

WARNING

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This information refers to the following products

Rayburn Ranger

(models 1984 – 1987)

also

Rayburn Gas Nouvelle

(1986 & 1987)

RAYBURN GAS RANGER

Also includes Rayburn Gas Nouvelle 1986-1987

Health & Safety at Work Act 1974

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

Introduction

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

It is available in open and balanced flue form, operating on natural draught, the boiler being designed for use in an open vent system only, operating with gravity primaries and pumped heating circulation or fully pumped systems if desired.

The hot water output with boiler burner operating and cooker burner operating at minimum setting is 17.0kW (58,000Btu/h) Open Flue – 15.7kW (54,500Btu/h) Balanced Flue.

This hot water output increases to 19.05kW (65,000Btu/h) Open Flue – 17.8kW (61,000Btu/h) Balanced Flue with cooker burner set at high and cooking taking place.

The boiler burner will provide 31.9m² (343.75ft²) – Open Flue and 30.2m² (325ft²) – Balanced Flue, of heat to radiator surface and pipes exclusive of domestic hot water requirements.

The recommended heating surface area is based on an average heat emission of 0.5kW/m² (160Btu/ft²h) The appliance is suitable for either Natural or L.P.G.

Installation Instructions Rayburn Gas Ranger Open and Balanced Flue

gases dependent upon model type. Two independently controlled gas burners separately provide heat to the central heating boiler section whilst the other burner provides heat to the cooker and domestic hot water only.

COOKERS ARE SUPPLIED WITH R.H. OVENS ONLY

Installation Requirements

The installation of the cooker boiler must be in accordance with the relevant requirements of the Gas Safety Regulations, Building Regulations, I.E.E. Wiring Regulations and the byelaws of the local Water Undertaking.

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

CP 331 Installation of pipes and meters for town gas Part 3. Low pressure installation pipes.

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

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

BS 5546 1979. Code of Practice for installation of gas hot water supplies for domestic purposes (2nd family gases).

BS 5440 Flues and air supply for gas appliances of rated input not exceeding 60kW.
Part 1. Flues
Part 2. Air Supply

BS 6172 Code of Practice for installation of domestic cooking appliances.

		OPEN FLUE				BALANCED FLUE			
		Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON	Cooker HIGH Boiler ON	Cooker Only LOW	Cooker Only HIGH	Cooker LOW Boiler ON	Cooker HIGH Boiler ON
Heat Input	kW	3.04	9.0	25.3	30.3	3.22	9.2	24.0	27.8
	Btu/h	10,400	30,700	86,400	103,500	11,000	31,350	78,600	95,000
Heat Output Water	kW	0.88	2.9	17.0	19.05	0.88	2.9	15.7	17.8
	Btu/h	3,000	10,000	58,000	65,000	3,000	10,000	54,500	61,000
Nat. Gas Burner Pressure	mbars	2.50	17.0	Ckr. 2.5 Blr. 15.25	Ckr. 15.25 Blr. 15.25	1.75	15.5	Ckr. 1.75 Blr. 15.5	Ckr. 14.5 Blr. 14.7
	Ins w.g.	1.0	6.8	1.0	6.1	0.7	6.2	0.7	6.2
Burner Injector Size		Natural Gas		L.P.G.		Natural Gas		L.P.G.	
	Cooker	2.38mm		1.70mm		2.45mm		1.70mm	
	Boiler	3.72mm		2.61mm		3.72mm		2.61mm	
	Cooker Thermostat Bypass Size	1.25mm		0.84mm		1.25mm		0.84mm	

Boiler Water Connections

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

Both connections are located at the rear edge of the cooker L.H. side panel.

Gas Connections Rp ½ (½in. BSP Int.)

Open Flue Outlet Dia. 150mm (6in.)

Electrical Supply 240V AC, 50Hz, 3 amp fused

Water Capacity of Boiler

Weight of Appliance
Balanced Flue

12.5 litres (2.75 galls)

300kg (660lbs)

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

Optional flue set available for 380mm (15in.)–500mm (20in) wall depths.

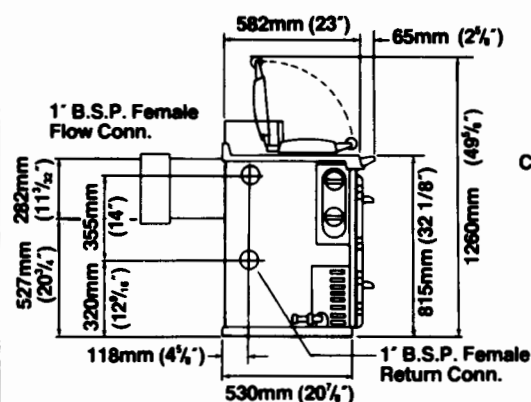
Overall Dimensions

Height: 855mm (33½ in.)

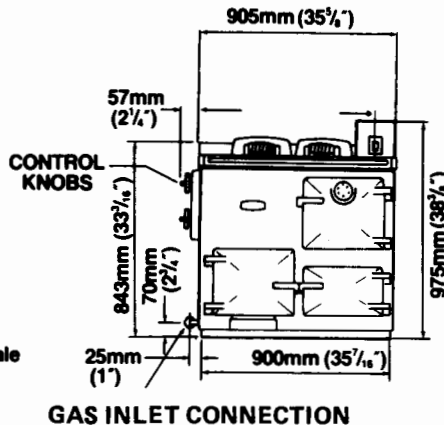
Width: 900mm (35½ in.)

