

WARNING

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

The Rayburn Oil Nouvelle cooker has gone through several changes and modifications during its long history, particularly with regard to the boiler burner.

The actual product featured here, is the MK2 model shown in its original form.

It differed from MK1 models, by having separate solenoid valves for a pilot and main oil feed and used a thermocouple for flame proving. The thermocouple signal was amplified by a HAWCO relay with individual timing relays.

MK3 models used a fully electronic sequence controller.



THE RAYBURN OIL NOUVELLE

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.

The cooking performance features of the popular and proven solid fuel Rayburn Cookers have been preserved and integrated into the Rayburn Oil Nouvelle Cooker, burning 28 Seconds Kerosene to BS. 2869:1983 Class 'C'

Summer Use

The cooker side provides domestic hot water and cooking facilities which consist of a large hotplate, main oven and warming oven. The independent oil burner is controlled by an electric cooker thermostat operated by the control knob. The cooker burner should always be continuously burning at a low fire rate when not required for cooking. When cooking is required, the burner operates at a high fire rate under the control of the main oven thermostat control knob and its setting.

Winter Use

An independent boiler oil 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 ~ 50 Hz electrical supply is required near to the appliance. The appliance is supplied with an 0.75mm² – 3

core P.V.C. x 3 metres 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 5 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.

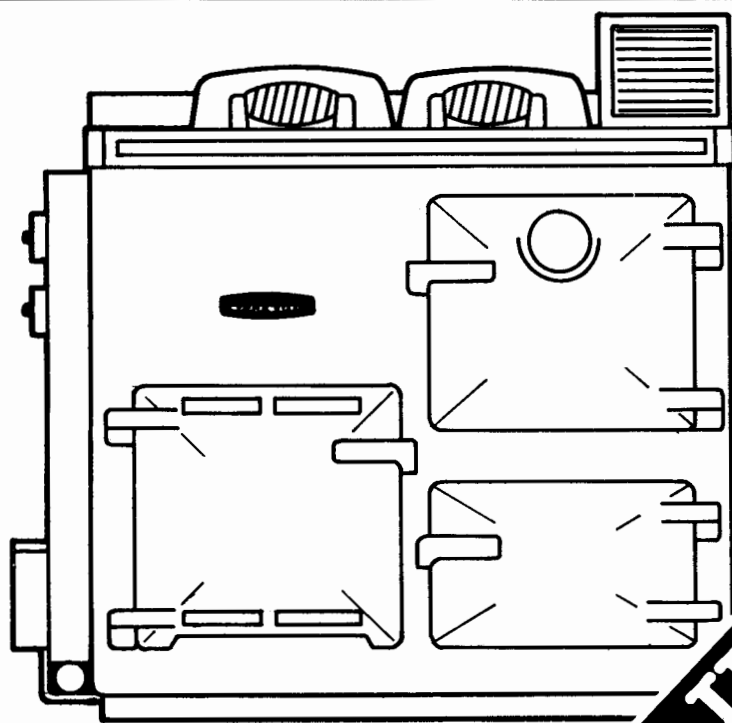
WARNING

COOKER BURNER: NEVER ATTEMPT TO RELIGHT A HOT BURNER – DO NOT TURN OIL ON UNTIL BURNER IS COOL.

BOILER BURNER: WAIT 3 MINUTES BEFORE RE-SETTING LOCK-OUT BUTTON AFTER LOCK-OUT LAMP ILLUMINATES DURING CYCLING.

Cooking and Domestic Hot Water – Summer Use

1. Depress the trip lever **D** – see Fig. 1 on the front of the oil control valve **P** and turn the cooker oil control valve knob **C** to No. 6 setting.
2. Switch power **ON** and set cooker thermostat knob **A** to No. 6 setting. Allow 15 minutes for oil to enter and settle in cooker burner base.



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.

- Open outer burner door **E** adjacent to the bottom warming oven door, remove/lift out inner cooker burner door **F**.
- Slide lighting cover **G** on the front of the burner shells, sideways to the left hand and expose the three lighting ports.
- Insert a lighted taper through the three lighting ports and light the front wicks, then close the lighting cover **G**.
- Replace inner cooker burner door **F** and close outer burner door **E**.

NOTE: ENSURE INNER COOKER BURNER DOOR F IS CORRECTLY LOCATED AND SEALED.

- Return thermostat knob **A** to its No. 1 setting for about 20 minutes, until the burner is hot, then re-set to No. 6 for cooking.
- The cooker burner will gradually increase its oil rate, and raise the temperature of the oven, taking about 2½ hours from cold to attain an oven temperature of 200°C (400°F), leaving the cooker thermostat knob **A** at its No. 6 setting.
Re-set the cooker thermostat knob **A** to the desired setting and the oven temperature will continue to be thermostatically controlled.

NOTE: SEE COOK BOOK FOR RECIPES.

- Set the cooker thermostat knob **A** to **LOW** which is the minimum setting when cooking is not required and idling rate is needed.
- Ensure both hotplate insulating covers are closed down to conserve heat in hotplate.

Oven Thermostat Settings

The cooker thermostat control knob **A** is marked **LOW**, then 1 to 6, which provides various main oven temperatures with setting 6 being the highest temperature – see chart below.

Thermostat Setting	Main Oven Temperature
LOW	125°C (257°F)
1	125°C (257°F)
2	165°C (330°F)
3	190°C (375°F)
4	230°C (445°F)
5	250°C (482°F)
6	270°C (518°F)

Failure of Electrical Power

Should the failure of electrical power occur, it will not be possible to obtain thermostatic control over the cooking oven.

However cooking can be continued by manual control as follows:

- High Fire rate can be obtained by engaging the actuating lever **B** on the top of the oil control valve **P** then push it to the left to engage in the notch of the cover.
Manual control can then be made by adjusting the cooker oil control valve knob **C** between the numbers 1 to 6 and re-setting the knob to suit the temperature indicator on the oven door corresponding with chart below.
- Low Fire rate can be obtained by setting the cooker oil control valve knob **C** to No. 1 setting where the oven temperature will be maintained at about 125°C (257°F). With the restoration of electrical power, remember to reset the actuating lever **B** by disengaging it from the cover notch and setting the cooker oil control valve knob **C** to No. 6 setting.
The thermostat will then control the oil rate.

To Turn Off Cooker Burner

- With boiler burner not in use:
Lift the trip lever **D** on the front of the oil control valve **P** to shut off the oil supply to the burner.

Cooker Oil Control Valve Knob Setting	Oven Temperature
1	125°C (257°F)
2	205°C (400°F)
3	230°C (445°F)
4	250°C (482°F)
5	275°C (527°F)
6	300°C (572°F)

- With boiler burner in use:
Turn the cooker oil control valve knob **C** anti-clockwise from No. 6 setting to **OFF**.

WARNING – NEVER ATTEMPT TO RELIGHT A HOT BURNER. DO NOT TURN OIL ON UNTIL BURNER IS COLD.

To Heat the Top Main Oven and Increase Hotplate Temperature

Turn the cooker thermostat knob **A** to the required setting which will take up to 90 minutes to attain after initial warm up from cold.

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

HINT: THE COLD SOLID PLAIN SHELF CAN BE USED AS A HEAT DEFLECTOR, (AS WELL AS A BAKING SHEET), SLIDE ONTO THE RUNNERS TOWARDS THE TOP OF THE OVEN SO REDUCING TOP HEAT.

The Hotplate

When the main 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 cooker thermostat knob **A** to increase the temperature of the hotplate.

Pans and kettles must have flat machined bases.

Use a wire brush to keep the hotplate clean.

Warming Oven

This is at a low temperature suitable for warming serving plates and dishes. Although not intended as a cooking oven, its temperature does vary with temperature of the main oven. As a guide, it is around a third the temperature of the main oven.

Domestic Hot Water Only (DHW)

The supply of domestic hot water to the cylinder is automatic and is at its maximum when the cooker thermostat knob **A** is on No. 6, 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 **A** 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 BURNER").

When the Cooker is Not in Use

During periods of the day when the cooker is not required, the cooker thermostat knob **A** 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 **A** to **LOW** which gives the lowest burning rate and will maintain an oven temperature of about 125°C (257°F). At a higher setting, the oil consumption will be higher, but the main oven, hotplate and domestic hot water will all be hotter. Turn the cooker thermostat knob **A** to No. 6 setting in the morning to increase the hotplate temperature and minimise the time to boil a kettle of 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.

Cooking and Central Heating – Winter Use

Cooker Burner – Use as previously described.

Lighting the Boiler Burner

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

1. Ensure all oil valves are open and oil is in the oil control valve **P**.
2. Depress the trip lever **D** on the front of the oil control valve **P** and turn the boiler oil control valve knob **J** to No. 6 setting.
3. Turn any time clock or programmer to **ON** and move any room thermostat pointer to a higher setting.
4. Switch **ON** the power supply and set the boiler thermostat knob **H** to a thermostat setting of 80°C (180°F) in cold weather and 60°C (140°F) in mild weather.

The lock-out light **K** will illuminate and the airfan become operative. Wait 30 seconds then depress the lock-out button **L** and the lighting sequence will commence.

5. Lighting Sequence

- (i) After depressing the lock-out button **L**, the lock-out light **K** extinguishes and the fan stops.
- (ii) Within 2½ minutes an ignited oil flame will be visible through the glass viewing window **M**.
- (iii) Some 4½ minutes from **START** the flame sensor confirms the established fire and passes control to the boiler thermostat knob **H** until satisfied.
- (iv) The satisfied boiler thermostat will then shut-off the oil supply but the fan remains energised on an overrun period of time of 8-9 minutes and is then ready for the next cycle call.

Boiler Lock-out

Should this occur the boiler will cease to function and a lock-out red light **K** will illuminate.

WAIT 3 MINUTES, THEN DEPRESS THE LOCK-OUT BUTTON L.

The lock-out light **K** will extinguish and the start-up cycle re-commence. Continued lock-out indicates a malfunction that requires qualified attention.

6. Set any programmer or room thermostat to the required setting and the boiler burner will come **ON** and **OFF** automatically upon heat demand.

To Turn the Boiler Off

Turn **OFF** boiler thermostat knob **H**.

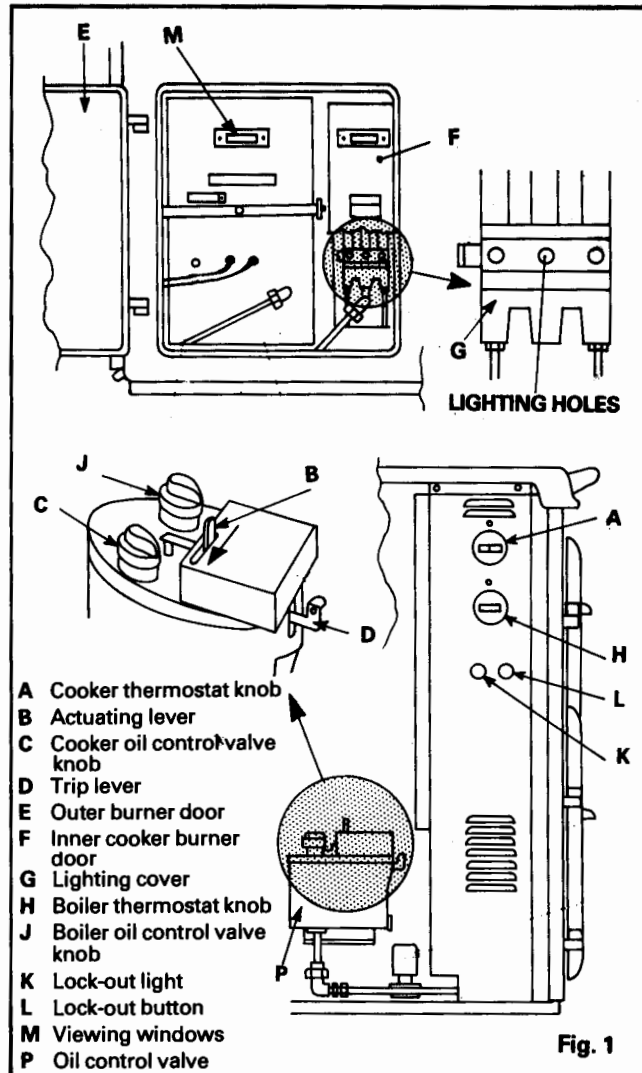
To relight, turn the boiler thermostat knob **H** to the required setting.

Frost Precautions

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

Bi-annual Servicing

With normal use a boiler/cooker 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 **A** and boiler thermostat knobs **H** should be turned **OFF** by the User the night preceeding the day of servicing so that the appliance will have cooled down by the following morning. A hot appliance cannot be serviced.

Cleaning

REMEMBER TO 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.

