

WARNING

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Rayburn P.J.
Oil fired cooker
Kerosene model
Diesel model

Models 1992 from serial number
R0024778 until 1993
as fitted with Monoflame burner
and oven thermostat
incorporating cooking priority
feature

RAYBURN

Monoflame Model

Installation Instructions for Rayburn PJ Central Heating Cooker

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.

IMPORTANT NOTICE: Any alteration that is not approved by Aga-Rayburn could invalidate the approval of the appliance, operation of the warranty and could also affect your statutory rights.

Control of Substances - Health and Safety Important

This appliance may contain some of the materials that are indicated below. It is the Users/Installers responsibility to ensure that the necessary personal protective clothing is

worn when handling, where applicable, the pertinent parts that contain any of the listed materials that could be interpreted as being injurious to health and safety, see below for information.

Firebricks, Fluebeds, Artificial Fuels - when handling use disposal gloves.

Fire Cement - when handling use disposable gloves.

Glues and Sealants - exercise caution - if these are still in liquid form use face mask and disposable gloves.

Glass Yarn, Mineral Wool, Insulation Pads, Ceramic Fibre, Kerosene Oil - may be harmful if inhaled, may be irritating to skin, eyes, nose and throat. When handling avoid inhaling and contact with skin or eyes. Use disposable gloves, face-masks and eye protection. After handling wash hands and other exposed parts. When disposing of the product, reduce dust with water spray, ensure that parts are securely wrapped.

INTRODUCTION

The Rayburn Oil Pressure Jet is a combined cooker and hot water boiler providing central heating, domestic hot water and cooking facilities. It is available with vertical flue outlet. The appliance is fired by a pressure jet oil burner. The boiler is designed for use with a indirect cylinder on a fully pumped water system, with a pumped over run facility.

During the summer four loose fire bricks are fitted in the boiler to reduce hot water output.

IMPORTANT:

This appliance must only be used with 28 seconds commercial Kerosene to BS 2869:1988 Part 2 "Class 2"

Indirect Cylinder to BS 1566 Part 1 Must Be fitted.

If a 190 litre cylinder is to be used, then a 1.5kW dissipating radiator must be fitted.

If a 160 litre is to be used, then a 2.0kW dissipating radiator must be used.

If a 140 litre is to be used, then a 2.5kW dissipating radiator must be used.

A Fire Valve Must Be Fitted

An Inline Filter Must Be Fitted

INSTALLATION INSTRUCTIONS

The installation of the appliance must be in accordance with the relevant requirements of the current Building Regulation, current IEE Wiring Regulations and the byelaws of the local Water Undertaking. It should be in accordance also with the relevant recommendations of the following current British Codes of practice:

BS 5410 Installation of oil fired space heating and hot water supply purposes. Part 1. Boilers of rated output not exceeding 44kW.

BS 5449 Central heating for domestic premises. Part 1. Forced circulation hot water systems

Building Regulations J 1/2/3 Provision for introduction of air supply and discharge of products of combustion for appliances.

BS 4543 Specification for chimney for oil fired appliances. Part 3.

Building Regulations J/1/2/3 Provision for protection against fire and heat.

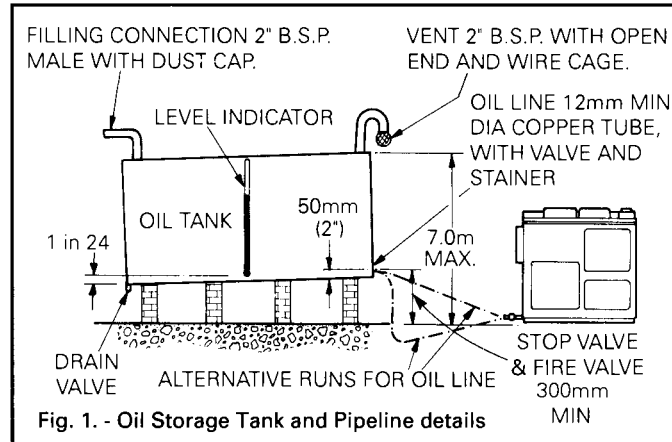
Appliance Hearth This appliance must be installed on a solid floor or base of incombustible material which is capable of supporting the total weight.

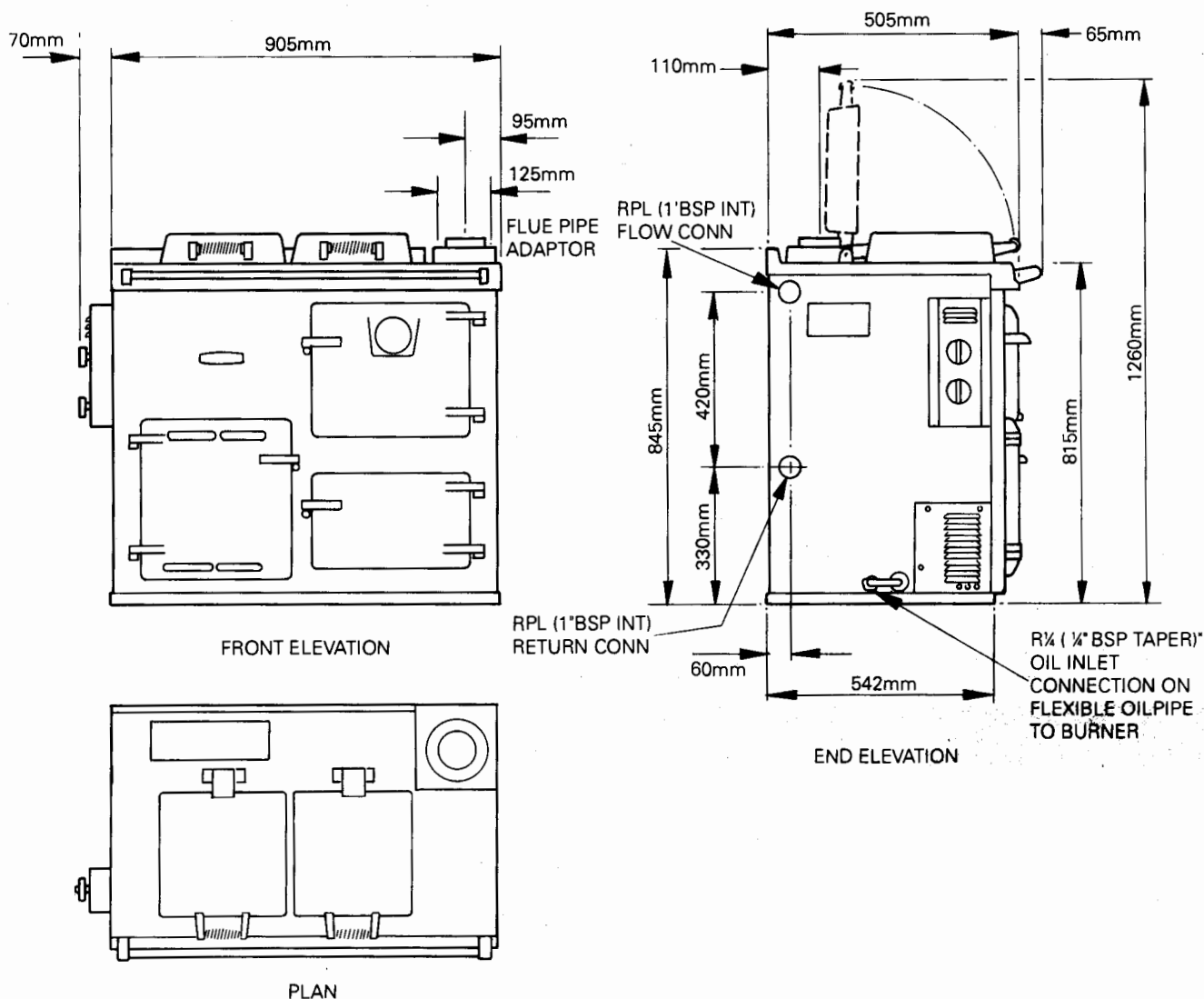
Location.

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 'Installation of Appliance'

Oil Storage (See Fig 1)

The minimum recommended oil tank size is 1400 litres (300 gallons) and the Codes Of Practice governing it's installation are covered by BS 5410. The requirements for mild steel tanks should be to BS 799 Part 5 and advice should be sought from the manufacturers for the





SPECIFICATIONS

HEAT INPUT	23.4 kW 84000 Btu/h	
OIL INPUT RATE	40cc / minute at 8.3 bar (120 lb / in²)	
HEAT OUTPUT TO WATER	HEATING MODE	COOKING MODE OVEN SET 220°C
NO BRICKS (WINTER)	60000 Btu/h 17.6 kW	23500 Btu/h 6.9kW
SIDE BRICKS FITTED	45600 Btu/h 13.4kW	12650 Btu/h 3.7kW
REAR BRICKS & SIDE BRICKS FITTED (SUMMER)	38000 Btu/h 11.1kW	10300 Btu/h 3.0kW

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 L.H. side panel.
 Oil Inlet R 1/4 (1/4 BSP Taper Ext)
 Flue Outlet 127mm (5in Int)
 Electrical Supply 240 ~ 50 Hz 5 amp Fused.

Water Capacity of Boiler

16.75 Litres (3.7 galls)

Weight of Appliance

340kg (748lb)

Burner Jet Nozzle

2.27 litres/h (0.6 u.s. Gallons/h)
 80° Hollow

Burner Pressure

8.3 bar (120lb/in²)

FUEL – COMMERCIAL KEROSENE

28 Seconds to BS 2869: Part 2: 1988 Class 'C2'

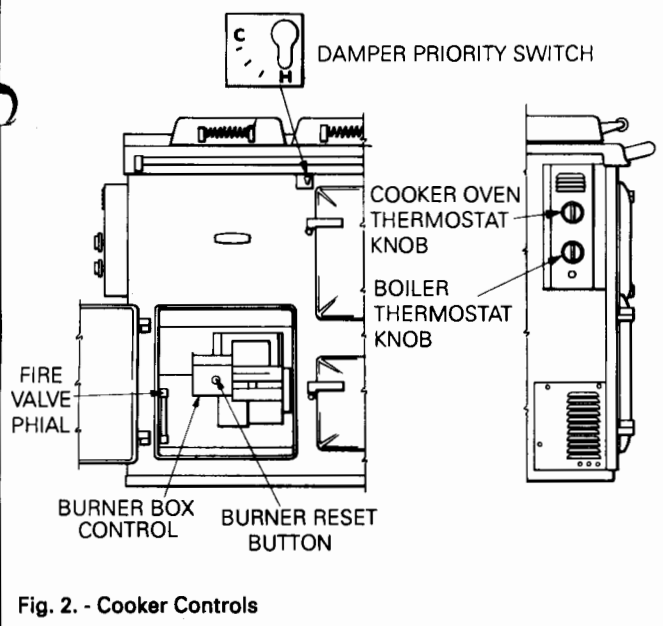


Fig. 2. - Cooker Controls

installation of Plastic Oil Tanks as an alternative consideration.

Oil Pipe Line.

The oil line from the storage tank to the appliance must be fitted with a remote acting fire valve (such as TEDDINGTON KBB C 150°f 1.5m capillary) and the heat sensing phial of the fire valve **MUST** be fitted to the clips in the burner compartment (See Fig 2). a 5-10 micron oil filter **MUST** also be fitted on the oil line, and the minimum size of the copper oil pipe line should not be less than 10mm diameter. A stop valve must be fitted near the appliance in an accessible position. The flexible pipe connection to the burner is to allow for removal of the burner without disconnection. Therefore the connection between the copper oil pipe and the burner flexible should be made as close to the cooker as possible to allow for ease of the burner removal.

Flue System - See Fig 3

Detailed recommendations for fluing are given in the current Building Regulations J1/2/3.

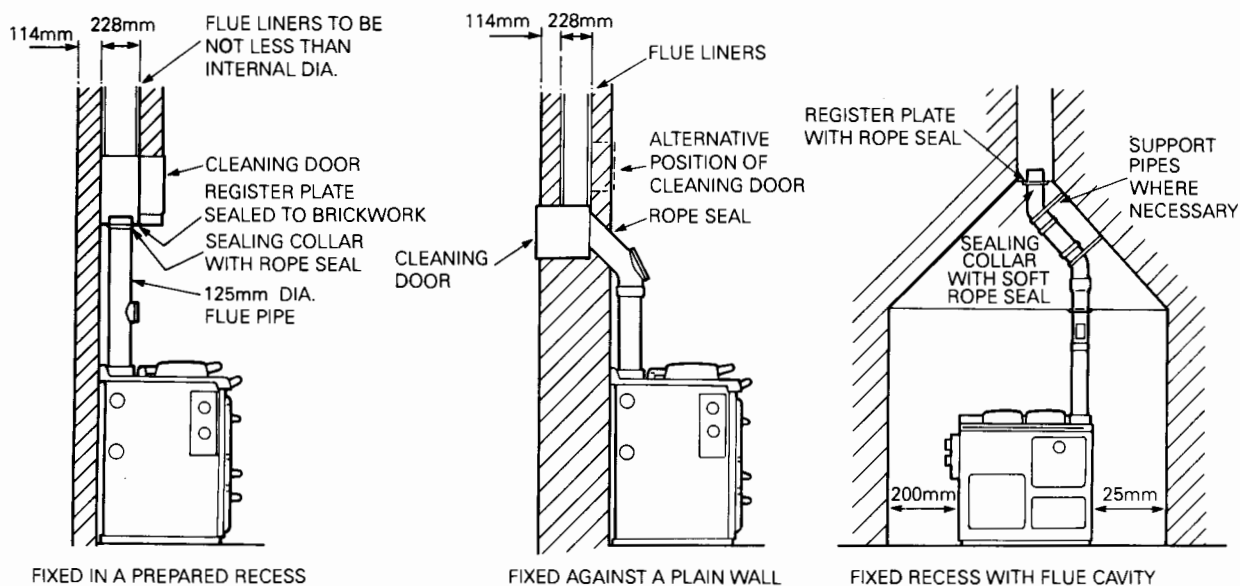


Fig. 3. - Flue Layouts

The following notes are intended to give general guidance:

The flue pipe and chimneys must be Class 1 as recommended for flue gases temperatures exceeding 260°C in Building Regulations J1/2/3 Section 4.

The cross sectional area of the flue serving the appliance must be not less than the area of the flue outlet of the appliance and be at least 4.5m high.

The flue pipe to be used must be not less than 125mm internal diameter. Flue pipes and fittings should be constructed from one of the following materials:

- Mild Steel with a wall thickness of 3mm minimum.
- Stainless Steel to BS 1449 Part 2.
- Cast Iron to BS 41.
- Mild Steel, acid resistant vitreous enamel lined to BS 1344 Part 2.

Chimneys.

Chimneys should be built of masonry or be assembled from factory-made insulated components. Masonry chimneys may be built of any masonry material, with a lining, or if flue blocks, without a lining. The chimney lining should be 150mm minimum diameter and be formed of moisture and acid resistant liners to BS 1181 with rebated or socketed joints uppermost. Alternatively, linings may be imperforate clay flue pipes as described in BS 65 or flue blocks to BS 1289 and installed to BS 6461 Part 1.

Ensure the chimney is swept over its entire height before connection of new appliance. No other appliance can share the chimney. Ensure all chimney mid-feather walls are intact and the complete chimney airtight. When confirmed, sufficient draught will be available to operate the appliance correctly.

Chimney Termination

All chimneys should terminate at least 600mm above the roof level in accordance with current Building Regulations and statutory requirements as outlined in BS 6461: 1984 Part 1 and BS 7566 Parts 1 to 4.

Chimney Cleaning

Ensure there are accessible airtight flue cleaning doors in order to obtain cleaning access to the complete chimney. Providing the appliance is operating correctly, an annual chimney flue cleaning will suffice, but if in doubt, arrange for a half yearly clean, preferably at the beginning/end of the central heating season.

Chimney Draughts

A well sealed, tall exposed chimney on a hill, is an instance where generated draughts could be in excess of 6.0mm w.g. Should this occur, a flue stabiliser must be fitted either in the flue pipe or chimney, but in the same room as the appliance, and adjusted accordingly.

Air Supply

Detailed recommendations for air supply are given in the current Building Regulations J/1/2/3-Section1. The following notes are intended to give general guidance:

Effect of Extractor Fan

Avoid, if possible, the installation of an extractor fan in the same room as the appliance or the room where the permanent vent is located. Compensating extra air inlets must be introduced equivalent to the capacity of the fan when fitted.

WATER CIRCULATION SYSTEM

In a combined central heating and domestic hot water system the hot water storage vessel must be of the indirect cylinder to BS 1566 Part I: 190 litre (40 gallon) with 1.5kW dissipating radiator, 160 litre (35 gallon) with 2.0kW dissipating radiator, 140 litre (30 gallon) with 2.5kW dissipating radiator.

A HEAT DISSIPATING RADIATOR OF THE CORRECT SIZE **MUST** BE FITTED.

