on the front tube.

NOTE: IF THE REAR WALL IS OF COMBUSTIBLE MATERIAL, THERE MUST BE AN AIR GAP OF 25mm (1in) BETWEEN THE WALL AND REAR OF APPLIANCE. FIT REAR DISTANCE BRACKET AS SHOWN IN FIG. 10.

2. Assemble and locate the flue draught diverter assembly on the top plate. See Fig. 5.
3. Fit a 600mm (24in) minimum vertical height of flue pipe into the draught diverter flue socket, sealing joint with fire cement. See Fig. 5.

NOTE: IT IS RECOMMENDED THAT A "SLIP" OR "SPLIT" ADAPTOR IS FITTED BETWEEN THE DIVERTER FLUE SOCKET AND FLUE PIPE TO FACILITATE POSSIBLE FLUE DISCONNECTION AFTER COMMISSION.

4. Connect and terminate the flue system in accordance with standard practice.

Site Location – Balanced Flue

1. Remove the carton, and using the template printed on the carton, mark out the position for the flue duct assembly aperture and carefully cut a hole through the brickwork to suit. See Fig. 5b. Ideally, the hole should just clear the flue duct assembly. Any oversize hole must be rendered/lined internally on the inside wall at this stage (particularly so if a cavity wall), otherwise access sealing will not be possible afterwards. Allow time for any wall lining to dry.

2. Remove the appliance assembly from its transit wooden pallet by the temporary location of a sloping ramp board between the pallet and floor. With the appliance on the floor, lift the front of the appliance (manually or crowbar) and insert a 1in BSP x 1m long tube between the front of the appliance base plate and the floor.

Draw the tube balanced appliance forward until the tube is at the rear of the appliance and then insert a second similar tube at the front of the appliance, between the base plate and floor. The tube supported appliance can now be slowly "rolled" across the floor and positioned with the rear flue stub width concentrically lined up with the wall aperture, but just clear of the wall.

Using a crowbar at the rear corner of the appliance base plate, take the weight of the appliance on the crowbar and remove the rear roller tube, followed by similar action on the front tube. Manually, push the rear flue stub through the wall aperture until the appliance back is positioned against the wall.

Ensure that the rear edge of cooker top plate is against a non-combustible wall and that any air gap between the rear vertical face of the fitted louvred box on the top plate and adjacent wall does not exceed 5mm (3/16in) to prevent unauthorised entry.

NOTE: IF THE REAR WALL IS OF COMBUSTIBLE MATERIAL, THE SEALING/DISTANCE PLATE MUST BE SECURED CONCENTRICALLY OVER THE

BALANCED FLUE APERTURE TO PROVIDE A 25mm (1in) AIR GAP BETWEEN THE WALL AND REAR OF THE APPLIANCE AND ALSO PROVIDE WEATHERPROOF SEAL BETWEEN THE APPLIANCE TERMINAL AND CUT-OUT IN WALL. SEE FIG. 11.

Disengage screw from top plate, then gently withdraw complete housing forward to enable fan housing extension to be fitted. See Fig. 10a & 11.

Replace complete fan housing, in the reverse manner described and secure.

3. Complete assembly of balanced flue by inserting and sliding air and flue ducts into the respective duct sections of cooker from outside. Mark fixing holes in air duct flange on wall and remove air duct. Drill and plug markings on outer wall, mortar render face of air duct flange then replace air duct ensuring the joint work is weatherproof.
4. Fit terminal grille to terminal and secure with screws provided.

Gas Installation

1. Connect the gas supply to the integral union gas service cock on the appliance.
2. Test the whole of the gas installation, including the meter for soundness and purge in accordance with the recommendations of CP331:3.

Water Connections

The two Rp1 (1in BSP int) flow and return connections are located towards the rear edge of the appliance left hand side panel, and pipe connections should be made with R1 (1in BSP ext) x 28mm dia copper compression fittings.

Gravity Domestic Hot Water and Pumped Heating

The 28mm O.D. primary flow pipe must rise continuously from the boiler section to the cylinder to ensure good gravity circulation and extended to provide an open vent. The 28mm O.D. primary flow and return pipes must not exceed 10m (30ft) in length. Pipe runs in excess of 5m (15ft) must be lagged.

To obtain continued Domestic Hot Water gravity circulation with the circulating pump operative, the special injector tee (supplied with appliance) must be connected to the heating/cylinder return pipes with the outlet of the tee connected to the boiler section return tapping. See Fig. 2a.

Fully Pumped System

The domestic hot water flow pipes may be pumped, provided that domestic hot water gravity circulation can take place in the event of pump failure or loss of electrical power. See Fig. 2b for system schematic.

The boiler section is suitable for use with most types of central heating control systems but it is recommended that controls are selected that isolate the boiler section electrically at times of no demand.

Electrical Connections.

A 240v ~ 50Hz electrical supply is required near to the appliance.

The appliance is supplied with a 0.75mm² (24 x 0.2mm) –3 core P.V.C. x 3 metres long replaceable power supply cable to BS 6500 Table 16, which must be connected as described under "Electrical Supply".

A label attached to the end of the flexible cable gives details of the cable core colour coding and their function which should be adhered to. When connecting to a 3 pin plug, observe the following recommendations:-

1. The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked

Installation Instructions

with the letter **E** or by the earth symbol  or coloured green or green-and-yellow.

2. The wire which is coloured blue must be connected to the terminal which is marked with the letter **N** or coloured black.
3. The wire which is coloured brown must be connected to the terminal which is marked with the letter **L** or coloured red.

WARNING – THIS APPLIANCE MUST BE EARTHED

It is recommended that electrical connections are made to a system junction box for the wiring of an external control system. The supplied 3 metre cable is factory connected to the 8-way terminal block and is intended to provide a continuous power supply. Connections on the terminal block provide for the connection of a time switch/ programmer together with cylinders and room thermostat connections which must be fed through empty grommetted holes adjacent to the cable cord and secured by the cable clamp adjacent to main supply cable clamp. The main cable clamp must be used for the power supply cord only.

Commissioning and Testing

Electrical Installation

Checks to ensure electrical safety should be carried out by a competent person, i.e. earth continuity, polarity and resistance to earth as described in the British Gas Multimeter Instruction Book.

Water Circulation System

The whole of the system should be thoroughly flushed out with cold water without the pump in position. Ensure that all valves are open.

With the pump fitted, the system should be filled and air locks cleared. Vent all heat emitters and check for water soundness.

Commissioning and Lighting the Cooker and Boiler — See Fig. 6a or 6b

1. Isolate electricity at wall sockets or spur box and turn cooker and boiler thermostat knobs to **OFF**.
2. After ensuring gas is available to the appliance, undo the union at the appliance gas service cock **A**, then open the cock **A** and purge any air within the supply pipe.

WARNING: NO SMOKING OR NAKED LIGHTS.

Close the appliance gas service cock **A** and remake the union, turn the gas service cock **A** to **ON** and test for gas soundness using suitable leak detection fluid, e.g. a soap solution and sense of smell to locate any gas leaks.

A procedural check is necessary on the appliance to ensure that all gas joints have remained intact after despatch from Works and installation as follows:-

Open Flue — Fig. 6a

- 3a. Open outer burner door **N** and lift off/out, top section of the inner panel **M**. Remove lower fixed section of the inner panel **P** via four fixing screws.

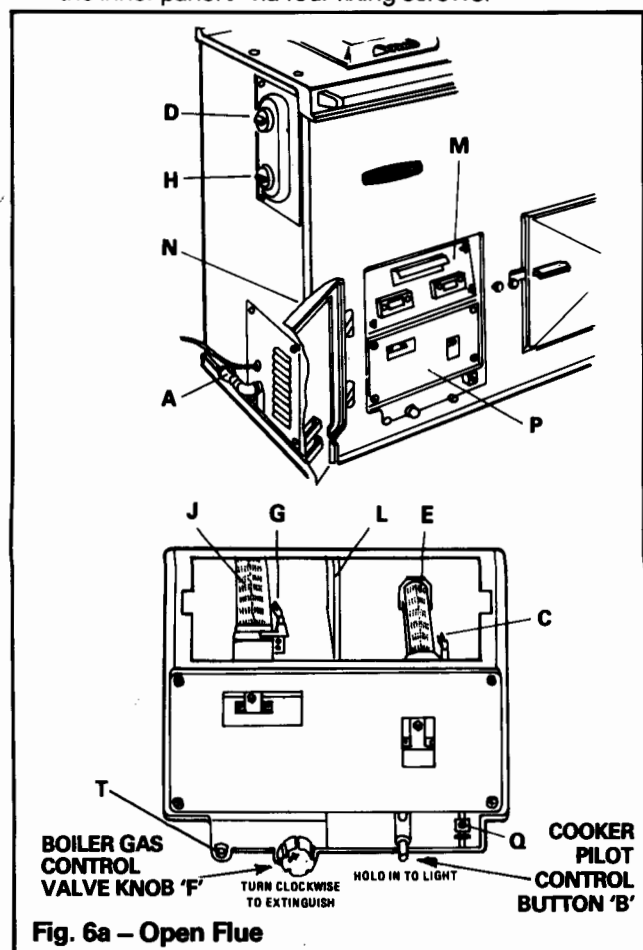


Fig. 6a — Open Flue

- b. Remove combustion chamber divider plate **L** by removing the front wing nut and slackening the rear wing nut.
- c(i) Remove one screw **A** securing boiler pilot burner support bracket to boiler main burner. See Fig. 7a. Remove boiler main burner from combustion chamber.
- (ii) Remove two screws **A** securing cooker pilot burner to main cooker burner support bracket. See Fig. 7b. Slacken octagonal locknut **B** securing cooker burner injector housing to gas burner manifold, and carefully remove burner from the combustion chamber.
- d. Remove the rear section of the combustion chamber base plate (Fig. 8) by releasing the two screws **A**.
- e. All joints beneath combustion chamber must now be tested for gas soundness.

Balanced Flue — Fig. 6b

- 3f. Open outer burner door **N** and remove the four fixing screws and washers from inner panel **R**, carefully ease panel forward and disconnect spark ignition leads from Piezo units.
- g. Remove combustion chamber divider plate **P** by removing the front wing nut and slackening the rear wing nut.
- h. Remove boiler burner: Remove one hexagonal head screw and washer **A** securing burner to pilot support bracket, draw burner forward and remove from combustion chamber. See Fig. 7c.
- i. Disconnect 1/4in BSP union **B** to boiler burner feed pipe and remove pipe. See Fig. 7c.
- j. Remove cooker burner: Disconnect 1/4in BSP union **C** above combustion chamber base plate and remove screw **F**, then remove burner. See Fig. 7d.
- k. Undo three hexagonal fixing screws and washers **D** on left hand combustion chamber base plate and remove inspection plate. See Fig. 8a.

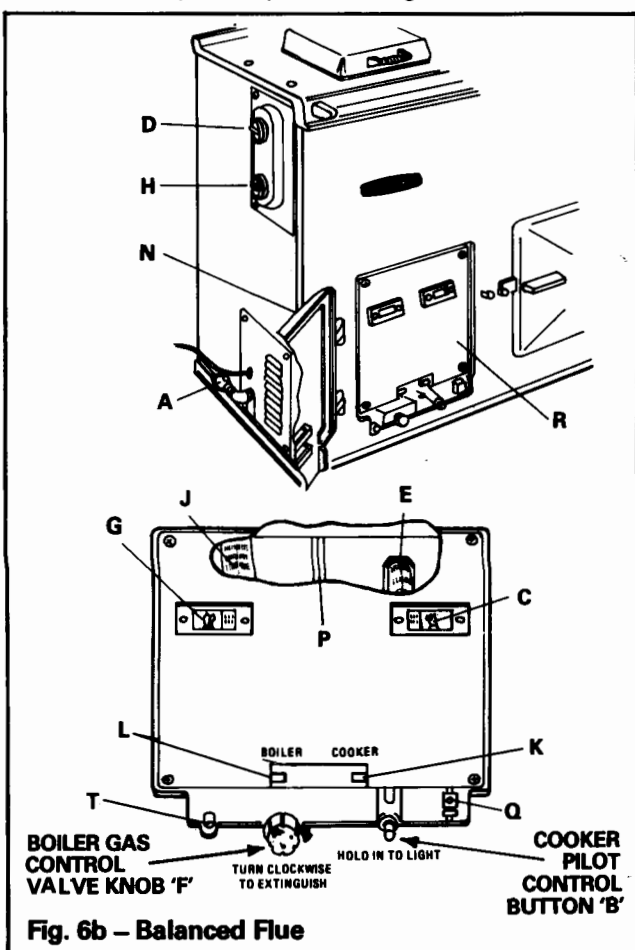


Fig. 6b — Balanced Flue

Installation Instructions

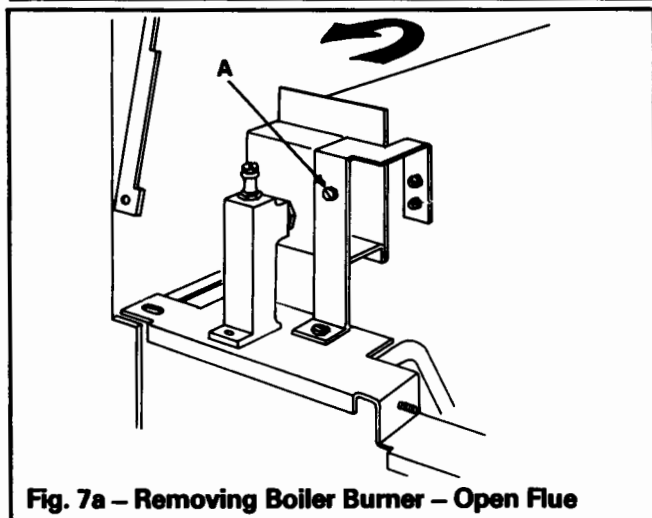


Fig. 7a - Removing Boiler Burner - Open Flue

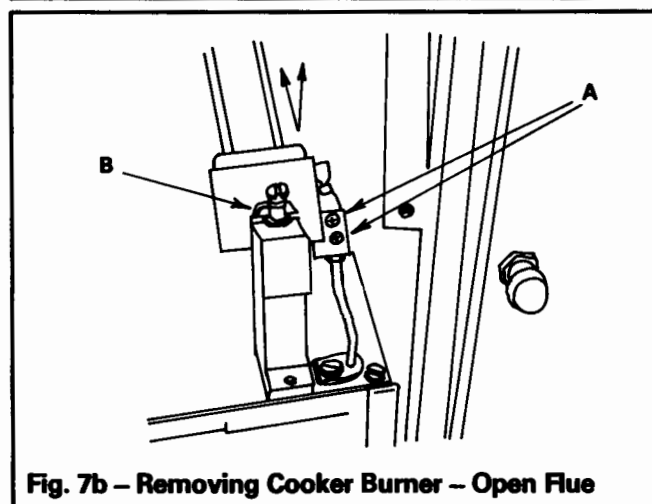


Fig. 7b - Removing Cooker Burner - Open Flue

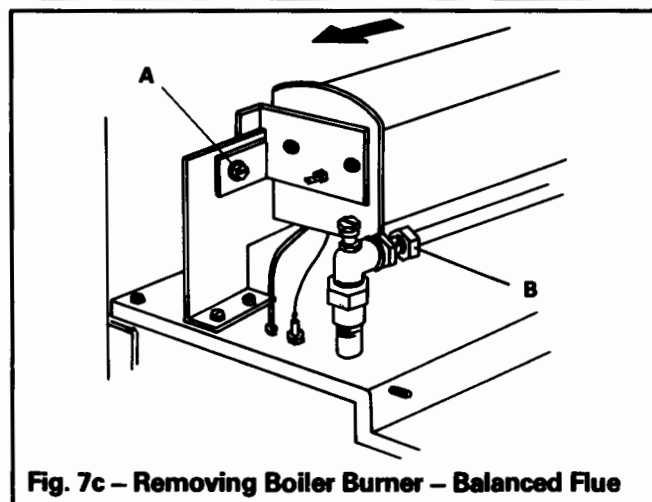


Fig. 7c - Removing Boiler Burner - Balanced Flue

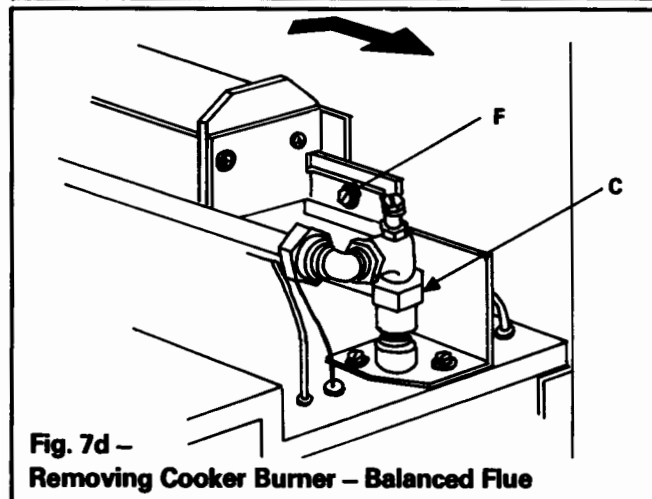


Fig. 7d - Removing Cooker Burner - Balanced Flue

- l. Undo three hexagonal fixing screws and washers **E** on right hand combustion chamber base plate and remove inspection plate. See Fig. 8a.
 - m. All joints beneath combustion chamber must now be tested for soundness.
 - 4a. With the appliance gas service cock **ON**, conduct pressure soundness testing of **ALL** incoming gas carrying joints and components beneath the combustion chamber base at the following joints:- See appropriate Fig. 9b.
 - (i) $\frac{3}{8}$ in BSP union connection **A** from gas service cock and located on L.H. side of boiler, below boiler burner.
 - (ii) All pipework joints to adaptor fitting **B** on boiler control valve and $\frac{1}{4}$ in gas inlet union connection **C** of cooker flame failure device.
- NOTE: TO CHECK JOINT B VISUALLY, USE A MIRROR.**
- b. After confirming gas soundness, refit disconnected items on combustion chamber base plate and secure with screws and washers previously removed.
 - c. Replace and secure boiler and cooker main burners and combustion chamber divider plate in the reverse order of dismantling but do not yet fit inner panels **M** & **P** - Open Flue see Fig. 6a or inner door panel **R** - Balanced Flue. See Fig. 6b.
 - d. Ensure pilot cock **Q** is **ON** with operating screw slot in line with the pipework. Use screwdriver to turn. See Fig. 6a or 6b.

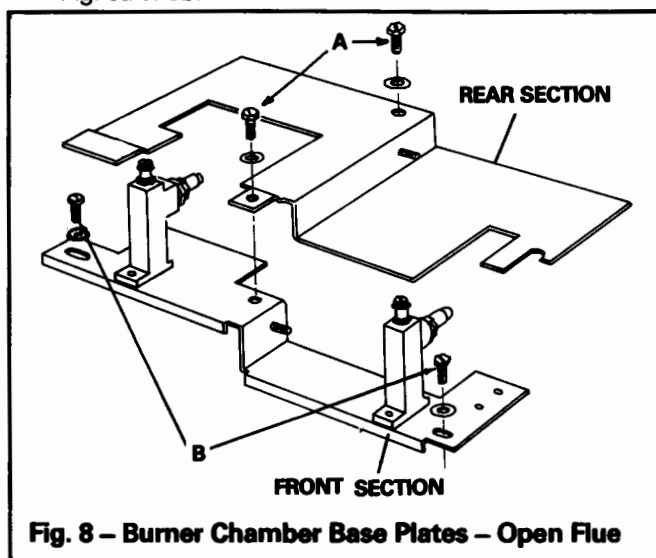


Fig. 8 - Burner Chamber Base Plates - Open Flue

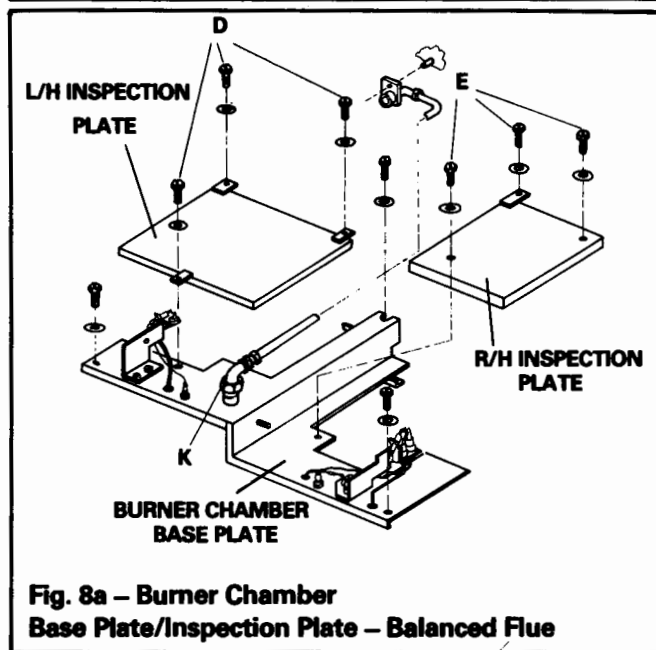


Fig. 8a - Burner Chamber Base Plate/Inspection Plate - Balanced Flue

Cooker Control – See Fig. 6a or 6b

- 5a. Push in and hold the pilot control button **B**, allow a few seconds for gas to reach the cooker pilot burner **C** and light the pilot burner with a match or lighted taper.