Depth: 582mm (23in.)

BALANCED FLUE

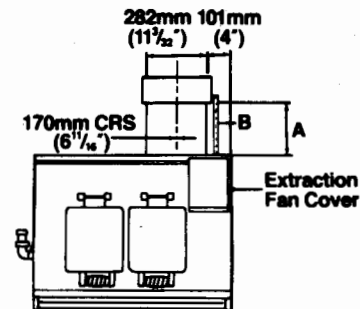


END VIEW



GAS INLET CONNECTION

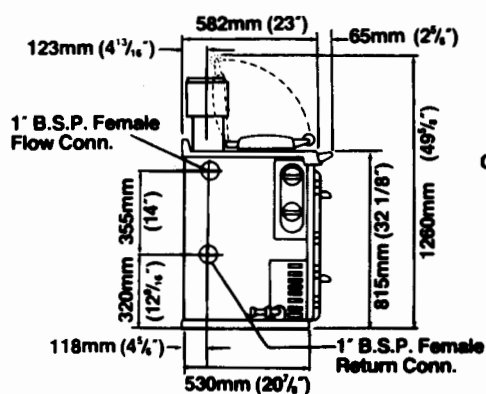
FRONT VIEW



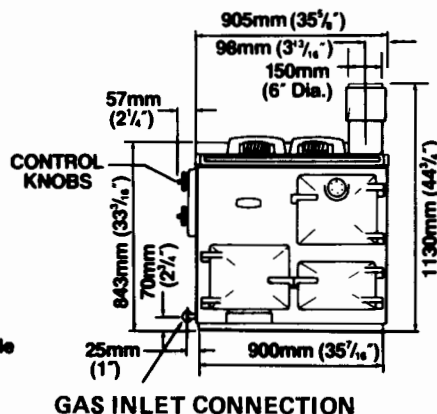
Balanced flue version
Dim. 'A'. Gives adjustment
to suit 9in. to 14in. wall
thickness. Special sizes can
be accommodated.
Item 'B' oven vent pipe
22mm O/D.

PLAN VIEW

OPEN FLUE

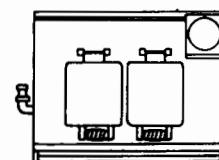


END VIEW



GAS INLET CONNECTION

FRONT VIEW



PLAN VIEW

Cooker Hearth

The cooker must be installed on a solid level floor or base of non-combustible material and capable of supporting the total weight of the cooker.

Location Balanced Flued Appliance

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

Location Open Flued Appliance

The location chosen for the appliance must permit 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 cooker. Should the installation of the appliance be in an unusual position or restricted space, special procedures may be necessary and BS 5376: Part 2 gives detailed guidance on this aspect.

Gas Supply

Service Pipes.

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

Meters

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

Installation Pipes

Installation pipes should be fitted in accordance with CP 331.3.

Pipework from the meter to the boiler must be of adequate size. Do not use pipes of a smaller size than the boiler gas connection.

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

Flue System

Balanced Flued Appliance

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

The following notes are intended to give general guidance.

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

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

DO NOT install the terminal:—

- a) Within 300mm (1ft), measured vertically, from the bottom of an openable window, air vent or any other ventilation opening.
- b) Within 300mm (1ft) above adjacent ground level
- c) Within 600mm (2ft) of any surface facing the terminal.
- d) Immediately beneath eaves or a balcony.

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

A terminal protective guard is available as an optional extra with the cooker.

The air inlet/products outlet duct and the terminal of the appliance must be not closer than 50mm (2in) to combustible material. Detailed recommendations on protection of combustible material are given in BS 5440: Part 1.

Flue System

Open Flued Appliance

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

The following notes are intended to give general guidance:

The cross-sectional area of the flue serving the cooker must be not less than the area of the flue outlet of the cooker.

If flue pipe is to be used it must be not less than 150mm (6in) internal diameter.

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

- a) cement
- b) aluminium or stainless steel
- c) cast iron or mild steel, acid resistant vitreous enamel lined.

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

If a chimney is to be used it preferably should be one that is composed of or lined with a non-

porous acid resistant material. (Chimneys lined with salt glazed earthenware pipes are acceptable if the pipes comply with BS 65 & 540: Part 1). A flue pipe constructed from one of the materials in (a) to (c) should form the initial connection to lined chimneys.

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

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

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

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

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

Air Supply

Balanced Flued Appliance

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

The following notes are intended to give general guidance:—

Kitchen or Internal Space Air Supply

Where the appliance is to be installed in a kitchen or internal space, it does not require the kitchen or internal space containing it to have a permanent air vent.

The room volume must not be less than 6m³ (210ft³)

Air Supply

Open Flued Appliance

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

The following notes are intended to give general guidance:—

Kitchen or Internal Space Air Supply

Where the appliance is to be installed in a containing space, it should 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 103cm² (16in²).

Effect of an Extract Fan

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

Water Circulation System

Detailed recommendations for the water circulation system are given in BS 5376:Part 2, BS 5449:Part 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 boiler and hot water storage vessel. Draining taps should be at least 12mm ($\frac{1}{2}$ in) nominal size and be in accordance with BS 2879.