The hot water storage vessel should be insulated preferably, with not less than 75mm 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 spaces 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 the 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.

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° - 35°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.

HEATING CONTROLS

Hot water systems should be in accordance with the relevant recommendations given in CP 342 - Part 1.
*CYL STAT OK
NO ROOM STAT. - TRV.*
Independent temperature controls including a time-switch are recommended for providing comfortable room temperatures. The boiler is suitable for use with a 2-channel controller giving separate control of central heating and cooking.

IMPORTANT: A heat dissipating radiator MUST be fitted off the main flow circuit (preferably in bathroom) to dissipate excess heat from the appliance. (See Water Circulation System and Fig.4 for size).

COOKING CONTROLS

An optional external electrical programmer is available, which will provide a timing feature to switch the main oven to the desired temperature setting as and when required. Your Rayburn stockist can supply a programmer if required.

Circulating Pump

It is recommended that the selected pump be of a proprietary type and manufacture, 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. 4.

The boiler section pressure loss curve, see Fig. 5 indicates the loss of head across the boiler section and should be considered when selecting the correct pump size.

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.

ELECTRICAL SUPPLY

Wiring external to the appliance must be installed in accordance with the current IEE Wiring Regulations and any local regulations which apply. The appliance is supplied for 220/240 volt ~ 50 Hz and fuse rating of 5 amps. The method of connection to the mains electricity supply should 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 and controlled by a 30 mA Residual Current Circuit Breaker (RCCB). Alternatively, a fused double-pole switch having a contact separation of at least 3mm 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. 6.

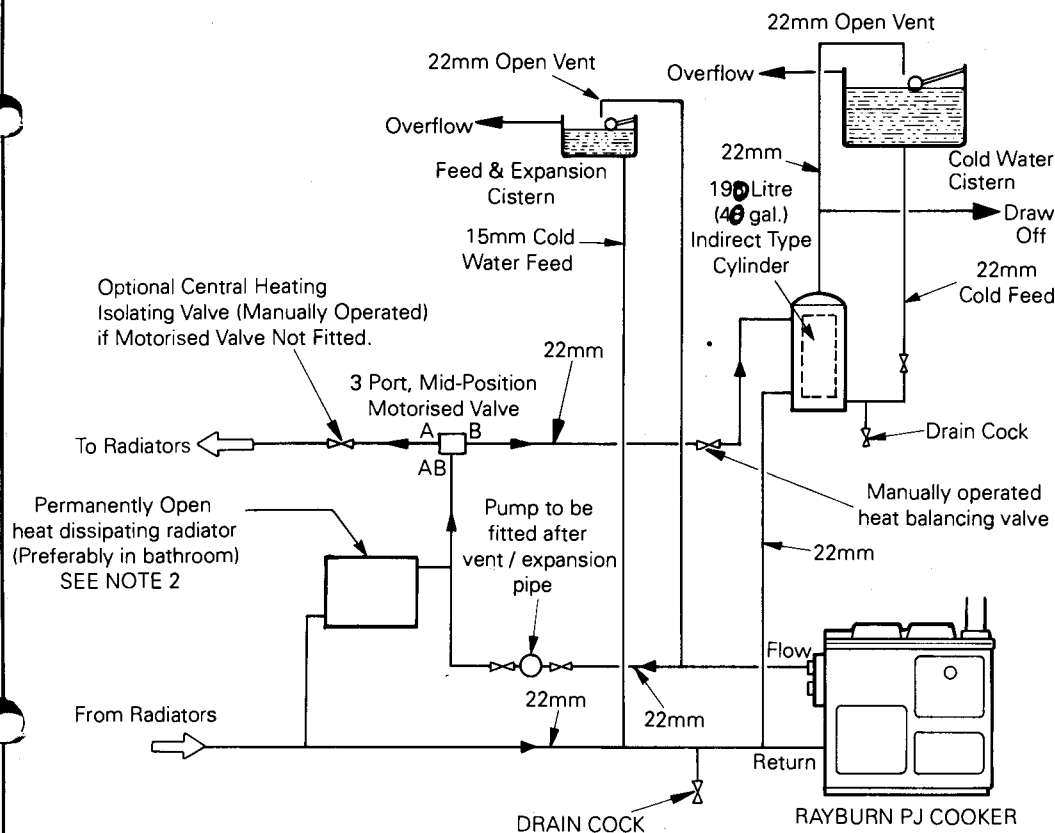


Fig. 4. - Typical Central Heating/Hot Water System

NOTES:
1. MINIMUM STATIC HEAD ABOVE HIGHEST POINT OF HEATING SYSTEM MUST BE SUFFICIENT TO PREVENT SUB-ATMOSPHERIC PRESSURE AT HIGHEST POINT WHEN PUMP IS IN OPERATION.
THE MINIMUM STATIC HEAD MUST BE AT LEAST $\frac{1}{2}$ "H" WHERE "H" IS THE MAXIMUM HEAD DEVELOPED BY THE PUMP.

2. THE RECOMMENDED HOT WATER SYSTEM IS A 190 LITRE (40 GAL) MINIMUM CAPACITY INDIRECT CYLINDER INSTALLED WITH A 1.5kW MINIMUM RATING HEAT DISSIPATING RADIATOR (PERMANENTLY OPEN) IF A SMALLER SIZED CYLINDER IS FITTED THEN A LARGER SIZE OF RADIATOR WILL BE NEEDED. eg 160 LITRES (35 GAL) + 2.0kW RADIATOR or 140 LITRES (30 GAL) + 2.5kW MINIMUM SIZED RADIATOR.

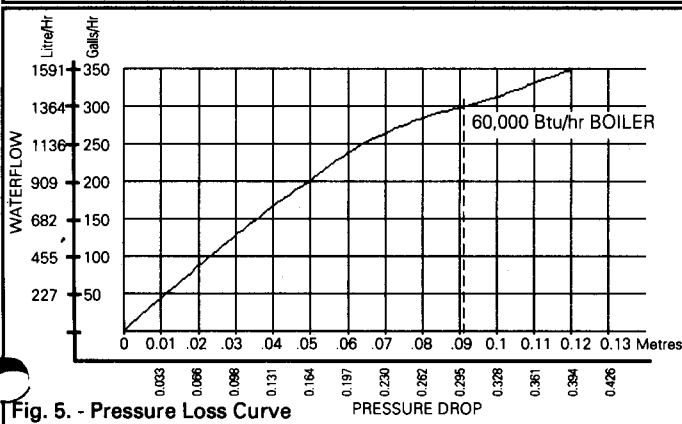


Fig. 5. - Pressure Loss Curve

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.

- Between wall and LH side of appliance 200mm
- Between wall and RH side of appliance 25mm
- Above the raised insulating cover handle 60mm

In addition, adequate clearance must be available at the front of the appliance to enable it to be operated and serviced.

Preliminary Installation

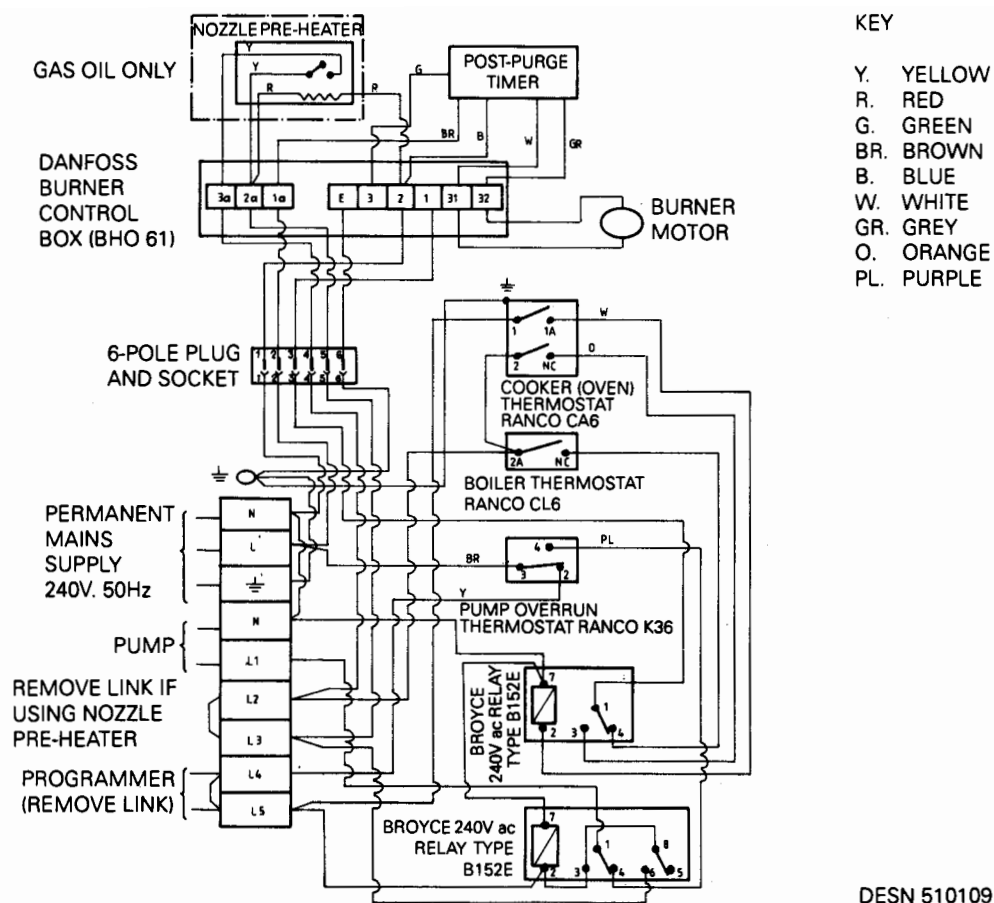
The appliance is delivered in a fully assembled condition with the exception of the following items which are supplied separately packed and require assembly.

Appliance rear distance bracket:- **If the rear wall is of combustible material, there must be an air gap of 25mm between the wall and rear of appliance. Fit rear distance bracket as shown in fig.7.**

Wherever possible it is recommended that skirting board is 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 gap. (Combustible walls excepted). Where the cooker is to stand in a recess or against a wall which is to be tiled, in no circumstances should the tiles overlap the cooker top plate.

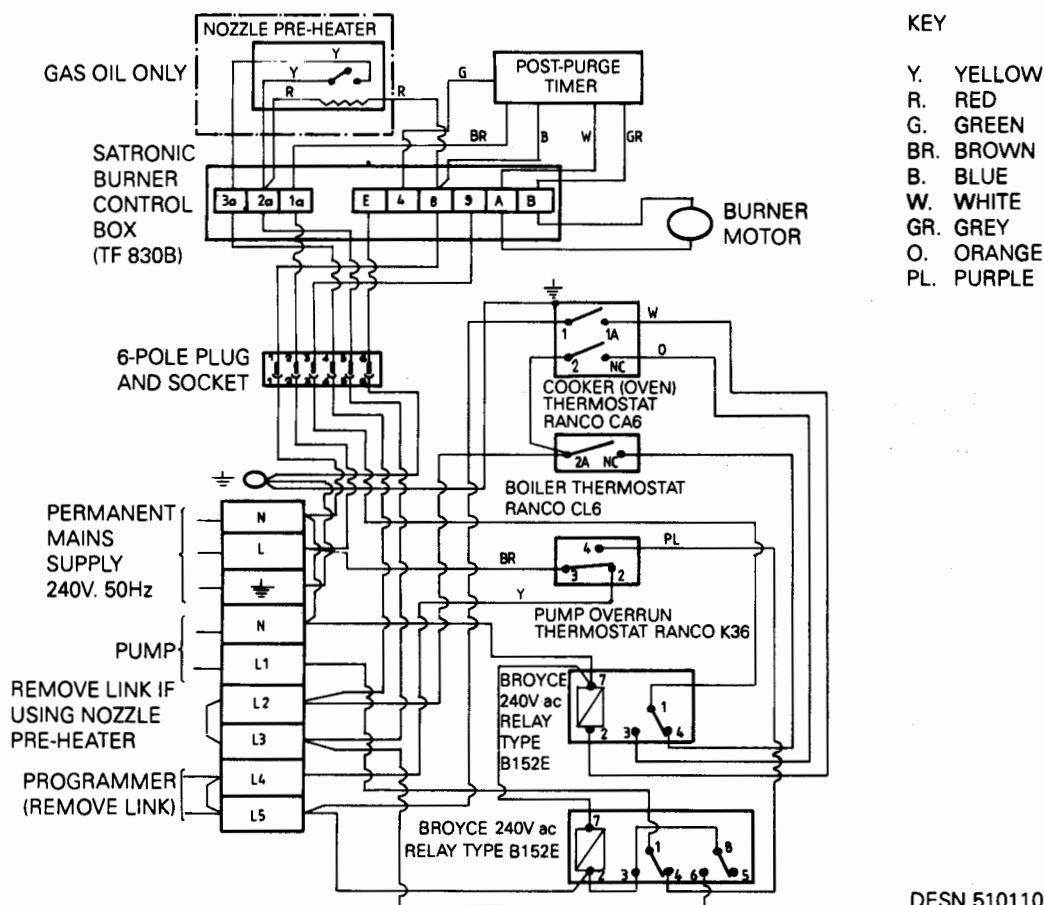
Site Location

1. Check that the hearth is level, then move the appliance from its transit wooden pallet, and position it with its back against the wall and in its intended position for flue connection.
2. Locate and fit flue pipe into socket of flue pipe adaptor, sealing joint with fire cement. **NOTE:- Ensure four drain holes inside flue socket are clear of cement.**
3. Connect and terminate the flue system in accordance with standard practice.



DESN 510109

Wiring Diagram for Danfoss Control Box



DESN 510110

Wiring Diagram for Satronic Control Box

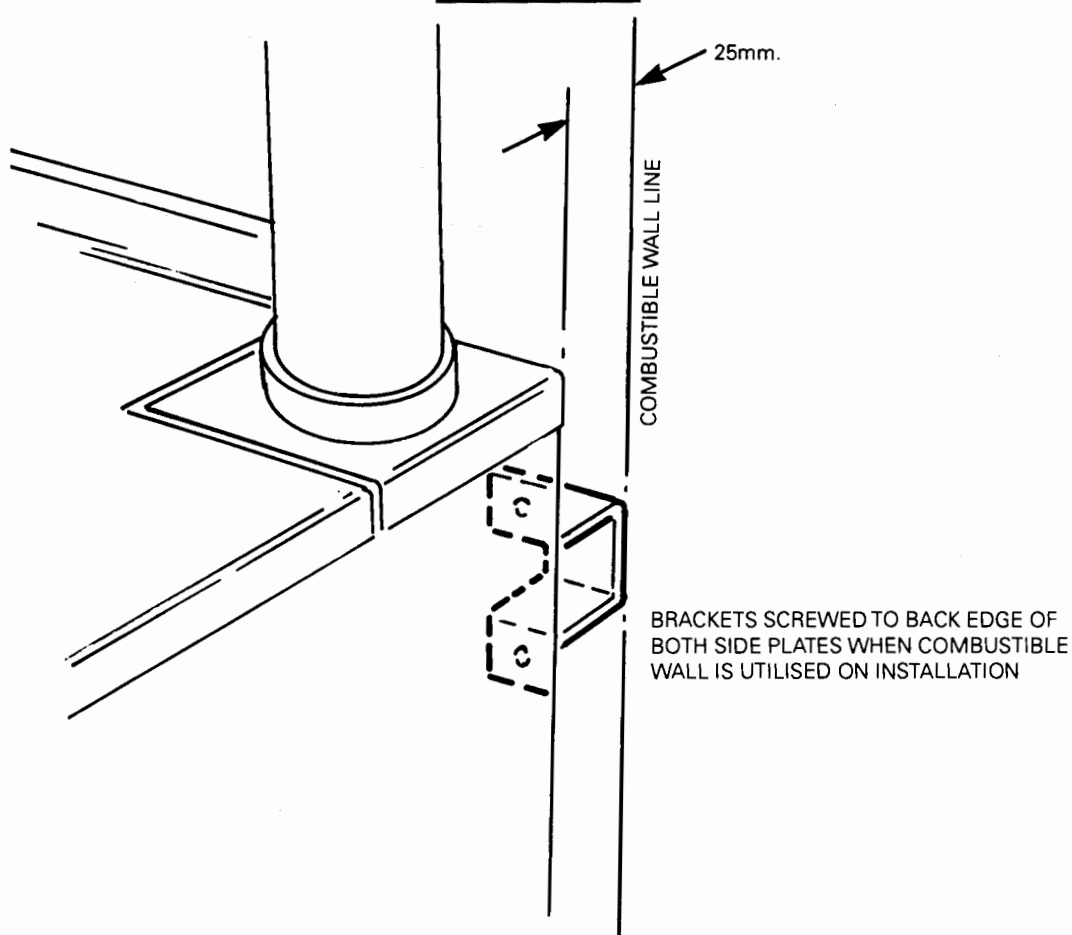


Fig. 7. - Clearance for Combustible Wall

4. Lift up the insulating covers and remove the hot plate (see fig. 9 under commissioning instructions). The removal will expose the two brick baffles (see fig. 10 under commissioning instructions).