NOTE: SOME AIR MAY BE PRESENT IN PILOT SUPPLY TUBE. FIRST REMOVE COMBUSTION CHAMBER DIVIDER PLATE **L (OPEN FLUE) OR **P** (BALANCED FLUE) THEN PURGE BY SLACKENING OFF PILOT BURNER TUBE NUT **C** (FIG. 9 OR 9A) AT PILOT BURNER AND THEN RETIGHTEN**

- b. Continue to hold in pilot control button **B** for at least 15 seconds after the pilot has lit, so that when the button is released, the pilot should remain alight. Check that the flame envelops the tip of the thermocouple. (Flame length approx 20mm (3/4in).
- c. Push in cooker thermostat knob **D** from **OFF** and turn anti-clockwise to **LOW**. The cooker main burner **E** should cross-light smoothly from the pilot at low fire.
- d. Turn the cooker control knob **D** from **LOW** to No. 9 and test for gas soundness at the following joints:- See appropriate Fig. 9 or 9a.

Open Flue – Fig. 9

- (i) 1/4in BSP gas outlet connection **A** of cooker flame failure device.
- (ii) 3/8in union connection **B** below cooker manifold.
- (iii) Pilot tube nut **C** on pilot burner.
- (iv) 1/8in BSP inlet/outlet connection **D** of pilot cock.

Balanced Flue – Fig. 9a

- (i) 1/4in BSP gas outlet connection **A** of cooker flame failure device.
- (ii) 1/8in BSP inlet/outlet connection **D** of pilot cock.
- (iii) 3/8in BSP union connection **B** below cooker manifold.
- (iv) Pilot tube nut **C** on pilot burner.
- (v) 3/8in BSP union connection **E** forming front cooker manifold.
- (vi) 3/8in BSP outlet connection **F** of front cooker manifold.
- (vii) Pilot tube nut **G** on pilot burner.

Use suitable leak detection fluid, e.g. a soap solution and sense of smell where possible to locate gas leaks.

- e. Turn the cooker thermostat setting knob **D** between No. 9 and **LOW** several times checking that the cooker burner **E** flame pattern changes as the knob is turned.
- f. Turn the cooker thermostat knob to the **OFF** position.

Boiler Control – Fig. 6a or 6b

6. Check that:-
 - a. The boiler system is full of water and all valves are fully open.
 - b. Any room thermostat is **ON**.
 - c. Any programmer or time switch is set at continuous heating.
 - d. Ensure the electricity supply is **ON** and that the pump is running.
 - e. Push in and hold the boiler gas control valve knob **F** allowing a few seconds for gas to reach the boiler pilot burner **G** and light the pilot burner with a match or lighted taper.

NOTE: SOME AIR MAY BE PRESENT IN THE PILOT SUPPLY TUBE. FIRST REMOVE COMBUSTION CHAMBER DIVIDER PLATE **L**

(OPEN FLUE) OR **B (BALANCED FLUE), THEN REMOVE BOILER BURNER. SEE FIG. 7A (OPEN FLUE) OR FIG. 7C (BALANCED FLUE). PURGE BY SLACKENING OFF PILOT BURNER TUBE NUT, **E** (OPEN FLUE) OR **G** (BALANCED FLUE) AT PILOT BURNER AND THEN RETIGHTEN. SEE FIG. 9 (OPEN FLUE) OR FIG. 9A (BALANCED FLUE)**

- f. Continue to hold in the knob for at least 15 seconds after the pilot has lit so that when the knob is released, the pilot should remain alight. Check that the flame envelops the tip of the thermocouple. (Flame length approx 20mm (3/4in) if necessary it can be adjusted via the adjustment screw. See Fig. 9 (Open Flue) and 9a (Balanced Flue) on the boiler gas control valve (turn anti-clockwise to increase the pilot flame).

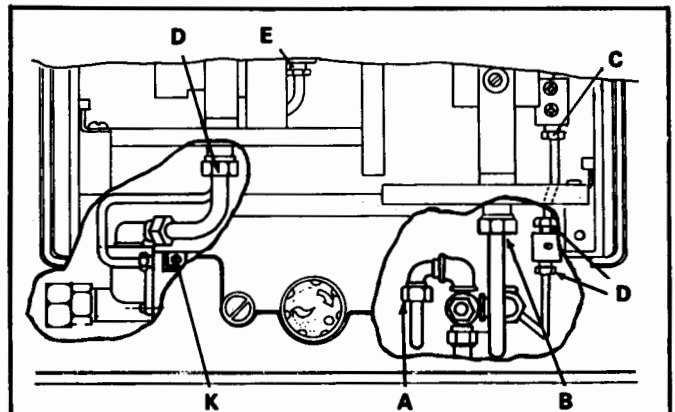


Fig. 9 – Gas Controls Installations – Open Flue

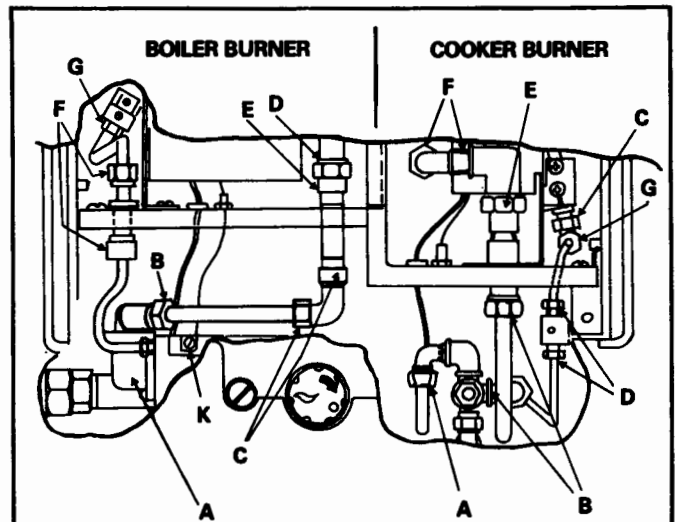


Fig. 9a – Gas Controls Installations – Balanced Flue

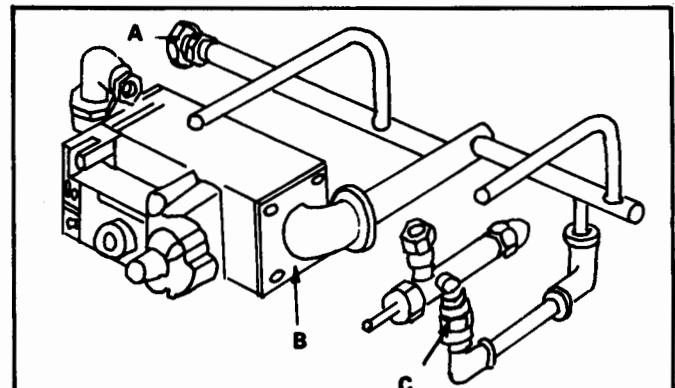


Fig. 9b – Gas Joints Under Base Plate – Open & Balanced Flue

Installation Instructions

- g. Turn the boiler thermostat knob **H** to maximum whereupon the main boiler burner should cross-light smoothly from the pilot burner. Test for gas soundness at the following points:- See appropriate Fig. 9 or 9a.

Open Flue – Fig. 9

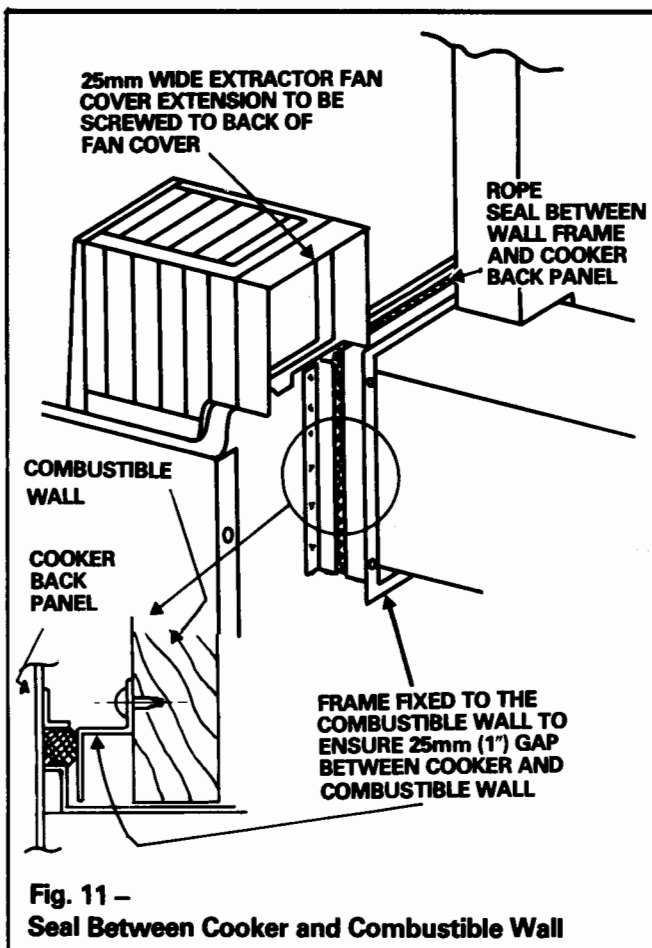
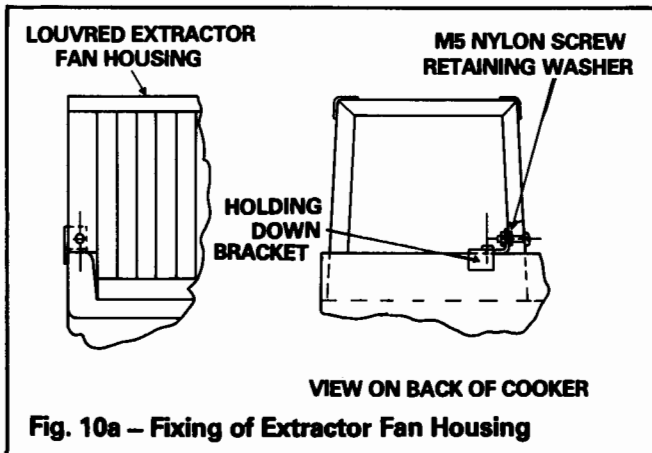
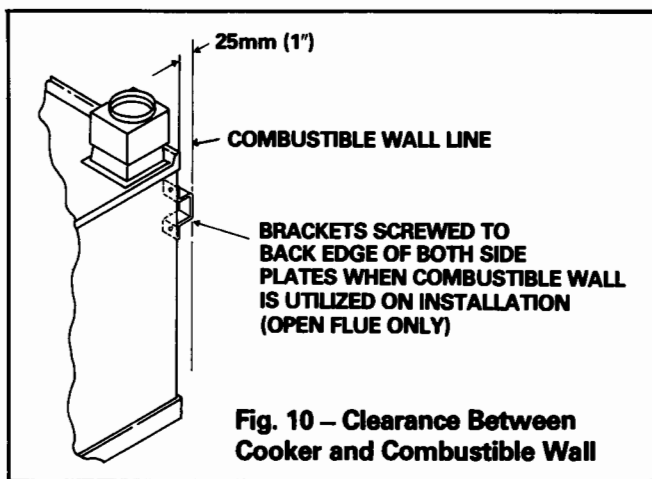
- (i) $\frac{3}{8}$ in BSP union connection **D** below boiler burner manifold.
- (ii) Pilot tube nut **E** on pilot burner.
- h. Secure and refit bottom **P** inner panel. Remove the sealing screw from the boiler burner pressure test nipple and connect a suitable pressure gauge.

Balanced Flue – Fig. 9a

- (i) $\frac{1}{2}$ in BSP outlet adaptor **A** of boiler control valve.
- (ii) $\frac{3}{8}$ in BSP outlet elbow **B** fitted into outlet adaptor **A**.
- (iii) $\frac{3}{8}$ in BSP union connection **C** below boiler burner manifold.
- (iv) $\frac{3}{8}$ in BSP union connection **D** forming front boiler manifold.
- (v) $\frac{3}{8}$ in BSP outlet connection **E** of front boiler manifold.
- (vi) Bulkhead tube nuts **F** of pilot feed tube .
- (vii) Pilot tube nut **G** on pilot.

Use suitable leak detection fluid, e.g. a soap solution and sense of smell where possible to locate gas leaks.

- i. Turn the boiler thermostat knob **H OFF** and **ON** several times to check that the boiler flames extinguish and cross-light satisfactorily.
- j. Turn the boiler thermostat knob to the **OFF** position.
- k. Refit top section of the inner panel **M** (Open Flue) or inner door panel **R** (Balanced Flue) in reverse order of removal. See Figs. 6a and 6b.
- l. The oven vent extractor fan and its louvred housing are wired and assembled at Works. Disengage screw on bottom L.H. side of louvred extractor fan housing (See Fig. 10a) from holding down bracket. Then gently withdraw complete housing forward until just clear of fan assembly on top plate. Temporarily switch electric power **ON**, depress fan switch so that it illuminates and confirm fan rotation. Replace louvred extractor fan housing and secure in reverse manner described. Engage projecting pins behind housing front cover into friction grip bushes on fan assembly bracket and finally secure with hidden captive screw.
- 7a. Set the boiler thermostat knob to 80°C (180°F) and the cooker thermostat knob to No. 9 setting and light the boiler and cooker burners at high rate. See **"Lighting Instructions"**.



Lighting Instructions

Lighting Pilots and Burners

Before lighting, ensure both cooker thermostat knob **D** and boiler thermostat knob **H** are in the **OFF** position.

Lighting Cooker Burner

1. Turn **ON** appliance service cock **A**.
2. Open outer burner door and insert a coin to turn pilot cock **Q** until slot is positioned in line with pipework.
3. Push in and hold pilot control button **B** allowing a few seconds for gas to reach cooker pilot **C**.
4. With the other free hand, light pilot **C** by pressing and releasing igniter button **K** (Balanced Flue) or with a lighted taper or match (Open Flue). After lighting, continue to hold in pilot control button **B** for at least 15 seconds after pilot has lit, so that when pilot button is released, the pilot should remain alight. If it does not, **WAIT 3 MINUTES** and repeat sequence holding in pilot control button **B** for a slightly longer time.
5. Push in and turn cooker thermostat knob **D** anti-clockwise to **LOW**, whereupon the main burner **E** will cross-light from the pilot. Close outer burner door (Balanced Flue), or replace top section (Open Flue) of the inner panel on to its supports. Check for correct location, then close outer burner door.

How to Operate Cooker Control

Overnight and when not required for cooking, leave cooker thermostat knob **D** at **LOW** position. To increase the temperature of the oven or hotplate, turn the cooker thermostat knob **D** to required temperature. Reduce knob setting gradually in order to maintain required temperature.

Lighting Boiler Burner

If a programmer or clock control is fitted to the boiler installation section, read the control instructions before lighting the boiler burner.

1. Switch **OFF** electricity supply at wall socket.
2. Turn the boiler thermostat knob **H** anti-clockwise to position **OFF**.
3. Turn any clock or programmer to **ON** and move any room thermostat pointer to a high setting.
4. Open outer burner door (Balanced Flue) or lift off top section of the inner panel (with two viewing windows) – Open Flue.
5. Check that the appliance service cock **A** is turned **ON**.
6. Push in and hold boiler gas control valve knob **F**.
7. With the other free hand, light pilot **G** by pressing and releasing igniter button **L** (Balanced Flue) or with a lighted taper or match – (Open Flue). After lighting continue to hold in knob **F** for at least 15 seconds after pilot has lit, so that when knob is released, the pilot should remain alight. If it does not, **WAIT 3 MINUTES** and repeat sequence holding in knob **F** for a slightly longer time.
8. Replace top section of the inner panel on to its supports, check for correct location. Open Flue only.
9. Switch **ON** electricity supply at wall socket.
10. Turn the boiler thermostat knob **H** clockwise to highest setting whereupon burner **J** will cross-light, close outer burner door.

How to Operate Boiler Controls

Set the boiler thermostat knob **H** to water temperature required, e.g. 60°C (140°F) in mild weather and 80°C (180°F) in cold weather. Set any programmer or room thermostat to the required setting and the boiler burner will come **ON** and **OFF** automatically upon heat demand.

Turning Off Boiler Burner

When boiler is not required for short periods only, turn the boiler thermostat knob **H** anti-clockwise to **OFF**.

When not required for long periods, switch **OFF** electricity supply at wall socket and turn boiler gas control valve knob **F** clockwise to extinguish boiler pilot **G**.

Turning Off Cooker Burner

Ensure the cooker thermostat knob **D** is at a **LOW** setting. Press and hold in cooker thermostat knob **D**, simultaneously turning it clockwise to **OFF** whereupon the main cooker burner **E** will extinguish, leaving the cooker pilot **C** alight.

To extinguish the cooker pilot **C**, insert a coin to turn cock **Q** until slot is positioned across the pipework.

When both burners have been alight for at least 10 minutes, check that the boiler burner gas pressure conforms to the gas pressure as indicated on the data plate.

Any adjustment of gas pressure can be obtained by the removal of the nylon blanking plug covering the adjustment screw **T** Fig. 6a (Open Flue) or Fig. 6b (Balanced Flue) on the boiler gas control valve (turn clockwise to increase the gas pressure).

Check that the boiler burner gas pressure is maintained and unaffected when other gas appliances are used.

NOTE: IF FOR ANY REASON A GAS RATE CHECK IS REQUIRED, TURN OFF ALL OTHER GAS APPLIANCES, AND USING THE GAS METER TEST DIAL AND WATCH TIMER, CHECK THAT THE MAXIMUM GAS INPUT TO THE APPLIANCE IS AS INDICATED ON THE DATA PLATE. (BS 6798:1987 GIVES FULL DETAILS OF THE METHOD).

- 7b. Turn the boiler and cooker thermostat knobs to **OFF**. Remove the pressure gauge from the boiler burner test nipple, replace the sealing screw, then remove the sealing screw from the cooker burner. Refit the pressure gauge to the cooker burner pressure test nipple then set the cooker thermostat knob to No. 9 setting, relight the cooker burner. Wait 10 minutes, then check that the cooker burner gas pressure high rate conforms to the pressure on the data plate. Turn the thermostat knob from No. 9 to **LOW** position and confirm that the low rate also conforms to the pressure on the data plate.

NOTE: NO PRESSURE ADJUSTMENT IS POSSIBLE AS A GOVERNOR IS NOT INCLUDED.

Turn the cooker thermostat knob to **OFF**, remove the pressure gauge and replace test nipple screw. Refit top inner panel **M** (Open Flue) – Fig. 6a. Refit inner panel **R** (Balanced Flue) – Fig. 6b and secure.

Reconnect spark ignition leads to respective Piezo units and check operation by lighting the cooker and boiler pilots as described in Lighting Instructions by depressing the knob **S** to spark light the respective pilots.

8. Check that there is no spillage of combustion products from the appliance down-draught diverter by carrying out a spillage test as detailed in BS 5440:1 – Open Flue Only. Inspect flame pattern and appearance of both burners at high fire to establish that there is adequate air for combustion.
9. Allow the heating system to warm up then set the pump adjuster to maintain a boiler 'flow' and 'return' temperature differential of between 10°-14°C (18°-25°F). Checks must be made by the installer to see that this differential is obtained after the boiler 'flow' temperature is stabilised.

Installation Instructions

The system should be balanced by regulating the water flow rate through individual heat emitters to ensure a satisfactory water temperature at each emitter. A system balance must also be made, so that the minimum flow required through the boiler, is achieved when supplying Domestic Hot Water only.

10. Check the operation of the flame failure device on both burners to ensure they both shut down in 60 seconds by turning **OFF** cock **Q** with screw slot in line with pipe. The appliance should be at working temperature.
11. When the water system reaches working temperature, check that the boiler thermostat operates satisfactorily. Check that any room temperature controls and programmer or time switch are fully operative.
12. Examine the system for water soundness. The system should then be turned off and rapidly drained while still hot.
The water system should again be filled and cleared of all air locks.