Electrical Supply

Wiring external to the boiler must be installed in accordance with the 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 boiler, preferably by the use of an unswitched shuttered socket-outlet in conjunction with a fused three-pin plug both complying with the requirements of BS 1363.

Alternatively, a fused double-pole switch having a contact separation of at least 3mm ($\frac{1}{8}$ in) 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. 1a and 1b.

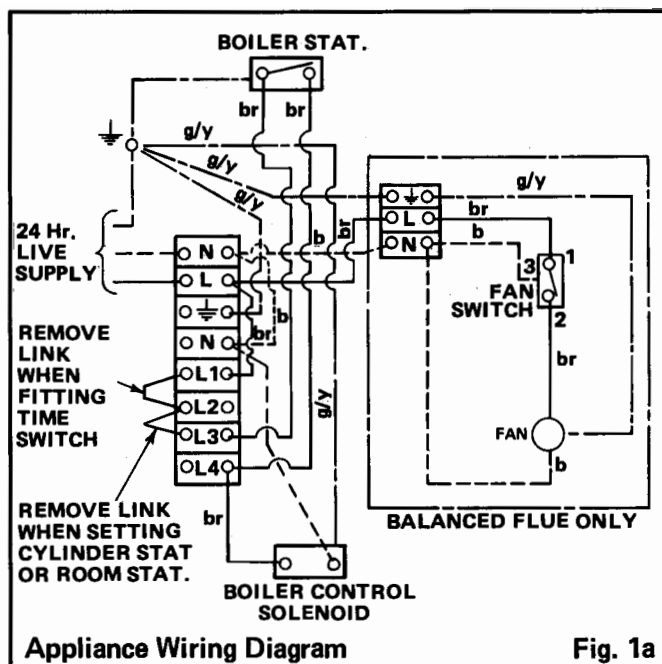


Fig. 1a

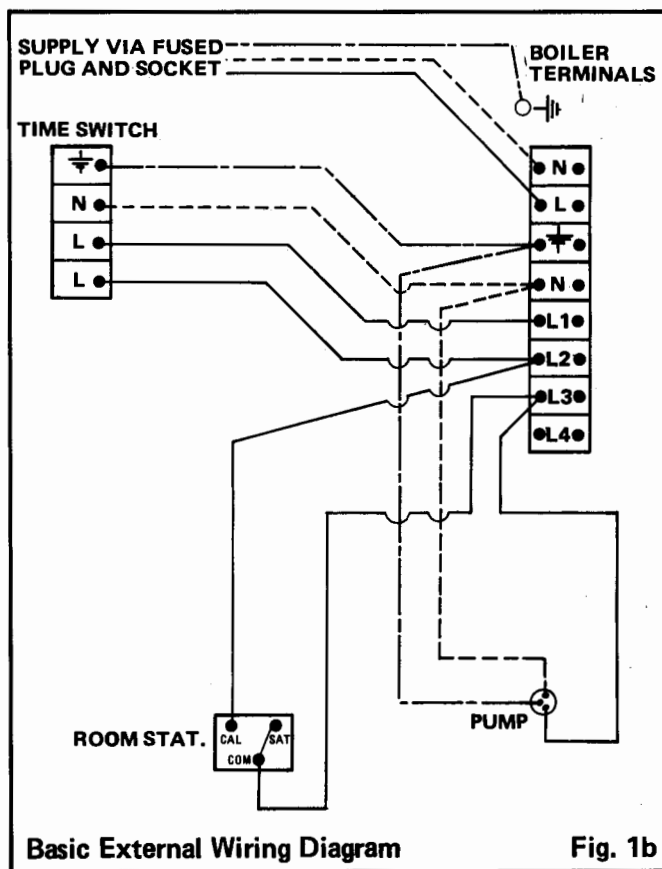


Fig. 1b

Installation of Cooker

General

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

Width:	1,108mm (43 ⁷ / ₈ in)
Depth:	582mm (23in)
Height:	1,320mm (52in)

This space includes the following minimum clearances for installation and servicing.

At the L.H. side of the cooker	200mm (8in)
At the R.H. of the cooker	Nil
Above the raised insulating cover handle	60mm (2 ³ / ₈ in)

In addition a minimum clearance of 1000mm (39³/₈in) must be available at the front of the cooker to enable the cooker to be serviced.

The initial length of flue pipe from the appliance flue socket should be vertical for at least 600mm (24in).

Flue pipes and fittings must not be closer than 25mm (1in) to combustible materials and where passing through a combustible partition such as a ceiling or roof, must be enclosed in non-combustible sleeve providing a connector space of at least 25mm (1in).

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

Installation

The cooker is delivered assembled with the exception of the following items which are separately packed and require re-assembly.

Open Flue Cooker:	Balanced Flue Cooker:
Flue Outlet/Diverter Assembly	Balanced Flue Terminal and Oven Vent Components Assembly

The standard flue set supplied with the cooker is suitable for walls having a thickness of 228mm to 356mm (9in to 14in). Flue sets for walls of thickness above 380mm (15in) and up to 510 (20in) are available to special order.

Templates of the terminal aperture position are printed on the cooker carton box. See Fig. 2.

Wall Preparation – Balanced Flue

1. Remove the carton and using the template provided, mark out on the wall the positions of the flue terminal aperture and carefully cut the brickwork to suit.
2. Lift the cooker assembly off its wooden pallet and position it with its back against the wall and the stub assembly of balanced flue located in the terminal aperture.

