

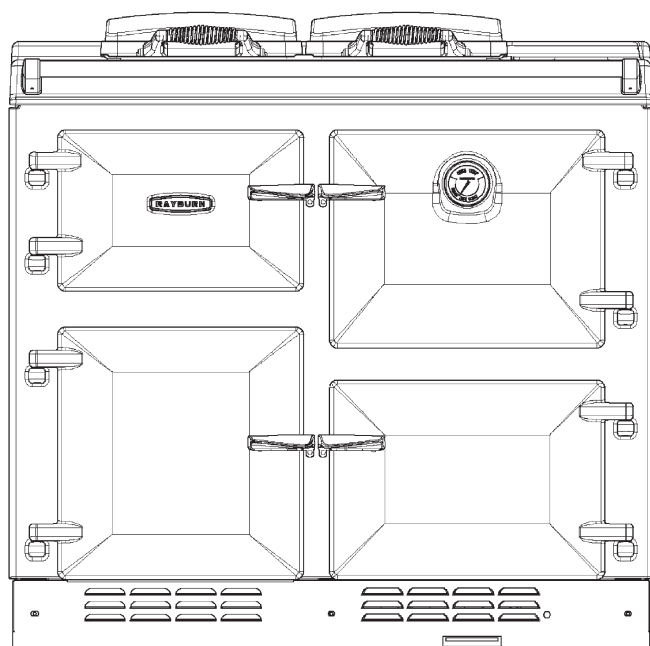


from **AGA**

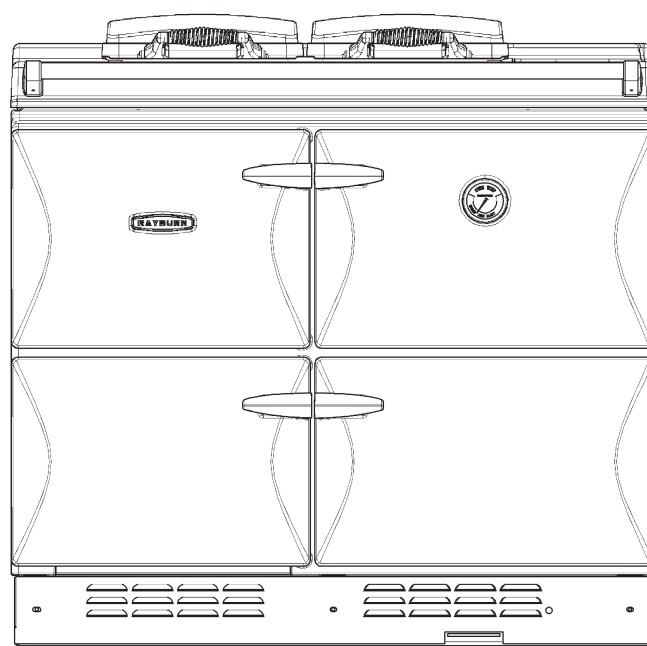


Installation Instructions

680KCD 780KCD



DESN 515906



DESN 516830

Installation Instructions

REMEMBER, when replacing a part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by AGA.

PLEASE READ THESE INSTRUCTIONS BEFORE INSTALLING THIS APPLIANCE

For use in GB & IE

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Consumer Protection

As responsible manufacturers we take care to make sure that our products are designed and constructed to meet the required standards when properly installed and used.

IMPORTANT NOTICE: PLEASE READ THE ACCOMPANYING WARRANTY

Any alteration that is not approved by AGA could invalidate the approval of the appliance, operation of the warranty and could affect your statutory rights.

Health & Safety

This appliance may contain some of the materials that are indicated. It is the Users/Installers responsibility to ensure that the necessary personal protective clothing is worn when handling where applicable, the pertinent parts that contain any of the listed materials that could be interpreted as being injurious to health and safety, see below for information.

Firebricks, Fuel beds, Artificial Fuels

When handling use disposable gloves.

Fire cement

When handling use disposable gloves.

Glues and Sealants

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

Glass Yarn, Mineral Wool, Insulation Pads, Ceramic Fibre

Maybe harmful if inhaled. May be irritating to skin, eyes, nose and throat. When handling avoid contact with skin or eyes. Use disposable gloves, face-masks and eye protection. After handling wash hands and other exposed parts. When disposing of the product, reduce dust with water spray, ensure that parts are securely wrapped.

Kerosene and Gas Oil (Mineral Oils)

1. The effect of mineral oils on the skin vary according to the duration of the exposure.
2. The lighter fractions also remove the protective grease normally present on the surface of the skin. This renders the skin dry and more prone to damage caused by cuts and abrasions.
3. 'Oil acne' is recognised by the presence of skin rashes. The arms are most often affected, but may occur where there is contact with oil or oily clothing.
 - Seek medical attention for any rash.
 - Avoid skin contact with mineral oil or clothing contaminated with mineral oil.
4. Inhalation of mineral oil vapours must be avoided. Never fire the burner in the open as unburnt oil vapours are likely to occur.
5. Use a suitable barrier cream which will give protection against mineral oil, lanolin based hand creams are usually very effective.
6. Never syphon mineral oil by use of the mouth. If accidentally swallowed, call a doctor, do not induce vomiting.