Instruct User

- (a) Advise the User of the precautions necessary to prevent damage to the heating system and to the building in the event of the heating system remaining inoperative during frost conditions.
- (b) Advise the User that, for continued efficient and safe operation of the appliance, it is important that adequate servicing is carried out at regular intervals recommended by the local Gas Region.
- (c) Hand the Operating Instructions to the User and demonstrate the correct operation of the appliance and system controls.
See notes under heading "**Method of Appliance Control**".

NOTE: LEAVE THESE INSTRUCTIONS WITH THE USER OR ADJACENT TO THE GAS METER.

Method of Appliance Control

There are two independently controlled gas burners, the cooker burner providing heat for the two ovens, hotplate and domestic hot water whilst the boiler burner provides heat for central heating only and is normally switched off in the summer.

A main gas service cock is incorporated at the L.H. side of the cooker.

Cooker Burner – Fig. 6a and 6b

The cooker burner **E** has a permanent pilot **C** and thermocouple assembly protected by a thermoelectric flame failure device **B** and controlled by a cooker thermostat **D**.

Turning **ON** the main gas service cock **A** to allow gas to the flame failure device and then insert screwdriver in pilot cock screw slot to turn pilot cock **ON**. Depressing the flame failure device button allows gas to the pilot burner which must be lit manually (Open Flue) and by Piezo spark unit (Balanced Flue). When the pilot heats the thermocouple probe correctly, the flame becomes established and allows gas to pass through the flame failure device **B** to the cooker thermostat on the L.H. side of the cooker.

Depressing the cooker thermostat knob **D** and turning to **LOW** allows gas to the cooker burner **E** which cross-lights from the pilot burner.

LOW is the minimum (and idling) gas rate and setting up to position 9 will enable a maximum thermostatically controlled gas rate to provide an oven temperature of 260°C (500°F). When the temperature is obtained, the gas rate modulates down until temperature recall.

See **Operating Instructions** for thermostat cooking settings.

When not in use, reset the knob **D** to **LOW**.

Boiler Burner – Fig. 6a and 6b

The boiler burner **J** has a permanent pilot **G** and thermocouple assembly protected by an electrically activated multi-functional gas valve knob **F** and controlled by a boiler thermostat **H**.

With main gas service cock **A** in the **ON** position, gas is allowed to the multi-functional gas valve. Depressing the gas valve knob allows gas to the pilot burner which must then be lit manually (open flue) and by Piezo spark unit (balanced flue). When the pilot heats the thermocouple probe correctly, the flame becomes established so that electrical power is now required to enable gas to pass to the boiler burner.

Turn the boiler thermostat to its maximum setting which electrically energises the multi-functional gas valve and allows gas to the boiler burner where it is cross-lit from the pilot light. With boiler temperature attainment, the boiler thermostat switches power off the gas valve which in turn extinguishes the boiler burner.

Servicing Instructions

Annual Servicing

It is important that servicing be carried out once per annum by a competent service engineer, and it is recommended that a contract be made with the local Gas Region or a CORGI registered installer.

With normal use, a boiler/cooker annual flueway clean and burner service should be carried out immediately after the end of the heating season. An additional flueway clean half-way through the heating season may be necessary in some cases.

The householder should be advised to turn **OFF** both cooker and boiler control knobs the night preceding the day of service, so that the appliance will have cooled down by the following morning, in readiness for servicing. Before commencing any servicing, isolate the electricity supply (switch **OFF** and remove plug) then turn **OFF** the gas supply at the appliance gas service cock (bottom L.H. side).

Standard Annual Service Schedule

- Service clean of complete heat exchanger over flueways and hotplate. Section 5.
- Service clean of cooker and boiler burners with main injector – Sections 2 and 5.
- Service clean of cooker and boiler pilot burner assemblies with injectors – Sections 13 and 14.
- Service maintenance of cooker thermostat and bypass screw. Section 15.

To Obtain Servicing access – Figs. 1a and 1b

- To obtain servicing access to both gas burners, gas controls and heat exchanger, proceed as follows:-
 - Lift out the hotplate via the lifting tools – See Fig. 2
 - Open outer burner door **N**.

Open Flue

- Lift out the top section of the inner panel **M** and unscrew/remove the fixed section of the inner panel **P**.

Balanced Flue

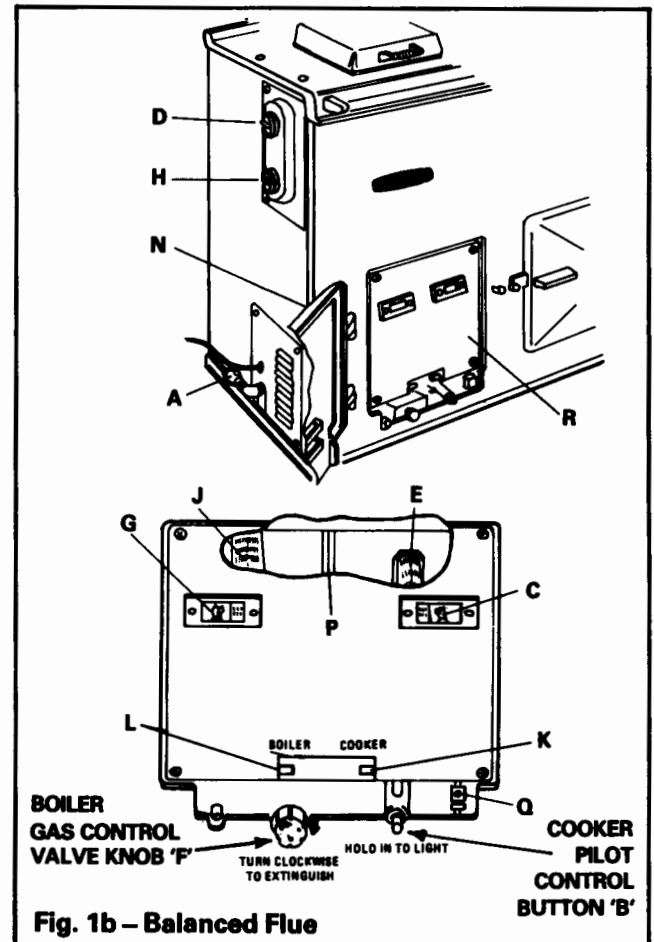
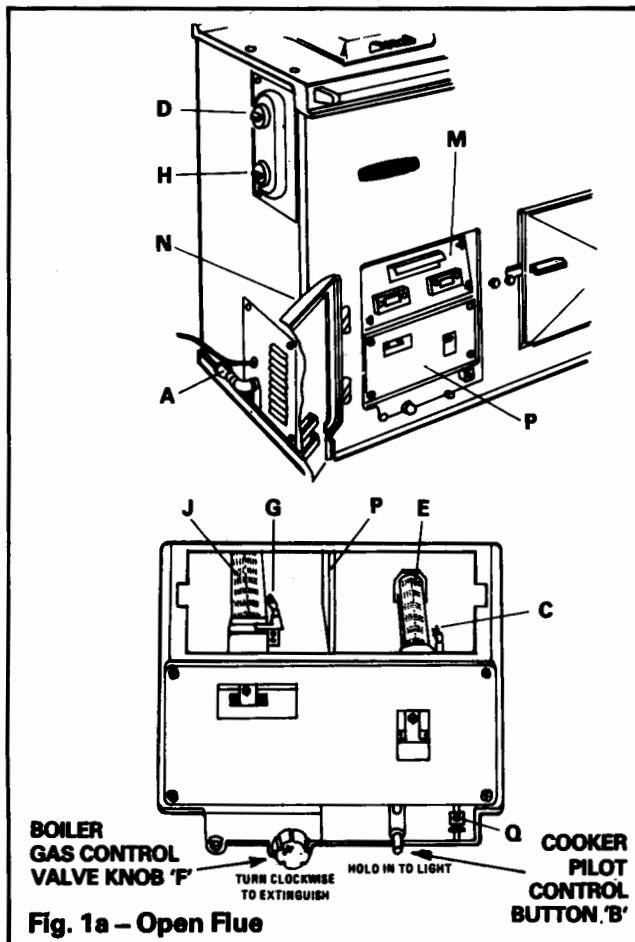
- Remove inner panel **R** four screws and washers. Carefully ease panel forward and disconnect spark ignition leads from Piezo units.

To Remove Cooker and Boiler Burner

- Ensure isolation of the electrical supply (switch **OFF** or remove plug).
- Ensure that the appliance service cock **A** is turned **OFF**.
- Remove combustion chamber divider plate **P** by removing the front wing nut and slackening the rear wing nut.

Open Flue

- (To remove Boiler Burner – Fig. 3a). Remove screw **A** securing main burner to pilot support bracket. Remove screws **B** securing pilot bracket and screw **C** securing support bracket to base and remove pilot support bracket. Carefully remove burner from the combustion chamber.



Servicing Instructions

- b. (To remove Cooker Burner – Fig. 3b). Remove two screws **A** securing cooker burner pilot to burner support bracket. Slacken octagonal locknut **B** securing cooker burner injector housing to gas burner manifold and carefully remove burner from the combustion chamber.

Balanced Flue

- c. (To remove Boiler Burner – Fig. 3c). Remove screw **A** securing main burner to pilot support bracket. Draw burner forward and lift out of the combustion chamber.
- d. (To remove Cooker Burner – Fig. 3d). Remove screw **F** securing main burner to pilot support bracket. Disconnect union fitting **B** and remove burner.

Both Models

- e. Place a layer of paper over combustion chamber base area to prevent debris falling on controls.

To Clean Cooker and Boiler Burners

- 4a. Gently brush the top face of both burners and examine the ports.
- b. Remove two screws and end plate secured to burner.

Open Flue Only

- c(i) Withdraw anti-linting gauze and brush gently.
NOTE: IF DETERIORATION OCCURS, THE ANTI-LINTING GAUZE SHOULD BE REPLACED WHEN SERVICING.

Replacements may be obtained under the following short list:-

COOKER BURNER – Geo. Bray removable anti-linting gauze BGC No. 399 652

BOILER BURNER – Geo. Bray removable anti-linting gauze BGC No. 399 653.

- (ii) Remove any lint or fluff from inside of the burner and venturi with a bristle brush and tip downwards to discharge debris.
- (iii) Replace the anti-linting gauze and re-secure the end plate.
- d. Re-assemble the burners and other components in the reverse order of dismantling. Test all joints for gas soundness. (For access to gas controls below the combustion chamber base plates), see under section **“To Remove the Complete Gas Control Assembly”** – Section 6.

To Clean the Boiler/Heat Exchanger – Fig. 5, 6 and 7

Interim Clean Only

- 5a(i) Place a layer of paper over both burners to prevent falling debris blocking the burner ports.

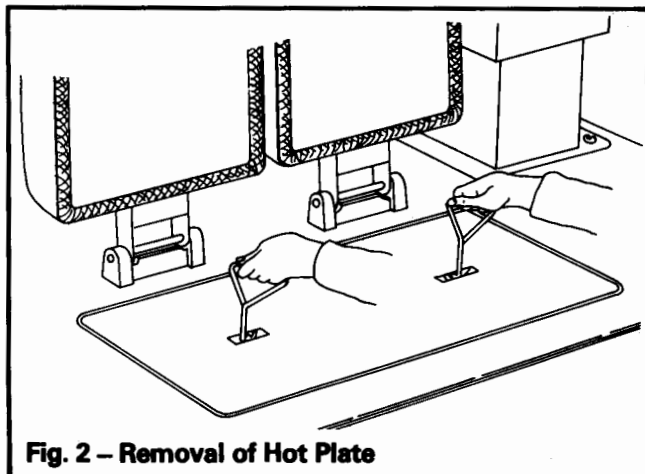


Fig. 2 – Removal of Hot Plate

Full Service Clean

- (ii) Remove the cooker and boiler burners, as described under the section **“To Remove the Cooker and Boiler Burners”** – Section 2.
- b. The space left by a removed hotplate will expose two baffle plates lying across the top of the heat exchanger secured by a location bracket – See Fig. 4a. Detach bracket and lift out both of these baffle plates.

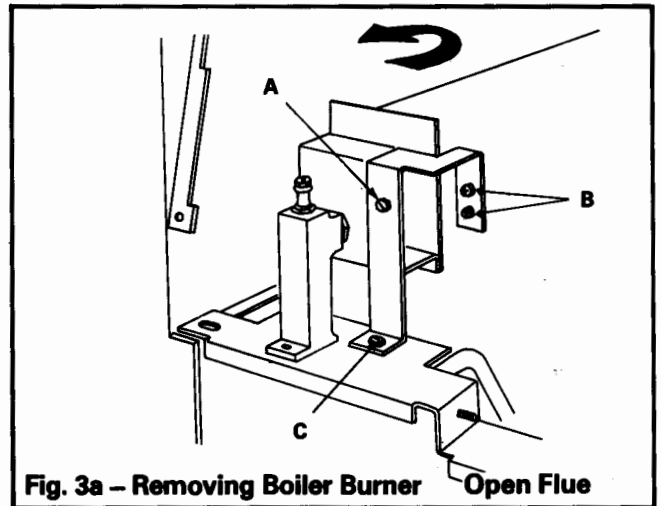


Fig. 3a – Removing Boiler Burner Open Flue

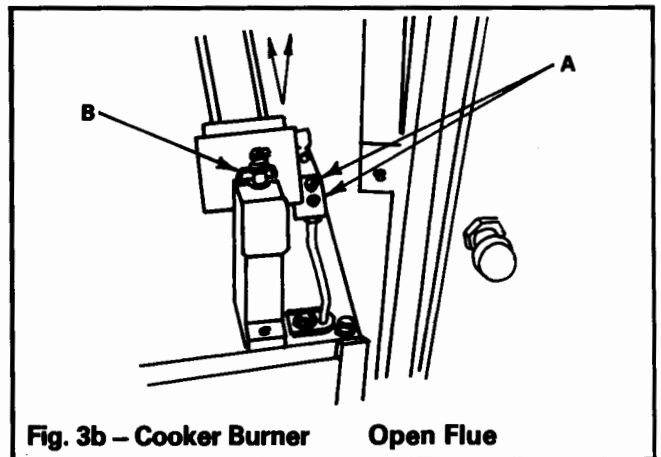


Fig. 3b – Cooker Burner Open Flue

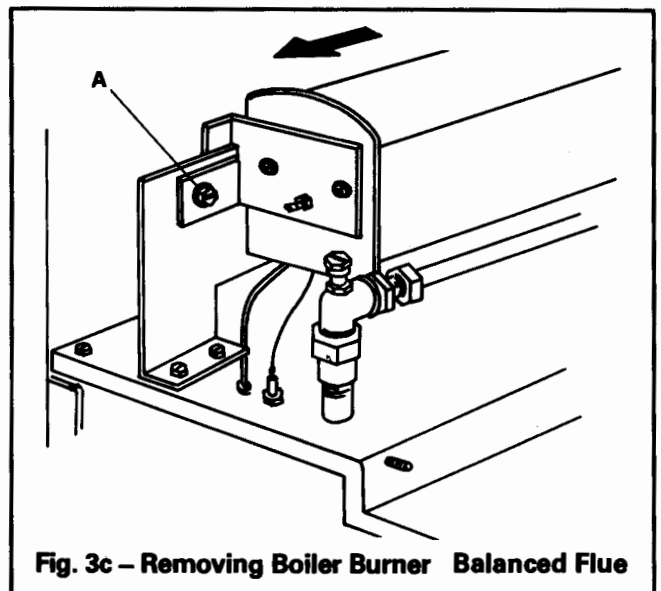


Fig. 3c – Removing Boiler Burner Balanced Flue

Open Flue Only

The removal of these baffles will now expose a stainless steel 'V' baffle assembly located on the heat exchanger cross tubes and this should be removed.

See Fig. 4b. Note the location/position of the two angle brackets on the top/front of the 'V' baffle assembly.

Brush the underside faces of baffle plates and 'V' baffle assembly.

- c. Ensure that the flueway above the oven top is clear and any deposit is removed. See Fig. 5.
- d. The front vertical face of the boiler flue discharge duct See Fig. 6 is located beneath the rear edge of the hotplate opening (L.H. end) and which terminates over the oven top.

Place hand at duct termination and feel behind to locate boiler flue discharge duct.

Insert brush into boiler discharge duct and vigorously brush sideways inside duct to remove any deposits. See Fig. 6.

- e. Thoroughly brush heat exchanger cross tubes and cooker flueways from the top and bottom of the heat exchanger until free of debris. See Fig. 7.

NOTE: REARMOST FLUEWAYS ARE NOT DIRECTLY ACCESSIBLE.

- f. Brush and clean in between hotplate ribs on underside.
Examine soft rope seal located on underside of hotplate baffle plate and replace if worn or frayed.
- g. Examine soft rope seal located around hotplate aperture in top plate.
Replace if frayed or damaged.

Interim Boiler Clean

- h(i) Remove layer of paper in combustion chamber with fallen debris.

Full Service

- (ii) Replace both burners and re-make all connections etc in the reverse order of dismantling under section **"To Remove the Cooker and Boiler Burners"** – (Section 2). Test all joints for gas soundness. (For access to gas controls below combustion chamber base plates, see under section **"To Remove the Complete Gas Control Assembly"**) – Section 6.

Open Flue Only

- i. Reposition the stainless steel 'V' baffle assembly (with angle brackets on top face nearest to front of appliance). Replace the boiler top baffle plates in reverse manner removed. See Fig. 4a and 4b and fix in place using location bracket, nut and washer.
- j. Replace hotplate ensuring the underside ribs lie over the combustion chamber and that it seals to the top plate.