DO NOT USE ABRASIVE PADS OR OVEN CLEANERS.

NOTE: TAKE CARE WHEN CLOSING THE DOOR TO LIFT THEM ONTO THE CATCH. IT IS NOT ADVISABLE TO PUT VERY WET CLOTHES ON THE HAND RAIL, AS THIS MAY CRAZE THE ENAMEL.

IMPORTANT – USE 28 SECONDS KEROSENE FUEL ONLY.



Installation and Servicing Instructions for Rayburn Oil Nouvelle 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: IN ORDER TO MAINTAIN THE OPTIMUM MAINTAINED PERFORMANCE FROM THIS APPLIANCE, IT IS ESSENTIAL THAT THE INITIAL COMMISSIONING OF THE INTERNAL OIL BURNERS, ARE UNDERTAKEN BY SELECTED, TRAINED INSTALLING SERVICING ENGINEERS. YOUR RAYBURN STOCKIST WILL PROVIDE ADVICE ON THE LOCATION OF THE NEAREST INSTALLING ENGINEER, AND WE ALSO RECOMMEND YOU CONTRACT OUT THE PERIODICAL SERVICING OF THE APPLIANCE TO THIS INSTALLING SERVICING ENGINEER.

Introduction

The Rayburn Oil Nouvelle is a combined cooker and hot water boiler providing central heating, domestic hot water and cooking facilities.

It is available with a vertical flue outlet only, the cooker burner operating on natural draught, the boiler burner being fan assisted, in conjunction with a fully sequential control box.

The boiler is designed for use in an open vented water system only, operating either with gravity D.H.W. primaries and pump heating circulation, or fully pumped systems, if desired.

Hot Water output with boiler burner ON and cooker burner at minimum setting.	18.4kW	(62,900 Btu/h)
Hot Water output with boiler burner ON and cooker burner at maximum setting	20.0kW	(68,530 Btu/h)

The boiler burner will provide heat to 34.8m² (375ft²) of 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 (160 Btu/ft²h). These appliances must only be used with 28 seconds Commercial Kerosene.

There are two independently controlled oil burners, one providing heat to the central heating boiler section, whilst the other provides heat to the cooker and domestic hot water only.

Installation Instructions

The installation of the appliance must be in accordance with the relevant requirements of the current Building 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 Authority and 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. Section 1 – Parts A and B.

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

Building Regulations

J/1/2/3 Provision for protection against fire and heat. Section 1 – Part C.

Appliance Hearth

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

		Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON	Cooker HIGH Boiler ON
Heat Input	kw Btu/h	2.9 9,870	8.2 28,000	26.6 90,900	31.97 110,100
Heat Output Water	kW Btu/h	0.85 2,900	2.5 8,530	18.4 62,900	20.0 68,530
Oil Input Rate	cc/minute	4.75	13.5	40-42	49-51
Weekly oil consumption by cooker only in Summer – 63.5 litres (14.0 gallons)					

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 Valve Inlet RP ¼ (¼in BSP Int)
Flue Outlet Dia. 127mm (5in Int)
Electrical Supply 240V ~ 50 Hz 3 amp Fused.

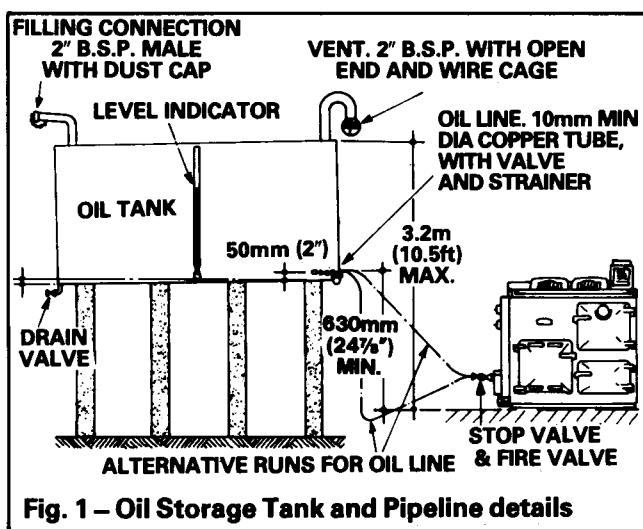
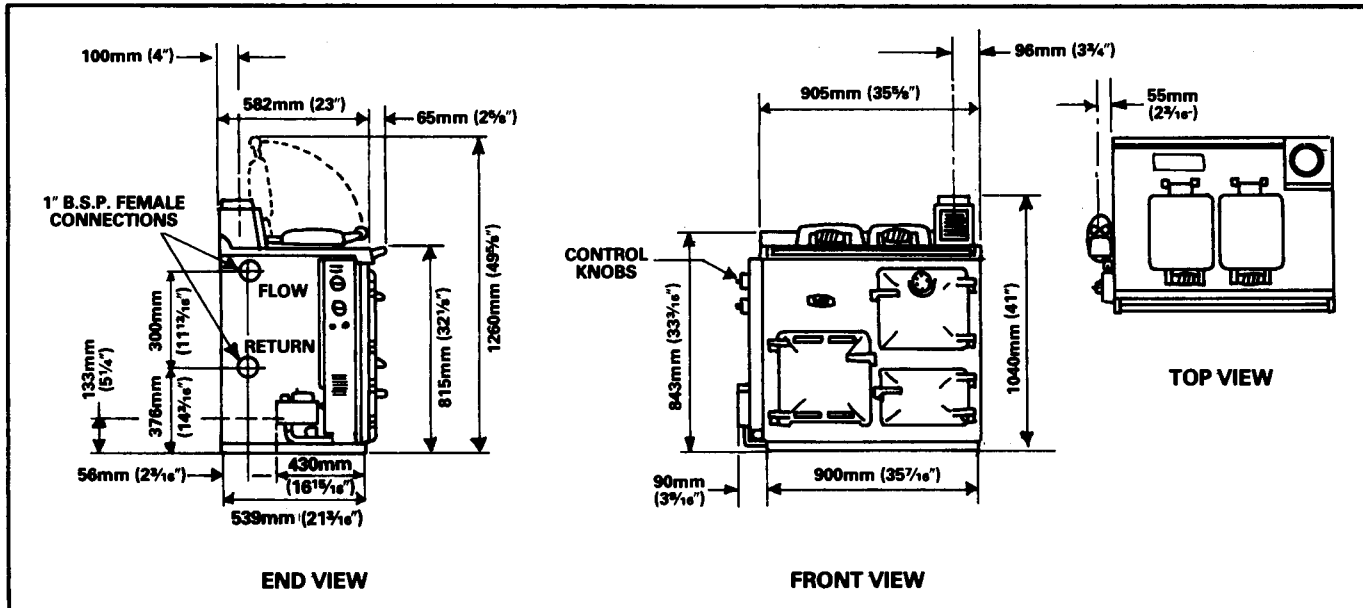
Water Capacity of Boiler 12.5 litres (2.75 galls)

Weight of Appliance 348kg (766lb)

Appliance Overall Dimensions Height: 975mm (38¾in)
 Width: 997mm (39¼in)
 Depth: 647mm (25½in)

FUEL – COMMERCIAL KEROSENE
 28 Seconds to BS. 2869: Part 2:1988 Class C2.

Installation Instructions



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" (pages 7-10).

Oil Storage – See Fig. 1

The minimum recommended oil tank size is 1400 litres (300 gallons) and the Codes of Practice governing its 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 installation of Plastic Oil Tanks as an alternative consideration.

The oil storage tank must be positioned with the bottom of the tank not less than 630mm (24 7/8 in), and the top not more than 3.2m (10.5ft) above the base of the cooker.

Oil Pipe Line

The oil line from the storage tank to the appliance should be fitted with a remote acting fire valve (such as a Teddington KBB-66°C) located outside the building, or where the supply enters the wall on the inside of the building and with the heat sensing phial of the fire valve, located as near as practicable on the L.H. side of the cooker.

A 5-10 micron oil filter should also be fitted in 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.

Flue System – See Fig. 2

Detailed recommendations for fluing are given in the current Building Regulations J/1/2/3 – Section 2, Part 'B'. The following notes are intended to give general guidance:-

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 (14.75ft) high.

The flue pipe to be used must be not less than 125mm (5in) 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 (6in) 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.

A 150mm (6in) minimum diameter factory-made insulated chimney, complying to BS. 4543 may be fitted and installed to BS. 6461 Part 2.

Use of older existing chimneys

Older early chimneys may well be constructed without chimney liners, and where it is proposed to replace an existing appliance, the chimney must be thoroughly checked against blockage, and the internal/external chimney condition checked against porosity or leakage and loose pargeting.

Doubtful chimney soundness should be checked by a smoke test, and action taken to remedy any damage/faults. If in doubt seek the Building Control Inspectors guidance on flues.

Ensure the chimney is swept over its entire height before connection of new appliance, also confirm no other appliance can share the chimney and that any chimney mid-feather walls are intact and the complete chimney airtight.

When confirmed, sufficient draught will be available to operate the appliance correctly.

Chimney Terminations

All chimneys should terminate above the roof level in accordance with current Building Regulations and statutory requirements as outlined in BS. 6461:1984 Parts 1 and 2.

However well-designed, constructed and positioned, the satisfactory performance of a flue can be adversely affected by the down-draught caused by adjacent tall buildings and trees or even nearby hills. These deflect the wind creating a zone of high pressure over the terminal causing it to blow directly down the chimney flue. A suitable anti-downdraught terminal such as the Marcone will usually effectively combat low pressure down-blow but no known cowl is likely to prevent down-draught due to a high pressure zone.

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 heating season.

High Chimney Draughts

The appliance is fitted with an integral flue stabilizer, able to control the draught in the flue pipe to about 6.0mm w.g. A well sealed, tall exposed chimney on a hill, is an instance where generated draughts could be in excess of this figure.

Should this occur, a flue stabilizer must be fitted either in the flue pipe or chimney, but in the same room as the appliance.

Draughts in excess of 6.0mm w.g. must then be controlled by adjusting this additional stabilizer down to this figure.

Air Supply

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

Kitchen or Internal Space Air Supply

Wherever a flued 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 260cm² (40in²).

40 SQUARE INCHES (6 x 6 APPROX)

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

Detailed recommendations for the water circulation system are given in BS. 5449:1 (for smallbore 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 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 (60ft).

Central heating, smallbore or microbore systems should comply with the recommendations of BS. 5449, Part 1 and water carrying copper tubes should be to BS. 2871, Part 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 CP. 342 – Part 1.