NOTE: SMOKE/SMELL EMITTED DURING INITIAL USAGE

Some parts of the cooker have been coated with a light covering of protective oil. During initial operation of the cooker, this may cause smoke/smell to be emitted and is normal and not a fault with the appliance, it is therefore advisable to open doors and or windows to allow for ventilation. Lift the lids to prevent staining the linings.

RAYBURN 680KCD ONLY

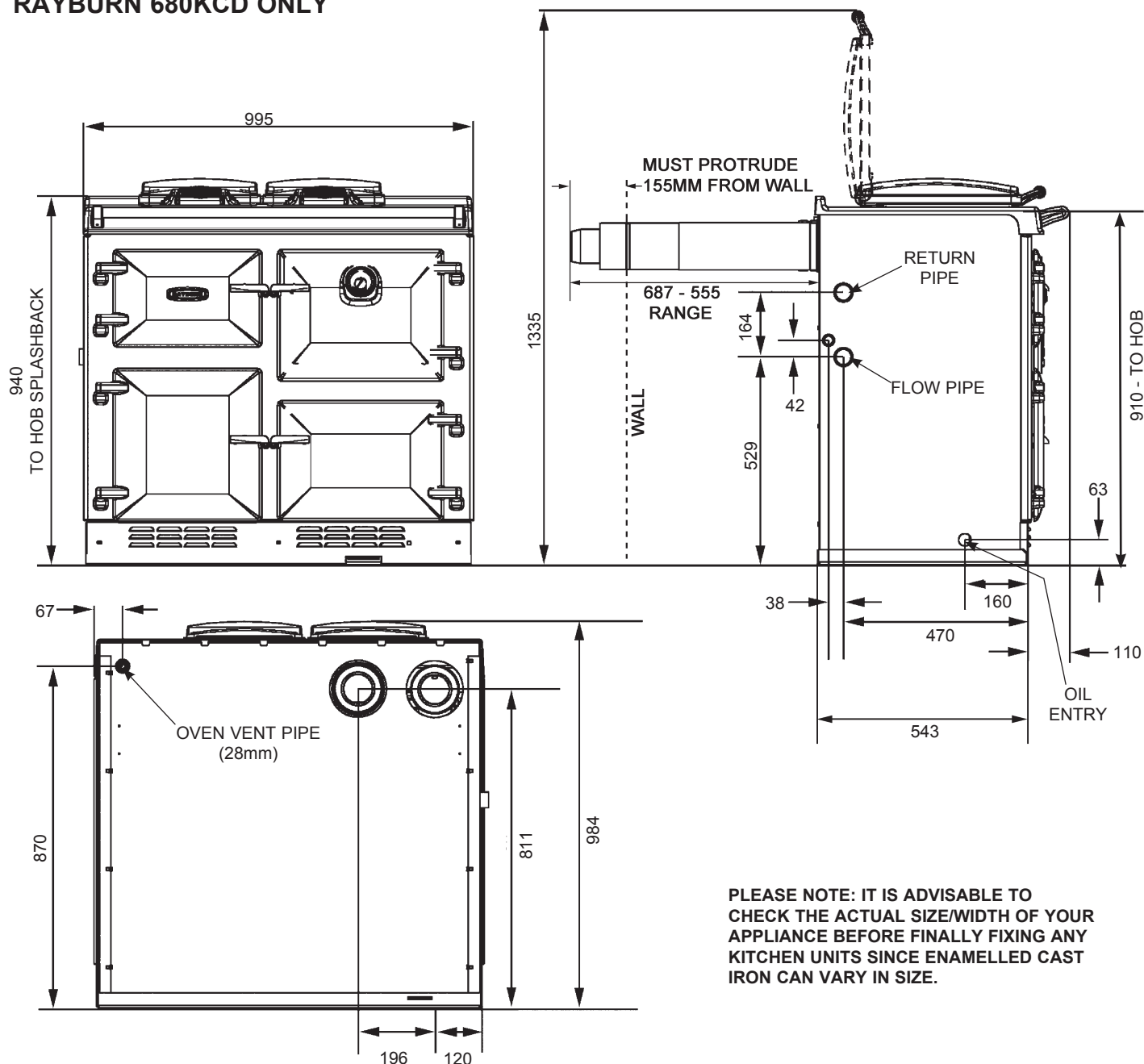


Fig. 1A

DESN 515907

GENERAL SPECIFICATIONS

Boiler Water Connections

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

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

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

Oil Inlet 10mm copper
To connect through LH side panel

Electrical Supply 230V~50Hz 270W
3 Amp Fused

Flue Outlet 125mm

CO₂% - BOILER 11.0 - 11.5

- COOKER 11.0 - 11.5

Max. Water Temp. 82°C

Water Capacity of Boiler 11.5 litres

Weight of Appliance 395kg

Max. Operating Pressure of Boiler 2 bar (20m)