5. Remove the enamelled cover behind the L.H. insulating lid and remove sealing plate (twist clip on L.H. side) and check that boiler flue baffle is correctly positioned (see fig 8). Reassemble sealing plate and enamelled cover.

Check that the two brick baffles are correctly positioned i.e. slide both towards the right leaving a passage for flue gases on the left hand side only. These baffles are permanent but are removable to allow for the fitting of the loose summer firebricks.

For summer use it will be necessary to fit the set of loose fire bricks supplied with the cooker (see under commissioning instructions).

After checking the firebrick, replace the hot plate ensuring it seals around its edge.

Electrical Connections

A 240V~50Hz electrical supply is required near to the appliance. The appliance is supplied with a 0.75m²-3 core PVC x 3 metres long replaceable cable which must be connected as described under 'Electrical Supply'.

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 a 3 pin plug, observe the following recommendations:

1. 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 $\perp$ 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 9-way terminal block and is intended to provide a power supply via timed switch or programmer. The circulating pump should be connected to L1 and Neutral N (see fig. 6) on the terminal block. If a programmer is to be used, the link between L4 & L5 MUST be replaced by the switch connections.

IMPORTANT:- The wiring from the pump must be fed through the grommet adjacent to the cable cord and clamped accordingly.

Fully Pumped System

The domestic hot water flow pipes are pumped, and a pumped overrun facility is fitted. See Fig.4.

Water Circulating System.

The whole of the system should be thoroughly flushed out with cold water without the pump fitted, the system should be fitted and air locks cleared. Vent all heat emitters and check for water soundness.

Oil Supply Connections

The oil supply connections between the storage tank and the burner should be run in copper, steel or aluminium pipe. Galvanised pipes and fittings should not be used. All pipework and fittings must be oil tight and screwed joints should be made good with an oil resistant compound.

The supply should terminate close to the burner with an Isolation valve, Fire valve, and filter, and approximately the last ½m should run in flexible pipe to facilitate moving the burner away from the appliance during servicing.

The size and arrangement of pipework will depend on the distance and height of the storage tank in relation to the oil pump inlet on the burner.

WINTER AND SUMMER FIRE BRICK POSITIONS

The appliance is provided with a set of fire bricks which have to be fitted in the boiler once the heating season is over to reduce the heat transfer to the water when central heating is not required. **IMPORTANT:- To fit the bricks turn both thermostats off and disconnect mains supply including programmer to prevent burner firing.**

Lift out the hot plate (see Fig. 9). Carefully remove the two baffle bricks which are fitted under the hot plate by separating them and lifting at the front (see Fig. 10).

Now fit the two rear Summer bricks by placing the rectangular brick with the rebate to the bottom in the channel welded on boilerface above the rear flue outlet. Fit the 'L' shape rear Summer brick by positioning on floor of combustion chamber and touching brick already fitted (see diagram 11). Locate back brick retaining bracket in groove in boiler to retain bricks in position at top. When located, slide both bricks to the right hand side.

The left hand side summer bricks stand on the base of the combustion chamber. Slide small side fire brick in position. The front side brick is secured by a removable stainless steel bar located on brackets welded to boiler (Fig. 11).

When the summer bricks have been secured replace the top baffle bricks, right hand side first, then the left hand

side. Finally move both bricks together to the right leaving a passage for the flue gases on the left hand side only. Replace the hot plate ensuring it seals around its edge.

COMMISSIONING

The air control is pre-set at the factory, however small adjustments may be necessary to suit site conditions (See Fig. 13)

Bleed Air from Oil Supply

Disconnect the flexible oil pipe at the pump inlet, open the stop valve slowly and run off some oil into a receptacle to establish an air free supply to the pump. Remake the connection oil tight and leave valve open.

Fit Pressure Gauge (see Fig. 12)

Remove bleed screw from pump and fit an oil pressure gauge with R 1/8 connection, to check the pump output pressure.

Electrical Installation

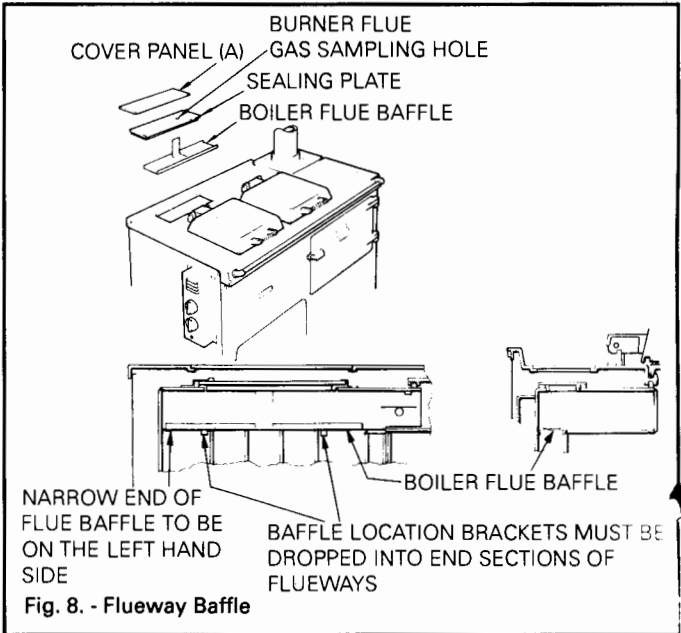
Checks to ensure electrical safety should be carried out by a competent person.

Switch on Electricity

Turn the oven thermostat to 9. The burner should start and run on pre purge for 7 to 15 seconds, with the ignition spark energised, before the solenoid valve opens admitting oil and allowing it to fire. Until all the air from the oil pump is flushed out there may be some flame instability resulting in the burner locking out as indicated by the signal light in the re-set button of the control box (see Fig. 2). In this event, wait at least one minute, then press the re-set button to re-start.

Vent the Oil Pump (see Fig. 12)

Whilst the burner is running, vent air from the pump by slackening the pressure gauge connection sufficient to allow air to bleed out. When bubble free oil seeps out, re-tighten.



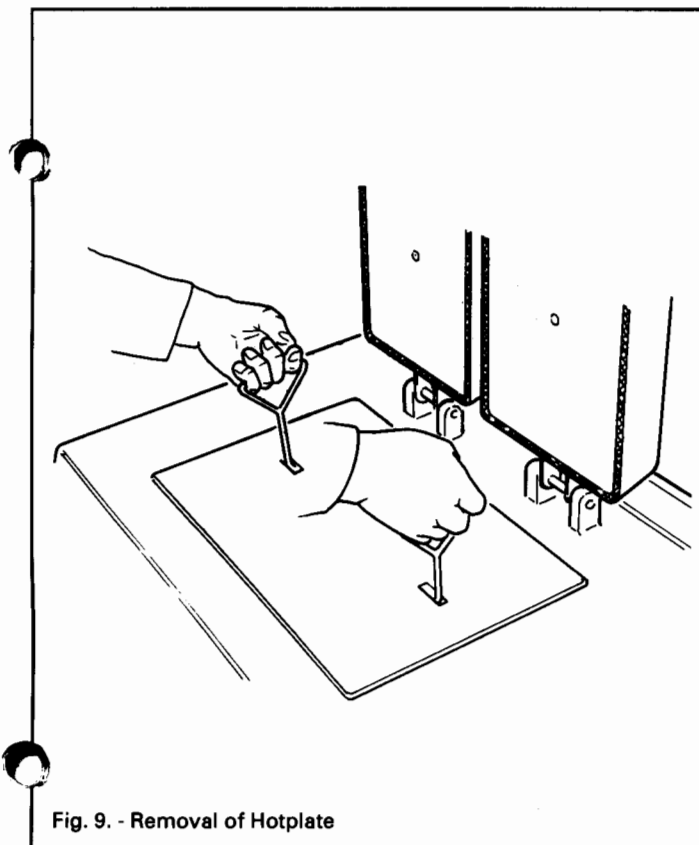


Fig. 9. - Removal of Hotplate

Adjust Oil Pressure (see Fig. 12)

Switch on the burner and check the oil pressure on the pressure gauge.

If the pressure gauge is not indicating the correct reading then adjust the pressure by turning the pressure regulator (1) clockwise to increase, or anti-clockwise to decrease the pressure until the pressure gauge reads 8.3 bar (120lb/in²).

To Set Combustion Air (see figs. 8,9 & 13)

Switch off the burner, disconnecting from electricity supply. **IMPORTANT:- Ensure that outer burner door is closed during setting procedures, and that only the baffle bricks are fitted.**

Remove the pressure gauge and screw in bleed screw. Switch on the burner and set flue damper priority switch to H (Heating).

Remove the enamelled top plate cover panel (A) behind the L.H. insulating cover where a plugging screw will be seen. Remove this screw and insert sensing end of portable indicator to check the CO₂ (Carbon-Dioxide) level. Adjust the burner air intake until 11.5 % CO₂ of flue gases is recorded in the indicator.

Check smoke

Remove the CO₂ indicator and using the same hole for flue sampling insert the sensing end of Baccarach Smoke Pump and check that the smoke in the flue exit does not exceed No.2 on the scale.

Check Ancillary Controls

Before leaving the site, check that any thermostats or other safety limit controls are working correctly and are capable of switching the burner off.

Check the operation of the Control Box. In the event of flame failure the control box will cut off oil supply by closing the solenoid valve. The re-set button on the box

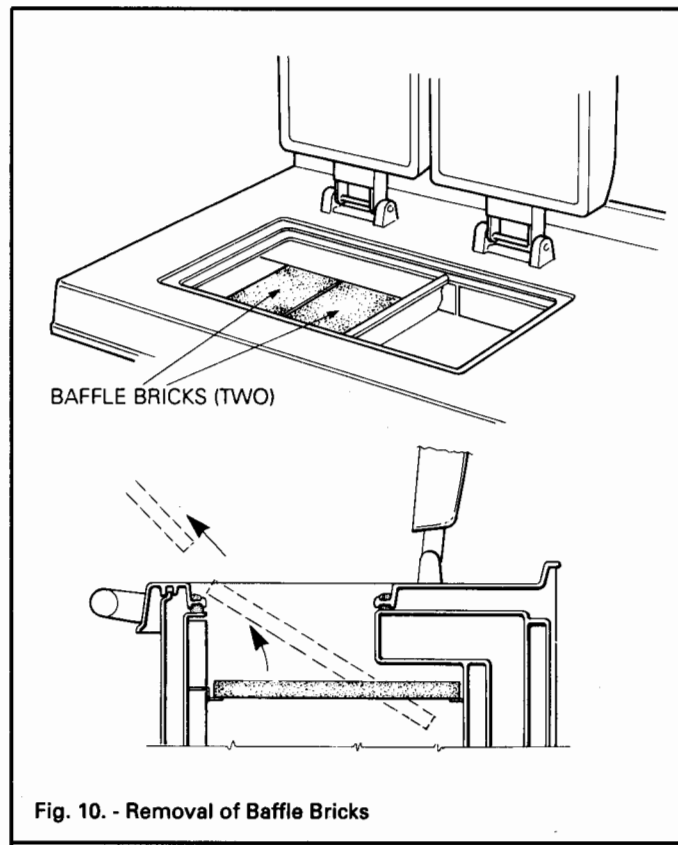


Fig. 10. - Removal of Baffle Bricks

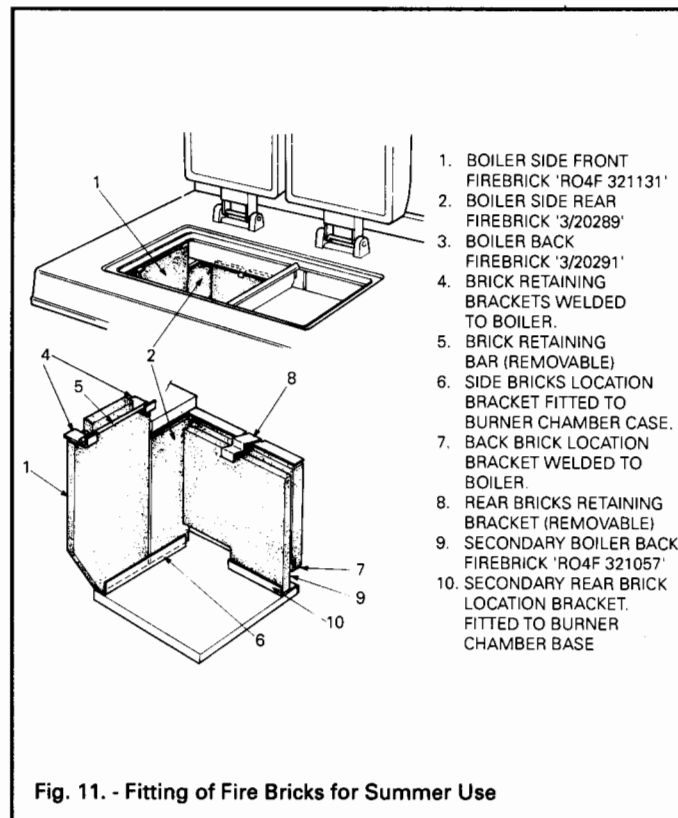


Fig. 11. - Fitting of Fire Bricks for Summer Use

will then be illuminated. **Wait 1 minute before re-setting the control Box.**

Boiler Control Check

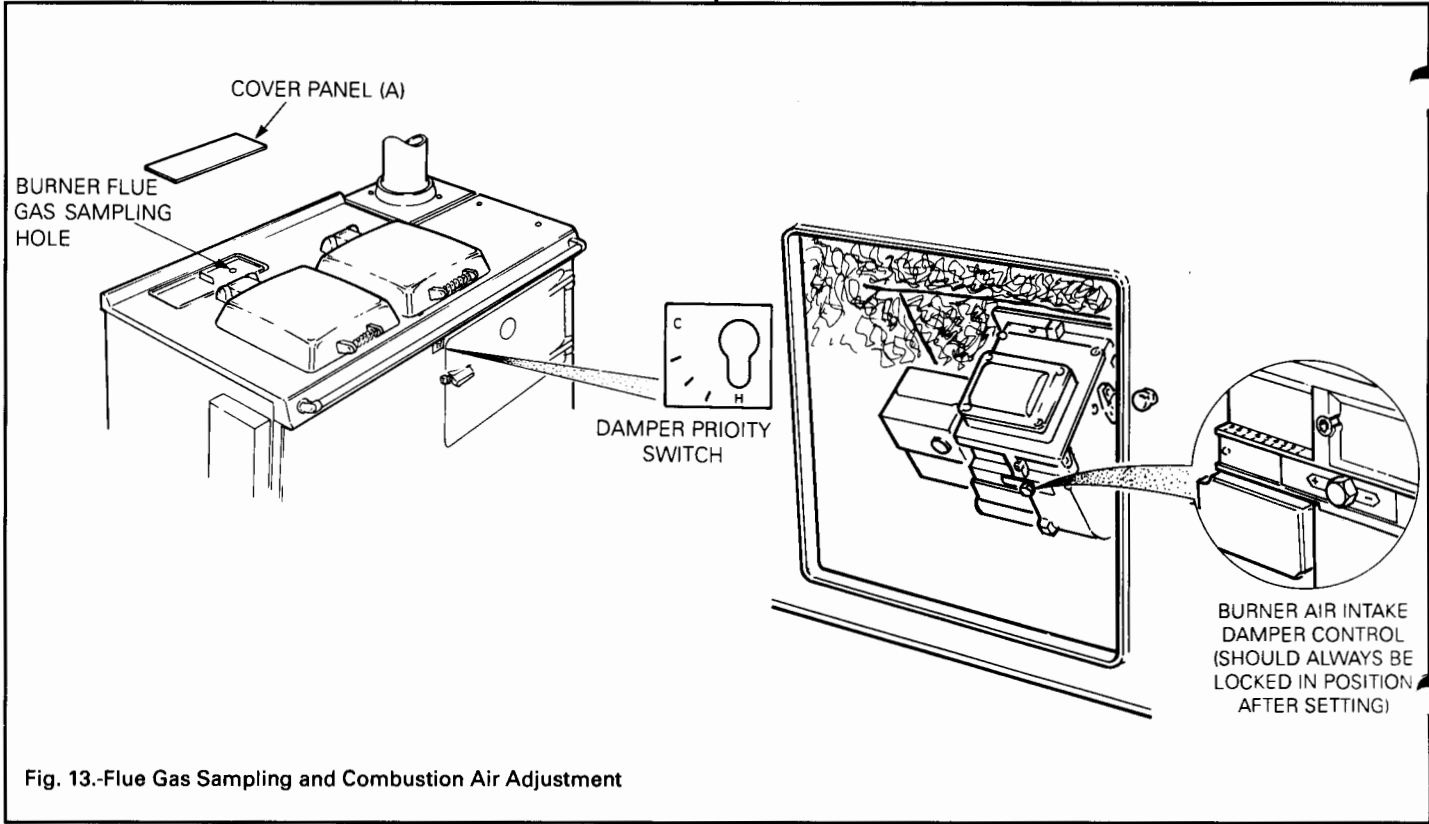
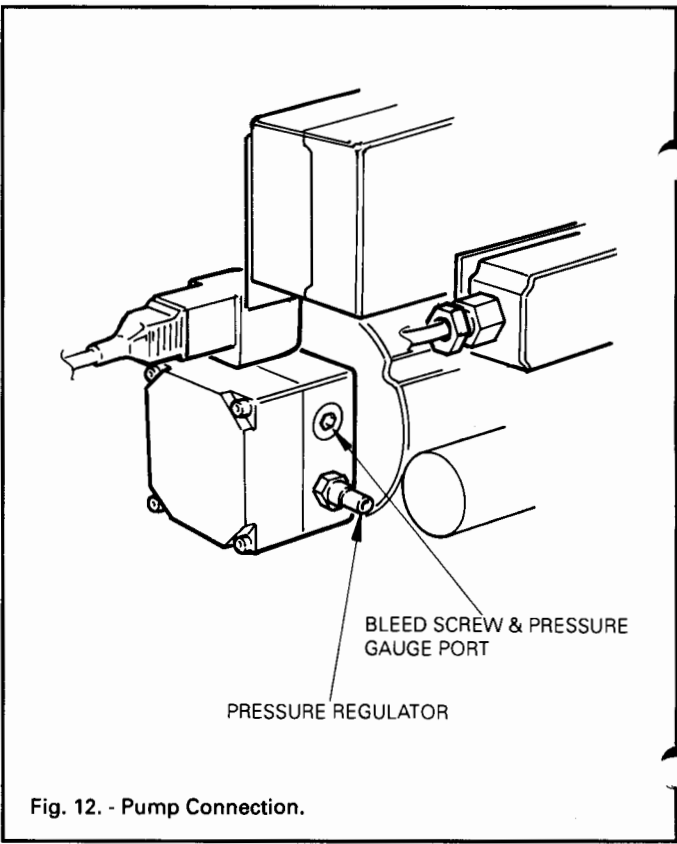
Check that:

1. The boiler system is full of water and all valves are fully open
2. Any programmer or time switch is set at continuous heating.