NOTE: Ensure that rear edge of cooker top plate is against wall and that any air gap between the rear vertical face of the louvred box on the top plate and adjacent wall does not exceed 5mm (3/16in).

3. Complete assembly of balanced flue by inserting air and exhaust ducts into respective stub sections from outside face of wall, then mark, drill and plug outer wall face to secure air duct flange to wall. Make good the wall around the terminal.
4. Locate and push fit oven vent tube into receiving socket with bend turned downwards. See Fig. 3.
5. Fit terminal grille to terminal and secure with screws provided.

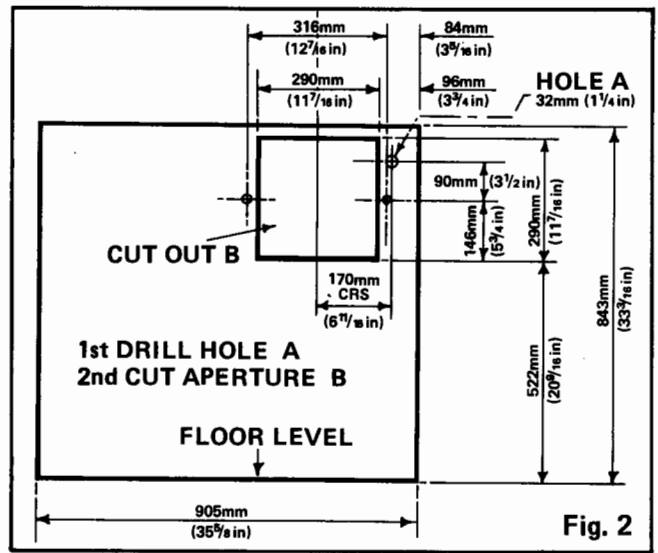
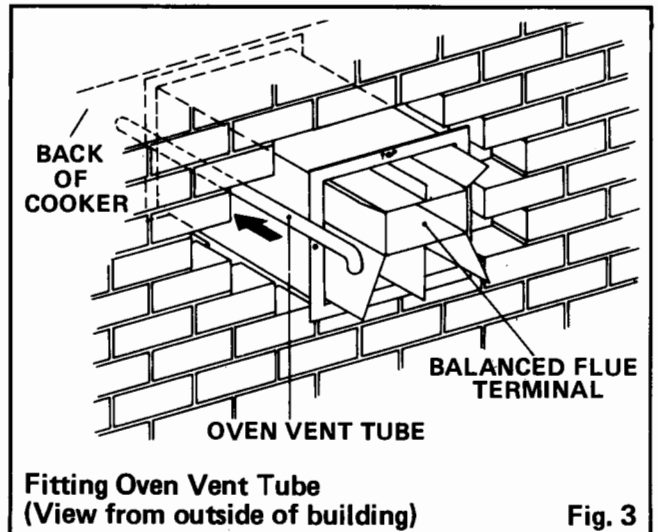


Fig. 2



Fitting Oven Vent Tube
(View from outside of building)

Fig. 3

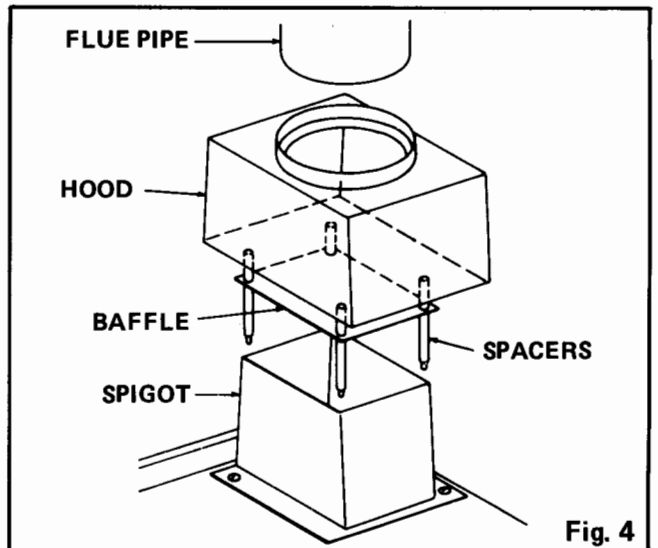


Fig. 4

Wall Preparation – Open Flue

1. Lift the cooker assembly off its wooden pallet and position it with its back against the wall and in its intended position for flue connection.
NOTE: IF THE REAR WALL IS OF COMBUSTIBLE MATERIAL, THERE MUST BE AN AIR GAP OF 25mm (1in) BETWEEN THE WALL AND REAR OF COOKER.
2. Assemble and locate the flue diverter assembly to the top plate. See Fig. 4.
3. Fit flue pipe into diverter hood flue socket sealing peripheral joint with fire cement.
4. Connect flue pipe to main flue as shown in Fig. 4.