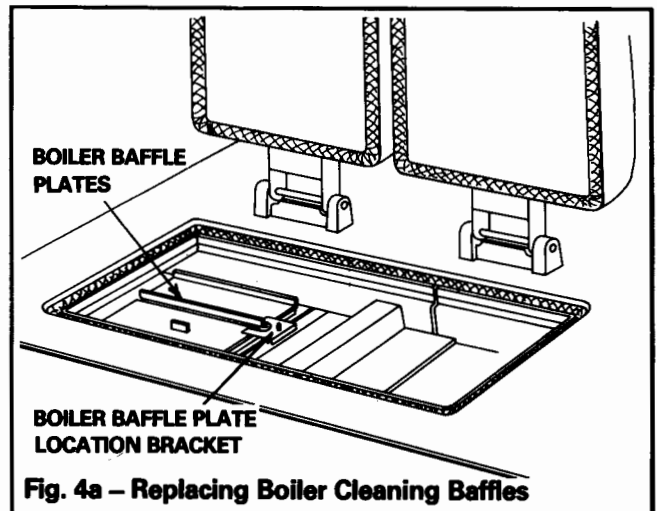


Fig. 4a – Replacing Boiler Cleaning Baffles

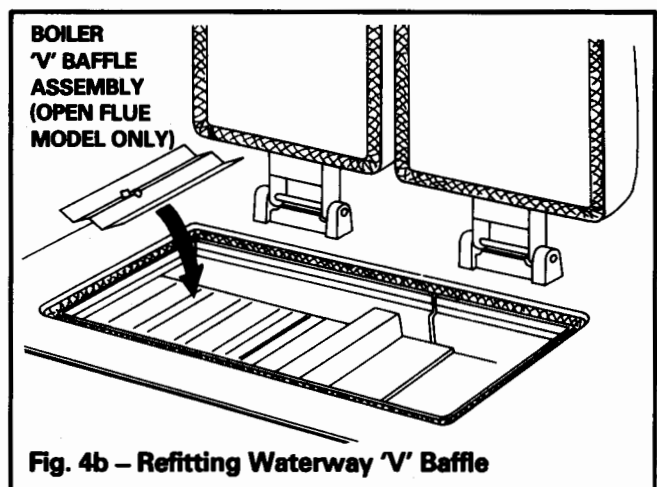


Fig. 4b – Refitting Waterway 'V' Baffle

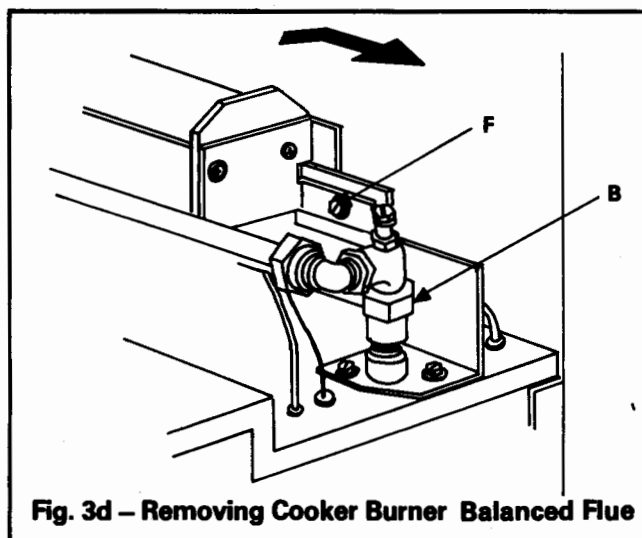


Fig. 3d – Removing Cooker Burner Balanced Flue

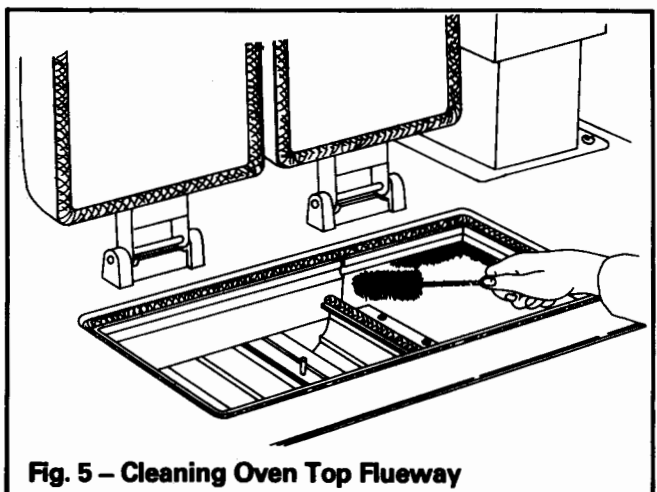


Fig. 5 – Cleaning Oven Top Flueway

Servicing Instructions

To Remove the Complete Gas Control Assembly

- 6a. Isolate the electricity supply (switch **OFF** or remove plug).
- b. Turn **OFF** gas at appliance service cock (L.H. side) and "**Obtain Servicing Access**", Section 1.
- c. Remove both cooker and boiler main burners as previously described under section "**To Remove the Cooker and Boiler Burners**" – Section 2.
- d. **Open Flue Appliance – Fig. 8**
 - (i) Remove the rear section of the combustion chamber base plate (See Fig. 8) by releasing the two screws **A**.
 - (ii) Remove two screws **B** securing the front section of the combustion chamber base plate (See Fig. 8).
- e. **Balanced Flue Appliance – Fig. 8a**
 - (i) Disconnect union fittings **K** (Fig. 8a) and remove gas feed pipe to burner.
 - (ii) Remove three screws **D** securing the L.H. inspection cover plate to the combustion chamber base plate. See Fig. 8a.
 - (iii) Remove three screws **E** securing the R.H. inspection cover plate to the combustion chamber base plate. See Fig. 8a.
 - (iv) Remove three hexagonal screws (two at front, one at rear) securing the combustion chamber base plates. See Fig. 8a.
- f. Both Models – See Fig. 9 and 9a
 - (i) Disconnect union fittings on boiler L.H. side base **A**, outlet of thermoelectric valve **B** and beneath cooker burner **C**.
 - (ii) Lift the complete gas control assembly until thermoelectric knobs are just clear of the open slotwork in the front plate, then disconnect valve electrically by removing receptacle connectors and earth screw.
 - (iii) Lift out the complete gas control assembly to obtain servicing access to the boiler multifunctional gas valve or cooker flame failure device.
 - (iv) Remove main and pilot injectors and check they are free of deposits with a tooth brush bristle or similar if necessary.

DO NOT USE OVERSIZE WIRE TO CLEAN ORIFICES.

To Service Boiler Multifunctional Gas Valve

NOTE: THE SERVICING OF THE BOILER SECTION GAS CONTROL VALVE SHOULD ONLY BE CARRIED OUT BY AN ENGINEER WHO IS FULLY CONVERSANT WITH THIS TYPE OF CONTROL. ONCE ACCESS TO THE CONTROL VALVE HAS BEEN MADE, SERVICING OF THE CONTROL TO REPLACE ELECTRIC SOLENOID OR REPLACE PILOT FILTER, ETC. CAN BE ACHIEVED FROM ITS FRONT/TOP.

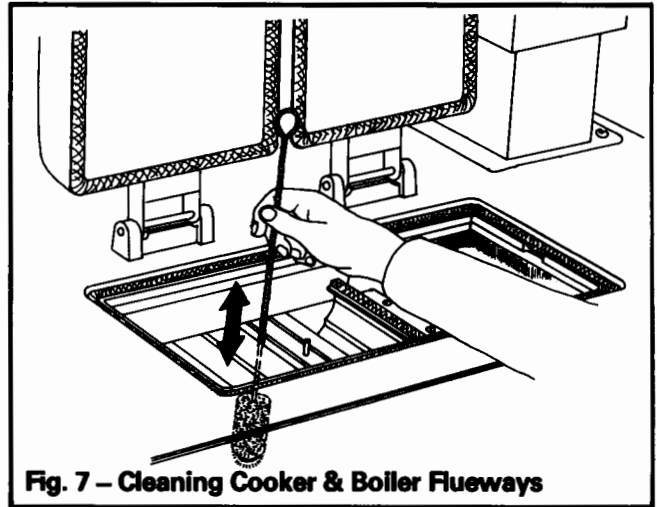


Fig. 7 – Cleaning Cooker & Boiler Flueways

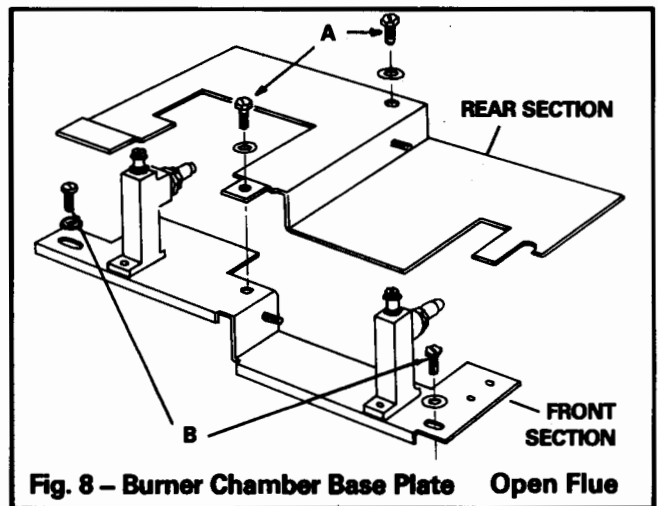


Fig. 8 – Burner Chamber Base Plate Open Flue

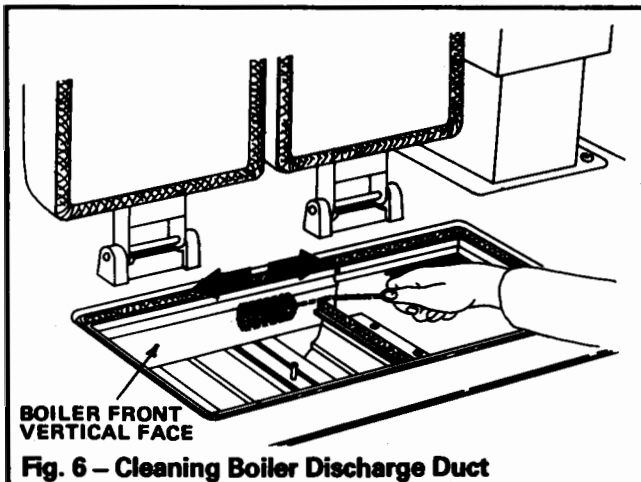


Fig. 6 – Cleaning Boiler Discharge Duct

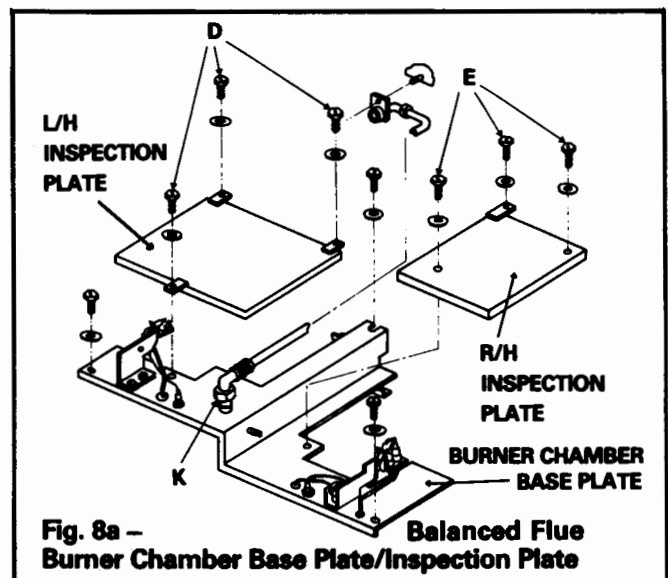


Fig. 8a – Balanced Flue Burner Chamber Base Plate/Inspection Plate

To Remove the Boiler Gas Control Valve – Fig. 9b

- 7a. Remove complete gas control assembly as in Section 6.
- b. Disconnect thermocouple nut at valve **D** and also pilot burner tube nut at valve **E**.
- c. Remove 8 screws securing two valve end plates at each end of the valve **F**.
- d. Disconnect the union fitting connection **E** beneath the boiler manifold to enable the removal of the complete gas valve. Fig. 9 or 9a.
- e. Introduce new gas valve (less end flange connectors) and re-assemble in reverse of dismantling. Pressure test all joints for gas soundness. See Section 4 of Commissioning and Testing.

NOTE: ALWAYS USE NEW 'O' RINGS SUPPLIED WHEN REPLACING VALVE.

To Remove Boiler Pilot Filter – Fig. 13

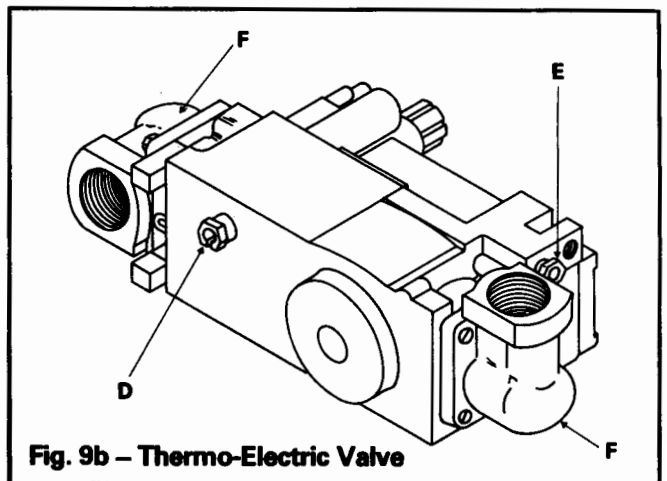
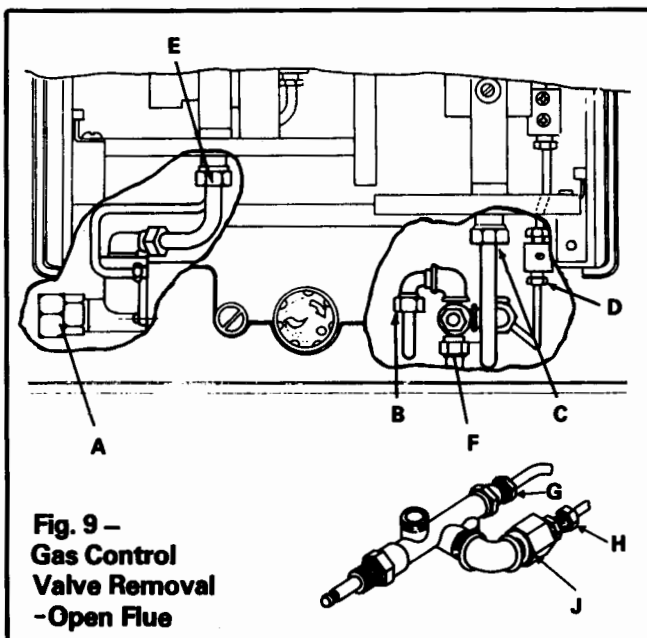
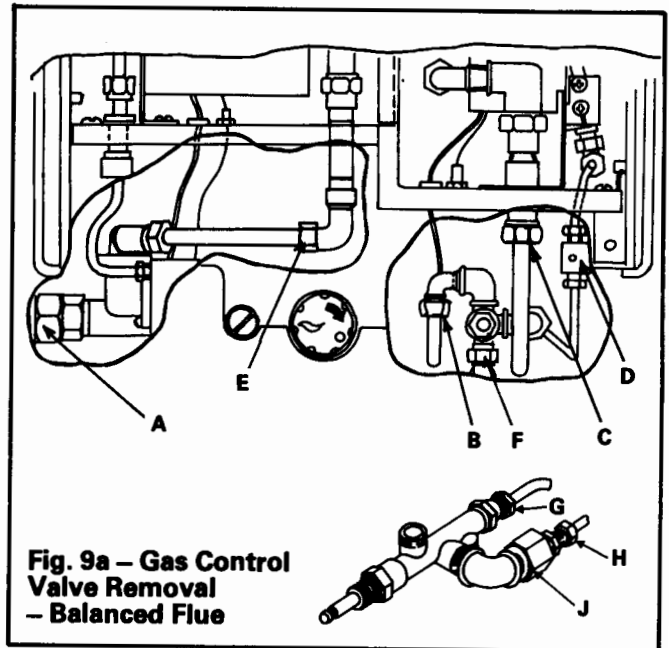
- 8a. Remove complete gas control assembly as in Section 6.
- b. Disconnect four screws **A** securing top mono block (adjacent to knob) and remove block.
- c. Disconnect solitary screw **B** securing aluminium plate beneath mono block and remove plate.
- d. Pilot filter can now be observed as a small pad of cotton wool which can be removed and replaced.
- e. Re-assemble components in reverse order of dismantling.

To Remove Cooker Thermoelectric Valve – Fig. 9 (Open Flue) or 9a (Balanced Flue)

- 9a. Follow instructions in Section 6 "To Remove the Complete Gas Control Assembly".
- b. Disconnect thermocouple from thermoelectric valve via split hexagon tube nut **G**.
- c. Disconnect union fitting **F** below valve at its inlet and also disconnect pilot tube nut at outlet of pilot filter **H**. Section 9 (Open Flue) or 9a (Balanced Flue).
- d. Remove inlet and outlet fittings from thermoelectric valve and transfer them to the replacement valve.
- e. Fit replacement valve and re-assemble in reverse order of dismantling.
- f. Test all joints for gas soundness. See Section 4 of Commissioning and Testing.

To Remove Cooker Thermostat – Fig. 11

- 10a. Isolate the electricity supply (switch **OFF** or remove plug).
- b. Turn **OFF** gas at appliance service cock (appliance L.H. side).
- c. Pull off the two thermostat knobs. Remove five screws securing control panel cover to L.H. side plate and remove cover.
- d. Unclip thermostat phial from top L.H. side of main oven and reset phial to face across the oven width instead of facing in depth. Withdraw thermostat phial and capillary tube clear of oven and cooker front plate until it is fully exposed at L.H. side of appliance.
- e. Disconnect joints of gas inlet and outlet compression fittings of cooker thermostat **B**.
- f. Remove two securing screws from support bracket and withdraw thermostat **B**.
- g. Remove inlet and outlet fittings from thermostat and transfer them to the replacement thermostat.
- h. Fit replacement thermostat and assemble in reverse order of dismantling, checking that the thermostat bypass screw is fitted and is of the correct size as designated on the data plate.
- i. Test all joints for gas soundness. See Section 4 of Commissioning and Testing.



Servicing Instructions

To Remove Boiler Thermostat – Fig. 11

- 11a. Isolate the electricity supply (switch **OFF** or remove plug).
- b. Pull off the two thermostat knobs. Remove five screws securing control panel cover to L.H. side plate and remove cover.
- c. Remove split pin from boiler thermostat pocket.
- d. Remove and withdraw boiler thermostat phial from boiler phial pocket.
- e. Disconnect two electrical leads from thermostat body and earth terminal. See Fig. 12 for connections.
- f. Remove two securing screws holding thermostat body mounting plate. Unscrew thermostat spindle locknut to detached thermostat **C** from mounting plate.
- g. Fit replacement thermostat and assemble in reverse order of dismantling. Electrical leads to be reconnected as previously. See Fig. 12 for connections.

To Remove Oven Temperature Indicator

- 12a. Open main oven door fully and remove four screws securing inner lining panel to outer door.
- b. Remove inner lining panel and slagwool insulation.
- c. Unscrew two hexagon nuts securing indicator to outer door and remove indicator.
- d. Fit replacement indicator in reverse order of dismantling.

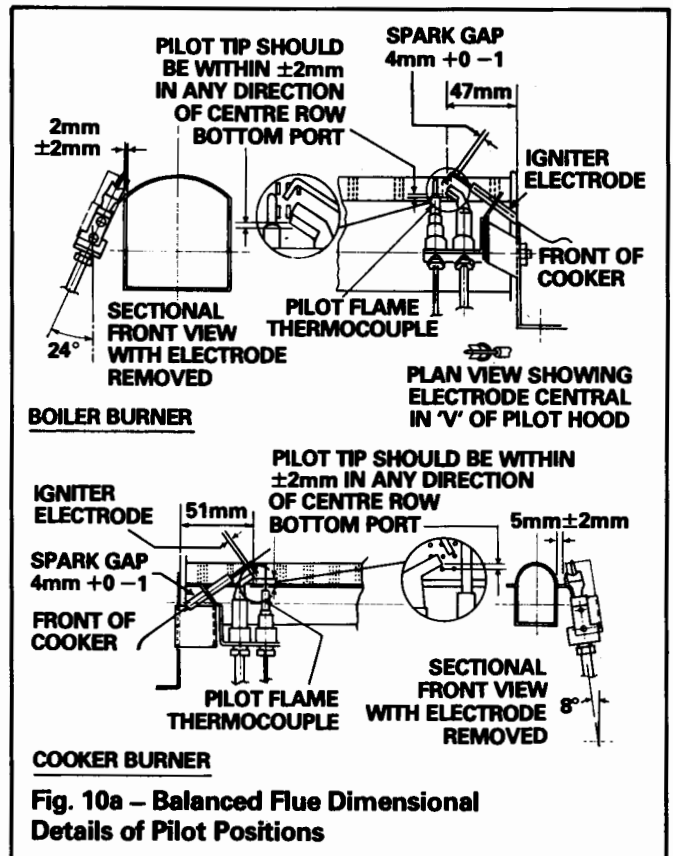
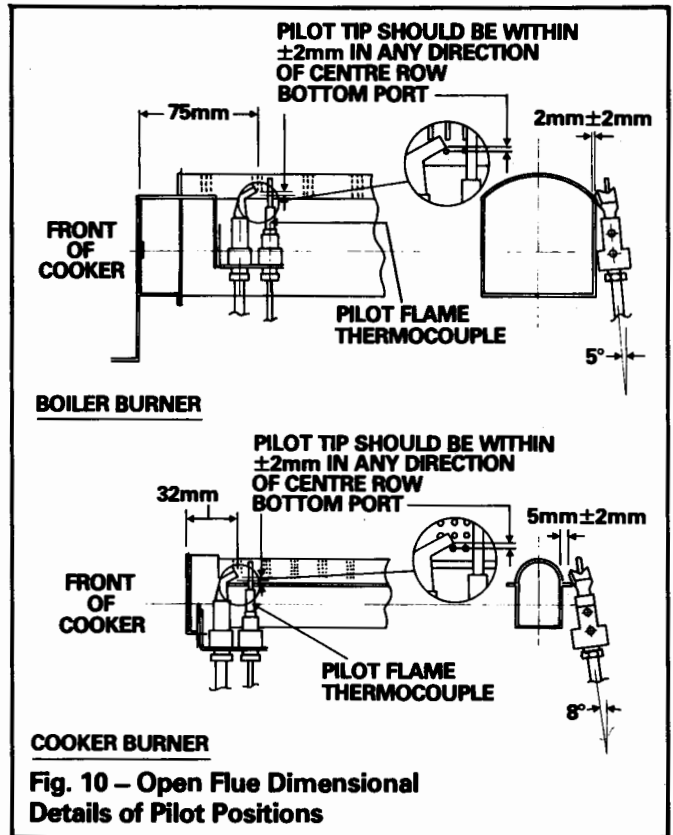
Removal of Cooker and Boiler Thermocouples and Pilot Assemblies

- 13. **BEFORE REMOVAL OF THESE COMPONENTS, THE FOLLOWING MUST BE CARRIED OUT:-**
 - (i) Isolate the electricity supply (switch **OFF** or remove plug).
 - (ii) Turn **OFF** gas at appliance service cock on cooker L.H. side.
 - (iii) Follow instructions in Section 6 “To Remove the Complete Gas Control Assembly”.
- 13a. **Cooker Thermocouple – Open and Balanced Flue** – Fig. 10 or 10a
 - (i) Disconnect hexagon nut securing thermocouple at pilot assembly and disconnect split hexagon tube nut at thermoelectric valve. Dislocate sealing grommet from combustion chamber base plate. (Balanced Flue only).
 - (ii) Remove any deposit from probe end.