3. Ensure the electricity supply is ON, that the pump is running and the boiler thermostat set at 80°C (180°F).
4. Allow the heating system to warm up then set the pump adjuster to maintain a boiler 'flow and return' temperature differential of 10°C-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. 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 heat dissipating radiator is achieved when supplying DHW only.
5. When the water system reaches working temperature check that the boiler thermostat operates satisfactorily. Check that any programmer or time switch are fully operational.
6. 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

1. 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.
2. Advise the User that, for continued efficient and safe operation of the appliance, it is important that adequate servicing is carried out at regular 6 monthly intervals.
3. Hand the Operating Instructions to the User and demonstrate the correct operation of the appliance and system controls.
4. Leave installation/servicing instruction with user.



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INTRODUCTION

Thank you for buying a Rayburn appliance. To get the best from it, please read this leaflet and carefully follow the instructions before using your Rayburn for the first time.

Your Rayburn oil pressure jet cooker has been designed to provide cooking, central heating and domestic hot water when you require it. It is designed to operate intermittently.

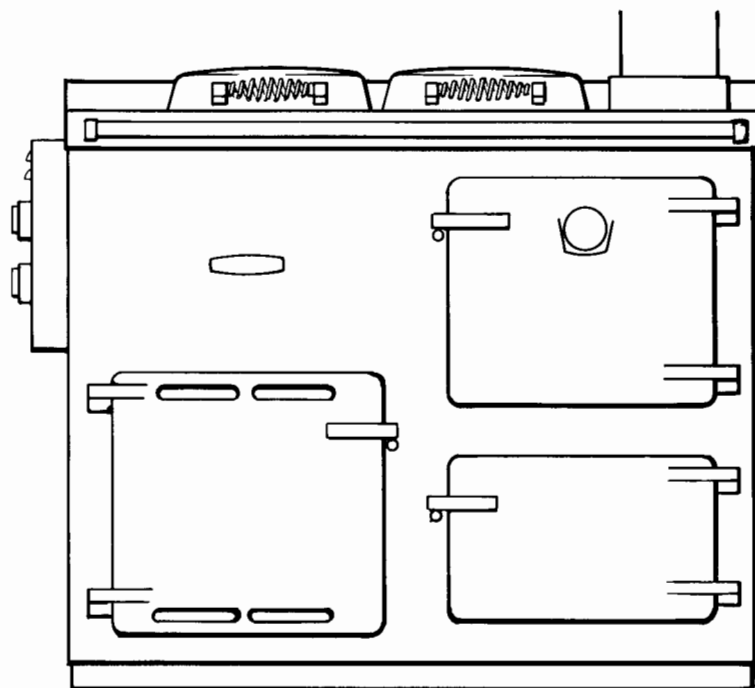
The Rayburn PJ cooker burns 28 second Kerosene to BS2869:1988 class 'C'.

An optional Rayburn Programmer is available from your Rayburn Stockist, which will control either the cooking or heating functions of your appliance.

A single burner provides heat for cooking, central heating and domestic hot water. A priority switch situated in the centre of the front plate, just below the top plate, diverts the hot flue gases either towards the cooker or the boiler. Position C is for cooking and position H is for heating. The priority switch should normally be left in position H except when cooking is in progress. (see fig 1).

You will find supplied with your Rayburn the following:

- 1 solid shelf
- 2 grid shelves
- 1 meat tin
- 1 cookbook
- Guarantee Registration



COOKING

Turn cooker/heating priority switch to position C. (see fig 1), using oven gloves if the Rayburn is in use.

OVEN & HOTPLATE CONTROL.

The oven & hotplate temperature is controlled by the oven thermostat control knob situated at the top left hand side of the appliance. (see fig 1). Turning the control knob clockwise increases the temperature, using this control also gives you hot water.

THE HOTPLATE.

The single hotplate of your Rayburn is graduated in temperature, the left hand side being hotter than the right hand side. Just slide pans to a hotter or cooler area depending on whether boiling or simmering is required. The hotplate temperature is also variable, depending upon the setting used; the higher the setting the hotter the hotplate.

Made of thick cast iron, the hotplate is machined flat. In order to ensure perfect contact and even heat distribution it is recommended that all pans and kettles used have thick flat machined bases. Pans should also have tight fitting lids for greatest efficiency.

Keep the insulated hotplate covers down when the hotplate is not being used to conserve heat. If the programmer is not in use turn the thermostat knob to the setting required to increase the hotplate temperature and minimise the time to boil a kettle. The hotplate gains in heat quicker than the oven, so it is first to react to an increase in the setting.

THE OVEN.

The oven thermostat control knob is marked 'OFF' then '1' to '9'. A temperature guide is shown below.

NOTE: Due to the varying operating demands on the cooker the thermodial temperature relative to thermostat knob is given as a guide only.

THE STORAGE COMPARTMENT.

Below the oven is a storage compartment, useful for keeping the meat tin, cake tins, etc. Although not a cooking oven when the Rayburn is on for any length of

time (such as for a traditional sunday roast) plates can be warmed in the top half of this compartment.

SETTING	APPROXIMATE MAIN OVEN TEMPERATURE	APPROXIMATE HEAT UP TIME FROM COLD	
		SUMMER	WINTER
1	135°	35mins	45mins
2	140-160°C (284-320°F)	↓	↓
4	170-190°C (338-374°F)		
6	195-215°C (383-419°F)		
8	220-240°C (428-464°F)		
9	234-255°C (455-491°F)	60mins	90mins

RAYBURN COOKBOOK.

The cookbook supplied with your Rayburn PJ central heating cooker is generic to all Rayburns. When following the recipes consult these operating instructions to ascertain which thermostat setting is required and other details relevant to the PJ.

HOT WATER.

When the cooker is used there is an additional bonus in that hot water will always be produced. It is, therefore, not necessary to pre-heat the domestic hot water before cooking.

When all the bricks are removed for winter use, and the appliance is operated in the cooking position, more hot water will naturally be produced to keep your home warm and cosy. It will therefore be necessary to keep the radiators on to prevent the burner cutting out as the manual overheat thermostat operates.

Auto

During summer operation the heat dissipating radiator fitted to your central heating system must be open to allow the circulation of hot water generated during cooking.

Prolonged summer cooking may necessitate the opening of an additional radiator to allow continued operation of the cooker.

In summer conditions during prolonged cooking periods with no domestic hot water being used, the temperature of the hot water will rise. Therefore caution should be used when using water for the first time.

COOKING CHART

	Temp	Shelf	Approximate Time
Scones	210°C/410°F	2	10-15 mins
Small Cakes	180°C/350°F	3	15-20 mins
Victoria Sandwich	180°C/350°F	3 + 5	20-30 mins
		OR	(Move lower cake up when top cake is cooked)
		4	20-30 mins
			(Both cakes on one shelf)
Semi-rich fruit cake	150°C/300°F	4	2 hours
Shortcrust-tartlets	200°C/400°F	2 or 3	20 mins
Shortcrust Pie	200°C/400°F	3	45 mins
Quiche	200°C/400°F - 220°C/425°F	Floor	45 mins
Puff Pastry	210°C/410°F - 220°C/425°F	2 or 3	15 mins
Meringues	120°C/240°F	5	1½ - 2 hours
Casseroles	120°C/240°F	4 or 5	3 hours or more
Bread-rolls	210°C/410°F - 220°C/425°F	2	15-20 mins
Bread-loaf	210°C/410°F	4 or 5	35 mins
Soufflé	180°C/350°F	4	30 mins

Shelf positions are counted from the top downwards ie: top shelf position is number 1.

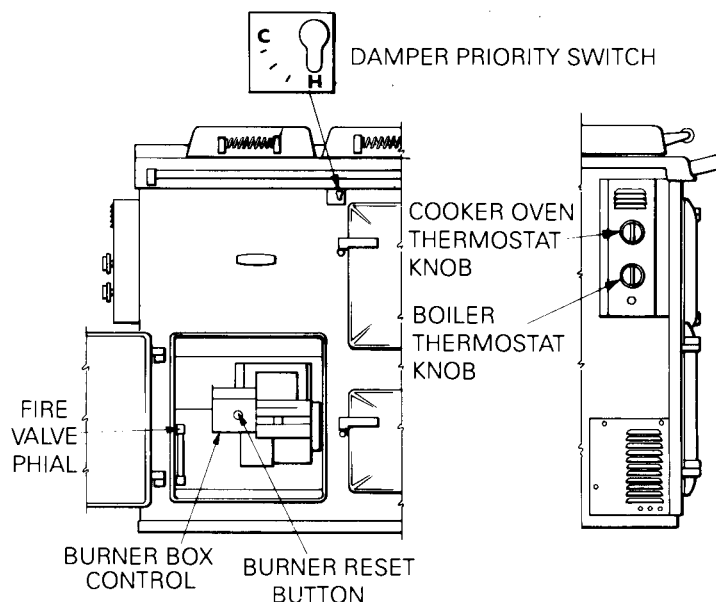


Fig 1. Appliance Controls

More flexible use of the appliance is achieved by adjusting the damper priority switch to a variable position between 'C' and 'H', whilst cooking on colder days, to allow more heat to the radiators. Always cook using the oven thermostat control.

COOKING HINTS

The oven is indirectly heated from outside by hot gases from the heat source so that no flame or elements within the oven means full use can be made of the whole cooking space.

The oven is slightly hotter towards the top than the bottom. At low heat the oven can be used for long slow cooking such as casseroles, stock, soup, ratatouille, curries, meringues, crème caramels, rice puddings etc., all of which benefit from gentle slow heat, and as the oven is vented into the flue, cooking smells disappear to the outside.

One of the many benefits of the cast iron oven is that the floor of the oven is hotter than that of a conventional cooker. No need to bake quiche pastry cases 'blind' just place the flan dish on the oven floor for 'soggy-free' pastry. When the oven is hot, the floor of the oven can be used for shallow frying (a cast iron dish is recommended) with the added advantages that fat splashes are carbonised, so cleaning is minimised and frying smells are taken away through the flue.

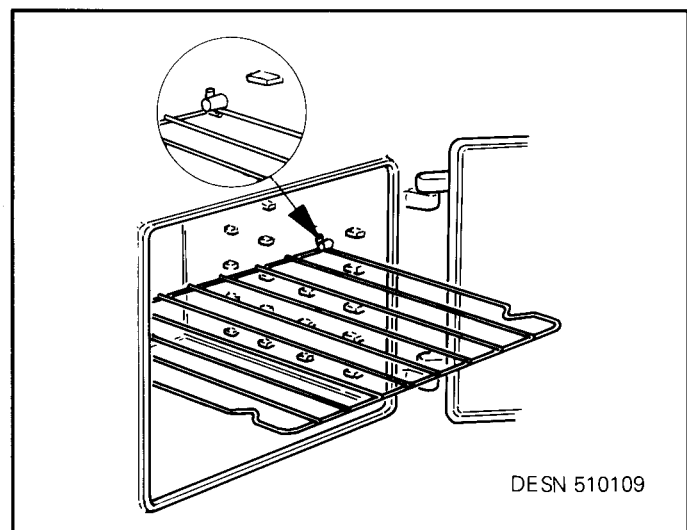
For perfect baking results, turn food during cooking.

The top of a hot oven is where grilling takes place, using the meat tin. Arrange food to be grilled on a grill rack and slide onto the top set of runners of the main oven. (A Rayburn grill rack can be obtained from your stockist). The thermodial temperature gauge on the oven door is a guide to the internal oven temperature. Remember though, on opening the door temperature will appear to drop, do not worry, close the door and after a few minutes the oven temperature can be read again. Cast iron retains the heat well so you can peep at a cake or soufflé to see how it is cooking without it sinking.

As you have probably realised, the meat tin supplied with your Rayburn fits the oven size, hanging directly from the runners, so leaving the grid shelves free for other dishes. The oven grid shelves are designed to be non-tilt and should be fitted with the upstand to the top and at the back, so when pulled forward the shelf cannot come right out.

NOTE: LOCATION OF OVEN GRID SHELVES

To ensure the correct operation of oven grid shelves, ensure they are inserted as shown.



DESN 510109

The solid shelf can be used as a baking sheet or as a heat deflector. If the oven is too hot or food already in the oven is beginning to over-brown, slide the solid shelf above the food. To be effective, this shelf should be stored out of the oven so that it is used from cold. You will find with prolonged use of the heating mode that some heat will be transferred through to the oven. This oven heat can be made use of for less critical cooking, without turning on the cooker control knob.

Further accessories (extra meat tins, shelves, solid shelves) and a grill rack are available from your stockist. **NOTE: TAKE CARE WHEN CLOSING THE DOORS TO LIFT THEM ONTO THE CATCH. IT IS NOT ADVISABLE TO PUT VERY WET CLOTHES ONTO THE HAND RAIL AS THIS MAY CRAZE THE ENAMEL.**

HEATING

The operation of the boiler is automatic and controlled by your central heating control. The temperature of the hot water supplied can be adjusted by means of the boiler thermostat control knob. The boiler can be turned off using this knob. Turn cooking/heating priority switch to position H (using oven gloves), except when cooking is in progress.

The boiler thermostat control knob is situated on the left hand side of the appliance beneath the oven thermostat knob. (see fig 1).

Turning the control knob clockwise will increase the temperature of the boiler which will provide hot water to the radiators and to the hot water cylinder.

Frost Precautions

In the event of the boiler being OFF for long periods during very cold weather, the advice of your installer should be obtained.

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 polish with 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. Keep a damp cloth handy, while cooking to wipe up spills as they occur, so they do not harden and become more difficult to remove later. If spills do become baked on a cream cleanser can be used. For stubborn deposits a soap impregnated pad can be carefully used on the vitreous enamel. Cleaners carrying the VEDC (Vitreous Enamel Development Council) approval logo can be used on your Rayburn.

In the oven, spills and fat splashes are carbonised at high temperatures; occasionally brush out with a stiff brush. The oven door can be removed for cleaning - **do not** immerse in water, and shelves can be soaked and cleaned with a cream cleanser.

Both insulating covers should be raised and allowed to cool before cleaning with a soapy damp cloth. Use a wire brush to keep the cast iron hotplate clean. General cleaning is best carried out when the Rayburn is cold.

DO NOT USE ABRASIVE PADS OR OVEN CLEANERS CONTAINING CITRIC ACID ON ENAMELLED SURFACES.

WINTER AND SUMMER USE

Although the Rayburn PJ is designed to be used intermittently, during cold spells, if you prefer, it can be run continuously on a low setting and turned up as required.

During the summer months it is necessary to fit loose fire bricks in the boiler to reduce the amount of hot water produced. It is recommended that these bricks are fitted and removed by the service engineer during the biannual services at the end and the start of the heating season.