Fuel Kerosene C2

RAYBURN 780KCD ONLY

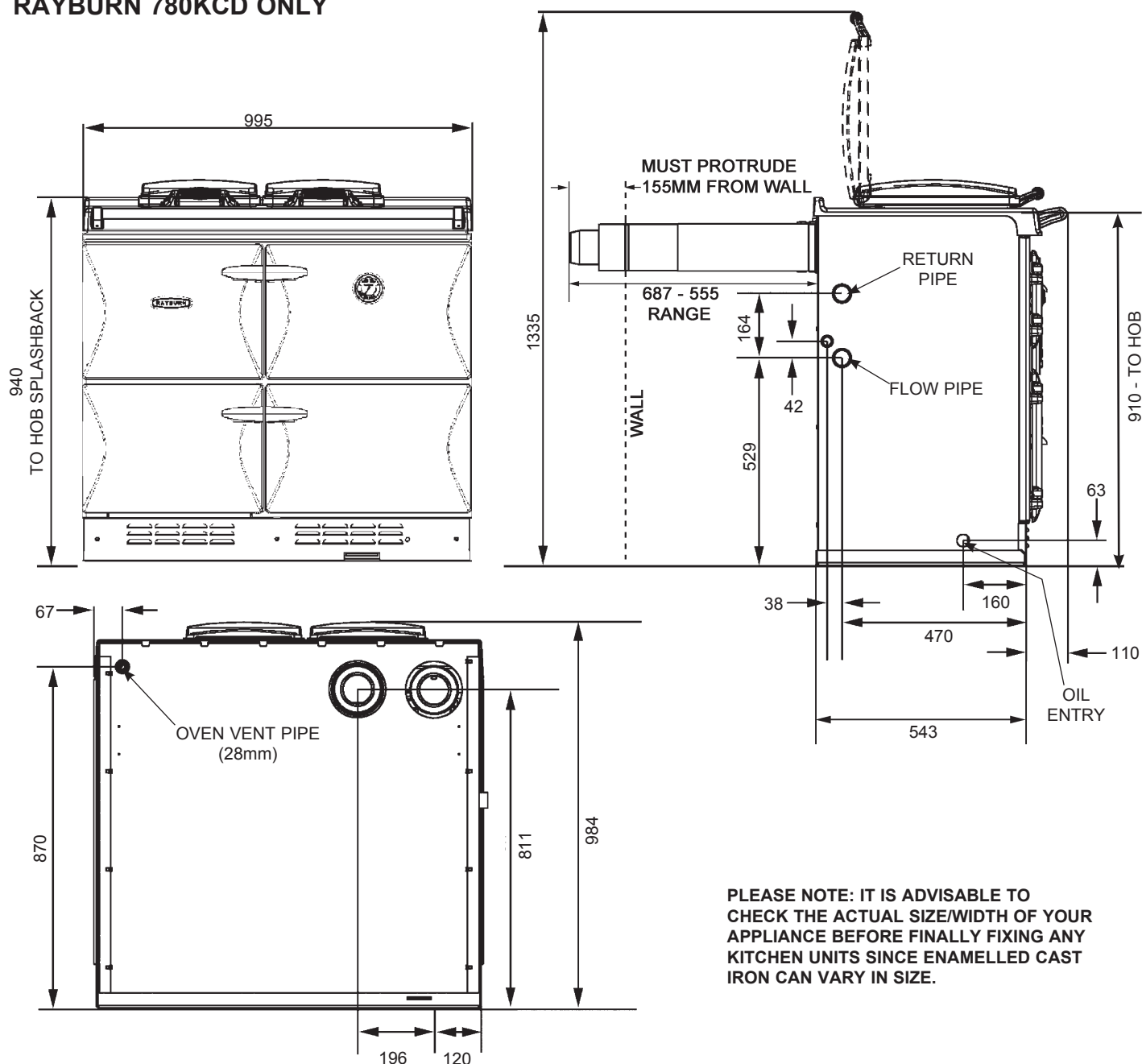


Fig. 1B

DESN 515831

GENERAL SPECIFICATIONS

Boiler Water Connections

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

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

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

Oil Inlet 10mm copper
To connect through LH side panel

Electrical Supply 230V~50Hz 270W
3 Amp Fused

Flue Outlet 125mm

CO₂% - BOILER 11.0 - 11.5

- COOKER 11.0 - 11.5

Max. Water Temp. 82°C

Water Capacity of Boiler 11.5 litres

Weight of Appliance 395kg

Max. Operating Pressure of Boiler 2 bar (20m)

Fuel Kerosene C2

Technical Data

680/780KCD	BOILER BURNER	COOKER BURNER
BURNER NOZZLE (US g/h)	0.65 @ 80°EH	0.35 @ 80°S
OIL PRESSURE Bar (psi)	8.5 (125)	10 (145)
OIL BURNING RATE cc/m	42.5	24
HEAT INPUT kW	25	15.0
BOILER OUTPUT kW	24	

INTRODUCTION

The Rayburn is a floor standing combined cooker and central heating boiler. It gives independent operation of space heating, domestic hot water and cooking.

The appliance is fired by two independent pressure jet oil burners. Either burner can be independently operated under the programmer control if required.

The boiler is designed for use on a fully pumped low pressure hot water circulation system with a pumped over run facility or alternatively on a sealed system limited to 2 bar.

IMPORTANT

- This appliance must only be used with Kerosene C2 to BS 2869.
- An Indirect Cylinder to BS 1566: Part 1 must be fitted.
- If the heating circuits are controlled in such a way that both heating and cylinder circuits can be closed off at the same time then a BYPASS LOOP should be fitted. (See Fig. 27).
- An OFTEC approved Fire Valve MUST be fitted in the oil supply line.
- The supplied in line filter MUST be fitted.

REGULATIONS

THIS APPLIANCE IS A CONTROLLED SERVICE BY DEFINITION AND REQUIRES EITHER FITMENT UNDER THE REMIT OF BUILDING CONTROL OR INSTALLATION OF AN OFTEC REGISTERED 105 TECHNICIAN (CLASSED AS A COMPETENT PERSON) WHO CAN SELF CERTIFY HIS OWN WORKS.