Fig. 5a Typical Gravity System

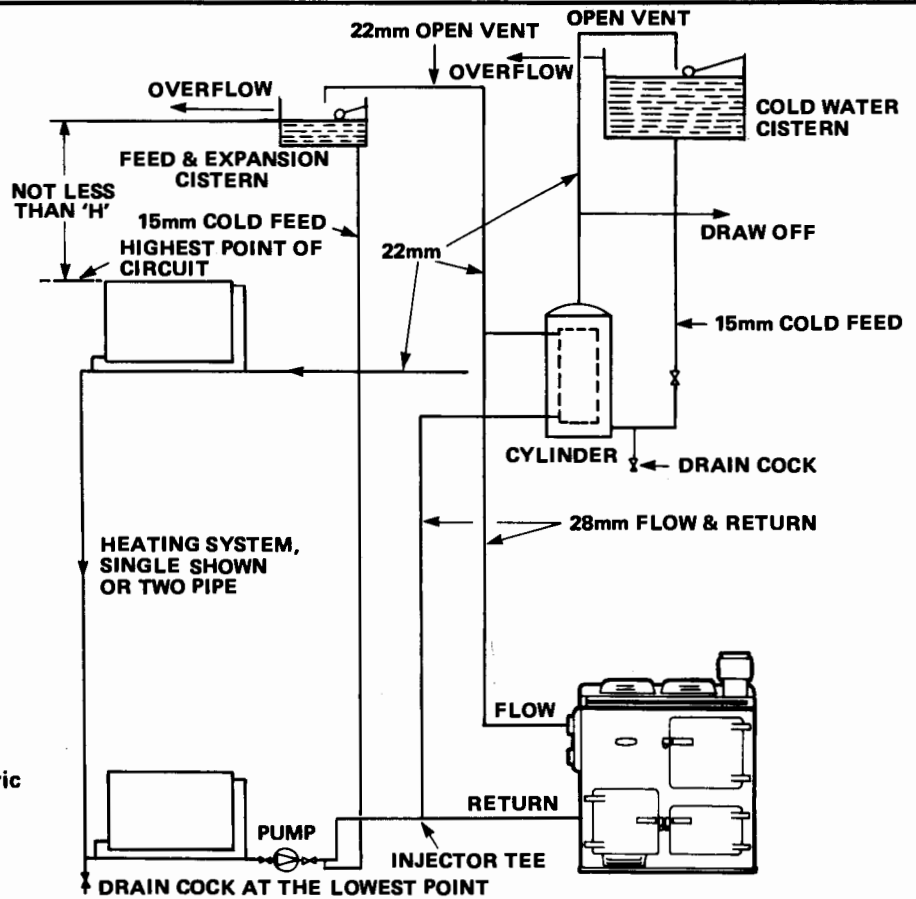
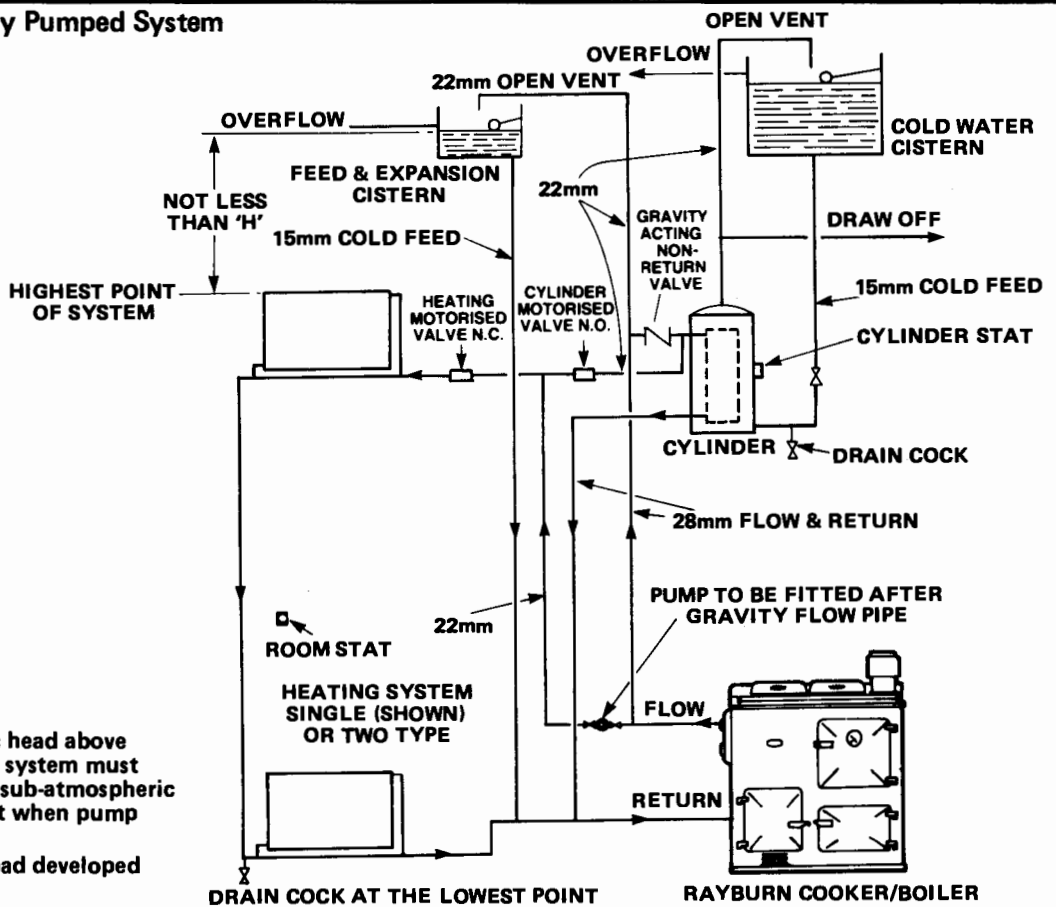


Fig. 5b Typical Fully Pumped System



Gas Connections

The cooker is fitted with a gas servicing union tap. Connect the gas supply to the servicing tap.