To fit the bricks: disconnect the appliance from all mains electrical supply (including programmer) and turn both thermostats OFF to prevent the burner firing.

Lift out the hot plate via the lifting tool. (Fig 2).

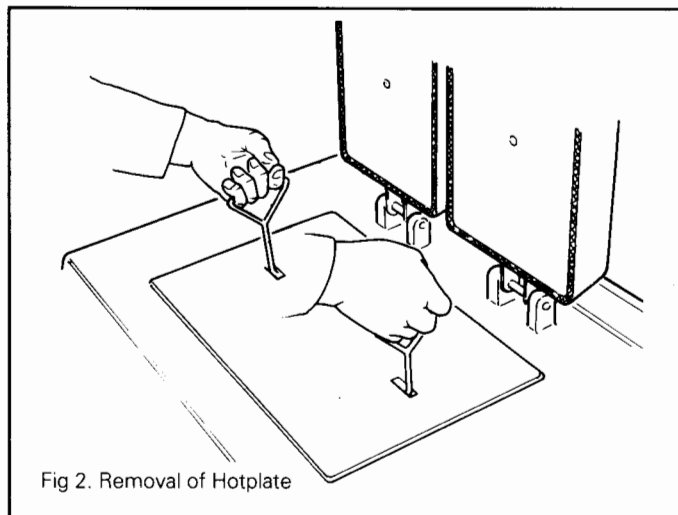


Fig 2. Removal of Hotplate

Carefully remove the two baffle bricks which are fitted under the hot plate by separating them and lifting at the front. (Fig 3).

Now fit the two rear Summer bricks by placing the rectangular brick with the rebate to the bottom in the channel welded on boilerface above the rear flue outlet. Fit the 'L' shape rear Summer brick by positioning on floor of combustion chamber and touching brick already fitted (see diagram 4). Locate back brick retaining bracket in groove in boiler to retain bricks in position at top. When located, slide both bricks to the right hand side.

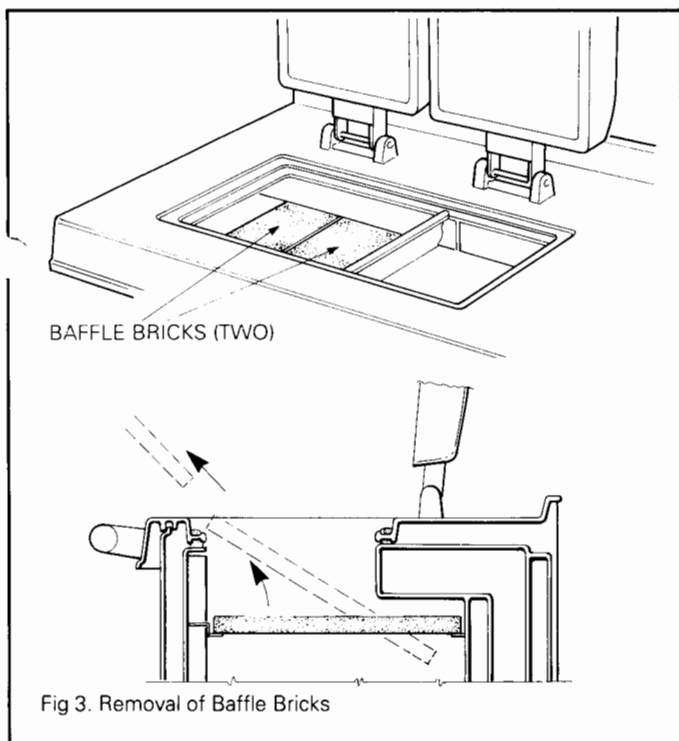
The left hand side summer bricks stand on the base of the combustion chamber. Slide small side firebrick in position. The front side brick is secured by a removable stainless steel bar located on brackets welded to boiler.

When the summer bricks have been secured replace the top baffle bricks, left hand side first, then the right hand side. Finally move both bricks together to the right leaving a passage for the flue gases on the **left hand side only**. Replace hot plate ensuring it seals.

SERVICING

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

Both cooker and boiler thermostat knobs should be turned OFF by the user the night proceeding the day of servicing so that the appliance will have cooled down by the following morning. A HOT APPLIANCE CANNOT BE SERVICED.

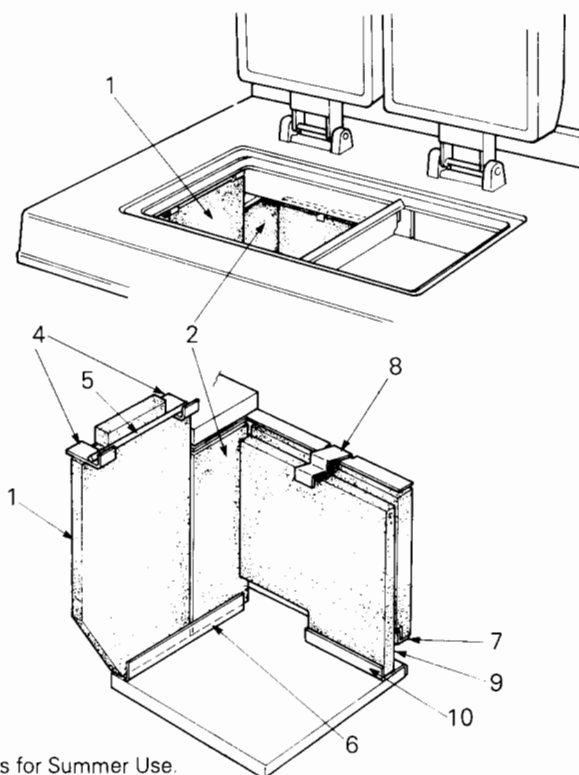


OIL LEAK OR FAULT

If an oil leak or fault exists or is suspected the unit must be turned off, including the electrical supply and must not be used until the fault has been rectified. Advice/Help should be obtained from your Installation Servicing Company.

POWER FAILURE

In the event of power failure your appliance will become inoperative until the power is restored when it will automatically start again.



1. BOILER SIDE FRONT FIREBRICK 'RO4F 321131'
2. BOILER SIDE REAR FIREBRICK '3/20289'
3. BOILER BACK FIREBRICK '3/20291'
4. BRICK RETAINING BRACKETS WELDED TO BOILER.
5. BRICK RETAINING BAR (REMOVABLE)
6. SIDE BRICKS LOCATION BRACKET FITTED TO BURNER CHAMBER CASE.
7. BACK BRICK LOCATION BRACKET WELDED TO BOILER.
8. REAR BRICKS RETAINING BRACKET (REMOVABLE)
9. SECONDARY BOILER BACK FIREBRICK 'RO4F 321057'
10. SECONDARY REAR BRICK LOCATION BRACKET. FITTED TO BURNER CHAMBER BASE

RAYBURN

Monoflame Model

Servicing Instructions for Rayburn PJ Central Heating Cooker

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.

IMPORTANT NOTICE: Any alteration that is not approved by Rayburn could invalidate the approval of the appliance, operation of the warranty and could also affect your statutory rights.

Control of Substances - Health and Safety Important

This appliance may contain some of the materials that are indicated below. It is the Users/Installers responsibility to ensure that the necessary personal protective clothing is

worn when handling, where applicable, the pertinent parts that contain any of the listed materials that could be interpreted as being injurious to health and safety, see below for information.

Firebricks, Fluebeds, Artificial Fuels - when handling use disposal gloves.

Fire Cement - when handling use disposable gloves.

Glues and Sealants - exercise caution - if these are still in liquid form use face mask and disposable gloves.

Glass Yarn, Mineral Wool, Insulation Pads, Ceramic Fibre, Kerosene Oil - may be harmful if inhaled, may be irritating to skin, eyes, nose and throat. When handling avoid inhaling and contact with skin or eyes. Use disposable gloves, face-masks and eye protection. After handling wash hands and other exposed parts. When disposing of the product, reduce dust with water spray, ensure that parts are securely wrapped.

INTRODUCTION

The Rayburn PJ central heating cooker is a simple robust appliance fitted with a reliable, proven, oil burner which is simple to maintain.

To ensure the best performance from the cooker it should be serviced twice a year; before and after the heating season by a registered heating installer.

An additional flueing and combustion chamber clean halfway through the heating season may be necessary in some cases. The cooker cannot be serviced whilst hot, so both oven and boiler thermostats should be turned off on the evening before the service visit.

SERVICE SCHEDULE

*IMPORTANT: ISOLATE ALL THE ELECTRICAL SUPPLIES TO THE APPLIANCE.

2.1. Twice a Year.

- (a) Service clean of boiler heat exchanger flueways, oven and hotplate flueways together with firebricks - section 3.2
- (b) Change four loose fire bricks from winter to summer arrangement or vice versa - section 3.3
- (c) Removal of oil burner for cleaning and inspection - section 3.4
- (d) Burner Servicing - section 3.5

2.2 Annually.

As above plus cleaning of oil pump strainer and fuel line strainer - section 3.5.2

2.3 Post Service Checks - section 6.

ROUTINE SERVICE PROCEDURES

3.1 Preparation.

Ensure that the cooker is cold by turning 'off' oven and boiler thermostats the evening before the service visit. Before removing service access covers or the oil burner ensure that ALL electrical supplies to the appliance have been turned OFF (switch off and remove plug). The burner can be removed without disconnecting the oil supply pipe. However if the filters are being cleaned or a pressure gauge fitted to the pump then the oil supply should be turned OFF and arrangements made to catch any oil which will leak from the oil pump.

3.2 Flueway and Combustion Chamber Cleaning.

Lift out the hotplate with the handles provided (see fig 1). Use the rake and brush to remove debris from the flueway above the oven and vacuum this area and the top of the firebrick baffles which are fitted above the burner chamber (see fig 2).

Carefully remove the two baffle bricks by separating them and lifting at the front (see fig 3).

Either remove the burner (section 3-4) or protect the burner tube to prevent debris from falling into it.

Remove the enamelled cover behind the LH insulating cover (see fig 4) and remove the sealing plate (twist clips on LHS). Remove the boiler flue baffle to expose the boiler outlet flueway which should be scraped and brushed clean. Remove all debris which will have fallen into the combustion chamber.

REASSEMBLY NOTE: Reassemble boiler flue baffle ensuring that narrow end of baffle marked 'LEFT' is on the left end of flueway and the location brackets are dropped into end sections of flueways. Refit sealing plate and the enamelled cover in reverse order of removal.

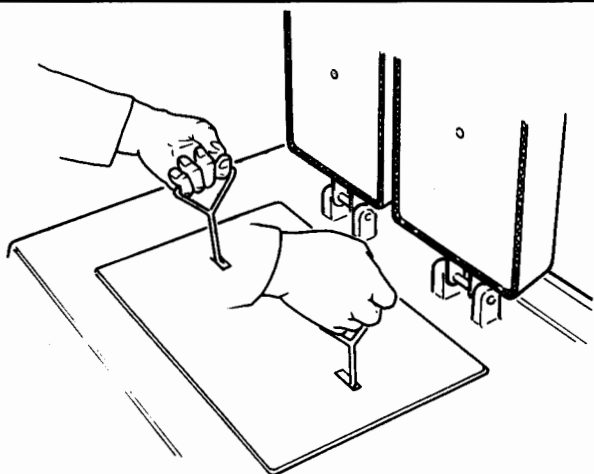


Fig.1 REMOVAL OF HOTPLATE

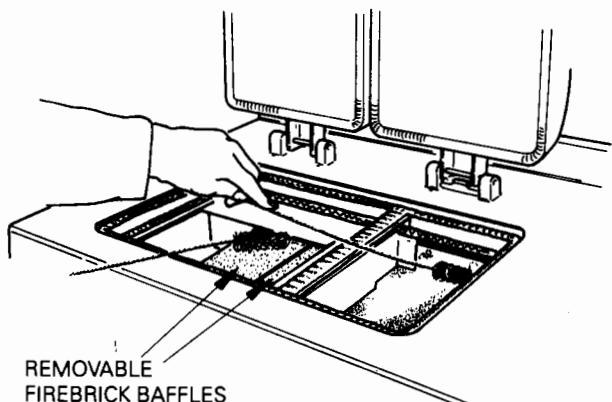


Fig.2 OVEN FLUEWAY CLEANING

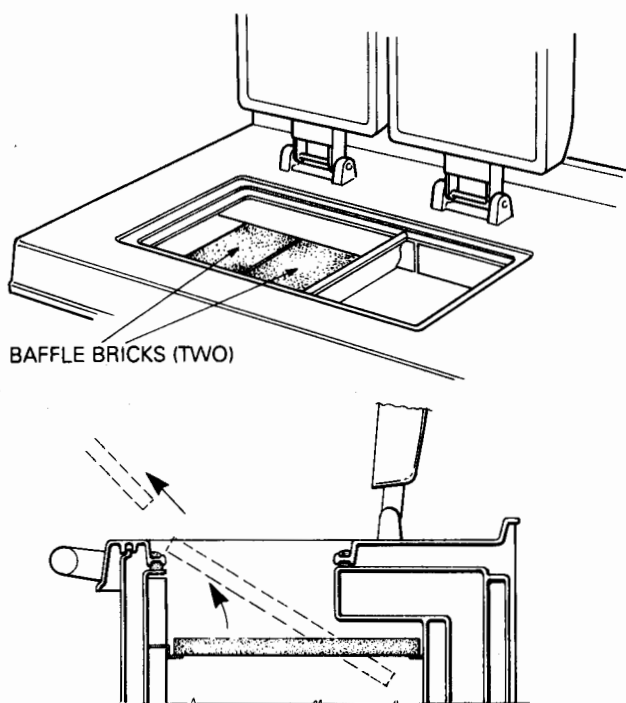


Fig.3 REMOVAL OF BAFFLE BRICKS

Brush clean the ribs on the underside of the hotplate. Examine the rope seal in the hob on which the hotplate sits. Replace if frayed or damaged.

Examine all firebricks for deterioration. Examine the fireboard floor of the combustion chamber and the chrome-iron plate on the right hand side of the combustion chamber. Both can be replaced if necessary (consult your Rayburn Agent).

Before reassembling the baffle bricks and hotplate check that loose firebricks are fitted or removed depending on the forthcoming season. Refit burner in reverse order to removal before commissioning.

3.3 WINTER AND SUMMER FIREBRICKS.

(FIG 5)

During summer months it is necessary to fit four loose firebricks in the boiler to reduce the amount of hot water produced. It is recommended that these bricks are fitted and removed by the service engineer during the biannual services at the end and start of the heating season.

The following loose firebricks are supplied with the cooker for the summer season:

Boiler Back firebrick 3/20291

Boiler Side Rear firebrick 3/20289

Boiler Side Front firebrick R04F 321131

Secondary Boiler Back firebrick R04F321057

The firebricks should be fitted in the following order:

a. Fit the two rear summer bricks by placing the rectangular brick with the rebate to the bottom in the channel welded on boilerface above the rear flue outlet. Fit the 'L' shape rear summer brick by positioning on floor of combustion chamber and touching brick already fitted (see diagram 5). Locate back brick retaining bracket in groove in boiler to retain bricks in position at top. When located, slide both bricks to the right hand side.

b. Locate the side rear firebrick inside the bracket fitted on the base, then push it toward the rear to locate behind the two rear firebricks.

c. Locate the bottom end of the boiler side front firebrick inside the bracket fitted on the base. Gently push the top end against the boiler side and secure the top end with a REMOVABLE stainless steel bar. The bar should be located in brackets welded to the boiler. These four bricks should be removed for the winter season by the service engineer and stored in safe place together with removable clip and bar.

After ensuring that the burner chamber is correctly fitted for the forthcoming season, refit the top baffle bricks. (N.B. These two firebricks are always in place summer and winter). Fit them as far to the RIGHT as possible, leaving a gap for flue gases on the left hand side only. Replace the hotplate ensuring it seals around it's edges.

3.4 Burner Removal.

Slacken the two grub screws (5mm) holding the burner blast tube to the combustion chamber (fig 6). Unscrew and disconnect plug (Fig.7). Pull the burner out of the combustion chamber (Fig.8). Disconnection of the oil supply pipes and burner cable is not necessary.