NOTE: REPLACE THERMOCOUPLE AT THIS STAGE IF PROBE IS BADLY PITTED, CORRODED OR MALFUNCTIONING. REMOVE GROMMET OVER THERMOELECTRIC CONNECTION END AND REFIT ONTO REPLACEMENT THERMOCOUPLE. (BALANCED FLUE ONLY).

13b. Boiler Thermocouple – Fig. 14

- (i) Disconnect hexagon tube nut securing thermocouple at pilot assembly and disconnect thermocouple fixing nut at multifunctional gas valve. (Dislocate sealing grommet from combustion chamber base plate – Balanced Flue only).
- (ii) Remove any deposit from probe end.



NOTE: REPLACE THERMOCOUPLE AT THIS STAGE IF PROBE IS BADLY PITTED, CORRODED OR MALFUNCTIONING. REMOVE GROMMET OVER THERMOELECTRIC CONNECTION END AND REFIT ONTO REPLACEMENT THERMOCOUPLE. (BALANCED FLUE ONLY).

13c. Cooker Pilot Burner Assembly – Open and Balanced Flue – Fig. 10 or 10a

- Disconnect split hexagon tube nut at thermoelectric valve. Disconnect pilot burner hexagon tube nut section and detach tube with pilot injector.
- Disconnect thermocouple probe from burner via hexagon securing nut.

Balanced Flue Only

- Remove two fixing screws securing pilot burner to bracket.
- Fit replacement pilot assembly and assemble in reverse order of dismantling.

NOTE: ENSURE CORRECT LOCATION OF PILOT INJECTOR TO OBTAIN A GAS-TIGHT JOINT AFTER TIGHTENING HEXAGON NUT. CHECK RELATIONSHIP OF PILOT POSITION TO MAIN BURNER – SEE FIG. 10 AND 10A.

- Test all joints for gas soundness. See Section 4 of Commissioning and Testing.

13d. Boiler Pilot Burner Assembly – Fig. 14

Open Flue

- Remove two screws securing pilot burner to bracket.
- Disconnect thermocouple probe from pilot burner via hexagon nut securing thermocouple.
- Disconnect hexagon tube nut securing pilot tube to pilot burner and withdraw tube with pilot injector.
- Fit replacement pilot assembly and assemble in reverse order of dismantling.

Balanced Flue

- Disconnect boiler pilot tube nut at uppermost bulkhead fitting.
- Disconnect thermocouple probe from pilot burner via hexagonal nut securing thermocouple.
- Disconnect pilot burner hexagon tube nut.
- Remove two fixing screws securing pilot burner to support bracket.
- Fit replacement pilot assembly and assemble in reverse order of dismantling.

NOTE: ENSURE CORRECT LOCATION OF PILOT INJECTOR TO OBTAIN A GAS-TIGHT JOINT AFTER TIGHTENING HEXAGON NUT. CHECK RELATIONSHIP OF PILOT POSITION TO MAIN BURNER – SEE FIG. 10 AND 10A.

- Test all joints for gas soundness. See Section 4 of Commissioning and Testing.

To Remove/Replace Pilot Electrodes – Balanced Flue Only – Fig. 10a

- Remove boiler burner and cooker burner as described in Section 2a, 2b, 3c, 3d.
- Prise grommet from combustion chamber base and thread high tension p.t.f.e. electrode leads through/clear of grommet.
- Remove two screws securing electrode bracket and pilot burner assemblies to support bracket.
- Remove any deposit on end of electrode or replace pilot electrode in the reverse manner of removal.

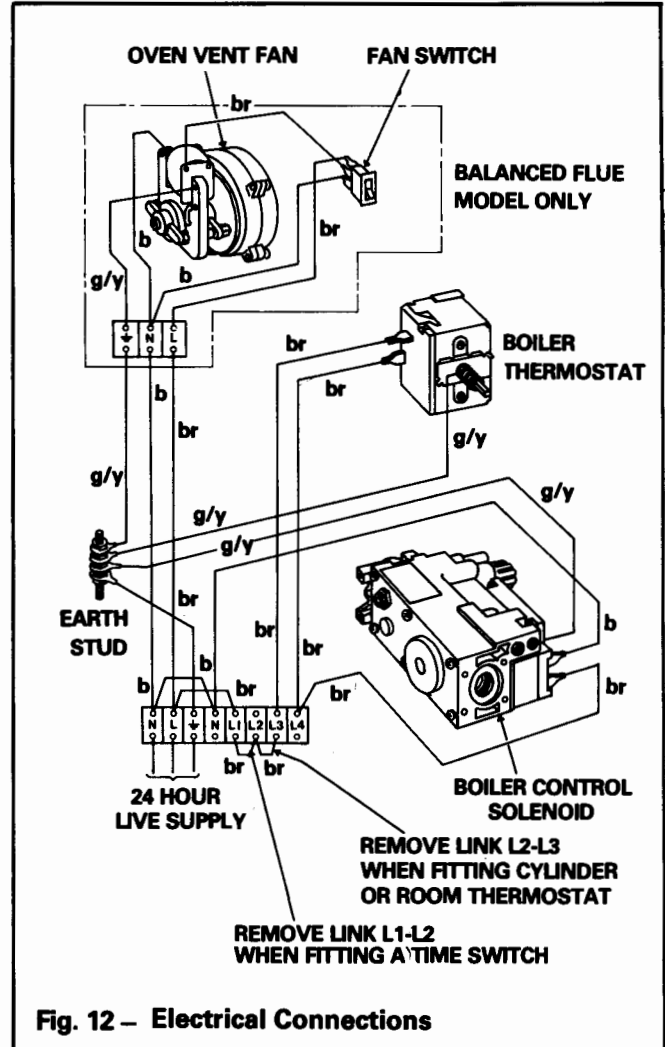


Fig. 12 – Electrical Connections

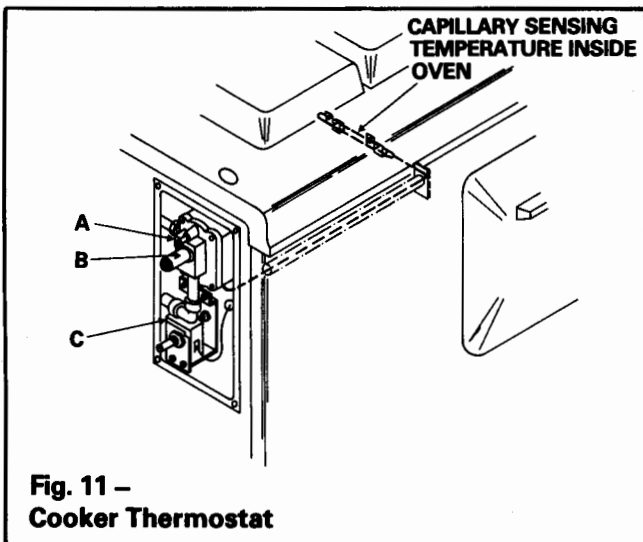


Fig. 11 – Cooker Thermostat

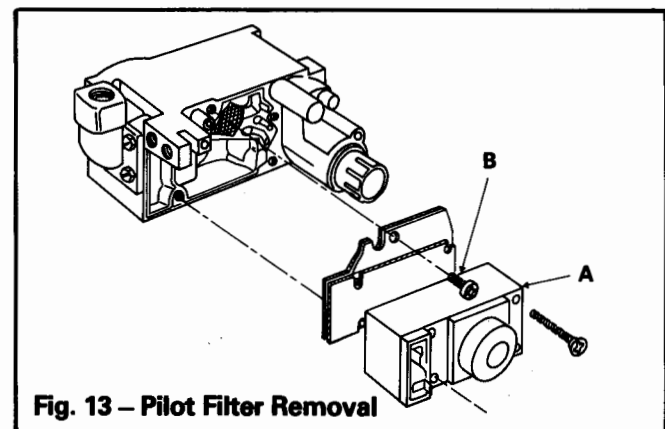


Fig. 13 – Pilot Filter Removal

Servicing Instructions

Maintenance of Cooker Thermostat – Fig. 1a and 1b

15. Remove both control knobs **D** and **H** and unfasten cover panel on L.H. side of appliance.
- 15a. **Regreasing of Thermostat Tap Plug – Fig. 15**
- (i) Hold spindle cover plate to thermostat body with finger pressure and remove two retaining screws. The spindle cover plate is springloaded inside and should be carefully removed from thermostat body.
 - (ii) Withdraw tap plug from body housing and lightly smear on plug face an approved grease sealant (such as **MOLYKOTE 1102**) taking care not to block the gasway.
 - (iii) Insert tap plug into position so that the housing spindle 'dog' locates in a slot of the tap plug spindle.
- NOTE: THE SPINDLE COVER CANNOT BE RE-ATTACHED IF THE 'DOG' LOCATION IS INCORRECTLY ASSEMBLED.**
- (iv) Holding the spindle cover plate to the thermostat housing, re-secure screws previously removed. Check assembly is correct by turning operating spindle.

15b. Restricted or Blocked Cooker Thermostat Bypass Screw – Fig. 11

- (i) Remove bypass screw **A** from thermostat housing.
- (ii) Ensure cross drilled holes adjacent to threaded section are free from deposit.

Check that bypass hole drilled down centre of spindle, breaking into cross holes is free of deposit and clean with a toothbrush bristle or similar, if necessary. **DO NOT USE OVERSIZE WIRE TO CLEAR BYPASS HOLE.**

To Remove Cooker Pilot Filter – Fig. 9 (Open Flue) or Fig. 9a (Balanced Flue)

- 16a. Isolate the electricity supply (switch **OFF** and remove plug).
- b. Turn **OFF** gas at appliance service cock on cooker L.H. side.
 - c. Follow instructions in Section 6 "To Remove the Cooker Gas Control Assembly" and Section 9 "To Remove Cooker Thermoelectric Valve".
 - d. Unscrew the filter **J**.
Remove outlet fitting and transfer it to the replacement filter.
 - e. Fit new filter and re-assemble in reverse order of dismantling.
 - f. Test all joints for gas soundness. See Section 4 of Commissioning and Testing.

17. Replacing Power Supply Cable

When fitting or replacing a power supply cable between the appliance and power supply point, ensure the cable is connected to the terminal block within the L.H. side panel of the appliance as follows:-

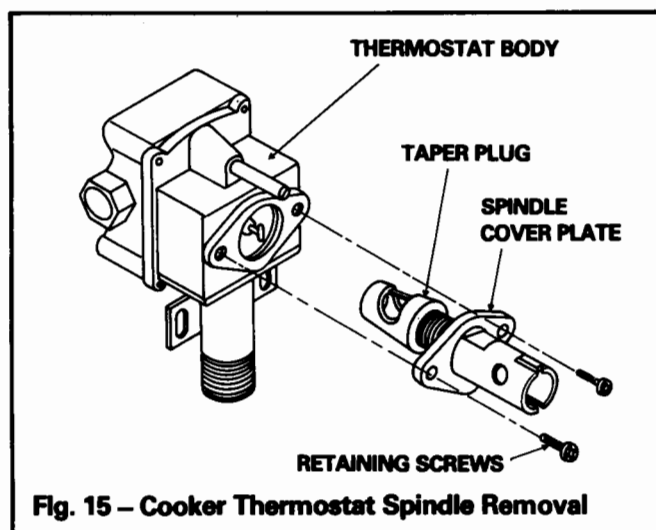
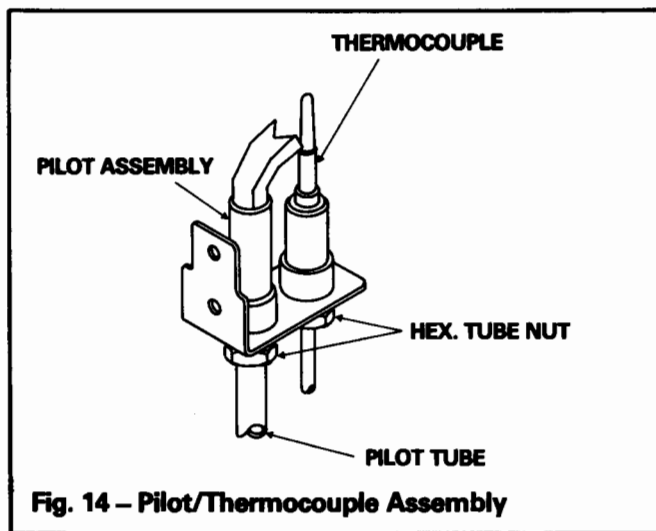
- (i) Remove four screws securing L.H. side louvred access panel on bottom face of L.H. side panel and detach access panel.
- (ii) Thread the 3 core cable through one of the bushed holes of the withdrawn removable access panel on the L.H. side panel.
- (iii) Locate and grip the 3 core cable in the top cable clamp adjacent to the side of the 8 way terminal block allowing about 100mm length of cable beyond the bush outlet.

- (iv) Remove the outer cable cover to bare the three individual core cables and cut the current carrying core cable (brown and blue) to sufficient length to enable connection to the terminal block. Connect brown to terminal marked **L**. Connect blue to terminal marked **N**. Connect green/yellow to $\oplus$.
- (v) The earth wire should be cut longer than the other two wires so that the live and neutral wires will be disconnected first if the supply cord is pulled through the cable clamp.

In the event of an electrical fault after installation of the appliance, preliminary system checks shall be carried out (i.e. earth continuity, polarity and resistance to earth as described in the Multimeter instruction book).

To Remove/Replace Oven Extraction Fan – Balanced Flue Only – Fig. 16

- 18a. Isolate the electrical supply (switch **OFF** or remove plug).
- b. Disengage screw on bottom L.H. side of louvred extractor fan housing (See Fig. 16) from holding down bracket.
 - c. Gently withdraw complete housing forward until clear of stationary fan assembly, then remove.
 - d. Remove two fixing screws securing fan scroll housing to sheet metal mounting bracket and then disconnect fan motor leads **L**, **N**. and $\oplus$ of neon lamps terminal block (noting terminal positions See Wiring Diagram Fig. 12).



- e. Refit new fan assembly in the reverse manner stated and re-wire the neon lamp/switch and terminal block, as disconnected.
- f. Position complete fan housing box in front of fan assembly, then carefully engage projecting pins behind box front into friction grip bushes on fan assembly bracket. Push housing forward then secure with screw on L.H. side of housing to top plate.
- g. Restore electrical supply, operate switch '**ON**' and check that neon illuminates and fan is operative, then switch **OFF**. Fig. 17.

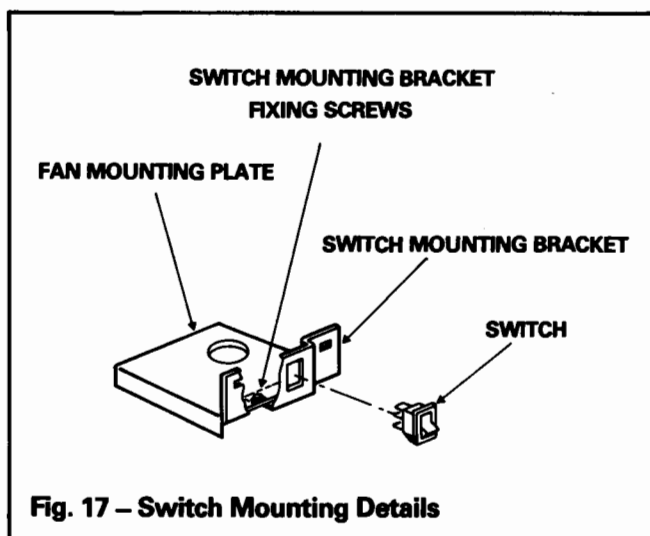
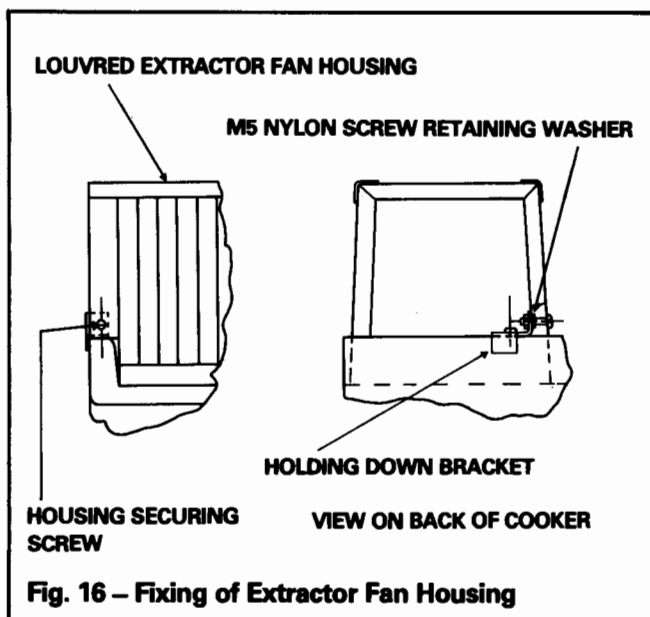
To Remove/Replace Oven Extraction Fan Switch/Lamp – Fig. 17

- 19a. Isolate the electrical supply (switch **OFF** or remove plug).
- b. Remove the complete fan housing as described in 18a, b, and c.
- c. Detach switch mounting bracket free of fan mounting plate by removal of two fixing screws.
- d. Disconnect terminal receptacle connections from switch terminal spades, noting terminal positions.
- e. Compress the two top and bottom barbs of the switch to enable the switch to be withdrawn from the bracket.
- f. Replace new switch in the reverse manner stated, reconnect to the cable receptacles to the switch spade terminals and secure bracket assembly to fan mounting plate.
- g. Restore electrical supply, operate switch '**ON**' then check that neon illuminates and fan is operative, then switch **OFF**.
- h. Replace and secure fan housing box in the reverse manner of removal.

20. Procedure to Check Thermocouple Outputs – Cooker and Boiler

1. Isolate the electrical supply (switch **OFF** or remove plug).
 2. Turn **OFF** gas at appliance service cock on cooker L.H. side and set oven control knob at **OFF**.
 3. Remove combustion chamber divider plate via its wing nuts.
 4. (To remove Boiler Burner). Remove screw **A**. (Fig. 3a Open Flue and 3c Balanced Flue) securing boiler burner to boiler pilot supporting bracket. Carefully remove burner from the combustion chamber.
- a. **Open Flue**
- (i) (To remove Cooker Burner). Remove two screws **A**. (Fig. 3b) securing cooker burner pilot to burner support bracket. Slacken octagonal locknut **B** securing cooker injector housing to gas burner manifold and remove burner from the combustion chamber.
 - (ii) Remove the rear section of the combustion chamber base plate (See Fig. 8) by releasing the two screws **A**.
- b. **Balanced Flue**
- (i) (To remove Cooker Burner). Disconnect union fitting **B** and remove burner (Fig. 3d).

- (ii) Remove the three screws **D** securing the L.H. inspection cover plate and the three screws **E** securing the R.H. inspection coverplate to the burner chamber base plate. See Fig. 8a. Access is now provided to thermoelectric valve thermocouple connecting nuts on boiler and cooker valves.
5. Proceed to carry out Instructions for British Gas Multimeter – Procedure 5 Sub-Section "Thermocouple Interrupter Users Instructions" after restoring gas at appliance service cock on L.H. side of cooker.
6. Re-assemble burner and components in reverse order of dismantling.
7. Test all joints for gas soundness. See Section 4 of Commissioning and Testing.



LEAVE SERVICING INSTRUCTIONS ADJACENT TO GAS METER FOR FUTURE USE.