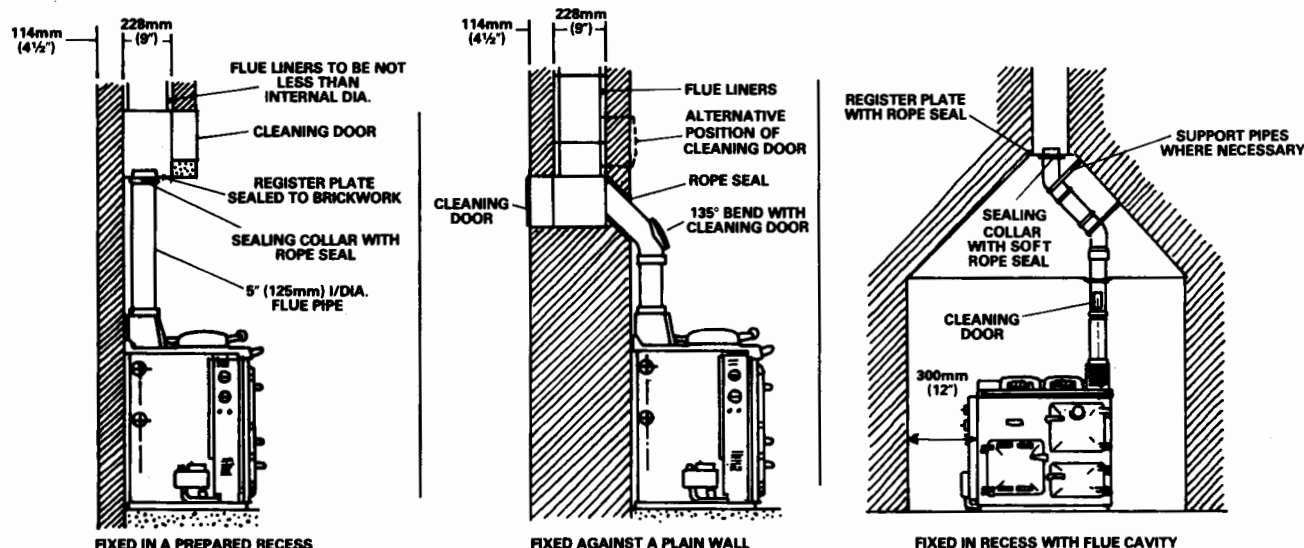


Fig. 2 – Flue Layouts

Installation Instructions

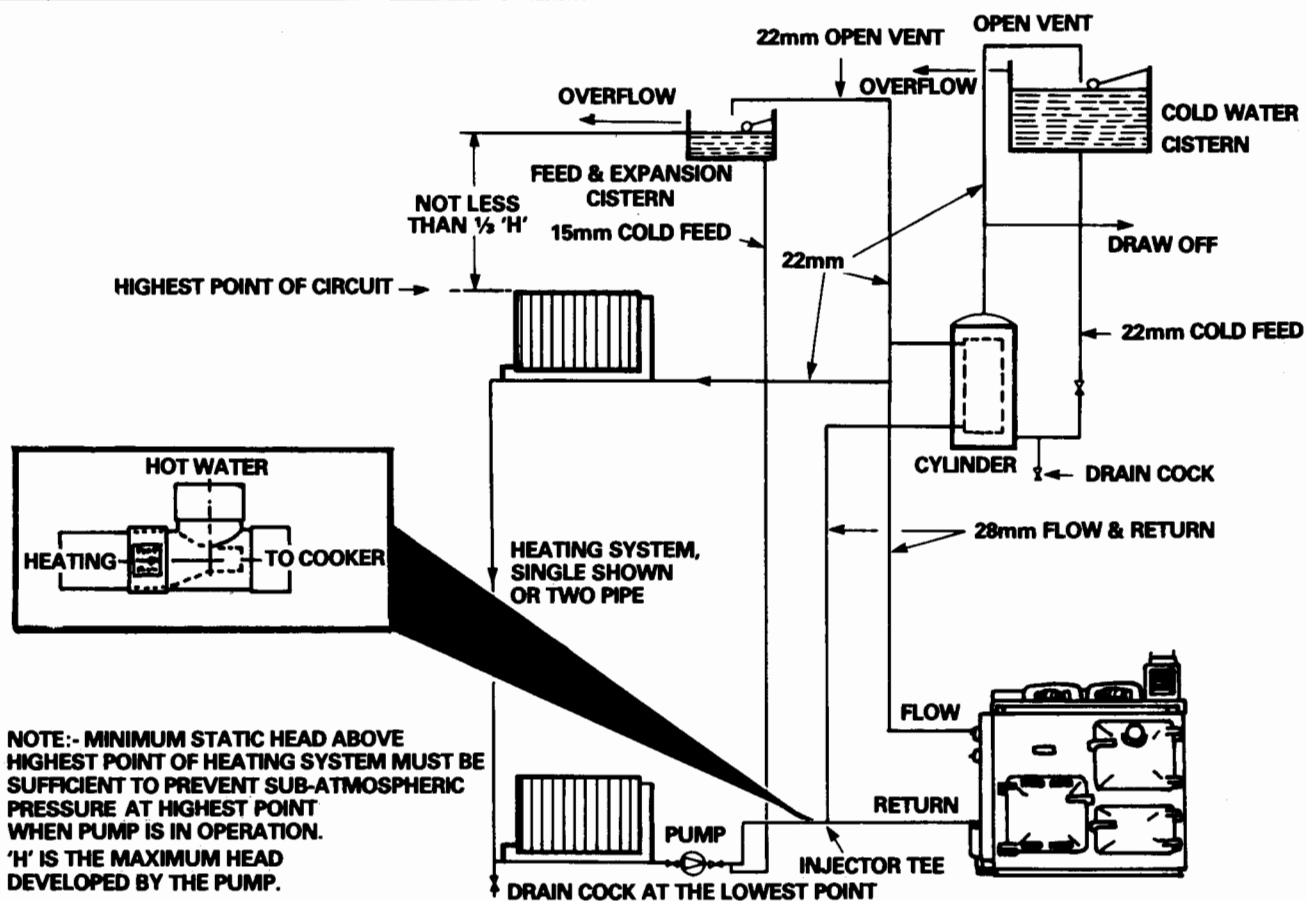


Fig. 3a – Typical DHW Gravity System

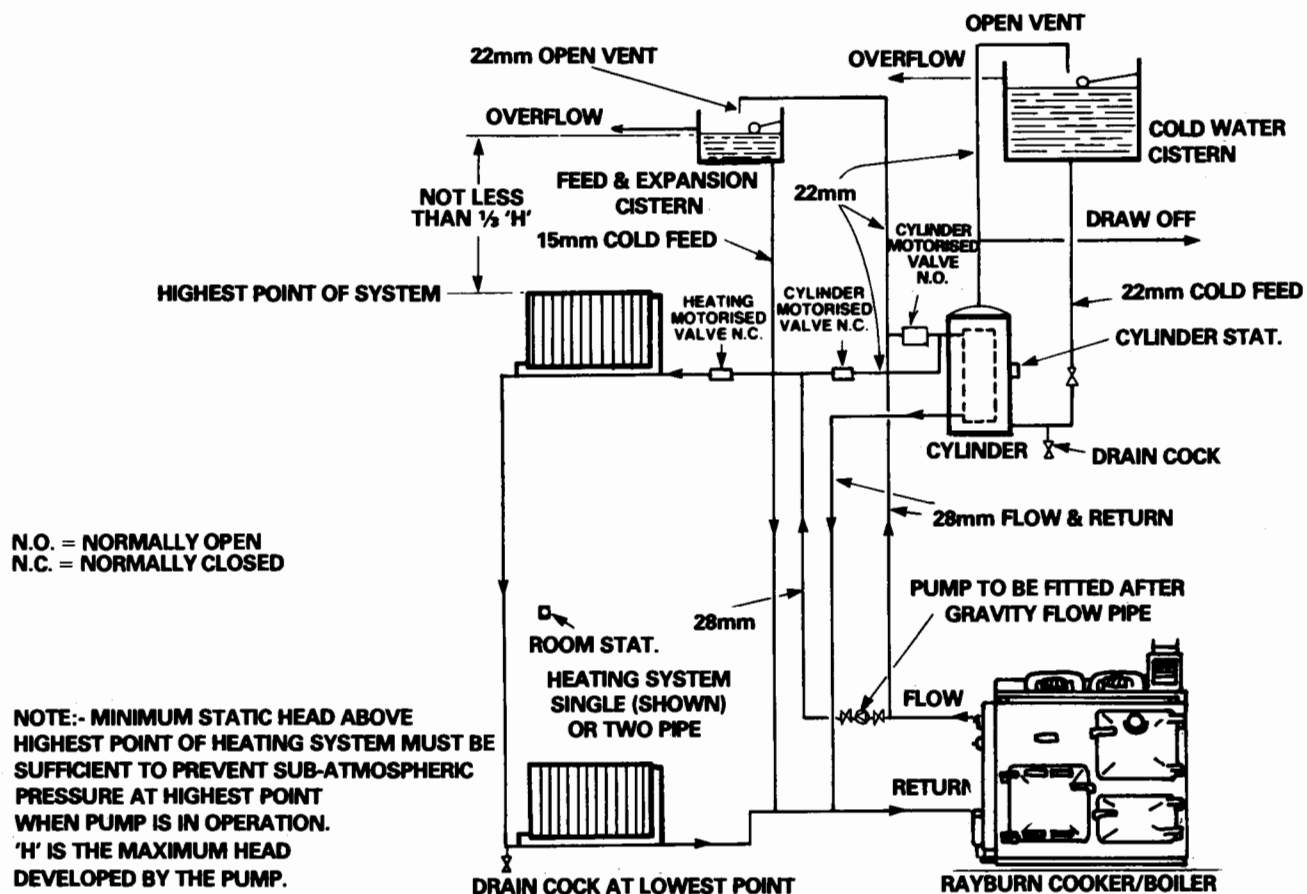


Fig. 3b – Typical Fully Pumped System

Controls

Independent temperature controls including a time switch are recommended for providing comfortable room temperatures.

Typical controls can be two or three port 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 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 Figs. 3a and 3b.

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. 4 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.

Boiler Output	17.5kW (60,000 Btu/h)
Temperature differential across the boiler	10°C-14°C (18°F-25°F)
Water Flow Rate	1091-1515 litres/h (240-333 galls/h)

Refer to boiler section pressure loss curve – Fig. 4.

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.

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 the BS. 1566 Part 1: DF Type 10, should be insulated, preferably with not less than 75mm (3in) thick mineral fibre or its equivalent, 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, 50 Hz and fuse rating of 3 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 (R.C.C.B.).

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. 5.

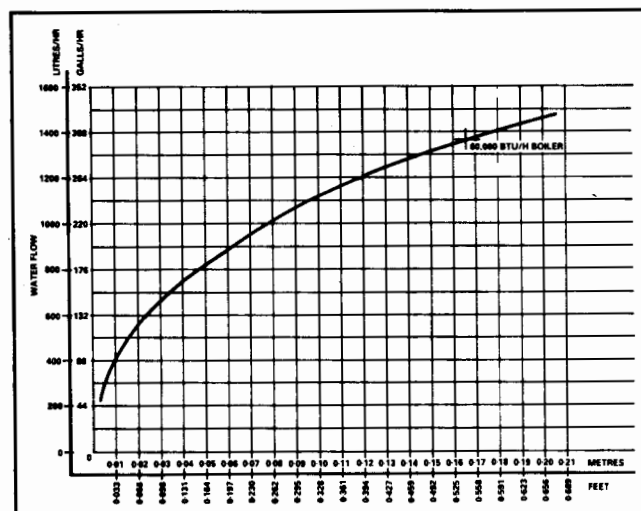
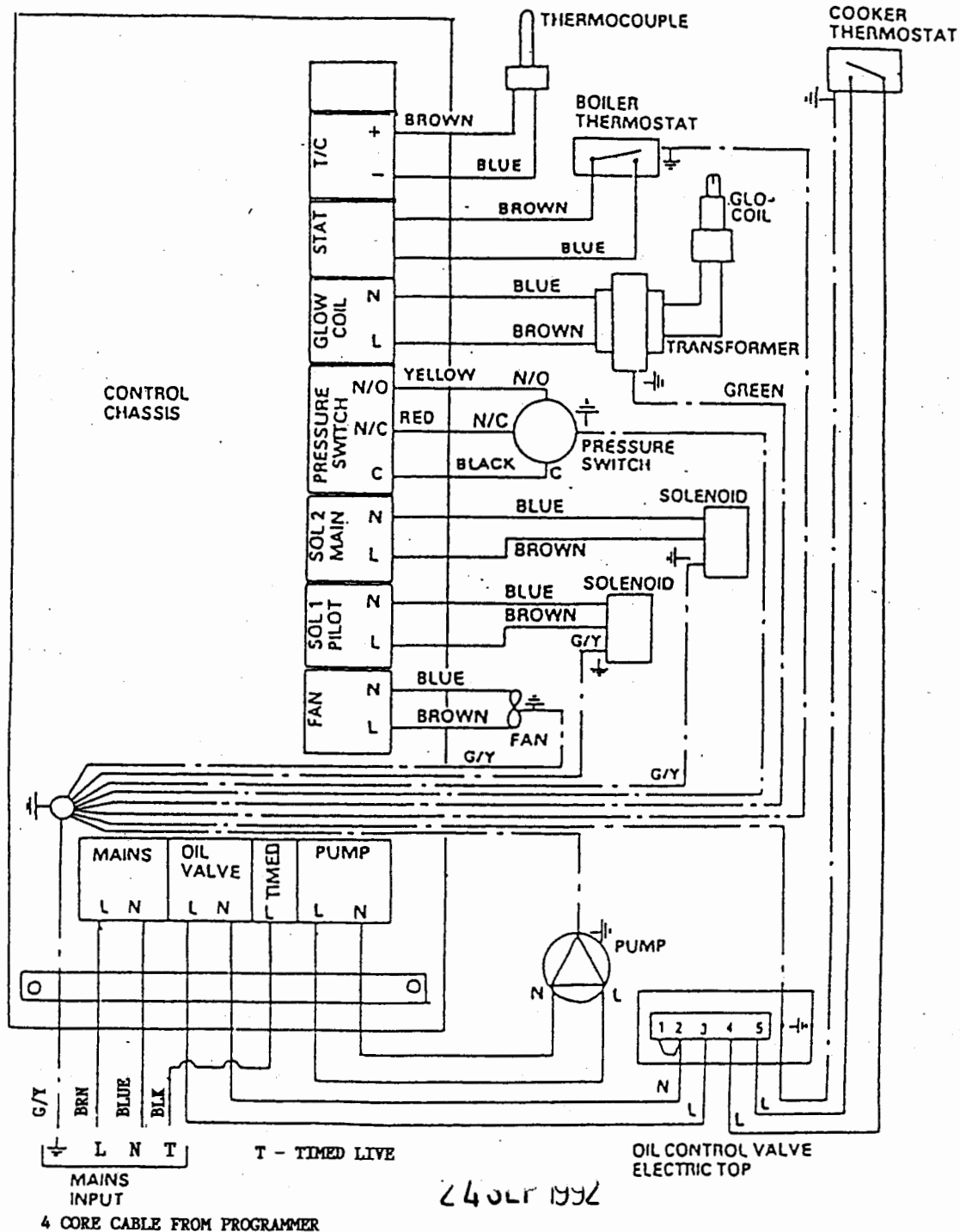


Fig. 4 – Pressure Loss Curve



2. (i) Unscrew the pinch screw locating the Flame Sensor and withdraw the Sensor from the combustion chamber. See Fig.11.
- (ii) Detach electrical connections at ignition glo-coil. See Fig.11
3. Slacken off boiler burner retaining tie bar bolt, remove tie bar, and holding the strap handle, horizontally withdraw the boiler burner forward gently, until clear of appliance. See Fig.11.
4. (i) Remove two bolts securing boiler burner top baffle and detach.
- (ii) Remove two end baffles and interstage baffles from within boiler burner.
- (iii) Check that wick on glo-coil is attached to glo-coil bracket and that the wick free-end is in contact with the pot reservoir. **WICK MUST NOT TOUCH COIL.**

Checking The Boiler Burner Oil Level

- (iv) Re-insert the boiler burner (minus any baffles), within the combustion chamber, ensuring it is fully engaged, refit the tie bar and secure with tie bolts.
- (v) Connect the main and pilot oil feed supplies/controls between the Oil Control Valve and the boiler burner. See Fig.11.