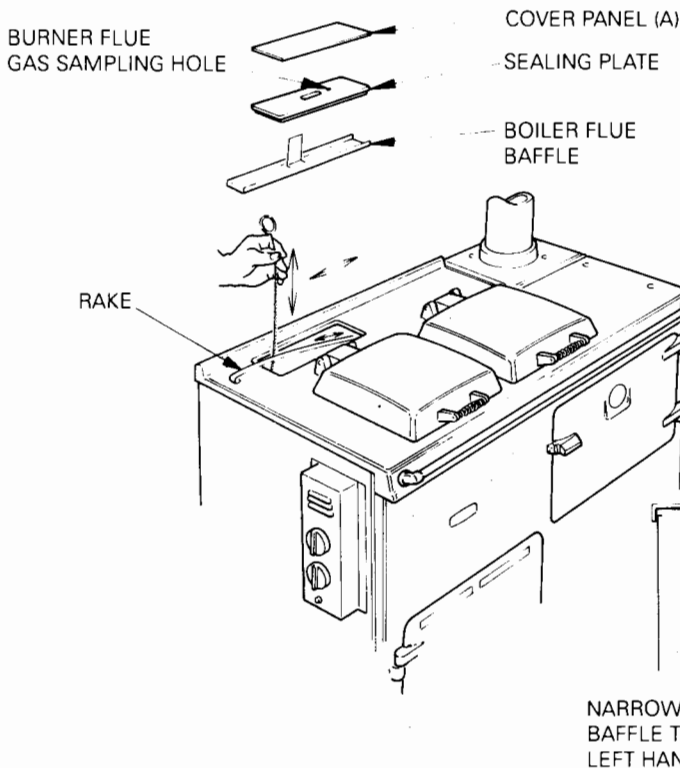


Fig.4 BOILER FLUEWAY CLEANING

3.5 Burner Servicing.

3.5.1 Twice yearly service.

Undo the screw holding the blast tube to the burner (fig 9). Clean the diffuser and ignition electrodes taking care not to wipe nozzle tip itself. Check electrode gap and adjust if necessary (see fig 10). Clean inside burner, check photo-resistor, electrical connectors and that all grommets are in place.

Reassemble.

3.5.2 Yearly Service.

Annually, clean the oil pump and flue line strainers in addition to the half yearly service.

To Clean Oil Pump Strainer (fig 11).

- Turn OFF the oil line isolating valve near to the appliance.
- Break the flexible oil feed pipe joint at the inlet to the pump taking care to collect kerosene residue from the flexible pipe and the pump.
- Remove electricity connection socket from solenoid.
- Undo 4 x socket head screws which retain pump end cover.
- Gently pull off end cover.
- Remove pump strainer (filter) and wash with clean petrol or paraffin.
- Re-assemble element and end cover in reverse order of removal.

To Clean Oil Line Filter.

- Turn off the line isolating valve fitted prior to the oil line filter.

- Follow manufacturer's instructions to remove filter element from the housing, taking care to collect kerosene residue from the filter housing.
- Wash filter thoroughly in clean petrol or paraffin.
- Re-assemble filter in reverse order of removal.

REPLACEMENT SPARES

IMPORTANT: Isolate the electrical supplies to the appliance.

4.1 Burner.

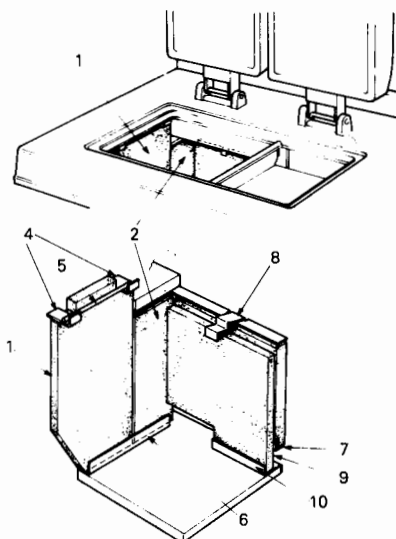
4.1.1 To Replace Burner Nozzle (see fig 10)

N.B. Nozzles should not be replaced or dismantled for cleaning nozzle filters unnecessarily. This should normally only be done if, after carrying out the routine service, the combustion check does not give acceptable results. Nozzles should be handled with great care, using clean tools and clean hands.

- Remove burner assembly as in routine service section - 3.4.
- Unscrew nozzle from its holder with a correctly fitting tubular spanner to avoid damage to hexagon.
- Replace nozzle by a new one of the same size, spray angle and spray pattern.

4.1.2 To Clean Burner Nozzle Filter (see fig 10)

- Remove nozzle as in 4.1.1.
- Unscrew filter assembly from the rear of nozzle.
- Wash filter assembly in clean petrol or paraffin.
- Refit filter assembly to nozzle in reverse order of removal.



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9. SECONDARY BOILER BACK FIREBRICK 'RO4F 321057'
10. SECONDARY REAR BRICK LOCATION BRACKET, FITTED TO BURNER CHAMBER BASE

Fig.5 FITTING FIREBRICK FOR SUMMER USE

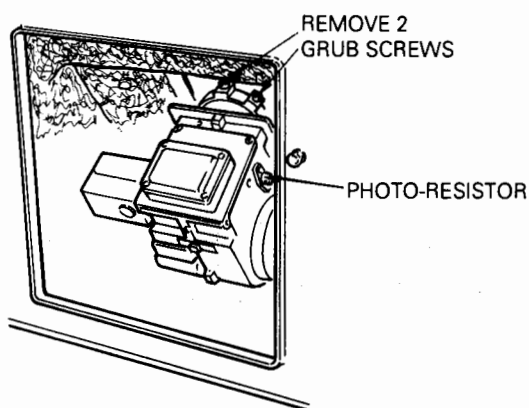


Fig.6

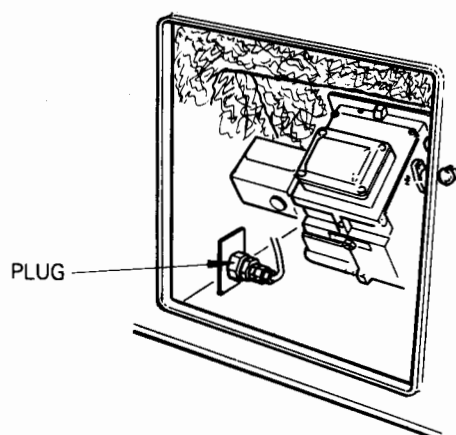


Fig.7 REMOVAL OF BURNER ASSEMBLY

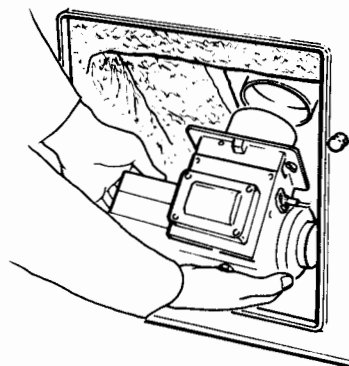


Fig.8 REMOVAL OF BURNER

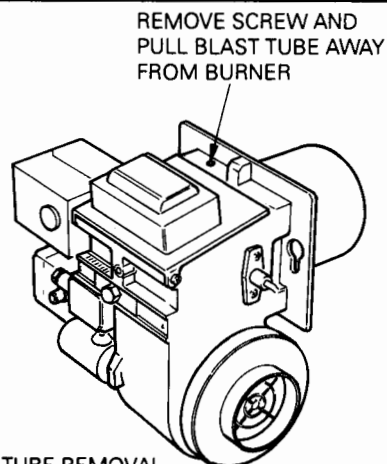


Fig.9 BLAST TUBE REMOVAL

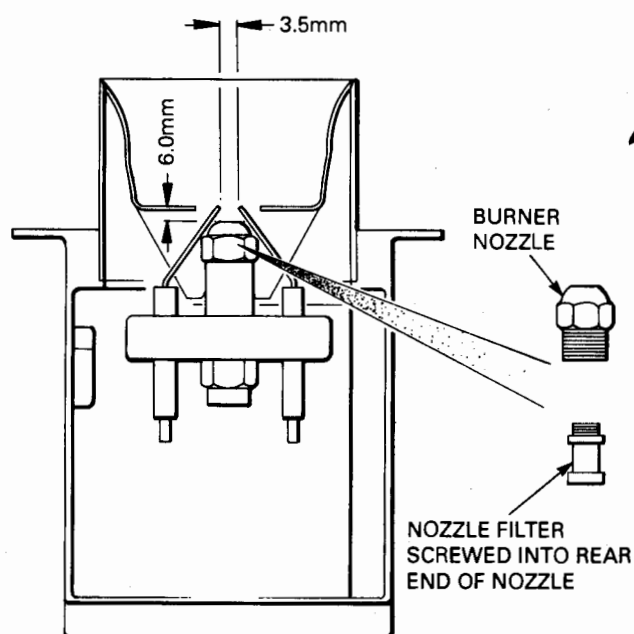


Fig.10 BURNER DETAIL

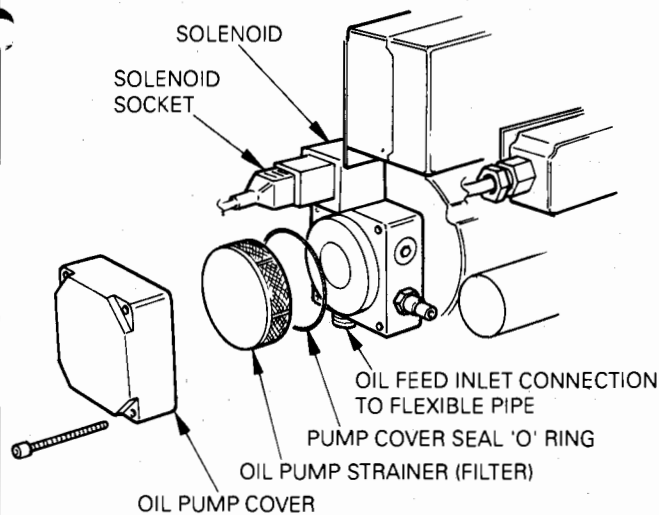


Fig.11 REMOVAL OF BURNER OIL PUMP STRAINER

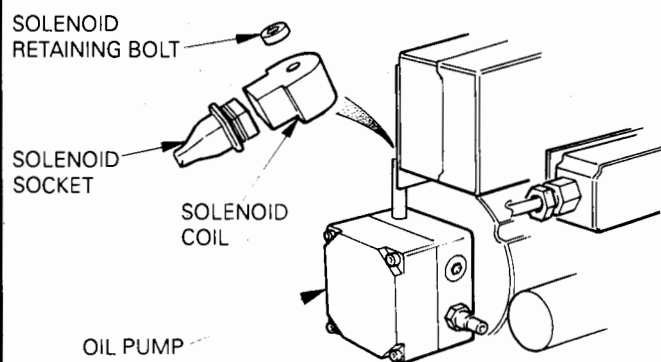


Fig.12 REMOVAL OF OIL SOLENOID

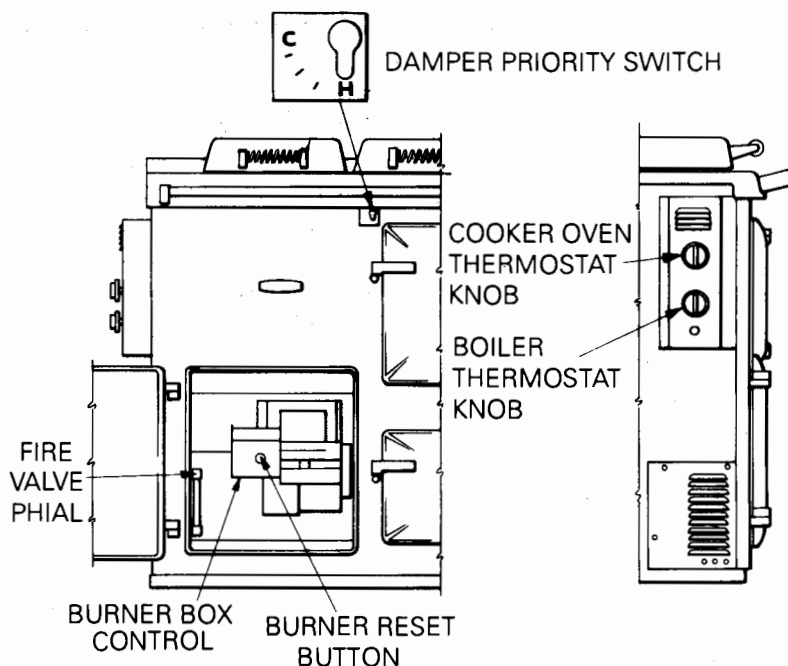


Fig.13 COOKER CONTROLS

4.1.3 To Replace Oil Pump Solenoid Valve (see fig 12)

- Turn OFF the oil line isolating valve near to the appliance.
- Remove burner assembly as in routine service section - 3.4
- Pull off electricity connection socket from solenoid.
- Break the flexible oil feed pipe joint at the inset to the pump taking care to collect kerosene residue from the flexible pipe and pump.
- Disengage retaining bolt from solenoid housing tube
- remove solenoid coil.
- Unscrew solenoid housing tube from oil pump with a correctly fitting spanner to avoid damage to hexagon, taking care to collect kerosene residue from the oil pump.

g. Fit replacement solenoid valve and assemble in reverse order of dismantling.

4.1.4 Burner Re-commissioning

BLEED AIR FROM OIL SUPPLY LINE. With the flexible oil pipe disconnected at the pump end, open the stop valve slowly and run off some oil into a receptacle to establish an air free supply to the pump. Make the connection oil tight and leave valve open.

Switch On Electricity.

Turn the oven thermostat to 9. The burner should start and run on pre purge for 7 to 15 seconds, with the ignition spark energised, before the solenoid valve opens admitting oil and allowing it to fire. Until all the air from

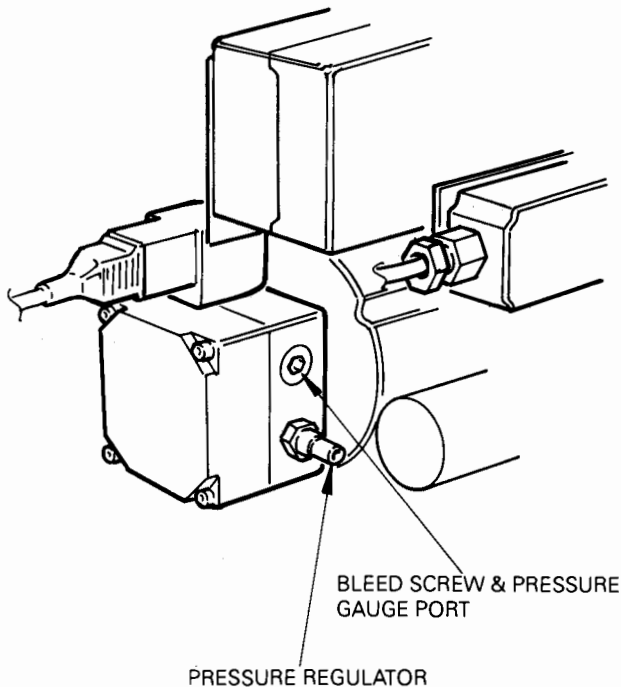


Fig.14 BURNER OIL PUMP CONNECTIONS

the oil pump is flushed out there may be some flame instability resulting in the burner locking out as indicated by the signal light in the re-set button of the control box (see fig 14). In this event, **wait at least one minute, then press the re-set button to re-start.**

Vent the Oil Pump (see fig 14)

Place a suitable container beneath the pump to collect the excess oil.

Slacken the bleed screw to release the trapped air in the pump. The burner will fire when the bleed screw is re-tightened. (N.B. The burner may have locked out before all the air was released; repeat as often as necessary).

Check Oil Pump Pressure (see fig 14).

Place a suitable container beneath the pump to collect the excess oil.

Unscrew and remove the bleed screw from the pump and fit an oil pressure gauge with R 1/8 connection. Restore the electricity supplies to the appliance. Switch on the burner and check the oil pressure on the pressure gauge. If the pressure gauge is not indicating the correct reading then adjust the pressure by turning the pressure regulator clockwise to increase, and anti-clockwise to decrease the pressure until the pressure gauge reads 8.3 bar (120 lbs/in²). Switch off the burner and disconnect all electricity supplies to the appliance. Remove the pressure gauge and replace the bleed screw.

Check Combustion Air (see fig 15).

Switch on electricity supplies to the appliance. Switch on the burner and set flue damper priority switch to H (Heating). Remove the enamelled top plate cover panel (A) behind the L.H.insulating cover where a plugging screw will be seen. Remove this screw and insert sensing end of portable indicator to check the CO² (carbon dioxide). Adjust the burner air intake until 11.5% CO² of flue gases is recorded on the indicator.

Note: The outer burner door should be closed when checking CO². Ensure that only the baffle bricks are fitted.

Check Smoke.

Remove the CO² indicator and using the same hole for flue sampling, insert the housing end of baccarach smoke pump and check that the smoke in the flue exit does not exceed No.2 on the scale.

Note: The outer burner door should be closed when checking level.