Servicing Instructions

Electrical Fault Finding – Extract from Instructions for British Gas Multimeter

1. Before attempting any electrical fault finding, always carry out the Preliminary Electrical System checks.
IMPORTANT: ALWAYS HAVE ALL EARTH TERMINAL/EARTH LINES CONNECTED DURING LIVE TESTING.
2. Read and apply the fault finding instructions.
3. Study the appliance wiring diagram and make sure that you understand the function and purpose of each component. Remember that in a series circuit the non-operational control may not be the faulty control. All components in a circuit should be checked. If the schematic wiring diagram is difficult to follow, then try re-drawing it, by tracing the circuitry for each component.
4. When carrying out continuity checks the component or appliance should be electrically isolated.
5. **Remember – when in doubt, read the instructions!**

- A. **Earth Continuity Check** – appliance must be electrically disconnected – meter set on Ω (ohms) x 1 scale and adjust zero if necessary.
- a. Test leads from any appliance earth point to earth pin on plug – resistance should be less than 1 Ω (ohm).
If resistance is greater than 1 Ω (ohm) check all wires for continuity and all contacts clean and tight.
If resistance of earth is still greater than 1 Ω (ohm) then this should be reported to your supervisor.
- B. **Short Circuit Check** – appliance electrically disconnected, all switches **ON** (including stats).
- a. meter set Ω (ohms) x 1 scale.
Test leads from **L** to **N** in appliance terminal strip/block – if meter reads 0 then there is a short circuit.
meter set on Ω (ohms) x 100 scale.
Repeat test with leads from **L** to **E**. If meter reads less than (infinity) there is a fault.

NOTE: SHOULD IT BE FOUND THAT THE FUSE HAS FAILED BUT NO FAULT IS INDICATED – A DETAILED CONTINUITY CHECK (I.E. BY DISCONNECTING AND CHECKING EACH COMPONENT) IS REQUIRED TO TRACE THE FAULTY COMPONENT. IT IS POSSIBLE THAT A FAULT COULD OCCUR AS A RESULT OF A LOCAL BURNING/ARCING BUT NO FAULT COULD BE FOUND UNDER TEST. HOWEVER A

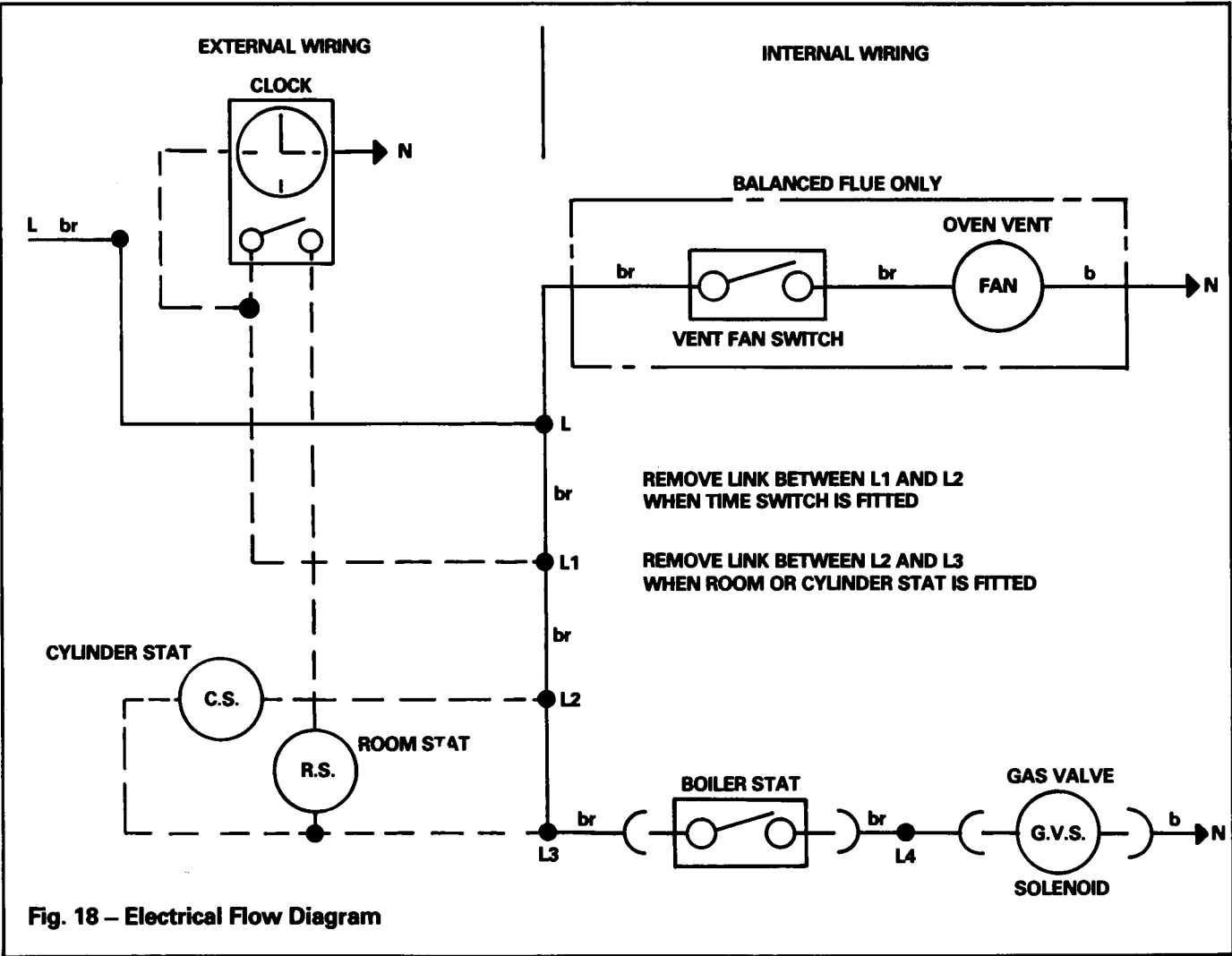


Fig. 18 – Electrical Flow Diagram

DETAILED VISUAL INSPECTION SHOULD REVEAL EVIDENCE OF BURNING AROUND THE FAULT.

C. Polarity Check

Appliance connected to mains supply and meter set on 300 Vac Scale. Test at appliance terminal strip:-

- Test leads from **L** to **N**
– meter reads approx. 240 Vac
- Test leads from **L** to ($\oplus$)
– meter reads approx. 240 Vac
- Test leads from **N** to ($\oplus$)
– meter reads from 0.15 Vac*

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

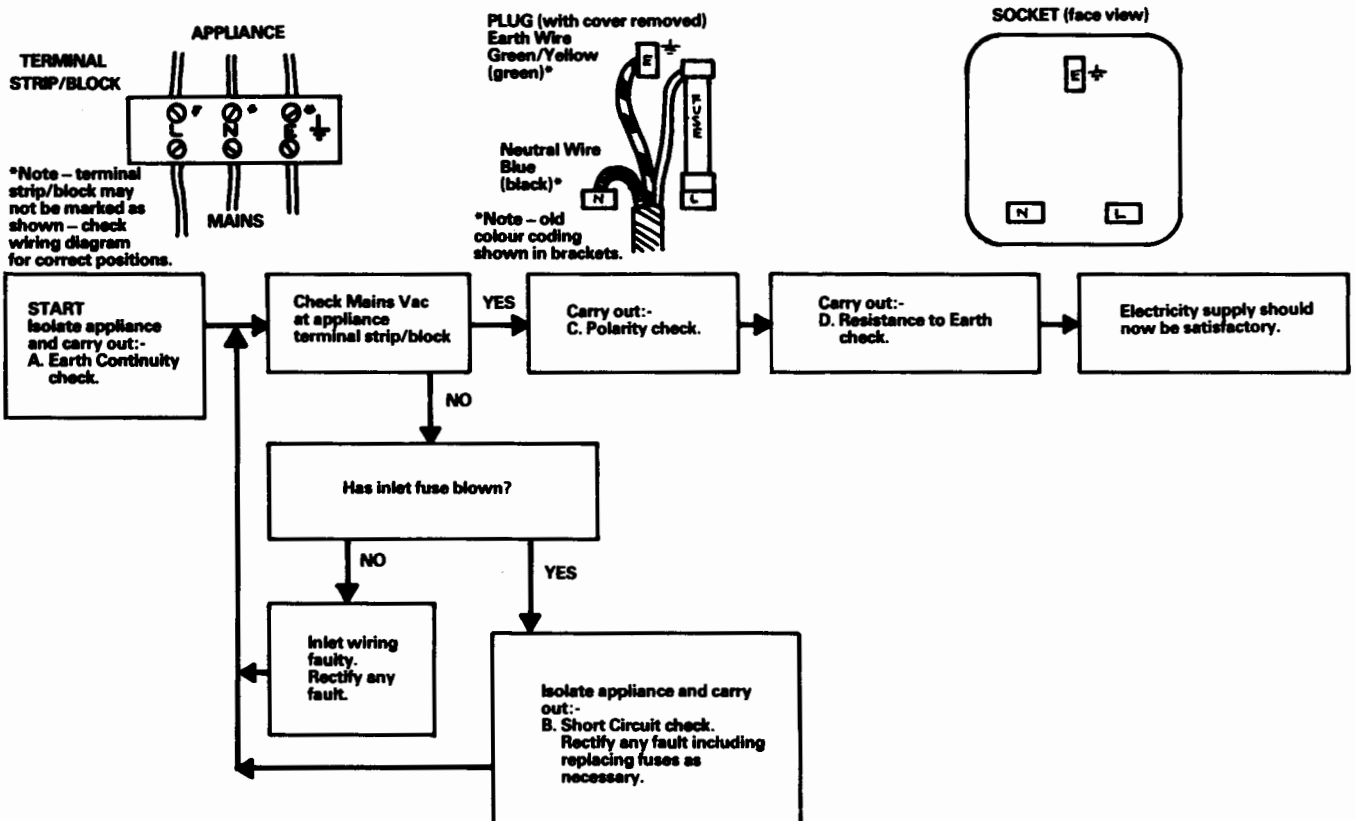
Repeat the test at the appliance plug/inlet spur to check the wiring system up to the appliance and rectify any fault. If necessary repeat the test at the supply system socket/spur – if the fault also occurs at this stage then there is a house system fault which requires attention by the Electricity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

D. Resistance to Earth Check

Appliance must be disconnected from mains supply and meter set on Ω (ohms) x 100 scale. All switches, including stats, **ON** – Test leads from **L** to **E** – if meter reads other than infinity (∞) there is a fault which should be isolated. A detailed continuity check is required to trace the faulty component.

IMPORTANT: THIS SERIES OF CHECKS ARE THE FIRST ELECTRICAL CHECKS TO BE CARRIED OUT DURING A FAULT FINDING PROCEDURE. ON COMPLETION OF THE SERVICE/FAULT FINDING TASK WHICH HAS REQUIRED THE BREAKING AND REMAKING OF ELECTRICAL CONNECTIONS THEN THE CHECKS – A. EARTH CONTINUITY, C. POLARITY AND D. RESISTANCE TO EARTH – MUST BE REPEATED.