The appliance must be commissioned by a competent or OFTEC approved engineer

The installation of the appliance must be in accordance with the relevant requirements of the current Building Regulations in force and the bylaws of the local Water Undertaking, it should also be in accordance with the relevant current British Standard Codes of Practice.

BS5410 - Installation of oil fired appliances for space heating and hot water supply purpose. Part 1 Boiler of rated output not exceeding 45kW.

BS5449 - Central Heating for domestic purposes, Part 1. Forced circulation hot water system.

Building Regulations England and Wales. Part J. Heat producing appliances.

Building Standards Scotland - Technical Standard Part F. Heat producing appliances and storage of liquid and gaseous fuel.

Building Regulations - Technical Booklet to Part L. Heat producing appliances.

LOCATION

Appliance Hearth: The surface temperature of the floor below the appliance does not exceed 100°C. The constructional hearth described in section J does not apply. However, this appliance must be installed on a solid floor of incombustible material which is capable of supporting the total weight of the appliance.

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

Between wall or unit and LH side - 4mm
of appliance top plate

Between wall or unit and RH side - 4mm
of appliance top plate

SHOULD THE WALL PROJECT BEYOND THE FRONT OF THE APPLIANCE, IT MUST BE INCREASED TO 50mm, SEE FIG. 2. To allow oven door to open enough to change oven and shelf positions.

Above the raised insulating cover - 60mm

In addition, adequate clearance must be available at the front of the appliance to enable it to be operated and serviced. Flue pipe must not be closer than 25mm to combustible material.

Where the cooker is to stand in a recess or against a wall which is to be tiled, in no circumstances should the tiles overlap the cooker top plate.

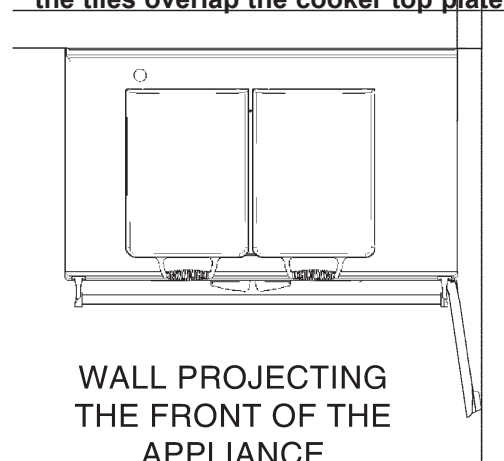
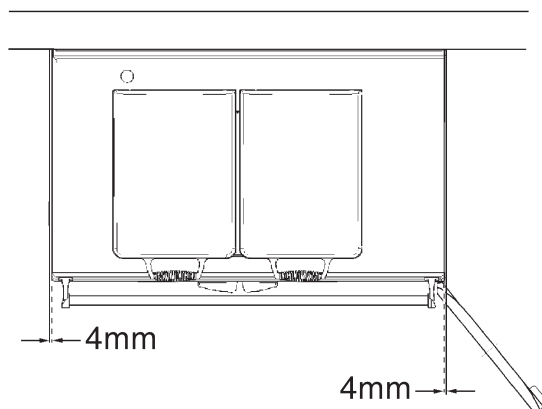


Fig. 2

Site requirements

OIL PIPE LINE

The oil supply connection between the storage tank and the oil pipe should be run in copper pipe with a minimum diameter of 10mm. Galvanised pipes and fittings should not be used. Annealed copper pipe is preferred with a flare type manipulative fittings. Capillary fittings with soft solder should not be used. Steel pipes should be joined using taper threads.

All pipework and fittings must be completely air tight. Only oil resistant compounds and PTFE tape should be used when making joints. Pipework must be protected against damage whether fitted above or below ground.