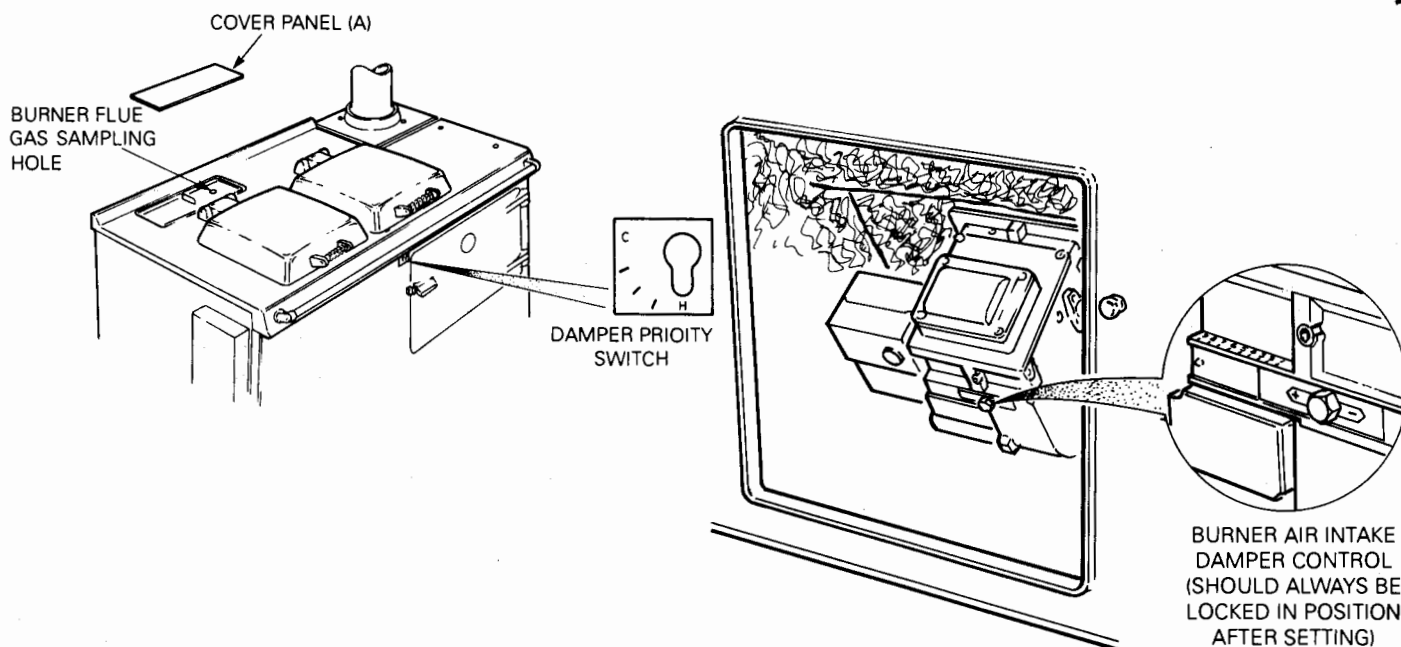


Fig.15 FLUE GAS SAMPLING AND COMBUSTION AIR ADJUSTMENT

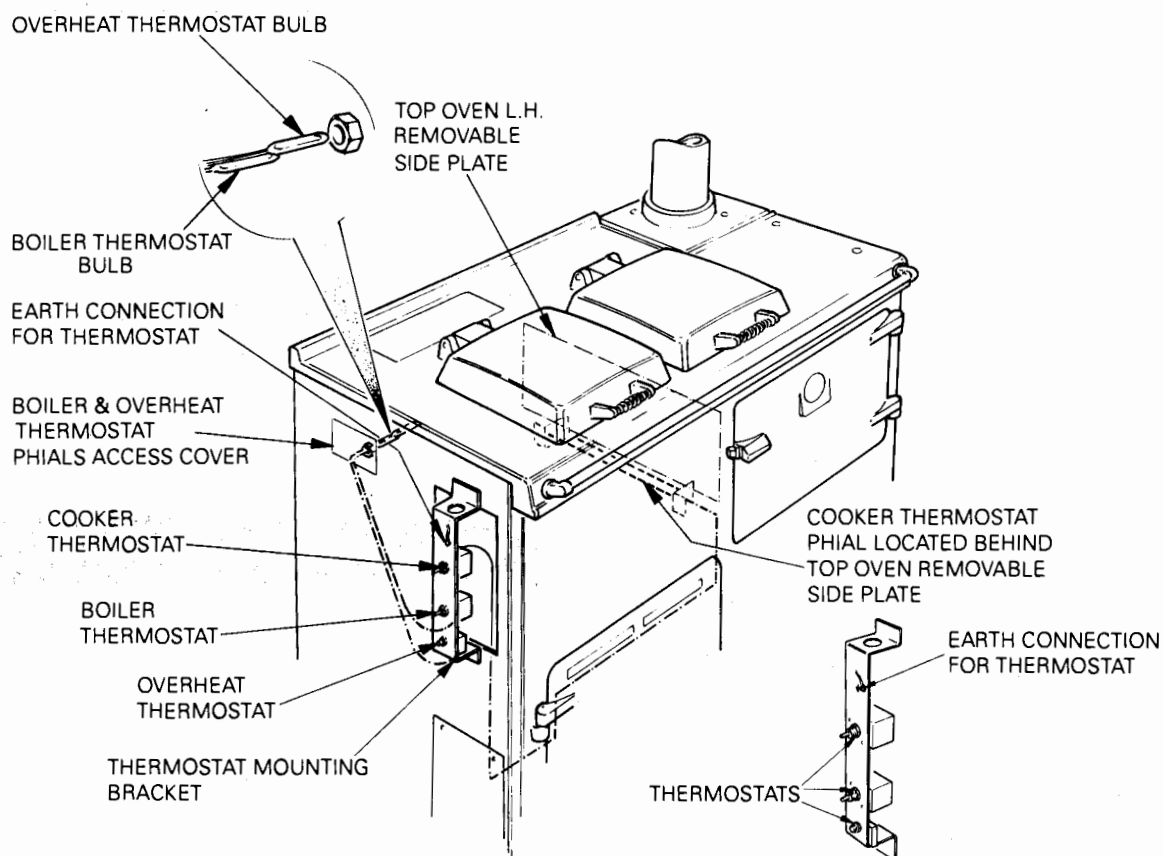


Fig.16 THERMOSTAT MOUNTING AND PHIAL LOCATIONS

4.2 Thermostat Replacement (see fig 16).

4.2.1 To Remove Cooker (oven) Thermostat.

- Pull off the two thermo-stat knobs. Remove two pan head screws securing control cover to L.H. side panel and remove cover.
- Disconnect four electrical leads from the thermostat.
- Unscrew thermostat spindle locknut to detach cooker (oven) thermostat from mounting plate.
- Open top oven door and using a screwdriver, remove two fixing screws securing inner L.H. oven side to expose the located thermostat phial.
- Remove the phial securing screw and unclip thermostat phial from the L.H. side of roasting oven and reset phial to face across the oven width instead of facing in depth.
- Slacken the capillary securing clamp inside the oven and two capillary retaining brackets inside burner housing.
- Withdraw the capillary and phial carefully out of the oven, across the burner and out through the side casing.
- Fit replacement thermostat and assemble in reverse order of removal. Electrical leads to be reconnected as previously (see fig 18 for connections.)

4.2.2 Boiler Thermostat.

- Pull off the two thermostat knobs. Remove two pan head screws securing control cover to L.H. side panel and remove cover.
- Remove two pan head screws securing rectangular cover to the rear top of the L.H. side panel and remove cover to expose boiler and overheat thermostat phial housing pocket.
- Remove split pin from the pocket.
- Withdraw both boiler and overheat thermostat phials from the pocket, and separate the two phials from one another.

- Disconnect two electrical leads from the thermostat.
- Unscrew thermostat spindle locknut to detach boiler thermostat from mounting plate.
- Fit replacement thermostat and assemble in reverse order of removal. Electrical leads to be reconnected as previously (see fig. 18 for connections). The boiler and overheat thermostat phials should be assembled together before fitting into the pocket.

4.2.3. To Remove Overheat / Pump Overrun Thermostat

- Pull off the two thermostat knobs. Remove two pan head screws securing control cover to L.H. side panel and remove cover.
- Remove two pan head screws securing rectangular cover to the rear top of the L.H. side panel and remove cover to expose boiler and over heat thermostat phial housing pocket.
- Remove split pin from pocket.
- Withdraw both boiler and overheat thermostat phials from the pocket, and separate the two phials from one another.
- Disconnect two electrical leads from the thermostat.
- Unscrew thermostat spindle locknut to detach overheat thermostat from mounting plate.
- Fit replacement thermostat and assemble in reverse order of removal. Electrical leads to be reconnected as previously (see fig. 18 for connections). The boiler and overheat thermostat phials should be assembled together before fitting into the pocket.

4.3 Control Circuit Description - see fig.18 for wiring diagram.

(see fig.17 for terminal block and RELAY locations). The main line voltage to the appliance is applied via terminal 'L' on terminal block. Basically, the COOKER and BOILER are connected in parallel with each other

and in series with the OVERHEAT thermostat, through RELAY (2).

Some switching is done via the RELAY (1) to segregate the COOKER and BOILER CONTROL and yet keep the burner LOCK-OUT protection in operation.

4.3.1. Cooking

When mains power is switched on and the time switch connections are made (across L4 / L5) power is supplied to Relay (2) through the overheat thermostat. Contacts 1/3 on Relay (2) bring on the circulating pump and contacts 6/8 will allow the burner to fire. For the ignition sequence to start Live power must be connected to terminal 1 in the danfoss control box. This is achieved by connecting contact 6 on Relay (2) through either of the operating thermostats to terminal 1 on Relay (1) and to terminal 1 in control box via connector block L3.

The auxiliary connections on the COOKER thermostat make as soon as it is switched on. These contacts operate Relay (1) which isolates the BOILER thermostat. The connection is completed through the temperature controlled switch connections of the COOKER thermostat.

If the boiler water temperature during the operation of the appliance under the control of the cooker thermostat rises too high then the boiler overheat thermostat will operate. This removes the power from Relay (2) which cuts out the supply of power to the burner but still keeps the circulating pump operating.

4.3.2. Heating

Since the cooker thermostat has priority, the appliance can be controlled by the boiler thermostat only when the oven thermostat is switched off. The sequence of events is exactly the same as for cooking except that the circuit is completed now by the temperature controlled switch connections in the BOILER thermostat.

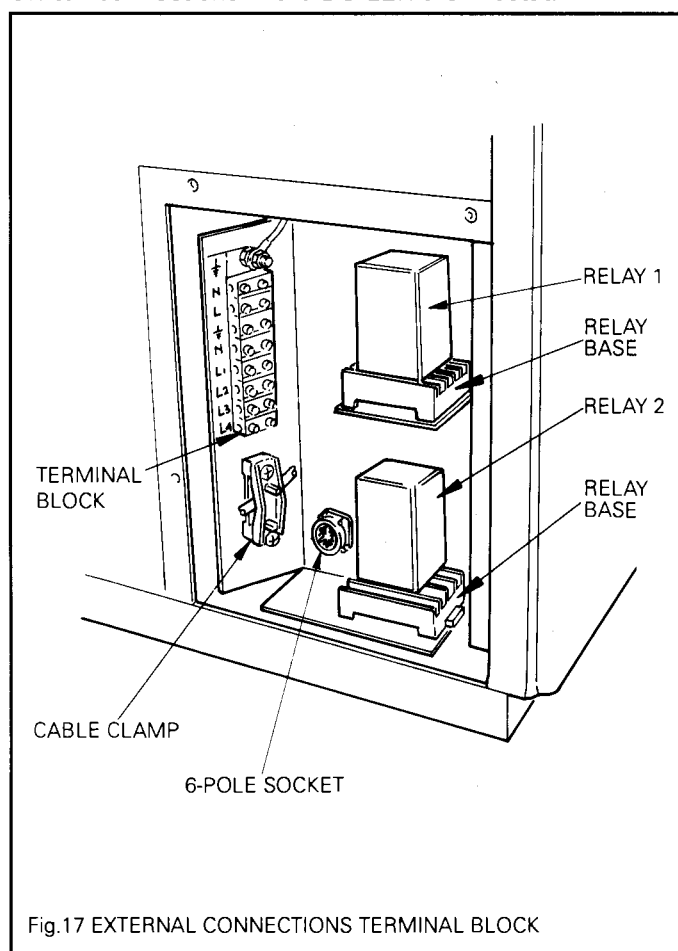


Fig.17 EXTERNAL CONNECTIONS TERMINAL BLOCK

4.3.3. Pump Overrun Thermostat.

When the time clock/programmer switches off at the end of the cooking and or heating period the circulating pump is switched off as well as the cooker. If in the period of time after the pump has gone off the water temperature in the boiler should rise too much then the overheat thermostat will operate and switch on the pump (but not the burner).

4.3.4. Photo-Resistor (see fig.6)

The Photo-Resistor is simply removed by pulling the body of the unit sideways from the keyhole slot. The connecting cables should be traced back to the control box and then removed, noting their positions, refit new component in reverse order.

FAULT FINDING

5.1 Control Circuit.

The correct operation of the control circuit can be checked as follows: Switch both cooker (oven) and boiler thermostats to 'OFF'. Connect the mains supply to terminal L.N and E and with the time switch/programme switched off turn the power on. Terminal L4 should be live, if not check pump overrun/cooker over heat thermostat.

When the time switch/programmer is switched on RELAY 2 can be seen and heard to operate, if not check terminal L5. If L5 is live then check voltage across RELAY 2 operating coil (Terminals 2 & 7). If L5 is not live then check time switch contacts.

When RELAY 2 operates then:

-L1 is made live and the water circulating pump comes on.

-L2/L3 are made live, if non of these are live then check RELAY 2 connections.

If the oven thermostat is switched ON then the RELAY 1 can be seen and heard to operate. If not then the fault lies in the oven thermostat auxiliary contacts or RELAY 1 operating coil. Check that there is mains voltage to the operation coil. If not, the fault is in the OVEN thermostat auxiliary contacts.

When RELAY Operates:

Terminal 3 on 6-pole socket is made live. If not, the RELAY 1 contacts are faulty. When L3 is made live, the burner should fire.

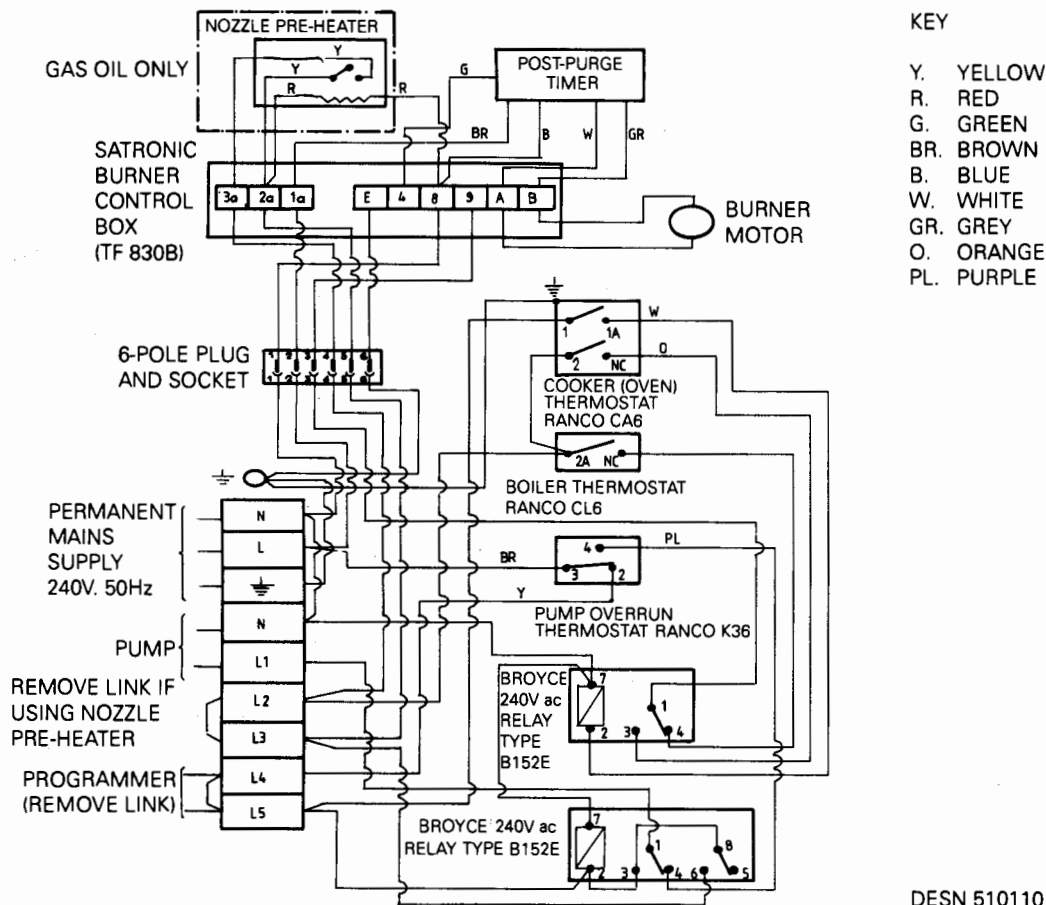
Turn Oven Thermostat OFF.

Turn Boiler Thermostat ON.