NOTE: IN ALL CASES, BOTH OIL PIPES MUST RISE CONTINUOUSLY FROM THE LOWEST POINT AVOIDING ANY PIPE KINKS. ON INITIAL COMMISSIONING, AIR MAY HAVE TO BE PURGED FROM BOTH PIPES TO OBTAIN OIL FLOW.

- (vi) Connect electrical power supply to appliance.
- (vii) Connect oil supply tank pipe, to inlet of Oil Control Valve, open all oil valves to allow oil into Oil Control Valve. It may be necessary to purge the oil line to prevent air locking.
- (viii) Depress the trip lever **D** on the front of the Oil Control Valve **P** (See Fig. 15) and turn the Boiler Oil Control Knob '**J**' to No.6 setting.

WARNING: ENSURE BOILER THERMOSTAT IS TURNED OFF

- (ix) Temporarily transfer the main solenoid power cable leads from the Control Panel to the incoming supply terminal block.
This will enable the main solenoid to open independently and allow oil to the boiler burner.
- (x) Wait about 10-15 minutes until the depth of oil within the boiler burner settles to a stabilized static depth.
Lower a dipstick through the hotplate aperture, until it seats onto the boiler burner base at its centre. Remove the dipstick and measure the oil depth which must register 15-17mm depth.
To correct the oil depth, adjust the Oil Control Valve height via the adjusting screws between the valve and mounting bracket.
When correct, ensure the valve is level in all directions and secure, then isolate electric power and re-transfer main solenoid cables, back to the control panel.
- (xi) Turn Boiler Control Knob **J** to **OFF**, disconnect the main inlet oil feed and pilot oil feed at the front of the boiler burner. Collect the oil spillover into a receptacle, then proceed to withdraw the boiler burner as indicated previously.
- (xii) Replace two interstage baffles, and end baffles ensuring correct location, then re-secure boiler burner top baffle.
- (xiii) Re-insert the boiler burner into the combustion chamber ensuring it is fully engaged, refit the tie bar and secure with tie bolts.
- (ixv) Re-connect the main and pilot oil feed pipes as previously described.

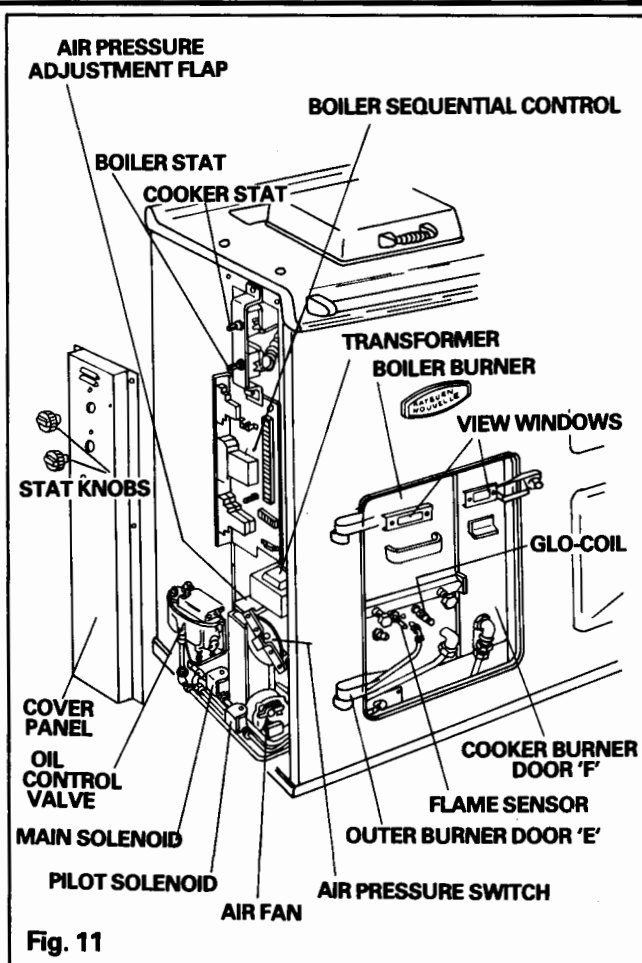


Fig. 11

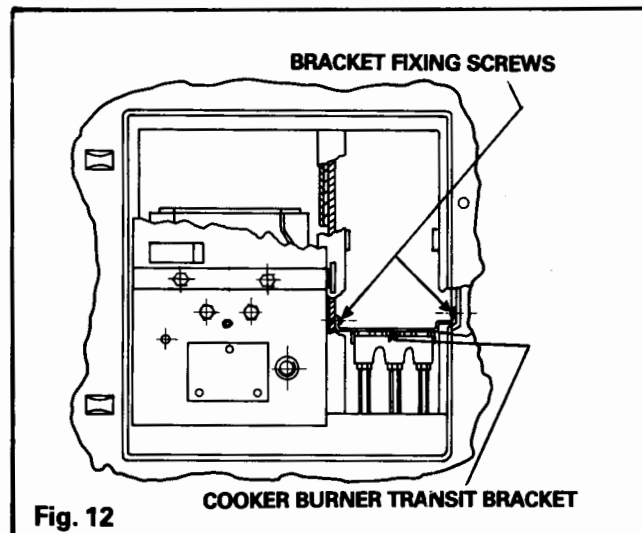


Fig. 12

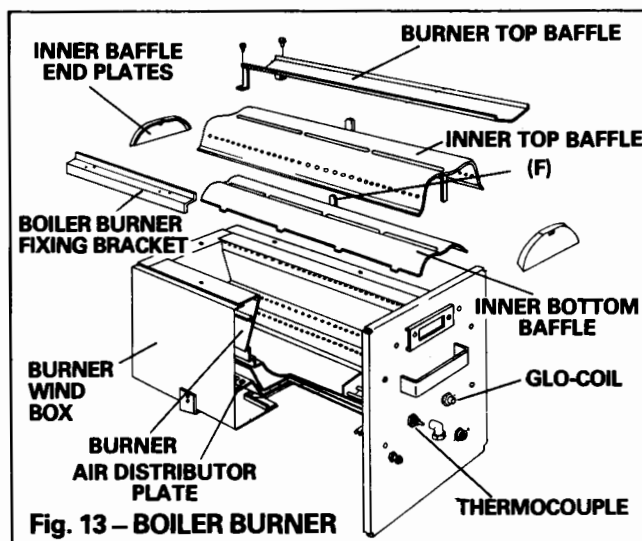


Fig. 13 - BOILER BURNER

Installation Instructions

- (xv) Re-connect electrical cable leads to glo-coil terminals, and insert Flame Sensor into combustion chamber and secure. Ensure shakeproof washer is fitted under Glo-Coil Locking Nut, and that Locking Nut, is tightly secured, by using the blade of a screwdriver in Nut Locking Slot.
- (xvi) Replace boiler front firebricks, boiler cover baffle and hotplate assembly in reverse method previously described.

Cooker Burner

1. Open outer burner door and lift/remove R.H. cooker inner burner door.
2. Remove screws securing cooker burner base front transit clamp to combustion chamber base and dispose of clamp – See Fig. 12.
3. Using a cross spirit level, confirm the burner base is level in all directions with the three levelling screws in location recesses of combustion chamber.

WARNING: THE BURNER BASE MUST BE LEVEL.

4. Remove the cooker burner base and check that the wicks fit, and the burner vapour chamber sealing plate provides an airtight bridge to seal the burner shells on. Remove the perforated burner shell assembly from separate packaging and check the shell sides are not restricted by the cross pin locations and are free to lift and fall on the burner base. Ensure the assembly seats closely to the burner box machined face grooves (lighting ports at the burner front). Check that the burner heat baffle above, fits into the top of the perforated burner shell, then dismantle back to the burner base.
5. Replace the cooker burner base into its location within the combustion chamber and connect the oil feed pipe.
6. Connect the oil feed pipe from the boiler and cooker burners to the respective outlet fittings on the underside of the oil control valve – See Fig. 14.

NOTE: THE COOKER OIL CONTROL VALVE OUTLET IS FURTHEST AWAY FROM THE APPLIANCE, THE OTHER BEING THE BOILER OIL CONTROL VALVE OUTLET.

Checking the Cooker Burner Oil Level – Fig. 15

1. Open all oil valves to allow oil into the oil control valve. It may be necessary to purge the oil line to prevent air locking.
2. Depress the trip lever **D** on the front of the oil control valve **P** and turn cooker oil control knob **C** to No. 6 setting. Oil should enter the cooker burner base in due course, and after about 10-15 minutes, the depth of the oil should have settled to a static depth of 10mm ($1\frac{1}{3}$ in). To correct the oil depth, slacken the nuts securing the threaded support legs and adjust leg height to suit. Re-check the cooker oil burner is level in all directions.
3. With a constant oil depth of 10mm, tighten the locknuts on the oil burner levelling screws.

IMPORTANT: THE COOKER OIL BURNER BASE MUST BE LEVEL IN ALL DIRECTIONS AND THE OIL DEPTH STABLE AT 10mm DEEP.

General

- a. Turn cooker control knob **C** to **OFF**, disconnect the copper pipe connection at the burner base and withdraw. Draw off the oil in the cooker burner base. See Fig. 15. Alternatively, the oil can be sucked out using an aspirator.
- b. Fit the burner wicks, sealing plate and perforated shell assembly with top baffle, checking that the shell assembly seats airtight on the burner base.