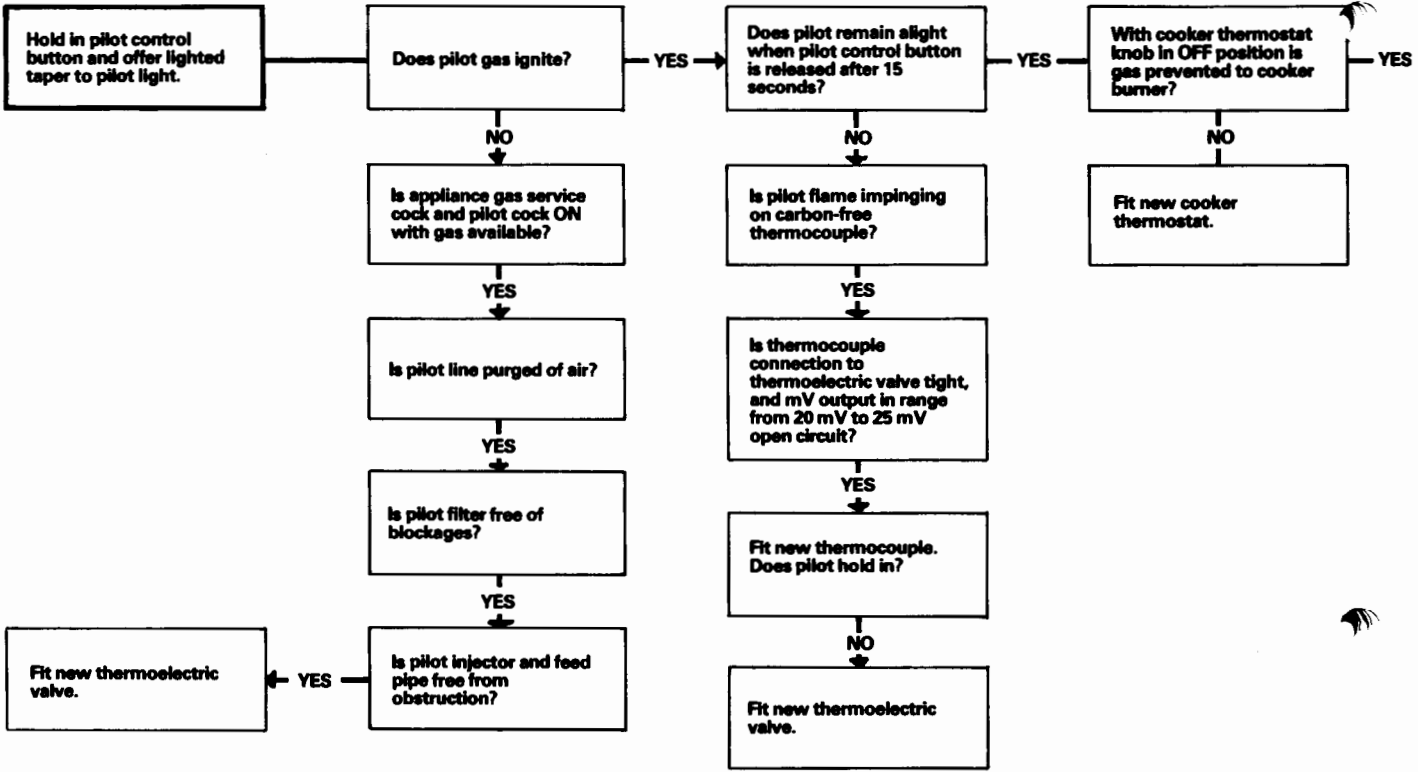
Preliminary Electrical System Checks



Servicing Instructions

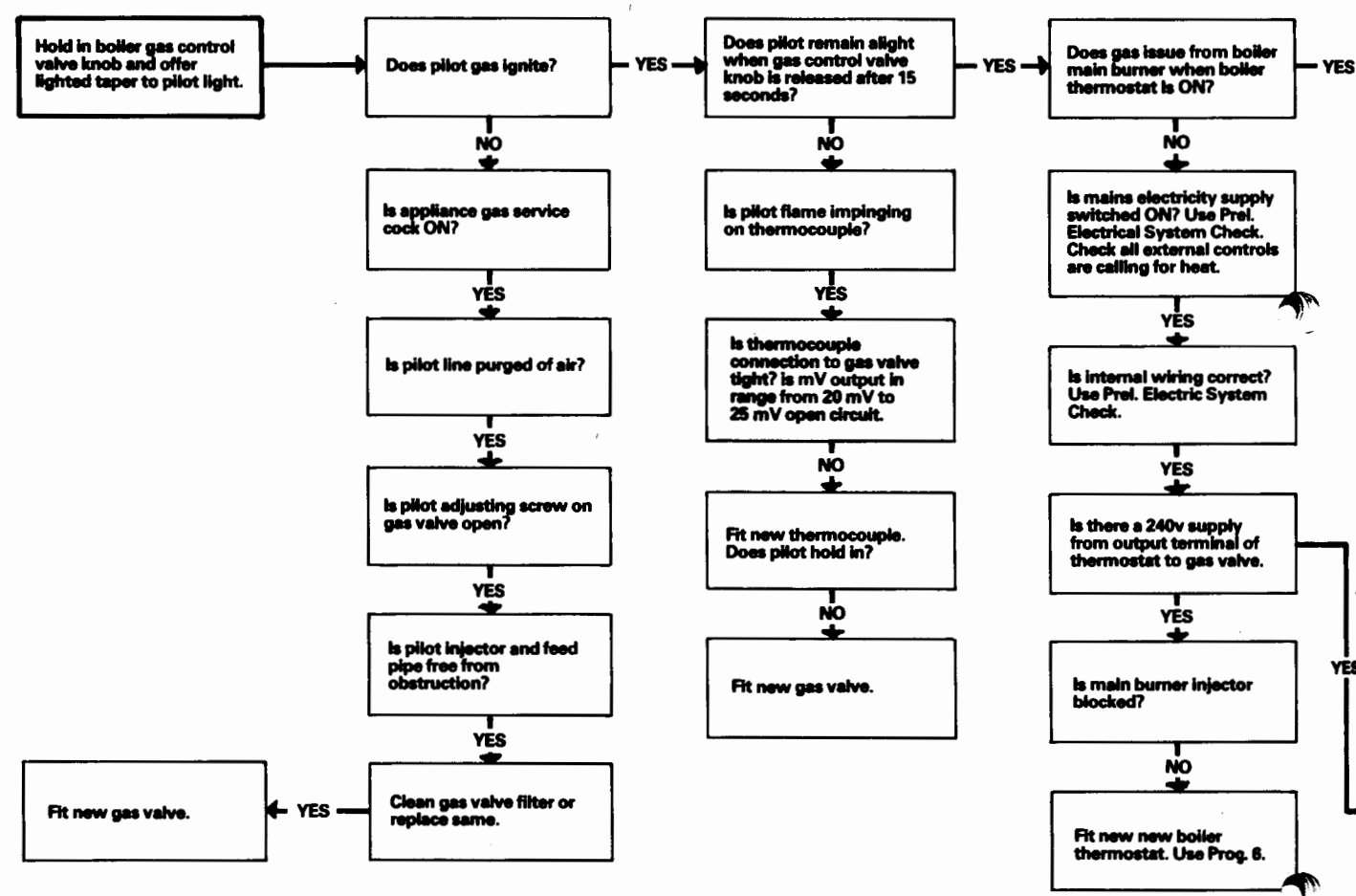
FAULT FINDING CHART FOR COOKING SECTION

Before commencement of fault checks ensure the



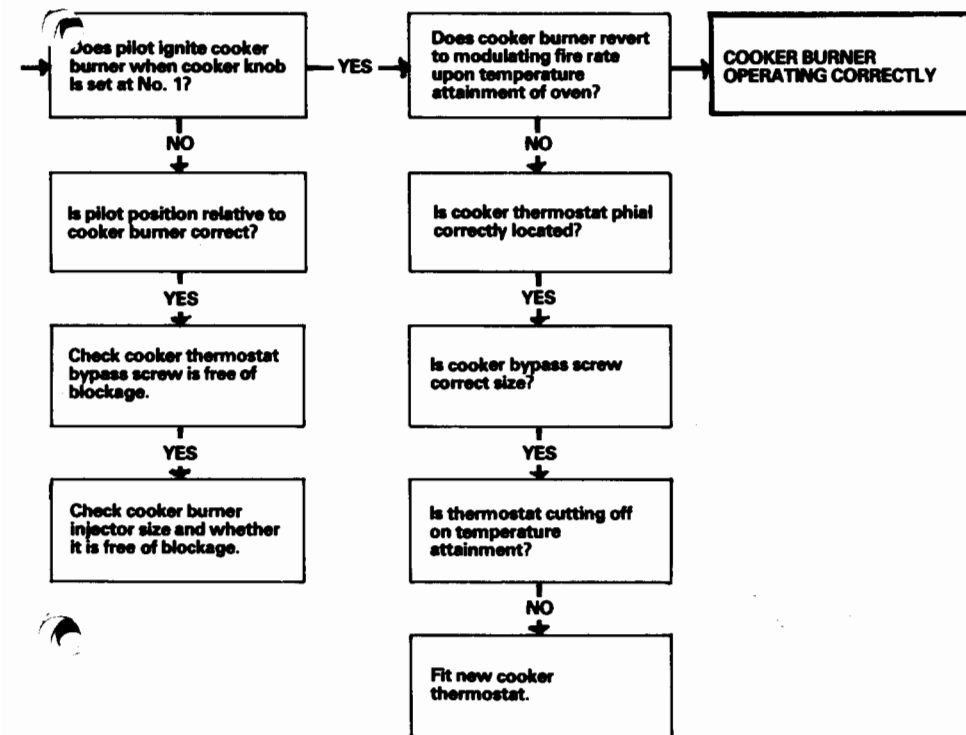
FAULT FINDING CHART FOR BOILER SECTION

Before commencement of fault checks ensure the

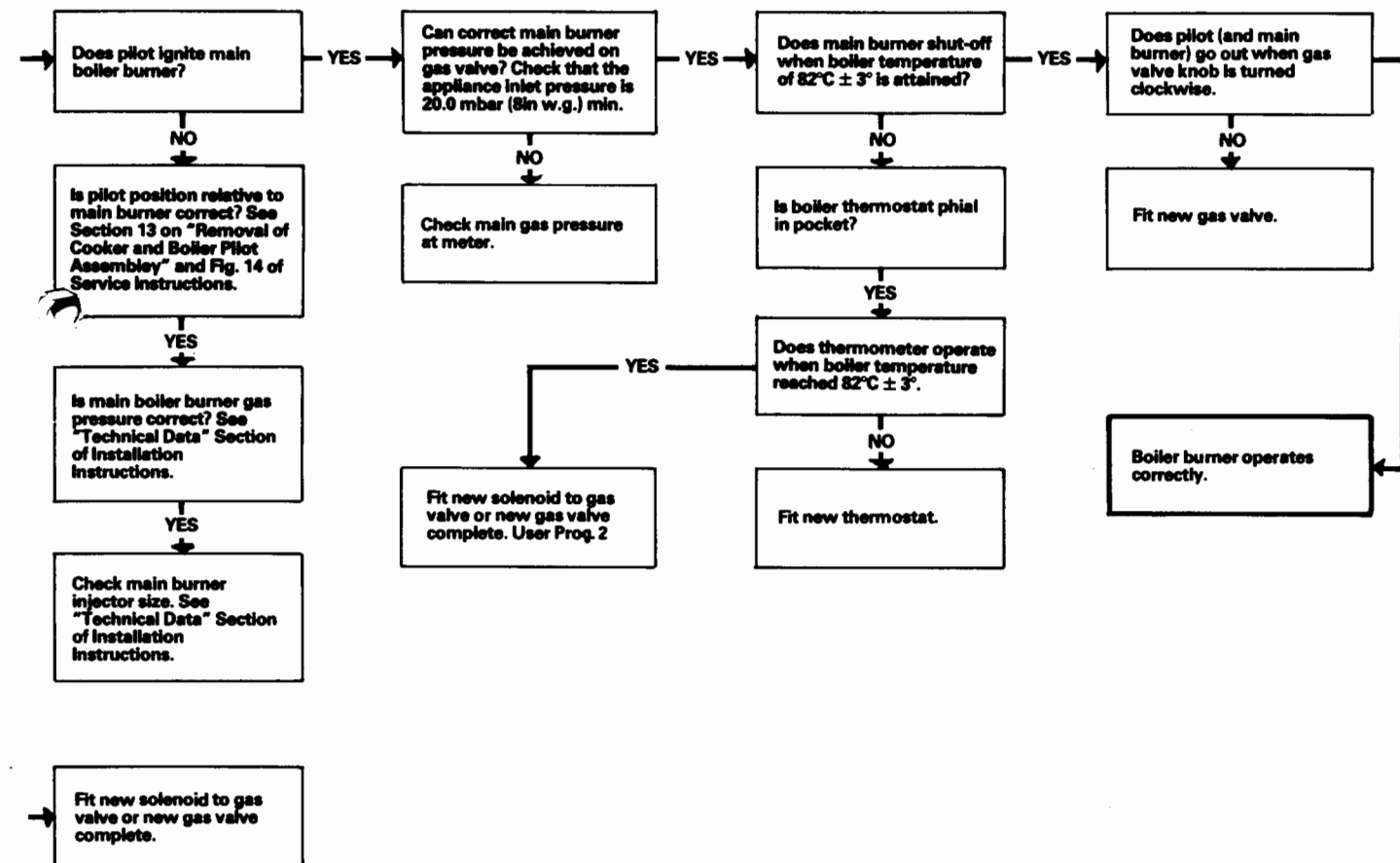


In the event of an electrical fault after installation of the appliance, preliminary system checks shall be carried out

cooker isolating gas tap is functional, i.e. ON — OFF.



appliance external gas tap is function, i.e. ON — OFF.

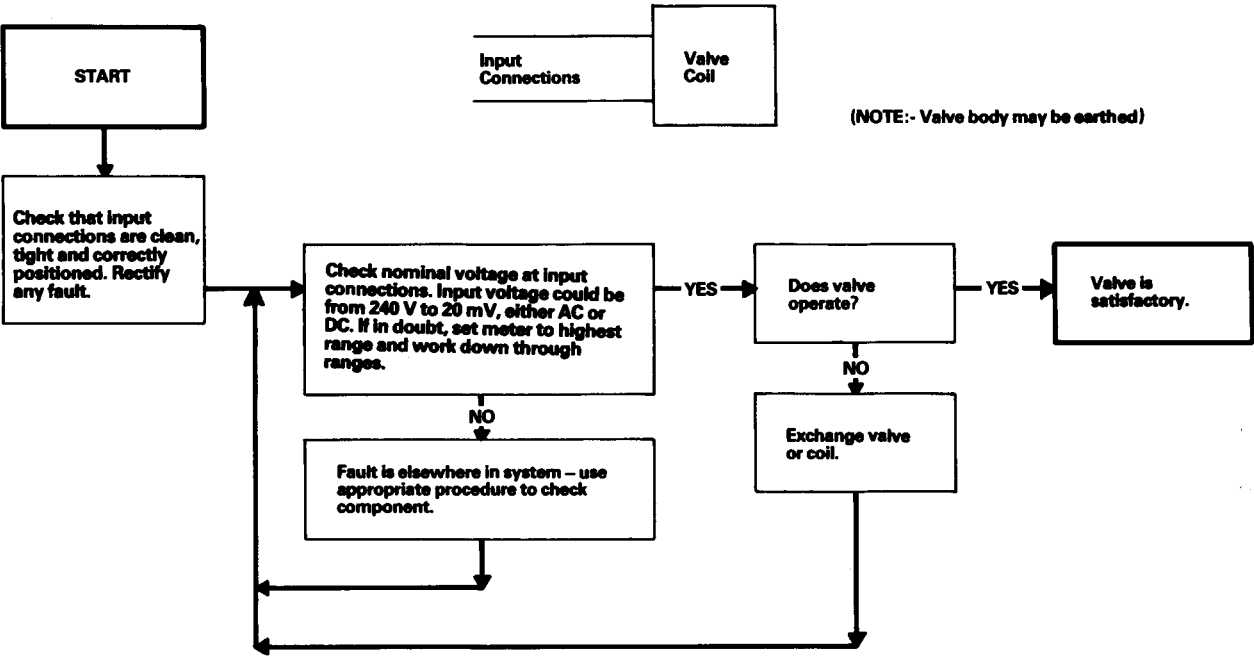


(i.e. earth continuity, polarity and resistance to earth as described in the B.G. Multimeter instruction book).

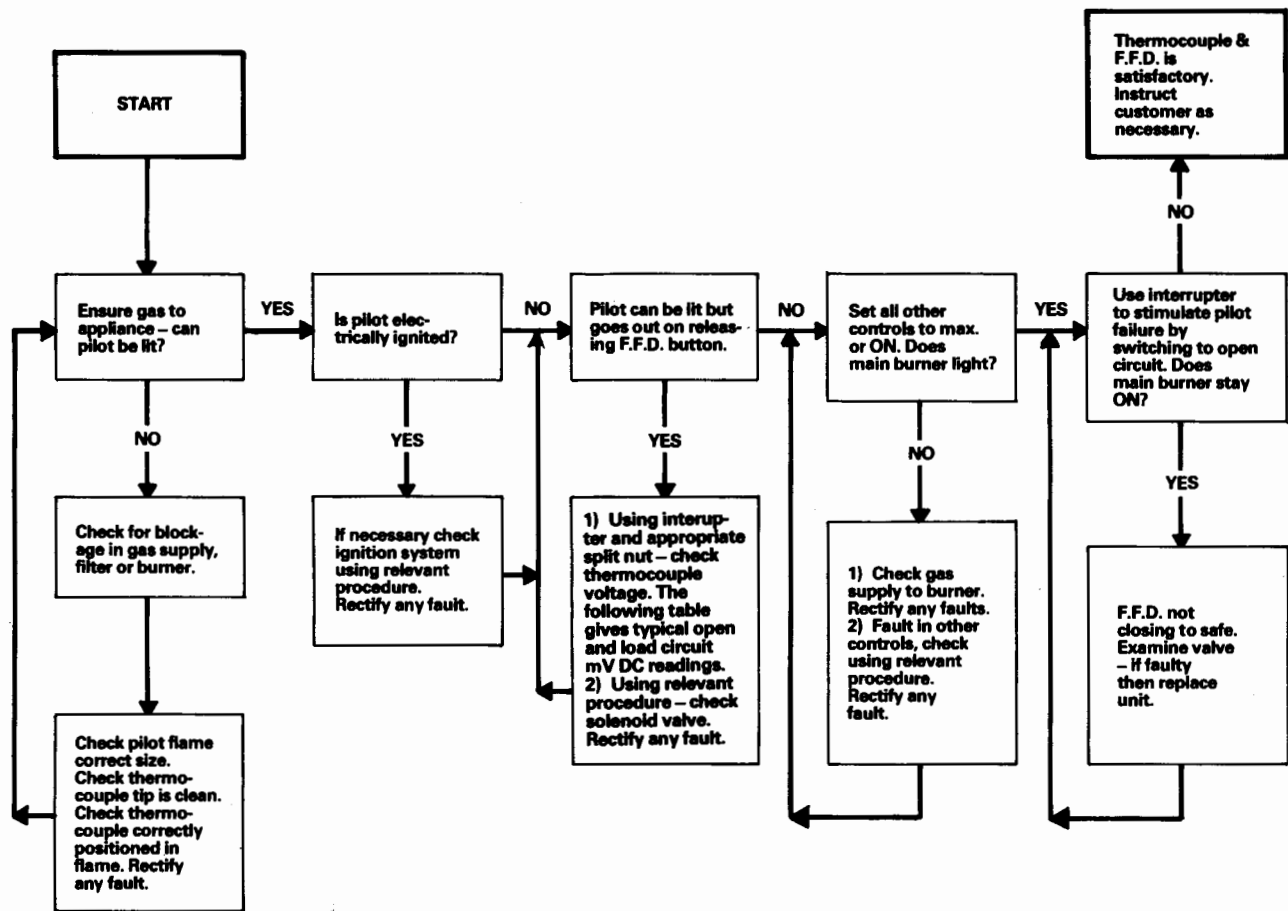
Procedure 2

Solenoid Valves

e.g. Solenoid valves, pilot stats, power unit solenoids, oil filled solenoids, oil filled operators.



Procedure 5 F.F.D. and Thermocouples



Typical Thermocouple Output Voltages (mV DC)

with thermocouple in normal
working position but pilot
only operating.

1. Thermocouple only

If open-circuit output is less than
15 mV – then thermocouple should be
exchanged if valve satisfactory.

Open Circuit millivolts (mV)

30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15

If load circuit output greater
than expected value, then
suspect faulty valve.

Expected Range of load circuit millivolts (mV)

17-9
16-9
16-8
15-8
15-7
14-7
13-7
13-6
12-6
12-5
11-5
10-5
10-4
9-4
9-3
8-3

If load circuit output is less
than 8 mV – then thermo-
couple should be exchanged
if valve satisfactory.

Note: Clean and tight contacts are particularly important in these
low voltage control circuits.

Procedure 6

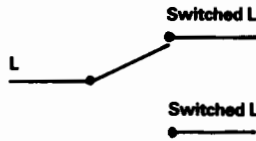
Thermostats and Switches

Simple Stat/Switch



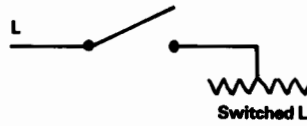
e.g. Boiler stat
Fan stat

Changeover Stat/Switch



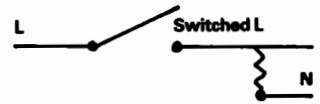
e.g. Cylinder stat

Stat with Series Accelerator Heater

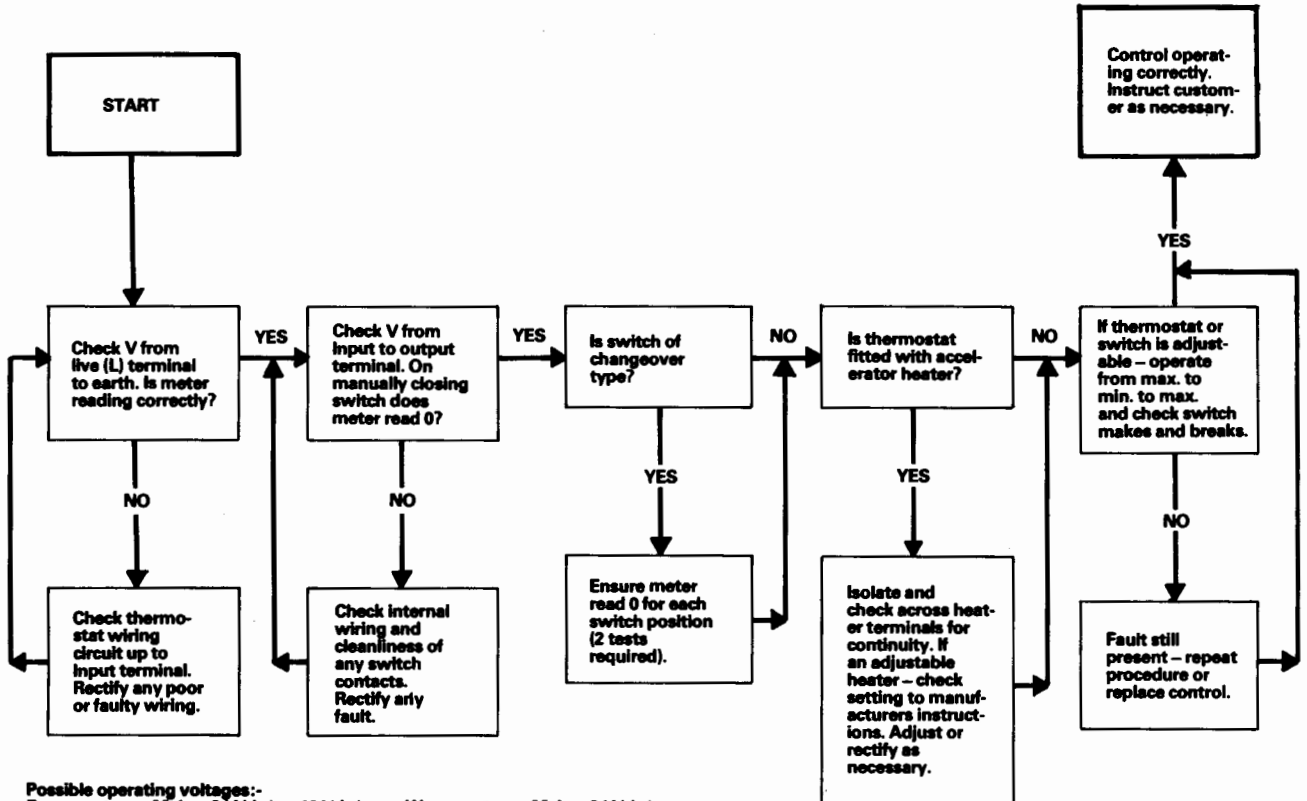


e.g. Room stat

Stat with Parallel Accelerator Heater



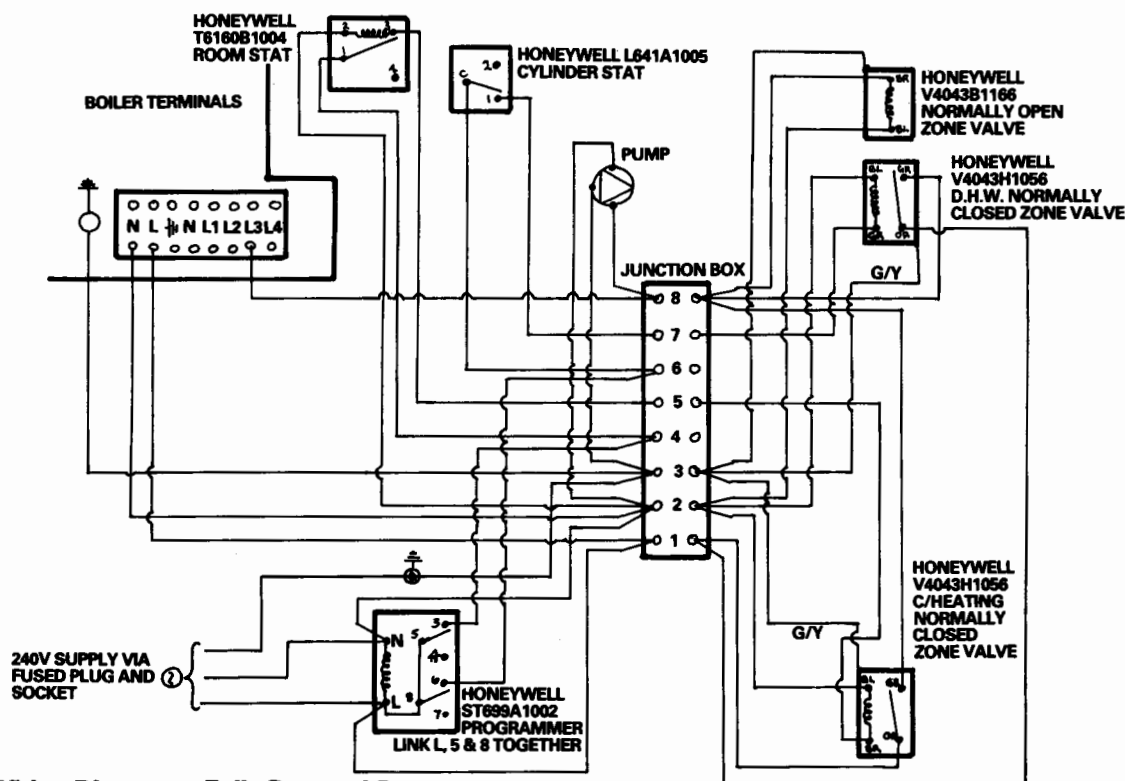
e.g. Room stat



Possible operating voltages:-

Room stats Mains, 24 Vdc/ac, 12 Vdc/ac
Fan stats Mains
Limit stats Mains, 30 mVdc

Water stats Mains, 24 Vdc/ac
Cylinder stats Mains, 24 Vdc/ac
Frost stats Mains, 24 Vdc/ac



Typical Wiring Diagram – Fully Pumped System

PROPANE GAS ONLY See front page for Natural Gas		OPEN FLUE						BALANCED FLUE						
		Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON		Cooker HIGH Boiler ON		Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON		Cooker HIGH Boiler ON		
Heat Input	kW	3.12	9.0	25.9		30.6		3.22	9.2	24.0		27.8		
	Btu/h	10,640	30,700	88,295		104,529		11,000	31,350	78,600		95,000		
Heat Output Water	kW	0.88	2.9	17.0		19.05		0.88	2.9	15.7		17.8		
	Btu/h	3,000	10,000	58,000		65,000		3,000	10,000	54,500		61,000		
Appliance Inlet Pressure 37mbars	mbars	2.0	35.0	Ckr.	Blr.	Ckr.	Blr.	2.0	35.0	Ckr.	Blr.	Ckr.	Blr.	
				2.0	35.0	34.5	34.5			2.0	35.0	34.5	34.5	
	Ins w.g.	0.8	14.0	0.8	14.0	13.8	13.8	0.8	14.0	0.8	14.0	13.8	13.8	
Burner Injector Size	Cooker		1.55mm (No. 320)						1.55mm (No. 320)					
	Boiler		2.54mm (No. 750)						2.61mm (No. 800)					
	Cooker Thermostat Bypass Size		68M (0.031 in.)						68M (0.031 in.)					

Boiler Water Connections

Flow (one) Rp 1 (1in BSP Int)

Return (one) Rp 1 (1in BSP Int)

Both connections are located towards the rear edge of the appliance LH side panel.

Gas Connections Rp ½ (½in BSP Int)

Open Flue Outlet Dia 150mm (6in Int)

Balanced Flue Adjustable for wall depths between 228mm (9in) and 355mm (14in).

Electrical Supply

Min Working Hydraulic pressure of boiler

Max Working Hydraulic pressure of boiler

Water Capacity of Boiler

Weight of both appliance versions

Appliance Overall Dimensions

240v ~ 50Hz 3 amp Fused.

0.23 bar (3.4 psi)

1.75 bar (25.75 psi)

12.5 litre (2.75 galls)

320kg (705lb)

Height: 975mm (38¾")
Width: 962mm (37¾")
Depth: 647mm (25½")

With Rayburn's policy of continuous product improvement, the Company reserves the right to change specifications and make modifications to the appliances described and illustrated at any time.