Water Connections

The two only 1in B.S.P. female boiler flow and return connections are located on the rear edge of the cooker left hand side panel, and pipe connection should be made with 1in B.S.P. male — 28mm dia.

compression couplers.

Gravity Domestic Hot Water and Pumped Heating:
 The 28mm min dia primary flow pipe must rise continuously from the boiler to the cylinder to ensure good gravity circulation and have an open vent. The 28mm dia primary flow and return pipes must not exceed 10m (30ft) in length and pipes longer than 5m (15ft) must be lagged.

To obtain continued Domestic Hot Water gravity circulation with the water circulator operative, an injector tee (supplied with cooker) must be connected to the heating return and cylinder return pipes with the outlet of the tee connected to the boiler return tapping. See Fig. 5a.

Fully Pumped System: The domestic hot water flow pipes may be pumped providing domestic hot water gravity circulation is possible in these pipes in the event of pump failure.

Electrical Connections

A 240V, 50Hz AC electrical supply is required near to the appliance. The appliance is supplied with a 0.75mm² – 3 core P.V.C. x 3 metres long replaceable power supply cable which must be connected as described under **"Electrical Supply"**. A label attached to the end of the flexible cable gives details of the cable core colour coding and their function which should be adhered to. When connecting to a 3 pin plug, observe the following recommendations:—

1. The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked 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: THIS APPLIANCE MUST BE EARTHED

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

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

Water Circulation System

The Rayburn Gas Ranger cooker boiler is suitable for open vented systems only with gravity domestic hot water circulation and pumped heating, or fully pumped alternatively, providing D.H.W. gravity circulation is possible in the event of pump failure. See Fig. 5b.

The boiler should be connected to a cistern water supply and subject to a maximum head of 18.25m (60ft). Central heating systems should be in accordance with the relevant recommendations given in BS 5376: Part 2. In addition, a small bore or microbore system 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 boiler.

Hot water systems should be in accordance with the relevant recommendations given in CP 342:Part 1.

Controls

Independent controls are recommended for air temperature under clock control.

Such conditions may 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 type and manufacture acceptable to British Gas and be adequate to give the required temperature differential between the flow and return.

The pump should be able to meet the requirements of the system design and be fitted in a readily accessible position (see Figs.5a & 5b) may be positioned either on the boiler flow or the return depending on the system design.

The boiler pressure loss curve (See Fig. 6) indicates the loss of head across the boiler and should be considered when selecting the correct pump size. Typical recommended selection is as follows:—

Grundfos UPS 15/50 or equivalent

A flow of 1000–1386 litres/hr (220–305 gph) for a boiler output of 16.1kW (55,000Btu/h) and temperature differential across the boiler of 10°–14°C (18°–25°F). Refer to boiler resistance curve (Fig. 6).

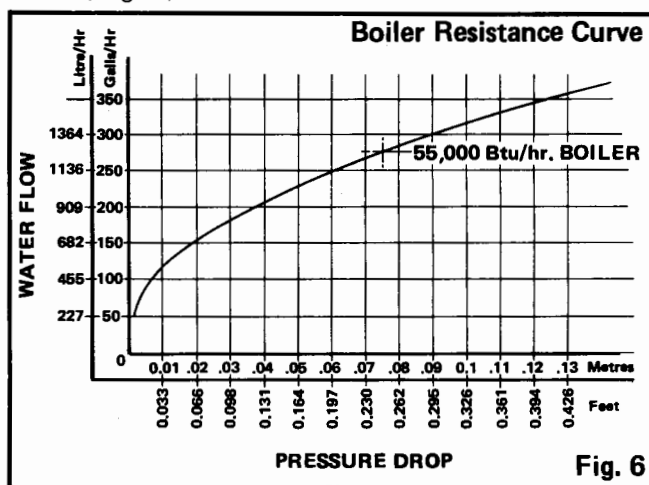


Fig. 6

Isolating Valves

Isolating valves must be fitted on the inlet and outlet of the circulating pump to facilitate service and replacement of the 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 BS 1566 Part 1: DF Type 10, should be lagged and fixed vertically as near as possible to the boiler 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.

Commissioning and Testing

Electrical Installation

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

Gas Installation

The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations of CP 331: Part 3.

Water Circulation System

The whole of the system should be thoroughly flushed out with cold water without the pump in position. Ensure that all valves are open. With the pump fitted, the system should be filled and air locks cleared. Vent all heat emitters and check for water soundness.

Commissioning and Lighting the Cooker and Boiler:

1. Isolate electricity at wall socket or spur box and turn cooker and boiler thermostats to **OFF**.
2. Purge the air from the gas supply making sure that gas is available at appliance gas tap.