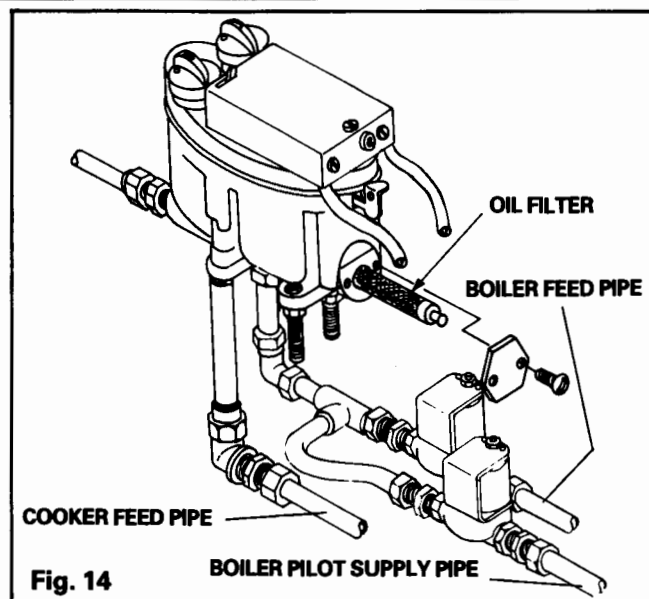


Fig. 14

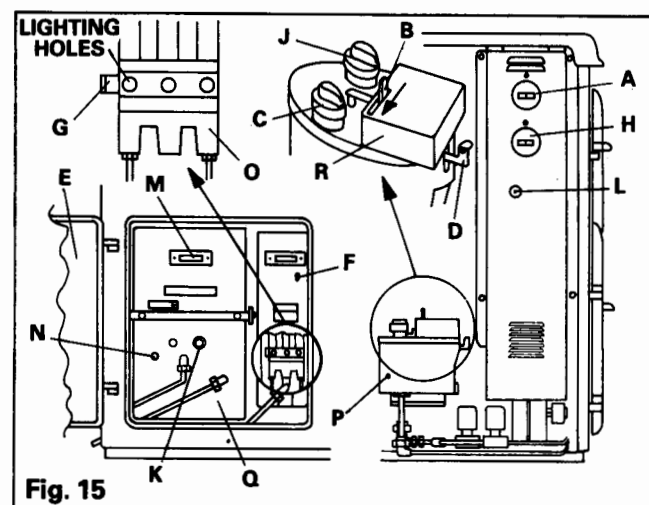


Fig. 15

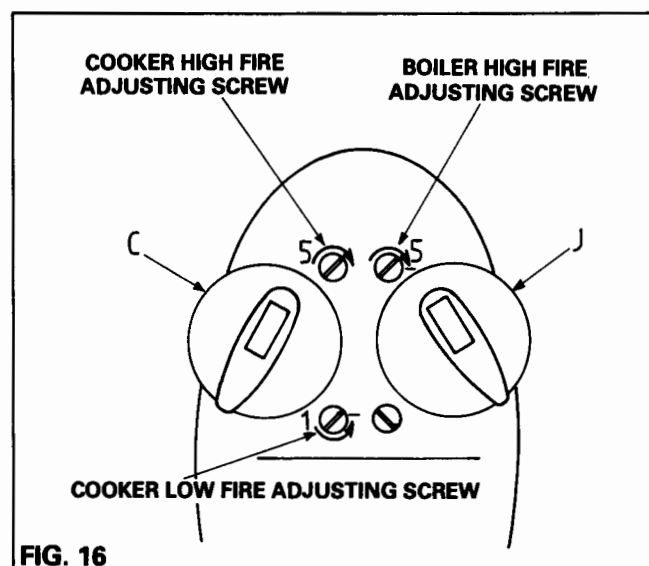


FIG. 16

- c. Replace the cooker burner and reconnect oil pipe.
- d. Ensure burner shell assembly location is seated airtight by carefully holding the assembly and slide it in a restricted forward/backward manner.

Commissioning and testing

Electrical Installation

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

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.

Lighting the Boiler Burner – See Fig. 15

1. Remove oil filter within oil control valve (See Fig. 14) and connect oil flow gauge assembly.
2. Ensure all oil valves are open and oil is in the oil control valve.
3. Depress the trip lever **D** on the front of the oil control valve and turn the boiler oil control valve knob **J** to No. 6 setting. Oil will now flow from the control valve.
4. Connect the 3 pin plugged end of the appliance cable into a power supply and switch **ON**.

5. Lighting Sequence

- (i) Set the boiler thermostat knob **H** to a thermostat setting of 80°C (180°F) whereupon the airfan unit will become operative, the ignition glo-coil **K** will start to heat up.
- (ii) After 1 minute, the pilot oil solenoid will energise and allow pilot oil supply to the boiler burner. Entry and rate of pilot oil flow is dependant on a small static head of oil from the constant level oil valve. Reduction or loss of this head, will result in pilot oil starvation e.g. low constant oil valve location or conversent, high burner pot location.
- (iii) The pilot oil supply will ignite within 30 seconds of oil flow, and be recognised by the thermocouple, which switches the pilot solenoid and glo-coil **OFF**, and switches the main oil flow solenoid **ON**.
- (iv) The activated boiler thermostat isolates power from the main oil solenoid, to interrupt the oil supply, but the fan remains energised on an overrun period time of about 5 minutes, depending on the length of **ON** time boiler cycle. This enables all the oil in the burner to be burned and also the cooling of the flame sensor, which then isolates power from the fan, ready for the next cycle call.
With the call for hot water, the boiler thermostat re-activates, and the complete cycle starts again.
- (v) Allow the boiler burner to operate for 2 to 3 cycles, then during a boiler **ON** period, proceed with the following checks.

Checking The Boiler Burner Fan Pressure

1. Connect pressure gauge to nipple **N**. Initial cold start should indicate a cold pressure reading of 3.1mm w.g. (0.125in w.g.) which on hot cycling, should rise to a stable 4.1mm w.g. (0.165in w.g.).
2. Adjust excess air pressure via air pressure adjustment flap on top of air duct at the L.H side of cooker. (See fig 11.) No adjustment of the air pressure switch is needed.
If pressure is low, remove plastic sensor tubes from Fan Scroll and Fan Duct, and connect a differential pressure gauge across the nipples. This reading should register between 8 – 11mm water gauge.
This should confirm whether the fan performance is adequate.
If the fan performance is confirmed, there must be a windbox air leak, and this should be investigated by

removal of the boiler burner assembly for examination of the underside gasket seal.

3. Disconnect pressure gauge and replace plug nipple.

Checking The Boiler Burner Oil Flow Rates

1. Set the cooker oil control knob **C** to **OFF** setting to check for correct boiler burner oil flow rates.
2. Set the boiler oil control valve knob **J** to No 6 setting.
3. With the boiler thermostat knob **H** set at maximum, the firing sequence of the boiler burner will commence.
4. Open the oil flow gauge valve to fill the gauge with oil, and by isolating the oil supply (via service valve) from the oil flow gauge, measure the oil flow rate by stop watch.
It should measure a consumption of 35–37cc per minute.
5. Restore the oil supply by opening/closing the respective valves.

6. Incorrect Boiler Burner Oil Flow Rate

If the measured oil rate is incorrect, adjustment should be made by the high fire adjustment screw on top of the oil valve – see Fig 16.

Observe a slotted head screw adjacent and to the left of control knob **J** in position 5.

Gently turn the screw anti-clockwise to increase, or clockwise to decrease the high fire oil rate, taking care not to exceed ¼ turn screw increments until the current oil rate is confirmed.

7. Boiler Burner Draught

Remove the enamelled top plate cover panel **A** behind the LH insulating cover where a plugging screw will be seen. See Fig. 7 of Servicing Instructions. Remove this screw and insert pressure gauge sensing end, to measure the boiler burner draught with boiler under fire. There should be a draught of between 0.3 to 0.5mm w.g. (0.012-0.020in w.g.).

8. Boiler Burner Smoke Test

Remove the pressure gauge, and using the same hole for flue sampling, insert the sensing end of a Baccarach Smoke Pump. A Smoke No of 0–1 should be confirmed. Re-assemble in the reverse order after confirming.

Boiler Burner Lockout

Fail-safe protection has been built into the Sequential Control so that in the event of any deviation from the timing programme, or component malfunction, a lock-out condition occurs, with the display of lamp **L**. Interruption of the Sequential Control power with the exception of the continuous running fan.
To cancel the lock-out condition, turn the boiler thermostat knob from **ON** to **OFF**, then back to **ON**. The cycle will then re-commence.

WAIT 3 MINUTES BEFORE TURNING THE THERMOSTAT KNOB ON.

Continued lock-out indicates a malfunction that requires qualified inspection – See Fault Finding Chart.

Lighting the Cooker Burner – See Fig. 15

1. Depress the trip lever **D** on the front of the oil control valve and turn the cooker oil control knob **C** to No. 6 setting.

NOTE: THE ACTUATING LEVER B ON THE ELECTRIC TOP MOUNTED ON THE OIL CONTROL VALVE TOP, PERMITS MANUAL CONTROL TO OBTAIN MAXIMUM OIL FLOW RATES IN THE EVENT OF POWER FAILURE AND DEPRIVATION OF THERMOSTAT USE. ENGAGE THE ACTUATING

Installation Instructions

LEVER B BY PUSHING TO THE LEFT AND ENGAGING IN THE NOTCH OF THE COVER. THIS ALLOWS THE ACTUATING PLUNGER BUTTON TO EXTEND UPWARD AND GIVE HIGH FIRE OIL RATE.

USE ACTUATING LEVER WITH POWER FAILURE ONLY.

2. Switch power **ON** and set oven thermostat knob **A** to maximum.
3. With the outer door **E** open, remove/lift out the cooker burner door **F**.
4. After allowing 15 minutes for oil to settle in the cooker burner base, slide lighting cover **G** on front of burner shells to the left to expose two lighting ports.
5. Light the 3 front wicks through the lighting ports and close the horizontal lighting cover.
Replace cooker burner door **F** and outer door **E**.
6. The cooker oil burner will gradually increase its oil rate, yet under the control of the oven thermostat, taking 2½ hours to attain 200°C (400°F) from cold.

Checking Cooker Burner Oil Flow Rates

1. Set the boiler oil control valve knob **J** to **OFF** setting.
2. Check for correct cooker burner oil flow rates and combustion in the following order only:
 - (i) Set the cooker thermostat **A** to **LOW** and wait about 5 minutes for the burner to settle to low fire rate.
 - (ii) Open the gauge valve to fill the oil flow gauge with oil, and by isolating the oil supply (via other valve) from the oil flow gauge, measure the oil flow rate by stopwatch.
It should measure 4.7 to 4.9cc per minute.
 - (iii) Restore the oil supply by opening/closing the respective gauge valves.

3. Incorrect Low Fire Oil Rate

ALWAYS ADJUST THE LOW FIRE RATE FIRST

If the measured oil rate is incorrect, adjustment should be made by the low fire adjustment screw on the top of the oil valve. See Fig. 16.

Look at cooker control knob **C** and observe a slotted head screw, adjacent and to the right of knob position 1.

Gently turn the screw anti-clockwise to decrease or clockwise to increase the low fire oil rate taking care not to exceed about ¼ turn screw increments until correct oil rate is established.

(iv) Set the cooker thermostat **A** to maximum and wait about 5 minutes for the burner to attain high fire rate.

(v) Carry out the procedure described in 2(ii) to obtain high fire rate.

It should measure 13.7 to 13.8cc per minute.

4. Incorrect High Fire Oil Rate

THE HIGH FIRE RATE MUST NEVER BE ADJUSTED UNTIL THE LOW FIRE RATE IS CONFIRMED.

If the measured oil rate is incorrect, adjustment should be made by the high fire adjustment screw on the top of the oil valve. Adjacent to control knob **C** will be seen a slotted head screw, adjacent and to the right of knob position 5. See Fig. 16.

Gently turn the screw anti-clockwise to increase or clockwise to decrease the high fire oil rate, taking care not to exceed about ¼ turn screw increments, until correct oil rate is established.

5. Smoke Test: Cooker Burner

Remove the louvred front of the flue chamber and identify a sampling hole below the bottom edge of the flue stabiliser on the flue chamber front. See Fig. 7.

Sample the flue products through the hole for a Smoke

Test utilising a Baccarach Smoke Pump where all readings should indicate a Smoke Number 0-1 under the following checks.

- (i) At low fire rate with cooker burner only.
- (ii) At high fire rate with cooker burner only.

6. Appliance And Flue Pipe Draught

i) Flue Pipe Draught

The draught must be measured in the flue pipe above the flue chamber, and must not exceed 6mm w.g. (0.24in w.g.) at any time.

Should excessive draughts occur, a flue stabilizer should be fitted on the flue pipe between the top of the flue chamber and the kitchen ceiling, for controlling the excessive chimney draught down to 6mm w.g.

ii) Appliance Draught

The draught in the boiler and cooker flues should be collectively checked, and for optimum performance, draught measurements with respect to Flue Pipe Draughts, should be as indicated in Fig. 17.

7. Remove oil flow gauge and replace with filter and blanking plate.

8. Remove the cooker burner door **F** and make final inspection to ensure burner shell assembly has remained sealed to burner base.

Boiler Control Check

Check that:-

1. The boiler system is full of water and all valves are fully open.
2. Any room thermostat is **ON**.
3. Any programmer or time switch is set at continuous heating.
4. Ensure the electricity supply is **ON**, that the pump is running and the boiler thermostat set at 80°C (180°F).
5. Allow the heating system to warm up then set the pump adjuster to maintain a boiler "flow and return" temperature differential of 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.
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 D.H.W. only.
6. 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.
7. 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.
See notes under heading **"METHOD OF APPLIANCE CONTROL"**.

METHOD OF APPLIANCE CONTROL

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

Appliance controls are incorporated at the left-hand side of the cooker.

Cooker Burner – See Fig. 15

The cooker burner **O** must be lit manually with a lighted taper and allowed to establish itself at low fire rate, i.e. with the cooker thermostat knob set to **LOW** position. Oil flow (heat input) is increased by electrically activating the oil control valve top mechanism **R**, which is then controlled by the cooker thermostat **A** set at selected settings to suit.

LOW is the minimum (and idling) rate and settings up to No. 6 will provide a maximum thermostatically controlled oil rate, and an oven temperature of 270°C (518°F).

When the temperature is obtained, the oil rate modulates downward until temperature recall.

See Users Instructions for thermostat cooking setting.

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

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.