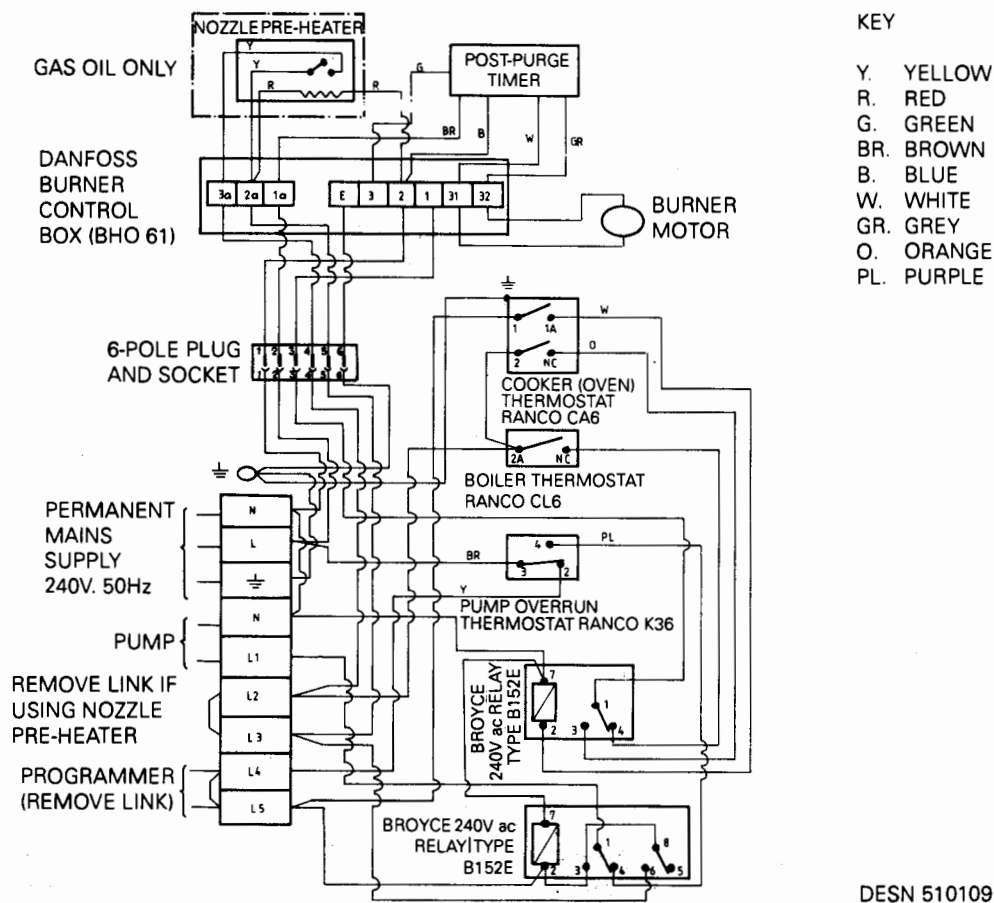
RELAY will not operate:

3 is made live as above. If not, then the fault lies in the boiler thermostat or RELAY 1 contacts.

Check that there is mains voltage to No.4 on the RELAY. If not, the fault is in the boiler thermostat. If there is power to No.4 on the RELAY, but no power to 3 on the 6-pole socket, the RELAY 1 contacts are faulty. When 3 on the 6-pole socket is live, the burner should fire.



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5.2 Burner Faults.

(a) If burner does not start:

Possible Cause	Remedy
Lock out box illumination	Reset
Photo-resistor exposed to light	Check that photo-resistor is correctly located in the housing, and that it is not exposed to extraneous light.
Oil pump or motor seized:	With electricity switched off remove housing access cover and try turning the fan by hand.
Faulty motor:	Exchange motor.
Faulty control box:	Plug in a replacement box.

(b) If burner starts / does not ignite / lock out:

Possible Cause	Remedy
No fuel:	Unscrew vent on oil pump and check whether oil dribbles out. If not check fuel tank contents, and that all valves are open.
No ignition spark:	Check that ignition leads are connected properly. Check that ignition electrodes are located and adjusted correctly.
Faulty solenoid valve:	Replace solenoid coil. If still not working then clean or replace solenoid valve housing tube assembly.

(c) If burner starts / ignites normally / lock out:

Possible Cause	Remedy
Photo-resistor exposed to light before ignition:	Check that photo-resistor is correctly located in the housing and that it is not being exposed to extraneous light.
Photo-resistor faulty:	Exchange.
Control box faulty:	Exchange.

(d) Starts / ignites but pulsates or fires unevenly / lock out:

Possible Cause	Remedy
Air in nozzle or oil line causing distort spray:	Re-purge at pump and try again
Dirt in nozzle causing distorted spray:	Replace nozzle.
Damaged or worn nozzle:	Exchange for one of the same make, size and spray pattern.

POST SERVICE CHECKS

Section 6.

Check for oil leaks. Ensure that the circuit board bracket and the lock out box brackets are correctly positioned. After allowing the cooker to heat up check that the flue

analysis is 11.5% CO² of flue gases and the smoke in the flue exit does not exceed No.2 on the baccarach smoke pump's scale. Check that if the oven thermostat is switched 'ON' while the boiler thermostat is 'ON' and the burner firing, that the burner stops momentarily and re-fires, as the oven thermostat takes priority over the boiler thermostat. Check that the hotplate is sealed around it's edge.

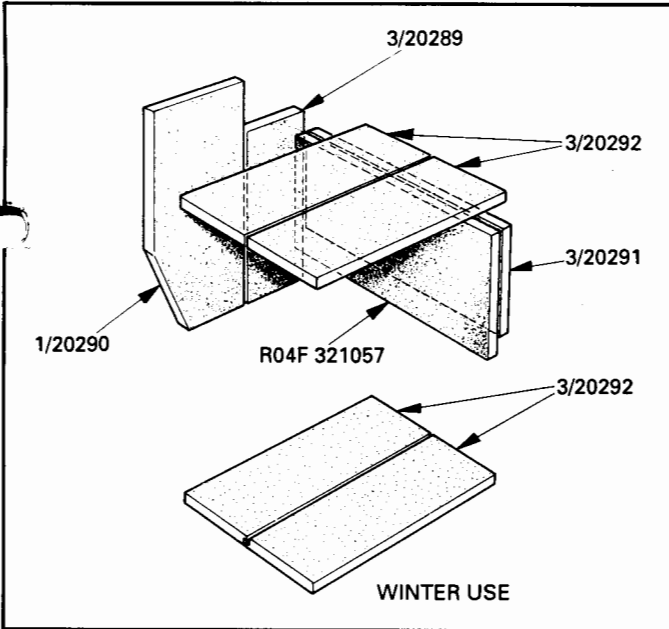
TECHNICAL DATA

TECHNICAL DATA & SPARE PARTS LIST.

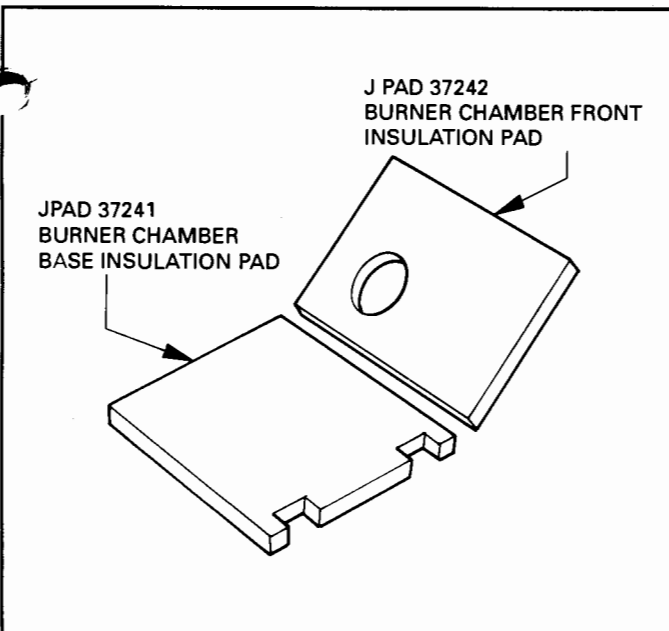
Electrical Supply:- 240~50 Hz 5A Fused.
 Fuel:- 28 seconds commercial Kerosene to
 BS 2869. Part 2: 1988 Class 'C2'

Removable Firebricks

R04F3 - 20289 Boiler Side Rear Firebrick 3/20289 1-off
 R04F - 321131 Boiler Side Front Firebrick 1-off
 R04F3 - 20291 Boiler Back Firebrick 3/20291 1-off
 R04F3 - 20292 Fire Box Top Firebrick 3/20292 2-off
 R04F - 321057 Secondary Boiler Back Firebrick 1-off



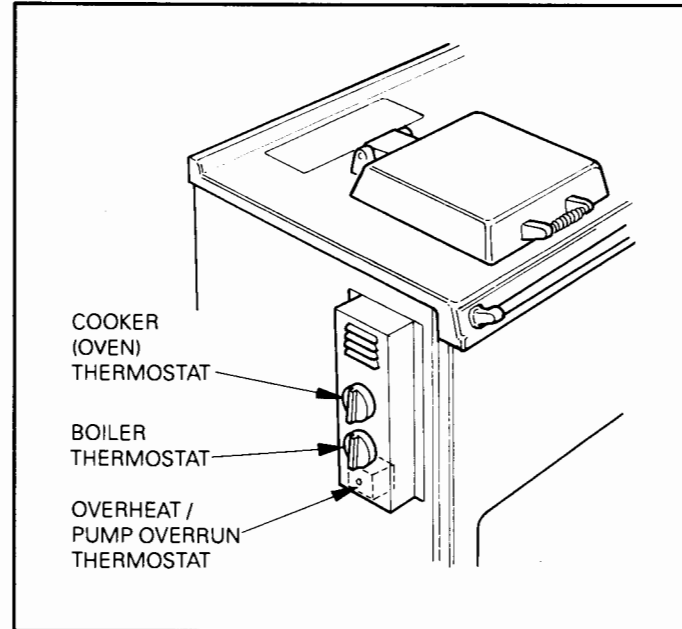
Burner Chamber Insulation Pads



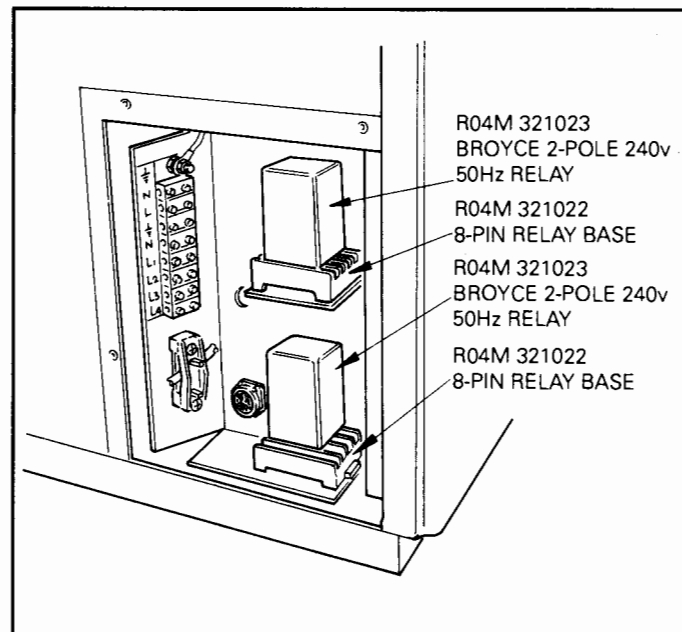
PJ MONOFLAME

Thermostats

R04T 46832	Cooker (oven) Thermostat	"Ranco"
R04T 321135	Boiler Thermostat	"Ranco"
R04T 321136	Overheat Pump/Overrun Thermostat	"Ranco"



Electrical Chassis



Outside Fixed Bricks

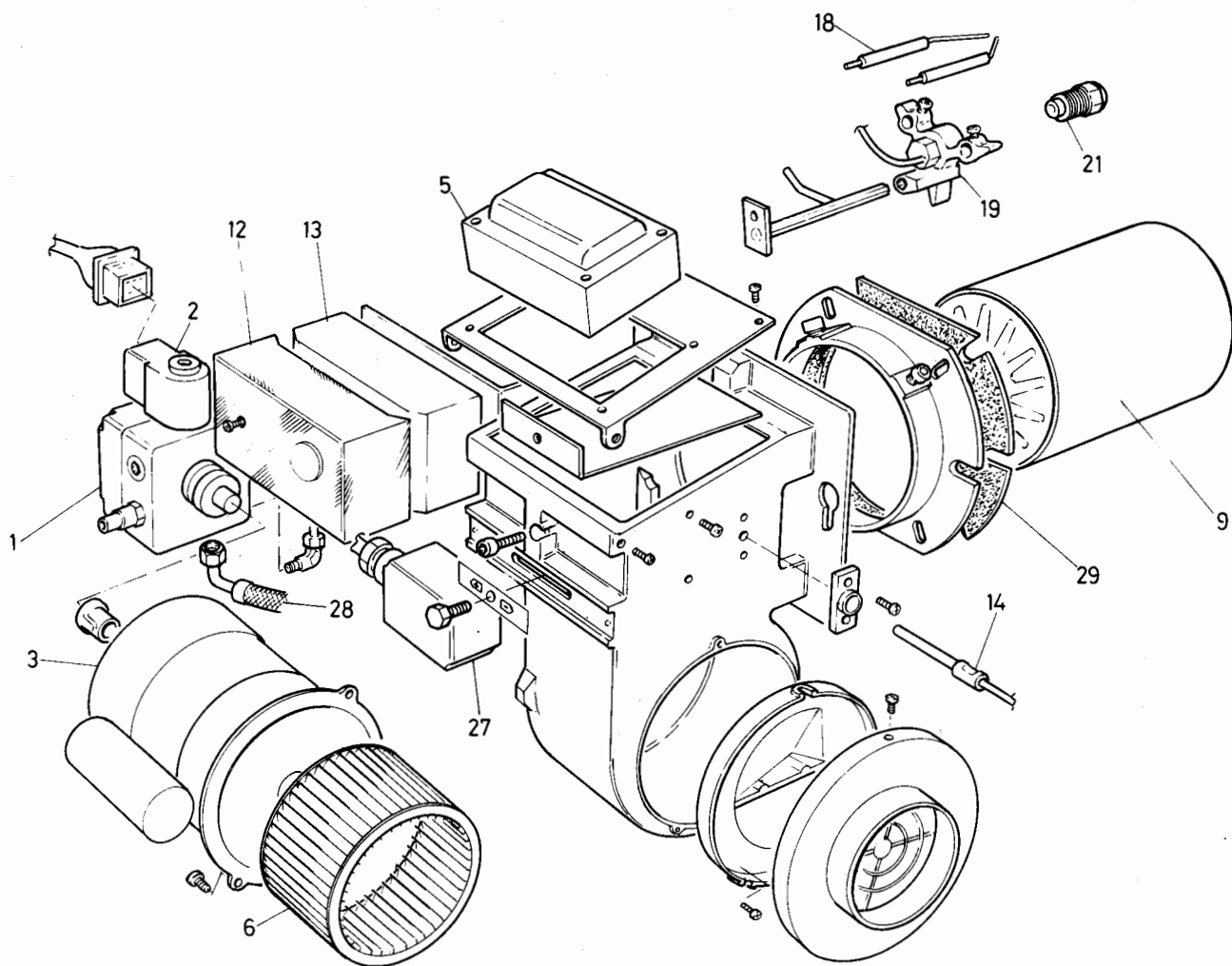
LOWER - R04F 321127

MIDDLE - R04F 321126

UPPER - R04F 4-20285

CHROME IRON SHOE - R04M 321094

Burner Assembly - PJ - MONOFLAME



R04M 321095 Burner Assembly Complete

1. R04M 999145 Pump - Danfoss BFP/Delta Oil
2. R04M 999146 Solenoid
3. R04M 999147 Motor - Acco/Simel 50W 2800 RPM
5. R04M 999148 Ignition Transformer - 8000V / 20MA
6. R04M 999149 Fan 99 x 42mm
9. R04M 999150 Blast Tube M-333/A.R.
12. R04M 999151 Control Box - Satronic TF 830B/Danfoss BH061

13. R04M 999152 Control Box Base

14. R04M 999153 Photo Cell
16. R04M 999154 Mounting Flange Gasket
18. R04M 999155 Ignition Lead Electrode
19. R04M 999156 Inner Assembly
21. R04M 999157 Atomiser Nozzle 0.60 x 80°H
27. R04M 999158 Post Purge Timer
28. R04M 999159 Flexible Hose
29. R04M 321149 Gasket

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

Rayburn

Glynwed Consumer & Building Products Ltd.

PO Box 30 Ketley Telford Shropshire TF1 4DD

Telephone (0952) 642000 Telex 35196 Fax (0952) 641961