Rayburn

Glynwed Consumer & Building Products Ltd

PO Box 30 Ketley Telford Shropshire TF1 4DD

Telephone (0952) 641100 Telex 35196 Fax (0952) 641961

RAYBURN
NOUVELLE

RAYBURN GAS
RANGER

Operating Instructions Rayburn Gas Nouvelle and Rayburn Gas Ranger Open and Balanced Flue

Health & Safety at Work Act 1974

As manufacturers and suppliers of cooking and heating products, in compliance with Section 6 of the Health and Safety at Work Act 1974, we take every care to ensure, as far as is reasonably practicable that these products are so designed and constructed as to be safe and without risk to health when properly used and installed. To this end, our products are thoroughly tested and examined before despatch.

The cooking performance features of the popular and proven solid fuel Rayburn Cookers have been preserved and integrated into the Rayburn Gas Central Heating Cooker burning Natural and LPG gases.

Summer Use

The cooker burner provides both domestic hot water and cooking facilities which consist of a large hotplate, main oven and warming oven. This is operated by the control knob marked 'cooker', and thermostatically controlled by the main oven thermostat. The higher the cooker control setting the more domestic hot water will be produced.

NOTE: THE COOKER BURNER IS INTENDED TO RUN IN A CONTINUOUSLY ALIGHT POSITION AT ALL TIMES – AT A LOW POSITION WHEN NOT USED FOR COOKING, THEN TURNING TO THE APPROPRIATE NUMBER WHEN REQUIRED. TURNING OFF THE COOKER IS NOT RECOMMENDED, UNLESS SERVICING IS REQUIRED.

Winter Use

An independent boiler gas burner controlled by an electric thermostat heats a hot water boiler to provide central heating for the heating of radiators

in addition to the same cooker facilities provided in the summer. The boiler can be electrically controlled by a time switch or programmer to give selected heating use.

Electricity Supply:

WARNING: THIS APPLIANCE MUST BE EARTHED.

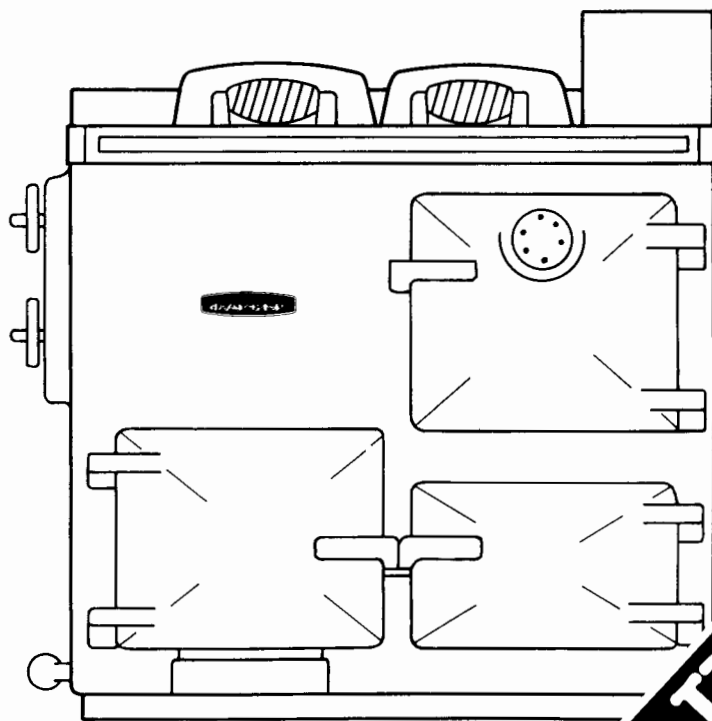
A 240V, 50Hz~electrical supply is required near to the appliance. The appliance is supplied with an in the summer. The boiler can be electrically controlled by a time switch or programmer to give selected heating use.

0.75mm – 3 core PVC x 3m long replaceable power supply cable having a label attached to the end of the cable giving details of the cable core colour coding and their function which should be adhered to. The appliance must be protected by a 3 amp fuse if a 13 amp (BS 1363) plug is used or if any other type of plug is used by a 5 amp fuse in the circuit.

To Connect a Plug

As the colour of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:—

1. The wire which is coloured green and yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol $\equiv$ or coloured green or green and yellow.
2. The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
3. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

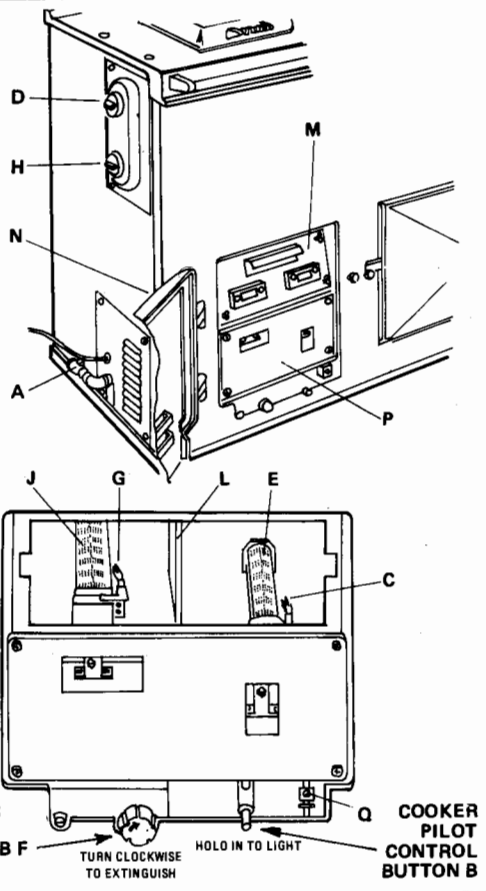


IMPORTANT
The cooker burner is intended to run in a continuously alight condition at all times, at low fire rate when idling. Turning the cooker burner OFF is NOT recommended unless servicing is required.

In your own interests and that of safety, it is the law that all gas appliances are installed by a competent person in accordance with these. An appliance supplied for use on LPG must not be used on Natural gas and vice versa.

SPECIAL NOTE: IF EITHER PILOT IS EXTINGUISHED FOR ANY REASON, ALWAYS WAIT AT LEAST 3 MINUTES BEFORE ATTEMPTING TO RELIGHT.

**Fig.1a
Open Flue**



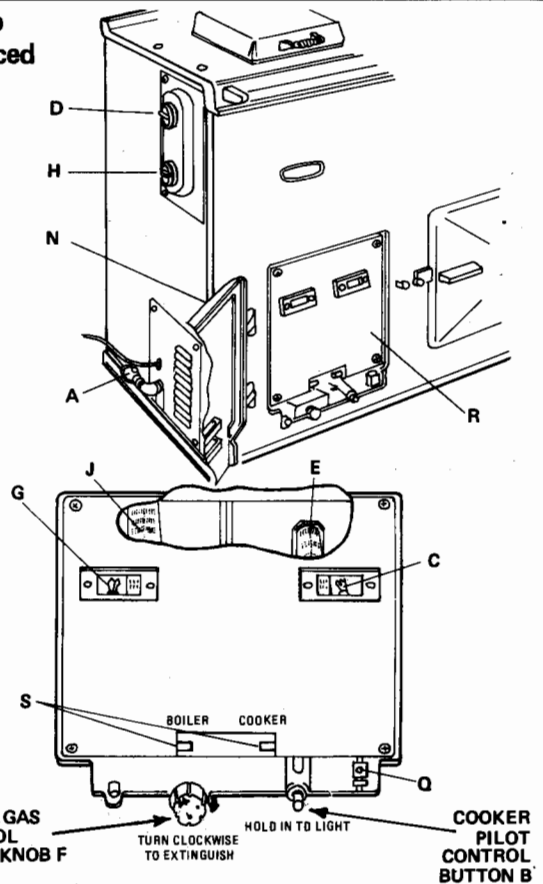
**Cooker Burner Only Alight—Summer Use
Open Flue — Fig. 1a**

1. Open the outer burner door N adjacent to the bottom warming oven door and lift up and remove the top section of the inner panel M (with two viewing windows) to expose the cooker burner E nearest the oven side.
WARNING: WHEN THE APPLIANCE IS HOT, USE PROTECTIVE GLOVES TO REMOVE INNER PANEL M.
2. Ensure service cock A and pilot cock Q are ON with the cock marker line and pilot slot in line with the pipework.
The service cock A is located on the bottom L.H. side of the cooker and pilot cock behind the bottom section inner panel P. Use a coin to turn pilot cock.
Ensure the cooker thermostat knob D is set at OFF.
3. Push in and hold pilot control button B located at the bottom of the front plate and marked 'COOKER' allowing a few seconds for gas to reach the cooker pilot burner C, and light the pilot burner with a match or lighted taper.
4. Hold in pilot control button B for at least 15 seconds after the pilot C has lit so that when the button is released, the pilot should remain alight. If it does not, wait 3 minutes and repeat sequence holding in pilot control button B for a slightly longer time.

5. Hold in cooker thermostat knob D on side of cooker and simultaneously turn knob anti-clockwise to LOW. The main burner E should smoothly crosslight from the pilot.
This is the minimum setting at which the cooker thermostat knob D should remain at when cooking is not required and idling rate is needed. Turn the cooker thermostat knob to its maximum setting No.9 and observe the increased gas rate which is necessary when high temperature cooking is required and then return it to its minimum setting.

6. Replace the top section of the inner panel M by positioning the top section inner panel support hooks (on reverse face) through the cut-outs of the support housing.
Ensure location is correct and the top section inner panel seals correctly.
Close the outer burner door.
7. Ensure both hotplate insulating covers are closed down to conserve heat in hotplate.

**Fig.1b
Balanced
Flue**



Balanced Flue — Fig. 1b.

1. Open the outer burner door N adjacent to the bottom warming oven door to expose black piezo generator knobs S below inner panel R.
2. Ensure service cock A and pilot cock Q are ON with the cock marker line and pilot slot in line with the pipework.
The service cock A is located on the bottom L.H. side of the cooker and the pilot cock in the bottom R.H. corner below inner panel R.
Use a coin to turn pilot cock.
Ensure the cooker thermostat knob D is set at OFF.
3. Push in and hold cooker flame failure red button B (located at the bottom of the front plate and marked 'COOKER PILOT') allowing a few seconds for gas to reach the cooker pilot burner C, then depress the R.H. piezo generator button S repeatedly until the pilot burner lights.

Alternatively the cooker burner viewing window/frame assembly may be removed by removing the two securing screws and a lighted taper passed through the aperture to light the pilot burner. Use protective gloves when hot. Replace window/frame once pilot light is established, ensuring it is properly located and the two securing screws are fully tightened.

4. Hold in pilot control button **B** for at least 15 seconds after the pilot **C** has lit so that when the button is released, the pilot should remain alight. If it does not, wait 3 minutes and repeat sequence holding in pilot control button **B** for a slightly longer time.
5. Hold in cooker thermostat knob **D** on side of cooker and simultaneously turn knob anti-clockwise to **LOW**. The main burner **E** should smoothly crosslight from the pilot. This is the minimum setting at which the cooker thermostat knob **D** should remain at when cooking is not required and idling rate is needed. Turn the cooker thermostat knob to its maximum setting **No. 9** and observe the increased gas rate which is necessary when high temperature cooking is required and then return it to its minimum.
6. Close the outer burner door **N** and ensure both hotplate insulating covers are closed down to conserve heat in hotplate.

To Turn Off the Cooker Burner

1. Ensure the cooker thermostat knob **D** is at **LOW** setting. Press and hold in cooker thermostat knob simultaneously turning it clockwise to **OFF** whereupon the main cooker burner **E** will extinguish. Insert coin in pilot cock **Q** screw slot and turn until slot is positioned across the pipe-work to extinguish pilot burner.

NOTE: IF THE BURNER IS TO BE RE-LIT IN A DAY OR TWO, TURN THE COOKER THERMOSTAT KNOB D OFF ONLY WITH THE PILOT ALIGHT. THE MAIN BURNER WILL THEN LIGHT IMMEDIATELY YOU TURN COOKER THERMOSTAT KNOB D FROM OFF TO LOW SETTING.

To Heat the Oven and Increase Hotplate Temperature

Turn the cooker thermostat knob **D** to the required setting which will take up to 65 minutes to attain after initial warm up from cold.

When the oven temperature is reached, the required temperature will be maintained by the cooker thermostat.

To reduce the top heat in the oven, place the plain solid shelf on the top pair of runners.

As a guide, when on summer use (cooker burner only on), the numbered settings on the cooker thermostat knob give the following approximate oven temperature:—

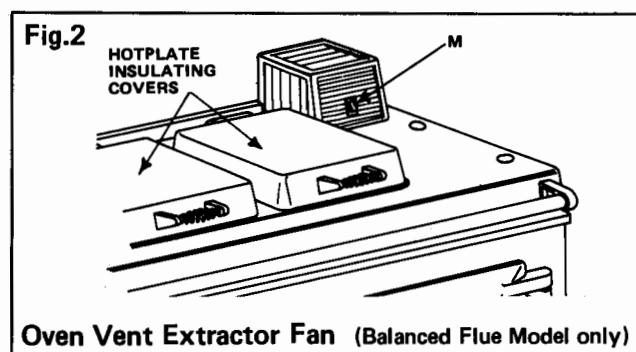
Setting	Main Oven Temperature
Low	120°C (250°F)
2	150°C (300°F)
4	182°C (360°F)
6	215°C (420°F)
8	246°C (475°F)

Cooking Fumes Extraction

The open flue version will efficiently vent cooking fumes from the main oven directly into the flue pipe and away. To obtain an equivalent facility

with the balanced flue cooker, an extractor fan has been fitted within a casing location on the rear corner of the top plate. See Fig. 2.

To obtain optimum performance of extraction, the switch **M** on the fan casing should be switched **ON** manually when the oven door is closed after loading. When cooking is finished, remember to switch power **OFF** at switch **M** to conserve energy.



The Hotplate

When the oven is in use, the hotplate will be hot enough for normal needs. The hotplate area above the main oven is used for simmering with the opposite end being the hottest.

At other times, increase the setting of the thermostat knob **D** to increase the temperature of the hotplate.

Pans and kettles must have flat machined bases. Use a wire brush to keep the cast iron hotplate clean.

Domestic Hot Water Only

The supply of domestic hot water to the cylinder is automatic and is at its maximum when the cooker thermostat knob **D** is on **No.9**, reducing as the cooker thermostat knob setting is reduced. The amount of hot water is increased if a considerable amount of cooking is performed. If more hot water is required overnight, set the cooker thermostat knob **D** to a higher setting than **LOW**, which is normally sufficient.

NOTE: IN THE CASE OF EXCEPTIONALLY HIGH DOMESTIC HOT WATER DEMANDS, IT IS RECOMMENDED THAT THE BOILER BURNER IS LIT WITH THE ROOM THERMOSTAT SET TO A LOW SETTING. THIS WILL PROVIDE A DOMESTIC HOT WATER PRIORITY SERVICE (Refer to instructions "LIGHTING THE BOILER")

When the Cooker is not in Use

During periods of the day when the cooker is not required, the cooker thermostat knob **D** should be set at **LOW** to give the lowest burning rate which will in most cases give sufficient heat to the hotplate and hot water. Use the setting that meets your needs.

Overnight

Turn the cooker thermostat knob to **LOW** which gives the lowest burning rate and will maintain an oven temperature of about 120°C (250°F). At a higher setting, the gas consumption will be higher but the oven, hotplate and domestic hot water will all be hotter.

Turn the cooker thermostat knob to **No. 9** setting in the morning to increase the hotplate temperature and minimise the time to boil a kettle of hot water.

The recommendations for the best use of the appliance are guidelines only and the respective settings of boiler and cooker thermostat knobs which best suit your requirements will be apparent with experience.

Cooker and Boiler Burner Alight – Winter Use

Cooker Burner – Use as previously described but with the following qualifications.
If the programmer is timed for early central heating facility, the main oven temperature will rise from its 120°C (250°F) idling temperature to above 200°C (400°F) after 2 hours continuous central heating. This temperature is obtained from the boiler burner flue gases and will fall with oven usage. To maintain the main oven temperature **with Central Heating on**, set the cooker thermostat knob to the following settings during cooking. This is an approximate guide as some variation occurs with the heating load on the boiler.

	Setting	Main Oven Temperatures
With Central Heating On	5	215°C (420°F)
	6	229°C (445°F)
	7	246°C (475°F)

Boiler Burner – (furthest away from the ovens).

If a programmer or clock control is fitted to the installation, read the control instructions before lighting the boiler.

Lighting the Boiler

1. Switch **OFF** the electricity supply at the wall socket.
2. Turn the boiler thermostat knob **H** (located below the cooker thermostat knob) anti-clockwise to **OFF**.
3. Turn any time clock or programmer to **ON** and move any room thermostat pointer to a high setting.

Open Flue

1. Open the outer burner door **N** adjacent to the bottom warming oven door and lift up and away the top section of the inner panel **M** (with viewing windows) to expose the boiler burner **J**.
WARNING: IF THE APPLIANCE IS HOT, USE PROTECTIVE GLOVES TO REMOVE INNER PANEL M.
2. Push in and hold boiler gas control valve knob **F** (located at the bottom of the cooker front and marked **'Boiler Pilot'** allowing a few seconds for gas to reach the boiler pilot burner **G** and light the pilot burner with a match or lighted taper.
3. Replace the top section of inner panel **M** by positioning the top section inner panel support hooks (on reverse face) through the cut-outs of the support housing). Ensure location is correct and the top section seals correctly.

Balanced Flue

1. Open the outer burner door **N** adjacent to the bottom warming oven door to expose black piezo generator knobs **S** below inner panel **R**.
2. Push in and hold boiler gas control valve knob **F** (located at the bottom of the front plate and marked **'Boiler'**) allowing a few seconds for gas to reach the boiler pilot burner **G** then depress the L.H. piezo generator button **S** repeatedly until the pilot lights.
Alternatively, the boiler burner viewing window/frame assembly may be removed by removing the two securing screws and a lighted taper passed through the aperture to light the pilot burner – **Use protective gloves when hot.**
Replace frame once pilot light is established, ensuring that it is properly located and the two securing screws are fully tightened.

3. Hold in the boiler gas control valve **F** for about 15 seconds after pilot **G** has lit so that when it is released, the pilot should remain alight. If it does not turn the boiler gas control valve knob fully clockwise and release. Wait 3 minutes and repeat sequence holding knob **F** for a slightly longer time.

Both Models

1. Switch **ON** the electricity supply at the wall socket.
2. Turn the boiler thermostat **H** clockwise to the temperature required e.g. 60°C (140°F) in mild weather and 80°C (180°F) in cold weather.
The boiler burner **J** should cross-light. Set any programmer or room thermostat to the required setting and the boiler burner will come **ON** and **OFF** automatically upon heat demand.
3. Close the outer burner door **N**.

To Turn the Boiler Off

Short Periods: Turn **OFF** boiler thermostat knob **H**
To relight turn the boiler thermostat knob to the required setting.

Long Periods: Switch **OFF** electricity supply at the wall socket and turn boiler gas control valve **F** clockwise to extinguish the pilot light.
To relight, follow procedure stated under **'Lighting the Boiler'**.

Frost Precautions

In the event of the boiler being switched **OFF** for long periods during very cold weather, the advice of the local Gas Region or Installer should be obtained.

Maintenance

It is important to have the appliance serviced once a year by a competent maintenance engineer and it is recommended that a regular servicing contract is made with the Gas Region or a CORGI registered installer.

WARNING: IF A GAS LEAK OR FAULT IS SUSPECTED, TURN OFF THE APPLIANCE AND CONSULT YOUR LOCAL GAS REGION OR INSTALLER

Annual Servicing

With normal use, a boiler/cooker annual flueway clean and burner maintenance should be carried out immediately after the end of the heating season. An additional flueway clean half-way through the heating season may be necessary in some cases. Both cooker and boiler thermostat knobs should be turned **OFF** by the User the night preceding the day of servicing so that the appliance will have cooled down by the following morning.

A HOT APPLIANCE CANNOT BE SERVICED

Cleaning

REMEMBER: BE CAREFUL OF THE HOT APPLIANCE

To keep the vitreous enamelled surface bright and clean, wipe over daily with a soapy damp cloth, followed by a clean dry duster. If milk, fruit juice or anything containing acid is spilt on the top plate or down the cooker, be sure to wipe it immediately or the vitreous enamel may be permanently discoloured. The lining of both insulating covers should be raised and allowed to cool before cleaning with a soapy damp cloth. A matt finish is best cleaned with a liquid soap on a damp sponge.

DO NOT USE ABRASIVE PADS OR OVEN CLEANERS

NOTE: TAKE CARE WHEN CLOSING THE DOOR TO LIFT THEM ONTO THE CATCH.

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