Boiler Burner – See Fig. 15

The boiler burner **Q** is operated by an electrical sequential control box (Fig. 11) and controlled by a boiler thermostat **H**. With electrical power connected and the boiler thermostat **H** set at maximum setting, the airfan and ignition glo-coil will become energised, and the lighting sequence commence.

After 1 minute of glo-coil ignition the pilot oil solenoid valve will energise and allow a pilot oil supply to the boiler burner.

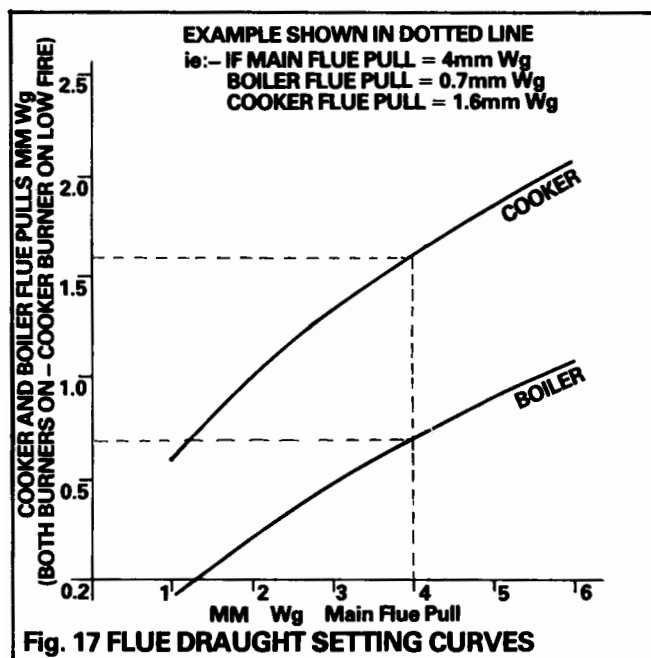
The pilot oil supply will ignite within 30 seconds of oil flow, and be recognised by the thermocouple. This switches the pilot solenoid and glo-coil **OFF**, and switches the main oil flow solenoid **ON**.

With boiler temperature attainment, the boiler thermostat **H**, interrupts the oil supply through the main oil solenoid (Fig.11).

The fan continues to give an overburn to burn any excess oil in the burner, and also to cool down the flame sensor (Fig.11), which may take up to 5 minutes, depending on the length of boiler burner cycle.

With temperature reduction on the flame sensor, power is isolated from the fan and the sequence control is ready for use upon call by the boiler thermostat.

NOTE: LEAVE THESE INSTRUCTIONS WITH THE USER.



Servicing Instructions

Twice Yearly Servicing

It is important that service cleaning is carried out at least twice yearly by a competent service engineer, and it is recommended that a contract be made with a registered heating installer. With normal use, a boiler/cooker half yearly flueway clean and burner service should be carried out immediately at the commencement and 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 **A** and **B** (Fig. 1a) 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 oil supply at the isolating valve near to the appliance.

Standard Half Yearly Service Schedule

- a. Service clean of complete boiler heat exchanger over flueways, oven and hotplate flueways together with boiler firebricks – Section 4.
- b. Service clean of complete cooker and boiler oil burner – Sections 2, 3a and 3b.
- c. Detailed examination of glo-coil and clean.

NOTE: DEPENDING ON USAGE, GLO-COILS MAY DETERIORATE (HEAT OXIDING) AND REQUIRE REPLACEMENT AT THE END OF RESPECTIVE HEATING SEASON.

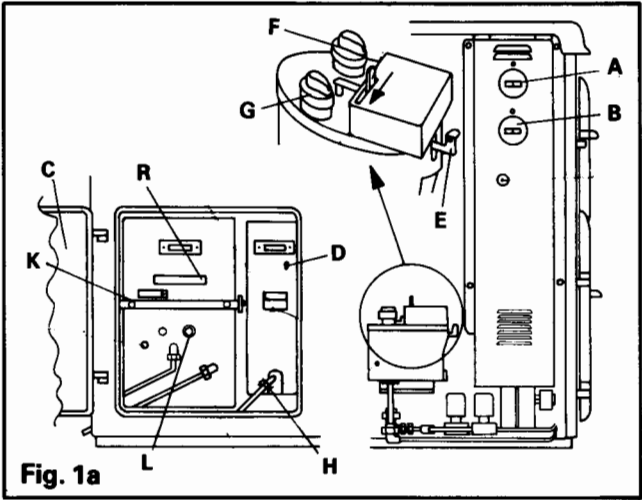
Standard Yearly Service Schedule

- a. Service maintenance check of cooker and boiler thermostats – Sections 5 and 6.
- b. Service maintenance check of boiler combustion fan unit, air pressure switch and oil solenoid – Sections 8, 9 and 10.
- c. Service maintenance check of boiler flame sensor, oil valve and its electric top – Section 11.
- d. Check on cooker and boiler oil flow rates – Section “Post Servicing Checks”.

1. To Obtain Servicing Access

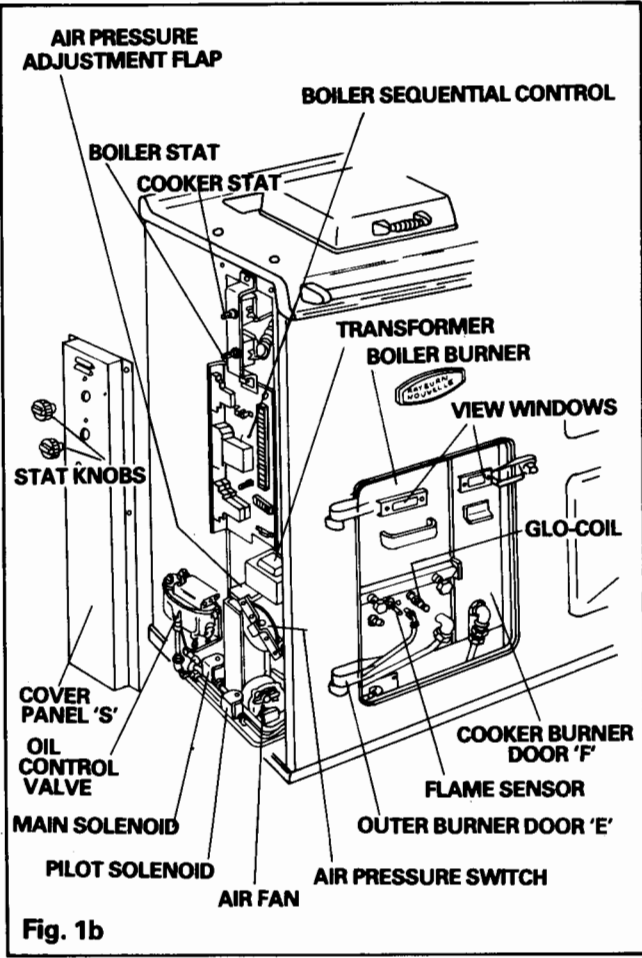
To obtain servicing access to boiler heat exchanger, oven and hotplate flueways, boiler firebricks and both oil burners, proceed as follows:

- a. Lift out the hotplate via the lifting tools – See Fig. 2.
- b. Lift out boiler combustion separator baffle and remove boiler flueway firebricks – See Fig. 3.
- c. Open outer burner door **C** – See Fig. 1a.
- d. Lift off cooker combustion chamber door **D** – See Fig. 1a.



2. To Remove Cooker and Boiler Burners – See Fig. 1a

- a. Ensure isolation of the electrical supply (switch **OFF** or remove plug).
- b. Ensure that the oil line isolating valve, near to the appliance is turned **OFF** and the trip lever on the appliance **E** is lifted up.
- c. Set boiler and cooker oil control valve knobs **F** and **G** from Position 6 to **OFF**.
- d. To Remove Cooker Burner
 - (i) Break the cooker oil feed pipe at inlet joint **H** taking care to collect Kerosene residue from burner oil pipe when inlet joint is separated.
 - (ii) Carefully lift complete oil burner assembly (See Fig. 4) out of combustion chamber, and stand on servicing surface.
- e. To Remove Boiler Burner – See Fig. 1a.
 - (i) Slacken off boiler strap retaining bolts and remove boiler strap **K**.
 - (ii) Disconnect electric ignition glo-coil at terminal connections **L** on boiler burner front, then push the connecting leads backwards to provide burner withdrawal access.
 - (iii) Remove flame sensor via location bracket on boiler burner front.
 - (iv) Break the boiler pilot and main oil feed pipes at burner pot inlet joints, taking care to collect Kerosene residue from burner oil pipes when the inlet joints are separated. Push pipework down.
 - (v) Place hand on boiler burner handle **R** and carefully, but forcefully, draw burner assembly forward from cooker, and lift out onto servicing area.



3. a. To Clean Cooker Burner – See Fig. 4

- (i) Remove and brush clean, the top heat baffle **A** free of soot, etc. on both surfaces.
- (ii) Remove burner shell assembly **B** and check that any heat deformation is minimal, the assembly is free of heat oxidised surfaces, and is interlocked together. Remove any internal/external surface deposits with soft brush.
- (iii) Remove the six wicks **C** and vapourising chamber plate **D** from oil burner box. If the wicks are badly charred or heat hardened, prepare replacements and clean vapourising chamber lid free of carbon deposit.
- (iv) Carefully remove any carbon deposit on machined surfaces of oil burner base which provide seating for burner shell assembly. Remove any internal/external surface deposits on burner reflector shields **K** with a soft brush.

DO NOT MARK OR DAMAGE MACHINED SURFACE.

Scrape and remove carbon deposit from burner base wick grooves.

- (v) Detached burner oil feed pipe **E** from burner base elbow **F** and scrape/brush the internal core of the burner base elbow **F** until it is free of deposit. Use pipe cleaner to brush open end of oil feed pipe **E** free of deposit, then reconnect to burner base, using an oil resistant sealant.

NOTE: ENSURE ELBOW AT OPPOSITE END OF OIL FEED PIPE E IS ORIENTATED CORRECTLY TO THE BURNER BASE ELBOW, AND THAT PIPE E SLOPES UPWARDS OR LEVEL TO BURNER BASE ELBOW.

- (vi) Fit the vapourising chamber plate to the oil burner base then place the burner shell assembly **B** on to the burner base **G** and locate same. Check that the joint between the oil burner base and burner shells, is near airtight, otherwise, unacceptable air gaps may result in burner light-back with ignited fuel occurring below the oil burner base.

- (vii) Remove the shells, replace wicks in oil burner wick grooves and ensure vapourising chamber plate is seated correctly. Refit burner shells, ensuring correct fit and location, then place burner assembly in combustion chamber, locating support legs in recess of combustion chamber base.

Reconnect the cooker oil feed pipe **J** to burner oil feed pipe elbow **H** and tighten.

The cooker burner is now ready for re-lighting.

3. b. To Clean the Boiler Burner – See Fig. 5

- (i) Unscrew two bolts **A** securing top heat baffle **B** remove and brush clean both surfaces free of soot, etc.
- (ii) Lift and remove front and back interstage end sealing plates **C**.
- (iii) Holding the finger grip **D** of the now exposed top interstage burner baffle **E** tilt it slightly and lift out clear of burner. Brush clean both surfaces free of soot.
- (iv) Holding the finger grip **F** of the bottom internal burner baffle **G** tilt it and lift out clear of burner. Brush clean both surfaces free of soot.
- (v) Temporarily plug the main and pilot oil inlet hole in the burner base bottom and brush/scrape the internal faces of oil burner and then tip the debris out of the burner. Withdraw glo-coil igniter **J**, brush and lightly clean.

Examine coil for deterioration by heat oxidation, and if in doubt, replace igniter.