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

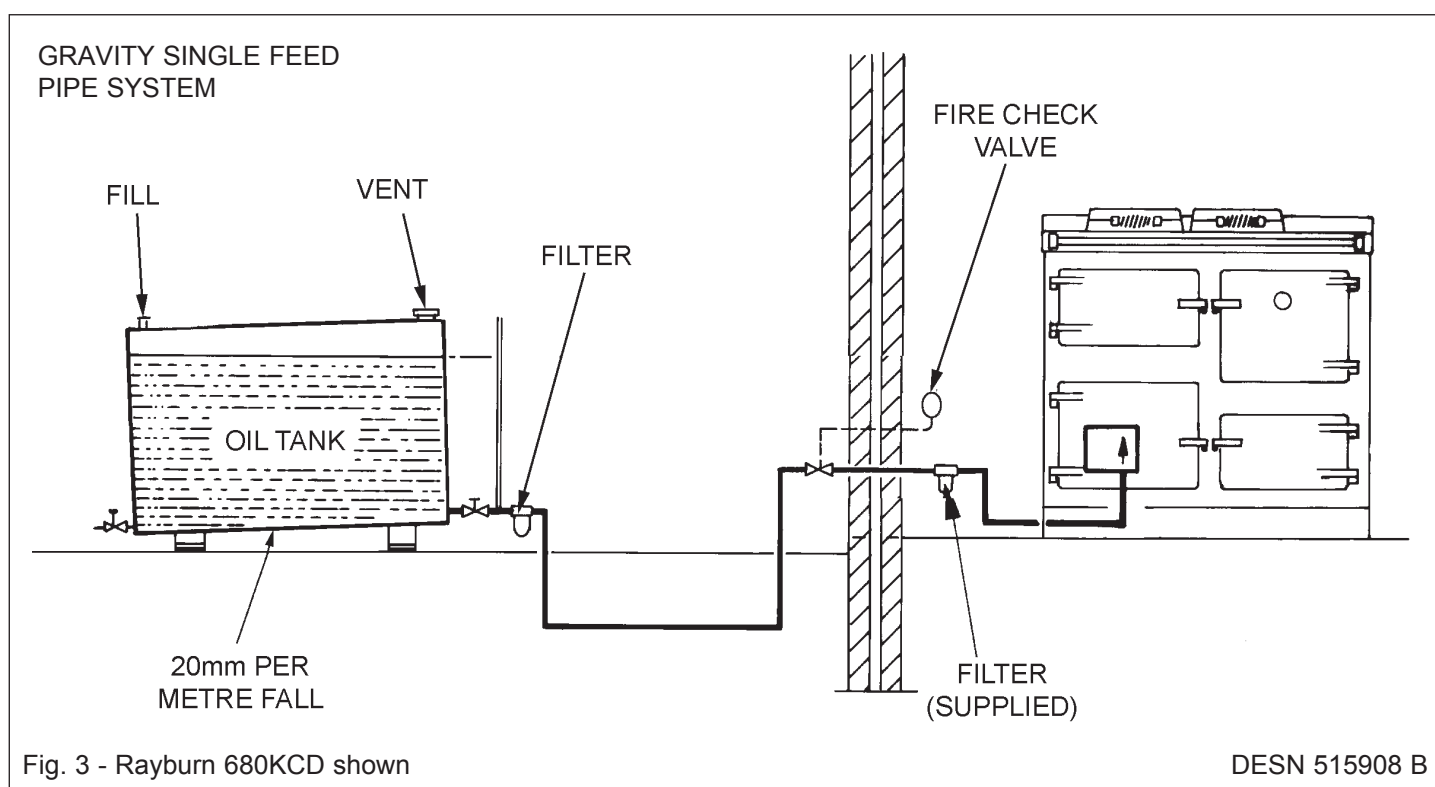
The oil line from the storage tank to the appliance must be fitted with a remote acting OFTEC approved fire valve operating at 150°F (65°C), fitted with an appropriate length of capillary to enable the valve body to be located externally at the point where the oil line enters the building.

The 5-10 micron oil filter supplied with the appliance must be fitted in the oil pipe and stop valve must be fitted as close to the cooker as possible in an accessible position. A flexible pipe connection, approximately 1000mm long, is supplied to fit between the oil supply pipe and the oil pump for ease of burner removal. This must be contained within the appliance.

For Oil Connection details, see Page 15.

OIL STORAGE

The minimum recommended oil tank is 1400 litres and the codes of practice governing its installation are covered by BS: 5420: Part 1. Mild Steel Tanks should be to BS 799: Part 5 and plastic tanks to OFTEC Standard OFS T100.



Flue System

See Fig. 4

The flue system must be installed in accordance with the regulations in force.

Terminal Position

The minimum acceptable spacings from the terminal to obstructions and ventilation openings are shown in Fig. 3. Where the terminal is within 1m of any plastic material, such material should be protected from the effects of the combustion products of the flue.

Terminal Protection

A terminal guard is supplied with the cooker and must be fitted. If the flue termination is less than 2 metres above ground level, if damage could occur to the terminal or if there is the possibility of accidental contact by persons.