CAUTION:

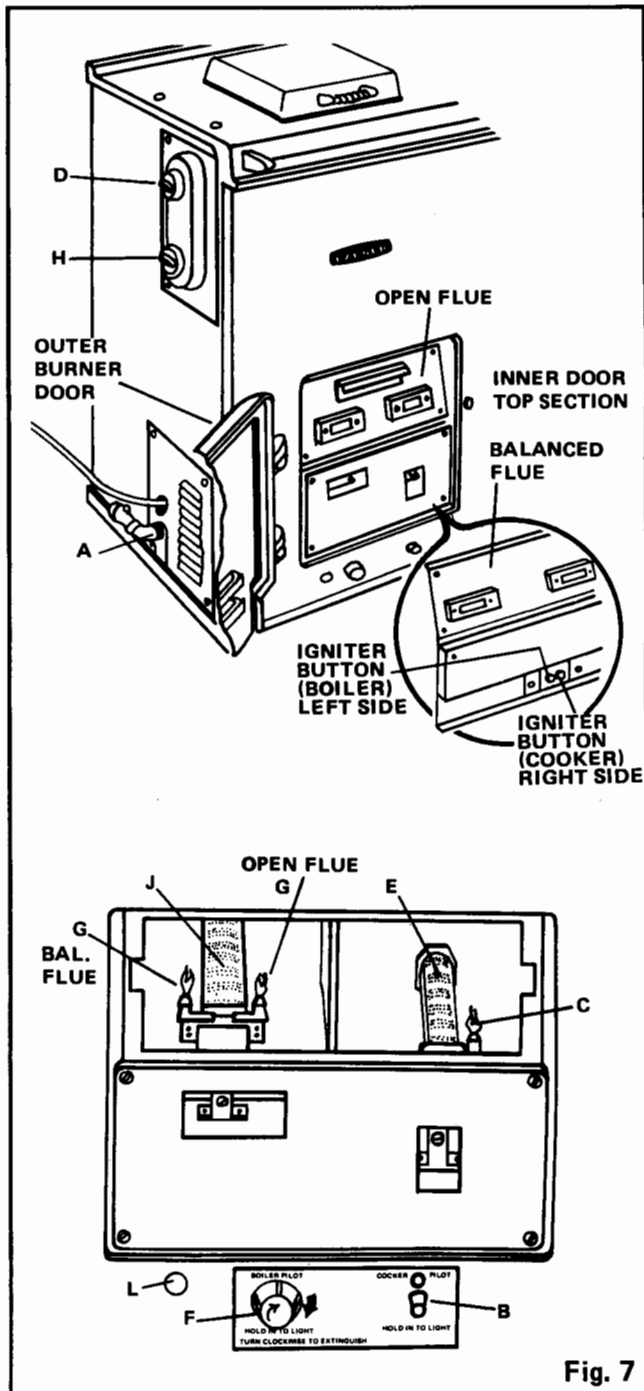
NO SMOKING OR NAKED LIGHTS

Undo the union at the appliance gas tap, open the tap and purge all the air from the supply pipe. Close the appliance gas tap **A** and remake union, turn gas tap **ON** and check for gas soundness. (See CP 331:Part 3).

WARNING: USE A SOAP SOLUTION AND SENSE OF SMELL TO LOCATE GAS LEAKS.

NEVER USE A NAKED FLAME.

- 3(i) Open outer burner door and lift off top inner door panel.
Remove lower fixed inner door panel via four fixing screws.
- (ii) Remove combustion chamber divider plate via its two wing nuts.
Place a lighted taper near both pilot lights and main burners and with appliance gas tap **A** open, no gas should be passing and the burners should not light.
- (iii)a. Remove two screws securing boiler pilot burner to support bracket. Remove two screws securing support bracket to boiler main burner and base plate and lift out support bracket. Push boiler burner forward, lift and remove.
- b. Remove two screws securing cooker pilot to burner support bracket. Slacken hexagonal locknut securing cooker injector housing to manifold and push the cooker burner forward to remove.
- c. Remove two screws each securing boiler and cooker burner manifold cover plate to base plate. Break union gas connections beneath boiler and cooker burner gas manifold.
- d. Remove screw securing boiler gas valve support to base plate step fold and screws in front of L.H. and R.H. corner of base plate.
- e. Push the combustion base plate inwards about 150mm (6in) to obtain visual access inspection of the gas connection below the burner chamber.



(iv) Cooker Control

- a. Push in and hold the cooker thermo-electric valve button **B** allowing a few seconds for gas to reach the cooker pilot burner **C** and light the pilot burner with a match or lighted taper.
- b. Hold in button **B** for at least 30 seconds after the pilot has lit so that when the button is released, the pilot should remain alight and the flame should envelop the tip of the thermo-couple and be about 19mm (¾in) long. Push in cooker thermostat knob **D** from **OFF** and turn anti-clockwise to **LOW**. The cooker main burner **E** should cross-light from the pilot light smoothly at low fire.
- c. Test for gas soundness on all cooker gas connections using sense of smell and soap solution.
- d. Turn the knob **D** from **LOW** to **No.9** and back progressively observing at the same time that the cooker burner **E** flame pattern changes as the knob is turned. Re-set the knob to the **OFF** position.

(v) **Boiler Control**

Check that:—

- a. The boiler system is full of water and all valves are fully open.
- b. Any room thermostat is **ON**.
- c. Any programmer or time switch is set at continuous heating.
- d. Then switch on the electricity supply and ensure the pump is running.

WARNING: ENSURE THE BOILER THERMOSTAT KNOB H IS SET AT OFF.