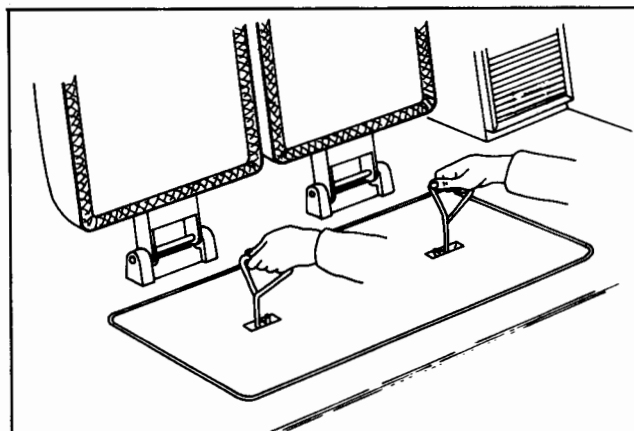


Fig. 2 – Removal of Hot Plate

Flueway Bricks

Boiler Cover Plate/Baffle

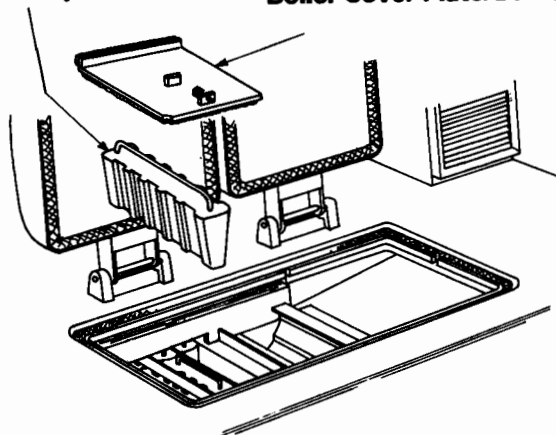


Fig. 3

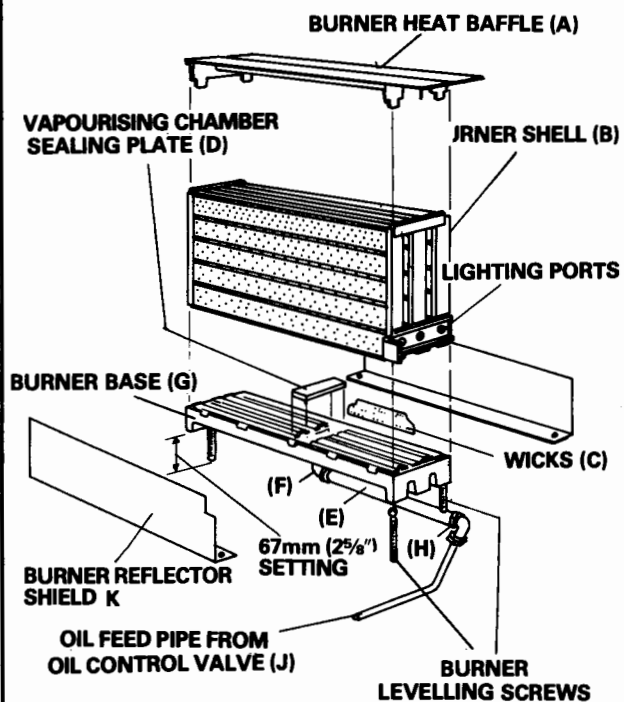
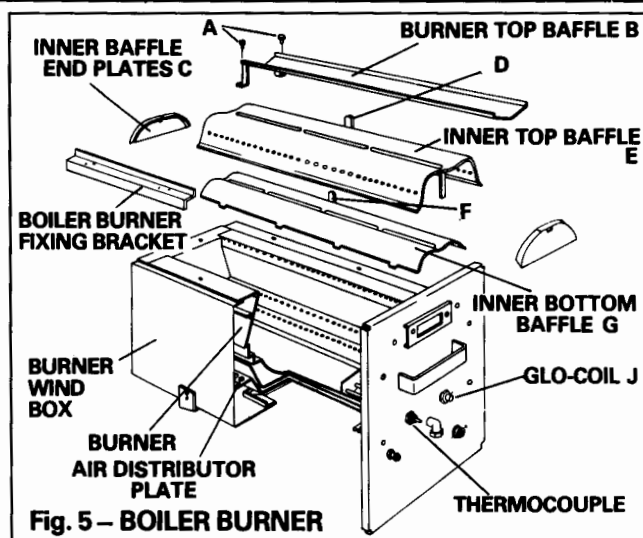


Fig. 4 – Cooker Burner Assembly

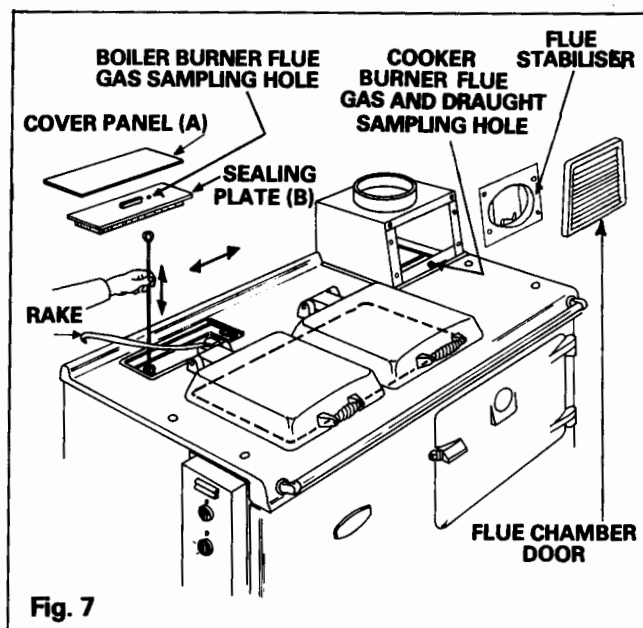
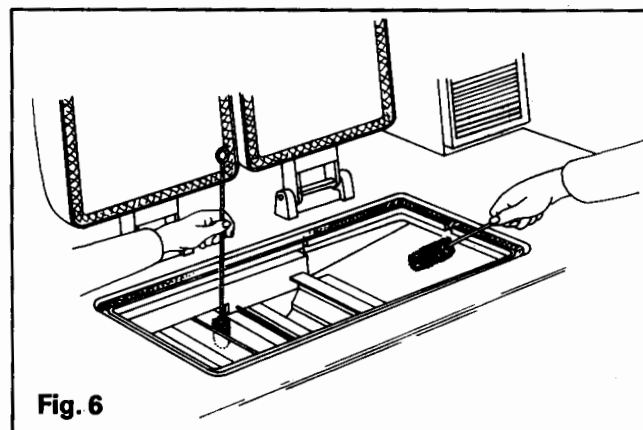
Servicing Instructions

- (vi) With the glo-coil igniter surface clean, check and ensure that the ignition wick is touching the oil burner base at the front. Replace if worn. Wick must not touch glo-coil. **THIS IS IMPORTANT.**
- (vii) Replace all interstage baffles and other baffle plates, etc., in a reverse order of dis-assembly.
- (viii) Check the soft seal in base of the boiler chamber and boiler burner front and renew if necessary, adhering the soft seal with sealing plate adhesive.
- (ix) Lift the complete oil burner assembly into the boiler chamber and push inwards in the reverse manner of withdrawal.
Reconnect the oil feed pipe and electrically reconnect the flame sensor and ignition glo-coil igniter in reverse order of dis-assembly. Ensure shakeproof washer is fitted under glo-coil locking nut, and that locking nut is tightly secured, by using the blade of a screwdriver in nut locking slot. Replace boiler strap retaining strap and secure tightly with retaining bolts.
The boiler burner is now ready for re-lighting.



4. To Clean the Boiler Heat Exchanger and Cooker Flueways – See Figs. 6 and 7

- (i) Remove the cooker and boiler burners as described under Sections 2d and 2e.
- (ii) Place a layer of paper on the boiler and cooker combustion chamber base area to collect debris when brushing commences.
- (iii) Use the rake and brush to ensure that the flueway above the oven top is clear and any deposit is removed – See Fig. 6.
- (iv) Lift top plate enamelled cover panel **A** (behind the L.H. insulating cover) and remove. Remove sealing plate **B** – See Fig. 7.
Insert flexible rake through exposed top plate aperture, directing it towards the flue chamber. Clean the boiler outlet flueway, by scraping the deposits towards the boiler heat exchanger and vigorously brush if necessary.
Additional access can be obtained via the front of the flue chamber by removal of the flue chamber door, unscrewing the four screws securing the flue stabiliser its sealing plate
- (v) Thoroughly brush boiler heat exchanger cross firebrick ducts and cooker flueways from the top and bottom of the heat exchanger until free of debris – See Fig. 6.
- (vi) 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.
- (vii) Examine soft rope seal located around hotplate aperture in top plate.
Replace if frayed or damaged.
- (viii) Remove layer of paper in combustion chamber base with fallen debris.
- (ix) Replace boiler flueway firebricks in reverse manner of withdrawal, then locate boiler combustion separator baffle in original position.
- (x) Replace hotplate ensuring the underside ribs lie over the combustion chamber, and that it seals to the top plate.
- (xi) Replace both oil burners and remake all connections, etc., in the reverse manner of dismantling as described under Section 2 – **“TO REMOVE COOKER AND BOILER BURNERS”**.



- b. Pull off the two thermostat knobs. Remove four screws securing control panel cover to L.H. side plate and remove cover.
- c. Disconnect two electrical leads from thermostat body and earth terminal. See Fig. 12 for connections.
- d. Remove two securing screws holding thermostat body mounting plate. Unscrew thermostat spindle locknut to detach thermostat **A** from mounting bracket.
- e. Open top oven door and using a screwdriver, remove two fixing screws securing inner L.H. oven side to expose the located thermostat phial – See Fig. 8.
- f. Unclip thermostat phial from L.H. side of roasting oven and reset phial to face across the oven width instead of facing in depth.

5. To Remove Cooker Thermostat – See Fig. 8

- a. Isolate the electricity supply (switch **OFF** and remove plug).

Withdraw thermostat phial and capillary tube clear of oven and cooker front plate until it is fully exposed at L.H. side of appliance.

- g. Fit replacement thermostat and assemble in reverse order of dismantling. Electrical leads to be reconnected as previously – See Fig. 12 for connections.

6. To Remove Boiler Thermostat – See Fig. 8

- a. Isolate the electricity supply (switch **OFF** and remove plug).
- b. Pull off the two thermostat knobs. Remove four 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. Unscrew thermostat spindle locknut to detach thermostat **B** 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.

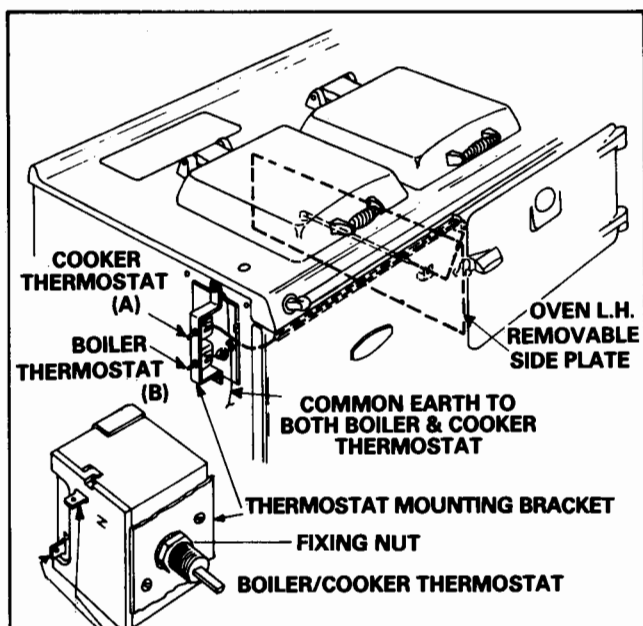


Fig. 8 THERMOSTAT TERMINAL

7. To Remove Oven Temperature Indicator

- a. Open roasting 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.

8. To Remove Main Oil Solenoid – See Fig. 9

- a. Isolate the electricity supply (switch **OFF** and remove plug), remove the side cover panel **S** via its fixing screws. See fig 1b.
- b. Detach solenoid cable connection from terminal block.
- c. Isolate oil supply by turning **OFF** isolating valve on inlet to oil control valve.
- d. Ensure boiler oil control valve knob **F** is set at **OFF**.
- e. Place a small tray receptacle on floor beneath the main oil solenoid. Break inlet/outlet connections of main oil solenoid at points **A** and **B** and allow surplus oil to run into tray receptacle.
- f. Remove inlet/outlet connection fittings from main solenoid, clean threaded ends and re-coat with oil sealant. Refit to new solenoid.
- g. Re assemble in reverse of dis-assembly and reconnect electrical cable leads to terminal block.
The main oil solenoid valve is now ready for use.

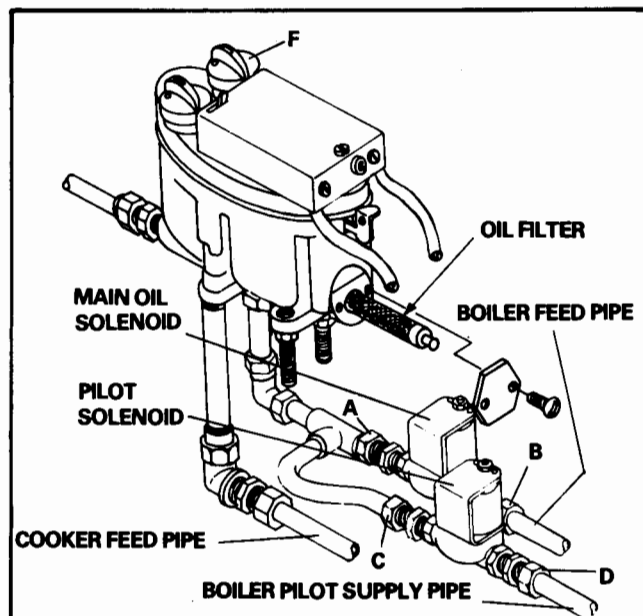


Fig. 9

9. To Remove Pilot Oil Solenoid See Fig. 9.

- a. Isolate the electricity supply (switch **OFF** and remove plug), remove the side cover panel **S** via its fixing screws. See fig 1b.
- b. Detach pilot solenoid cable connections from terminal block.
- c. Isolate oil supply by turning **OFF** isolating valve on inlet to oil control valve.
- d. Ensure boiler oil control valve knob **F** is set at **OFF**.
- e. Place a small tray receptacle on floor beneath the pilot oil solenoid.
Break inlet/outlet connection of pilot oil solenoid at points **C** and **D** and allow surplus oil to run into tray receptacle.
- f. Remove inlet/outlet connection fittings from pilot solenoid, clean threaded ends, and re-coat with oil sealant. Refit to new solenoid.