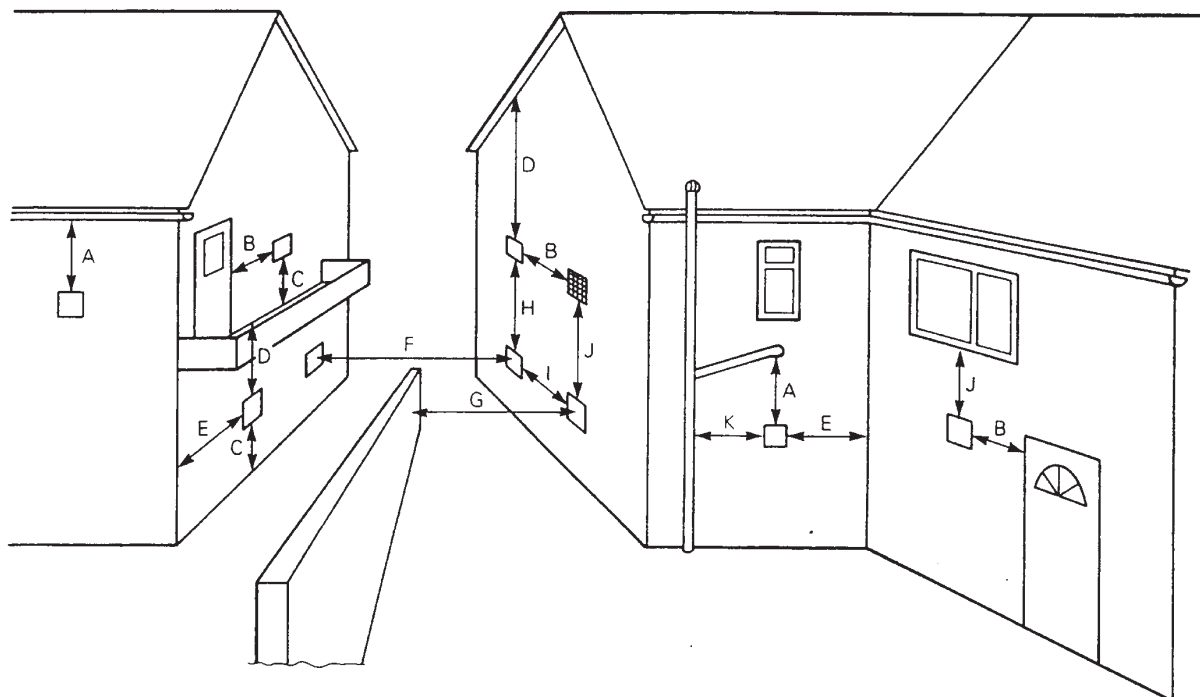


Fig. 4

A	BELOW A GUTTER OR SANITARY PIPEWORK	600mm	H	VERTICAL FROM TERMINALS ON THE SAME WALL	1500mm
B	HORIZONTAL FROM OPENING, AIR BRICK, WINDOW ETC	600mm	I	HORIZONTAL FROM TERMINALS ON THE SAME WALL	750mm
C	ABOVE GROUND OR BALCONY LEVEL	300mm	J	BELOW AN OPENING, AIR BRICK, WINDOW ETC.	600mm
D	BELOW EAVES OR BALCONY	600mm	K	FROM VERTICAL SANITARY PIPE	300mm
E	FROM AN INTERNAL OR EXTERNAL CORNER	300mm			
F	FROM A TERMINAL FACING A TERMINAL	1200mm			
G	FROM A SURFACE FACING A TERMINAL	600mm			

There are additional general requirements in most Regulations and Standards that the flue must be positioned so that it does not cause a nuisance and permits the dispersal of combustion products.

Consideration must be given, as to the possible adverse affects of combustion noise on adjoining properties, inherent with this type of product.

Carbon Monoxide Detector/Alarm

It is recommended that a Carbon Monoxide Dectector/Alarm should be fitted in the same area as the cooker.

Site requirements

WATER CIRCULATION SYSTEM

Flow and return pipework between cooker diverter valves must be 28mm diameter minimum.

PLEASE NOTE: The flow pipe connection should be connected to the bottom boiler connection and the return pipe should be connected to the top boiler connection as Fig. 27.

Space and water heating should be in accordance with the relevant recommendations of BS 5410: Part 1.

In a combined central heating and domestic hot water system, the hot water storage vessel must be of the indirect cylinder type to BS 1566: Part 1. The hot water storage vessel should be insulated with not less than 75mm thick mineral fibre or its equivalent.

Cisterns and pipework should not be situated in areas which may be exposed to freezing conditions.

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

The appliance boiler section should be connected to a cistern water supply, subject to a maximum head of 18.25m. The heating system must be designed (and adjusted if necessary) to give temperature differential across the boiler at full output of 20°C. When horizontal runs are used the pipes should rise upwards in the direction away from the appliance.

Circulating Pump

It is recommended that the selected pump be sized to suit the boiler pressure loss and therefore 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 fitted in a readily accessible position.

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.

Inhibitor

A corrosion inhibitor **MUST** be added to the heating system to protect the heat exchanger and pipework. Inhibitor must also be replaced if the system is drained after installation. As a precaution the heating system **MUST** also be flushed out prior to the addition of the inhibitor to ensure any flux, debris is removed.

HEATING CONTROLS

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

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

Thermostatic radiator valves may be fitted when required.

The boiler should be controlled so that it operates on demand only.

Operation of the system under control of the boiler thermostat only, does not produce the best efficiency.

Refer to the control equipment manufacturers literature for information e.g. wiring.

ELECTRICAL SUPPLY

Wiring external to the appliance must be installed in accordance with current National Wiring Regulations and any local regulations which apply. The appliance is supplied for 230 Volt ~ 50 Hz 270W a fuse rating of 3 amps. The method of connection to the mains supply should facilitate complete isolation of the appliance, by the use of a fused double pole switch having contact separation of at least 3mm serving only the appliance. The point of connection to the mains should be readily accessible and adjacent to the appliance. The installation should be protected by a 30mA Residual Current Circuit Breaker (RCCB).

The minimum requirement for the power cable is that it should be a 3 core PVC sheathed flexible cord (85°C min) at least 0.75mm² (24 x 0.2mm) to the relevant standard.

WARNING: THIS APPLIANCE MUST BE EARTHED.

In the event of an electrical fault after installation of the appliance preliminary electrical system checks must be carried out i.e. earth continuity, polarity and resistance to earth.

For wiring instructions, see wiring diagrams.

The circulating pump must be connected to PL and PN on the terminal block (See Fig. 18) and the cables clamped and passed through the grommet in the right hand side panel.

NOTE: The 3 amp fuse rating takes into account any AUXILIARY components used. In most central heating systems i.e. circulating pump, zone valves, AGA recommend that only CE marked equipment is used in conjunction with this appliance.