- e. Push in and hold the boiler multi-functional gas valve knob **F** allowing a few seconds for the gas to reach the boiler pilot burner **G** and light the pilot burner.
- f. Hold in the knob for at least 30 seconds after the pilot has lit so that when the knob is released, the pilot should remain alight and the flame should envelop the tip of the thermo-couple and be about 19mm (¾in) long. If necessary it can be adjusted by turning the adjustment screw **K** on the multi-functional gas valve in a clockwise manner to decrease the pilot flame and anti-clockwise to increase.
- g. Turn the boiler thermostat knob **H** to maximum whereupon the main boiler burner should cross-light smoothly from the pilot burner.
Test for gas soundness on all boiler gas connections using sense of smell and soap solution. Turn the boiler thermostat knob **H OFF** and **ON** progressively, observing that the burner flame goes out and relights immediately.
- h. Replace combustion base plate and divider plate in reverse manner previously described. Secure and refit top and bottom inner door panels. Remove the plug of the cooker burner pressure test nipple and connect pressure gauge.

Natural Gas Model

- 4a. Set the cooker knob to No.9 setting with the cooker burner alight. When the burner has been alight for at least 15 minutes, check that the burner gas pressure is as indicated in the Technical Specification. No pressure adjustment is necessary as a governor is not included.
- b. Remove the pressure gauge from the cooker burner and replace the nipple plug. Remove boiler burner pressure test nipple plug and refit pressure gauge. When the boiler burner has been alight for at least 10 minutes, check that the burner gas pressure corresponds with that indicated in the Technical Specification. Any adjustment of gas pressure can be obtained by turning the adjustment screw **L** through the front plate in a clockwise manner to increase the gas pressure and vice versa. Remove the pressure gauge from the boiler burner and replace the nipple plug. Check that the gas pressure at both burners are unaffected when other gas appliances are used.

NOTE: IF FOR ANY REASON A GAS RATE CHECK IS REQUIRED, TURN OFF ALL OTHER APPLIANCES USING GAS AND USING THE GAS METER TEST DIAL AND WATCH, CHECK THAT THE MAXIMUM GAS

INPUT TO THE APPLIANCE IS AS INDICATED ON THE DATA PLATE. (CP 332: PART 2 GIVES FULL DETAILS OF THE METHOD).

5. Check that there is no spillage of combustion products from the appliance down-draught diverter by carrying out a spillage test as detailed in BS 5440:Part 1 — Open Flue version only.
Inspect the flame pattern and appearance of both burners at high fire to establish that there is adequate air for combustion.
6. Allow the heating system to warm up then set the pump adjuster to maintain a boiler 'flow' and 'return' temperature differential of between 10° — 14°C (18° — 25° F). Checks must be made by the installer to see that this differential is obtained after the boiler 'flow' temperature is stabilised.
The system should be balanced so that the minimum flow required through the boiler is achieved when supplying D.H.W. only.
7. Check the operation of the flame failure device on both burners to ensure they both shut down in 20 seconds. The appliance should be at working temperature.
8. 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.
9. 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.

L.P.G. Model

No pressure adjustments is provided as the gas pressure is pre-set at 14in. w.g. at the gas burner.

To Turn Off the Central Heating Boiler

- Short Period:** Switch **OFF** electricity supply at the wall socket. To relight, switch **ON** electricity at the wall socket. The pilot will remain on continuous.
- Long Period:** Switch **OFF** electricity supply at the wall socket and turn the multi-functional gas valve knob **F** clockwise. The pilot light will extinguish and relighting should be made as described under 3(v) of Boiler Control.

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

Method of Appliance Control

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

Cooker Burner

The cooker burner **E** has a permanent pilot **C** and thermo-couple assembly protected by a thermo-electric flame failure device **B** and controlled by a cooker thermostat **D** with main gas tap at the L.H. side of the cooker.

Turning the main gas tap **A ON** allows gas to the flame failure device. Depressing the flame failure device button allows gas to the pilot burner which must then be lit manually. When the pilot heats the thermo-couple probe correctly, the flame becomes established and allows gas to pass through the flame failure device **B** to the cooker thermostat on the L.H. side of the cooker. Depressing the cooker thermostat knob **D** and turning to **LOW** allows gas to the cooker burner **E** which cross-lights from the pilot burner.

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

See Users Instructions for thermostat cooking settings. When not in use, re-set the knob **D** to **LOW**.

Boiler Burner

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

With main gas tap **A ON**, allow gas to the multi-functional gas valve. Depressing the gas valve knob allows gas to the pilot burner which must then be lit manually. When the pilot heats the thermo-couple probe correctly, the flame becomes established so that electrical power is now required to enable gas to pass to the boiler burner.

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

Balancing Water Circulation System

The system should be balanced by regulating the water flow rate through individual heat emitters to ensure a satisfactory water temperature at each heat emitter.

Operating Instructions

Hand the **Operating Instructions** to the User for retention and instruct in the safe operation of the appliance.

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.

Finally advise the user that, for continued efficient and safe operation of the appliance it is important that adequate servicing is carried out at regular intervals recommended by the local Gas Region.

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

NOTE: DO NOT LEAVE INSTALLATION AND SERVICING INSTRUCTIONS WITH THE USER.

LEAVE THE SERVICING INSTRUCTIONS ADJACENT TO THE GAS METER.