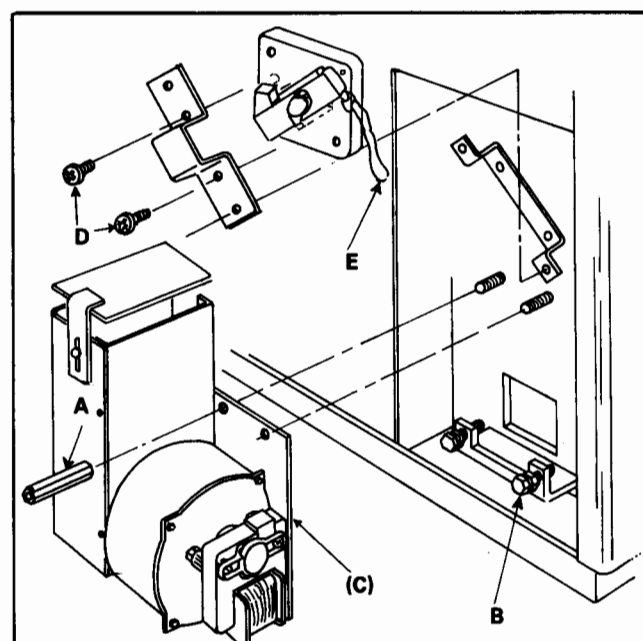


Fig. 10

Cooker Operating Sequence

With the oil valve trip lever depressed **ON**, the L.H. knob in the oil control valve set at No. 6, oil will flow to the cooker burner. It is intended that the cooker burner be operated on a 'high-low' oil rate basis, with idling oven temperatures obtained by a thermostat knob setting of '**LOW**' (oven temperature 125°C approx.), without the use of electrical power.

Setting the thermostat knob from 1-6 setting will cause the thermostat to switch electrical power **ON-OFF** automatically and vary the oil rate to provide a selected oven temperature, thermostatically controlled.

Setting No. 6 is the maximum oven temperature and maximum oil rate obtainable with reduced knob settings, providing reduced temperatures/oil rates.

See Users Instructions for details of thermostat knob settings and oven temperatures.

Electrical Power Failure

Despite the loss of electrical power, high oven cooking temperatures can still be obtained, but oven temperature control must be manual only.

Method: Holding the actuating lever on the top of the oil control valve, push it to left and engage it in the notch of the cover.

Ensure the L.H. knob on the oil control valve is set at No. 6 setting to obtain maximum oil rate and adjust later to suit temperature requirements.

Electrical thermostat control will not be possible until the actuating lever is dis-engaged and the oil control valve L.H. knob is returned to No. 6 setting.

Cooker Electrical Faults

Because the control system is basically simple, only two electrical malfunctions are likely to occur, namely:-

1. Oven thermostat malfunctions and must be replaced.
2. Oil control valve electric top, bi-metal heater element fails. The complete electric top must be replaced.

Boiler Operating Sequence

The operation of the boiler burner is under the overall control of an electronic sequential control box, whose function is to provide the following service:-

1. A purpose-made orderly timing sequence of electrical signals, to various electrical controls, to enable the boiler to cycle upon boiler thermostat demand.
2. To recognise an electrical control malfunction or condition, and prevent the timing sequence continuing, by causing a lock-out condition.

With the oil valve trip lever depress **ON**, the R.H. knob on the oil control valve set at No. 6, oil will exit from the oil control valve as far as the de-energised main and pilot solenoid valves only.

NOTE: WHERE THERE IS A LIKELIHOOD OF AIRLOCKING SUCH AS INITIAL COMMISSIONING OR REPLACEMENT OF CONTROLS, PREPURGE THE PILOT AND MAIN OIL FEED PIPES OF AIR BY BREAKING THE PIPE JOINTS AT THE BOILER BURNER FRONT.

Lighting Sequence

1. To start the boiler sequence cycle, set the boiler thermostat knob to 80°C. The glo-coil ignition and airfan become energised with switch-on.
2. After 1 minute of energisation, the pilot solenoid valve opens, and admits a pilot supply of oil into the pilot reservoir at the front of the boiler burner.
3. The pilot oil supply becomes ignited within 30 seconds of entry, and this pilot fire then progressively heats an adjacent thermocouple until a temperature of about 300°C is attained by the thermocouple after about 1 minute of flame.

4. This temperature confirmed, the thermocouple switches the main oil solenoid **ON** to admit oil at full rate, which then cross lights from the pilot flame. At the same time, power is isolated from the glo-coil and pilot solenoid valve, resulting in a pilot oil shut-off condition.

5. The burner continues to run at main oil rate, under control of the boiler thermostat until satisfied.

NOTE: IF FOR ANY REASON, ONE OF THE FUNCTIONS ARE NOT CARRIED OUT IN POINTS 1-4, A LOCK-OUT CONDITION WILL OCCUR AT THE END OF THE TIMING SEQUENCE, OR, THE SEQUENCE WILL NOT COMMENCE.

6. With boiler thermostat interruption, power is isolated from the main oil solenoid valve, but the fan remains energised on an overrun, to burn all the oil in the burner and cool the thermocouple down in temperature, taking about 5-6 minutes.

With reduction in temperature of the thermocouple, the fan becomes de-energised, and power is isolated, until the boiler thermostat calls for heat. With thermostat call, the sequence re-commences.

Post Servicing Checks

Confirmation of oil rates and combustion must be made as a final check, and should be carried out as follows:

Cooker

1. Remove oil filter within oil control valve and connect oil flow gauge assembly. Gauge must be capable of measuring 60cc per minute or 30cc per half minute.
2. Confirm the cooker burner base is level in all directions.
3. Confirm the static oil depth in the cooker burner box is 10mm (13/32in) after a 15-20 minute period.
4. After lighting the cooker burner assembly, check the oil rates as follows, using the oil flow gauge and setting the thermostat knob.
 - (i) Low Fire – 4.7cc per minute (Setting **LOW**)
 - (ii) High Fire – 13.5cc per minute (Setting No. 6).
 After 30 minutes on high fire, sample the flue products in the flue chamber for a Smoke Test which should indicate a Baccarach Smoke No. 0-1
5. Leave the cooker thermostat knob set to No. 6 and the oil flow gauge connected.

Boiler

1. Connect manometer tube to test point nipple.
2. Switch **ON** power supply and set boiler thermostat knob to 80°C, whereupon the glo-coil igniter and airfan will become energised.
3. Confirm the initial cold windbox air pressure of 2.5mm w.g. (0.10in w.g.) which on hot cycling, should rise to a stable 3.5mm w.g. (0.140in w.g.).

NOTE: LOW PRESSURE INDICATES A LEAKING GASKET SEAL BELOW THE WINDBOX OR AROUND ITS FRONT DOOR.

Adjust excess air pressure via air pressure adjustment flap on top of air duct at L.H. side of appliance, disconnect manometer and re-plug the test nipple.

4. Allow the boiler burner to operate for 2-3 cycles, then during a boiler **ON** period, sample the flue products within the boiler flue chamber where a Baccarach Smoke No 0-1 should be confirmed.
5. Confirm the oil rate from the flow gauge which should indicate a total of 51.75cc per minute maximum. Disconnect oil flow gauge and replace oil filter in oil control valve.

BOILER BURNER.

SYMPTOMS	CAUSE	REMEDY
SWITCH ON		
– nothing happens.	No power to unit.	Check mains supply, time clock, external thermostat.
	Boiler thermostat off.	Check thermostat switched on.
	Faulty thermostat.	Replace thermostat.
	Main relay failure.	Replace main relay.
– Power at boiler T/stat outlet.	Air pressure switch not reset.	Check pressure sensing tubes – positioned correctly.
		Change air pressure switch.
FAN NOT RUNNING.		
	Fault with air pressure switch.	Check adjustment has not been tampered with.
		Check sensing tubes on correct way round.
		Change pressure switch.
	Fault in HAWCO unit.	Check power to HAWCO P.C.B. (brown wire), if O.K. change HAWCO unit.
	Main relay failure.	No power to fan terminals.
		Change main relay.
	Faulty fan unit.	Change fan unit.
FAN ONLY		
– Fan and glo-plug energised/ no pilot/lock out/glo-plug de-energised/fan continues running.	Main relay faulty. HAWCO faulty. Faulty short timer Z09	Replace main relay. Replace HAWCO unit. Replace short timer Z09
– Fan, glo-plug, pilot solenoid energised/pilot flame/no main solenoid/		
– solenoid and glo-plug de- energised/fan runs on/lock out light.		
	Faulty thermocouple	Change thermocouple.
	Faulty HAWCO unit.	Replace HAWCO unit.
FAN and GLO-PLUG on CONTINUOUSLY		
– Fan and glo-plug on/pilot solenoid does not open.	Faulty short timer Z09	Change short timer Z09
PILOT BURNER DOES NOT LIGHT		
– Glo-plug energised/power to pilot but does not open.	Faulty pilot solenoid.	Change solenoid.
	Faulty pressure switch.	Check setting of pressure switch.
		Change pressure switch.
	Air lock in pilot oil feed pipe.	Check oil pipe rises steadily over whole length.
	Glo-plug not working.	Check Volts to Glo-plug. Check contacts on Glo-plug terminals. Replace if required.
	Transformer faulty.	Check Volts In/out. Replace if required.
	Wick displaced.	Check wick in burner replace if required.
	Glo-coil touching wick	Adjust wick to be 2–3mm clear of glo-coil
	Faulty long timer relay, Z10.	Change relay Z10.
	Faulty short timer relay, Z09.	Change relay Z09.
PILOT FLAME ONLY		
– Lack of oil to main burner	Air lock in oil feed pipe.	Remove air lock/ensure gradual rise on pipe-work
	No power to main solenoid.	Change HAWCO unit.
	Faulty main solenoid.	Change main solenoid.
LOW AIR PRESSURE FROM FAN.		
	Air adjustment cover on fan duct set wrongly.	Reset air adjustment cover on fan duct.
	Fan speed too low	Change fan unit.
NO FLAME SENSING		
– Goes to lockout	Faulty thermocouple.	Replace thermocouple.
	Faulty HAWCO unit.	Change HAWCO unit.

Fault Finding

COOKER BURNER.

SYMPTOMS	CAUSE	REMEDY
BURNER WILL NOT LIGHT.	Check wicks in position. Lack of oil to burner.	Fit wicks. Check oil valve switched on. Check oil valve trip is down. Check oil feed pipe gradient, ensure steady rise.
NO HIGH FIRE.	Control valve setting wrong. Sticking control valve pin.	Check control valve knob is set at maximum. Change control valve top.
SOOTY FLAME – LOW FIRE.	Poor fitting burner shells. Low fire oil rate incorrect.	Check set of shells seating properly Change set of shells. Check burner base, replace if necessary. Reset oil rate.
SOOTY FLAME – HIGH FIRE.	Oil rate too high. Down Draughts. Poor fitting burner shells.	Re-adjust high fire oil rate. Check flue for down draughts and eliminate them. Check set of shells seating properly Change set of shells. Check burner base, replace if necessary
CONTINUOUS LOW FIRE.	Power failure. Cooker thermostat faulty. Oil valve electric top faulty. Oil valve control pin stuck.	Check mains supply; if power cut use manual control. Replace cooker thermostat. Change electric top. Free using manual control lever. Change oil valve top.
CONTINUOUS HIGH FIRE.	On manual over ride. Cooker thermostat faulty. Oil valve electric top faulty.	Return manual over ride lever to low position. Change cooker thermostat. Change electric top.
ABNORMALLY LOW OVER NIGHT TEMPERATURE.	Oil starvation. Air lock in oil feed pipe. Air lock in burner feed pipe.	Check oil supply. Check oil feed pipe rises over whole length. Check burner feed pipe gradient and cleanliness.