Rayburn 680/780K CD Wiring 111MB for independent Satronic boxes

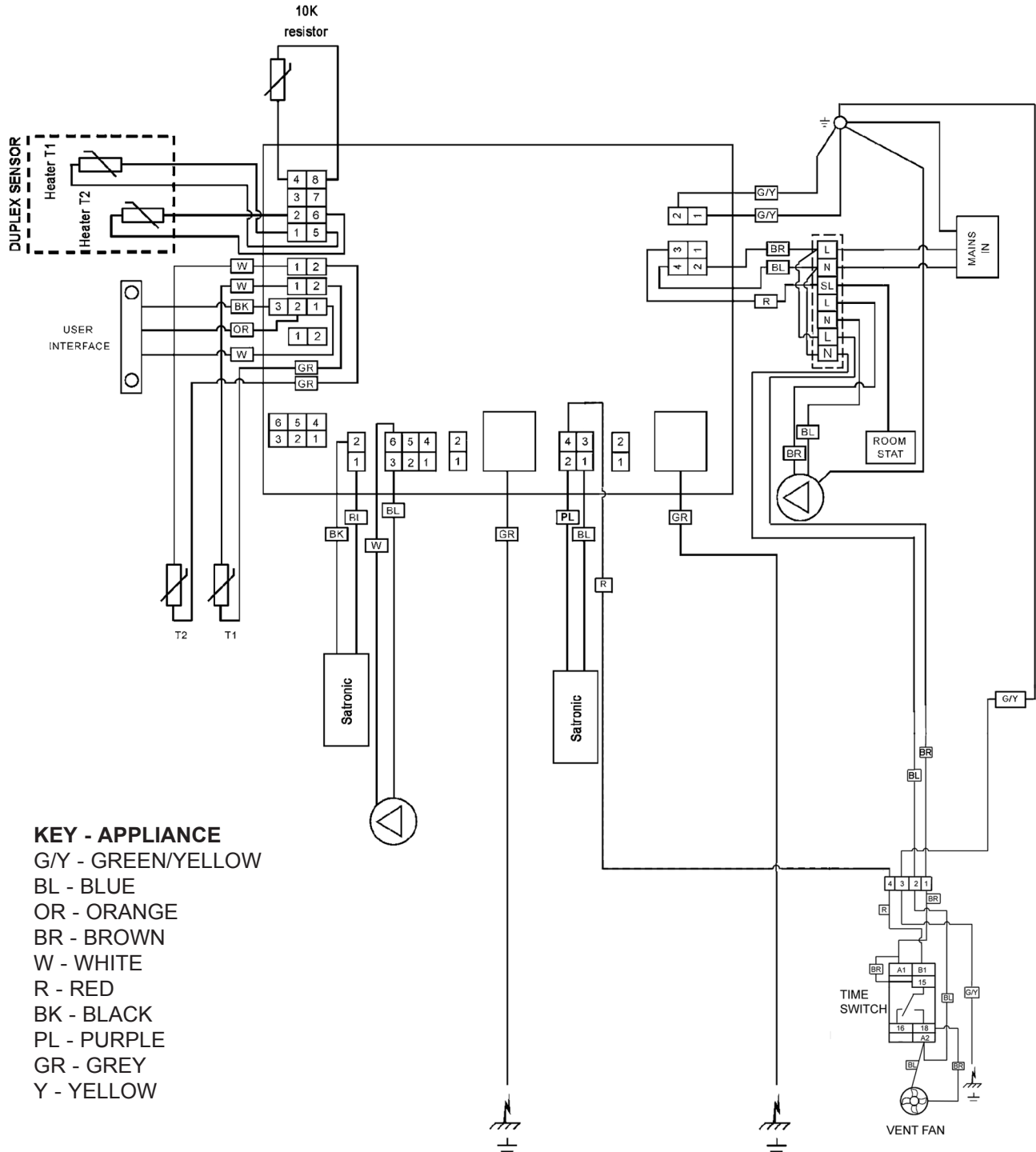


Fig. 5

Site requirements

Rayburn 680/780K CD Wiring Diagram 111MB Self Contained Control

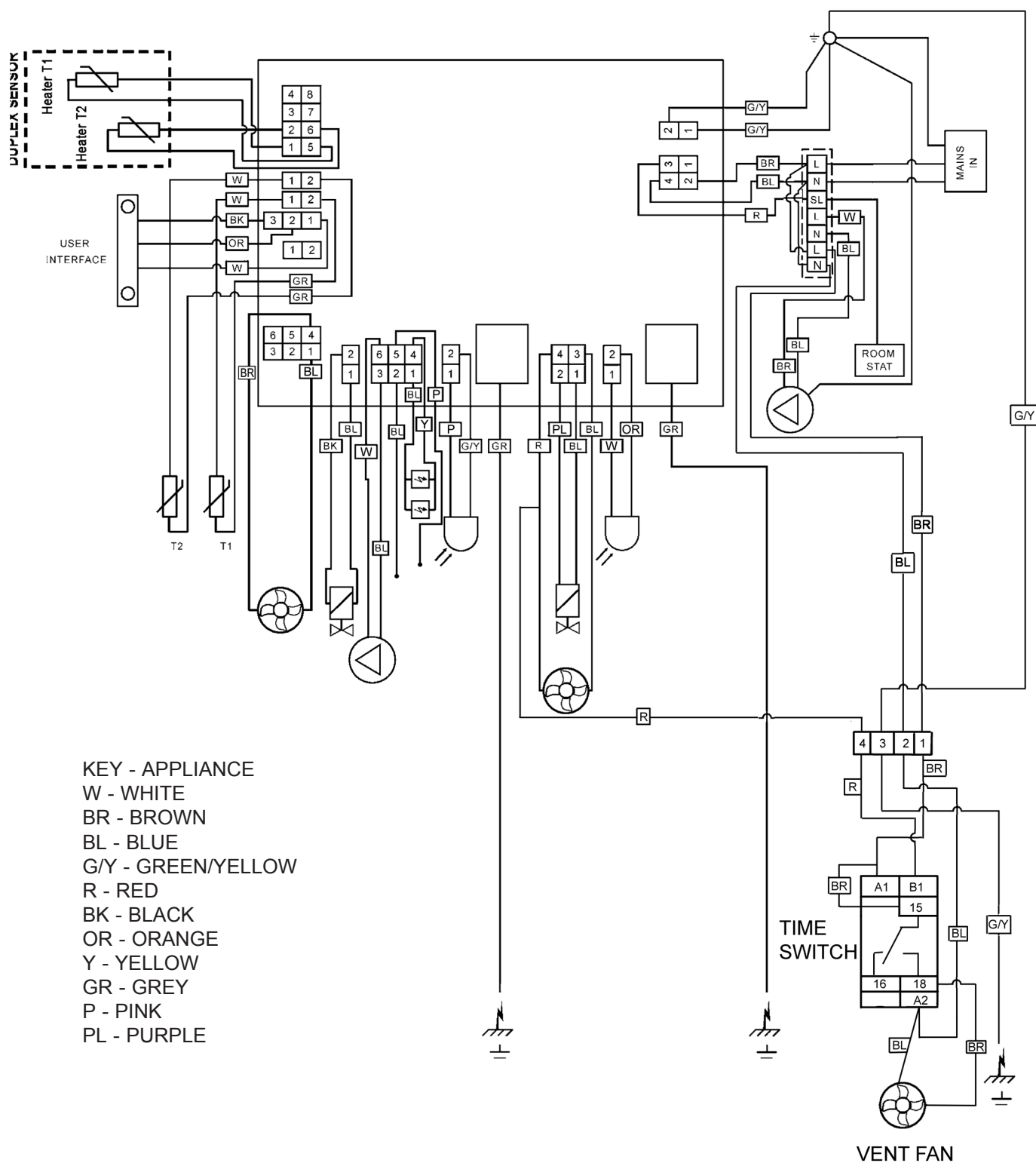


Fig. 6

CLEARANCES

This appliance is floor mounted. The space in which the appliance is to be fitted must have the following minimum dimensions.

Between wall or unit and LH side - 4mm
of appliance top plate

Between wall or unit and RH side - 4mm
of appliance top plate

SHOULD THE WALL PROJECT BEYOND THE FRONT OF THE APPLIANCE, IT MUST BE INCREASED TO 50mm, SEE FIG. 2. To allow oven door to open enough to change oven and shelf positions.

Above the raised insulating cover - 60mm

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

PRELIMINARY INSTALLATION

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

The appliance rear distance bracket

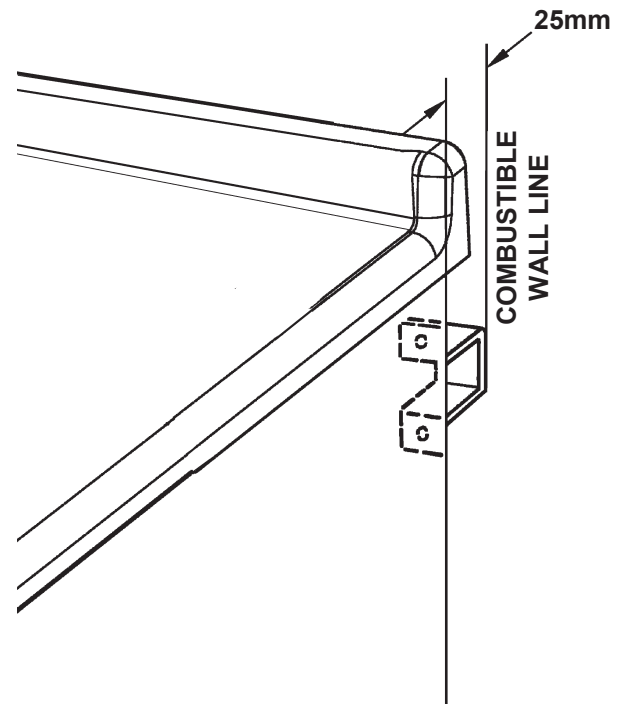
The cooker handrail

The oil filter

Appliance rear distance bracket: If the rear wall is of combustible material, there must be an air gap of 25mm between the wall and the rear of the cooker. Fit the rear distance bracket as shown in Fig. 7. Wherever possible it is recommended that the skirting board is removed for the width of the appliance to enable the rear edge of the appliance to make contact with the vertical wall and avoid a rear gap. (Combustible wall excepted).

Where the cooker is to stand in a recess or against a wall which is to be tiled, **IN NO CIRCUMSTANCES SHOULD THE TILES OVERLAP THE TOP PLATE.**

The handrail brackets are held on the front edges of the cooker top-plate casting. Fit the handrail brackets ensuring the fibre protecting washers are in position. Insert the handrail into the brackets, positioning them correctly, and tighten the grub screws and locating bolts.



BRACKETS SCREWED TO BACK EDGE OF BOTH SIDE PLATES WHEN COMBUSTIBLE WALL IS INSULATED ON INSTALLATION

Fig. 7

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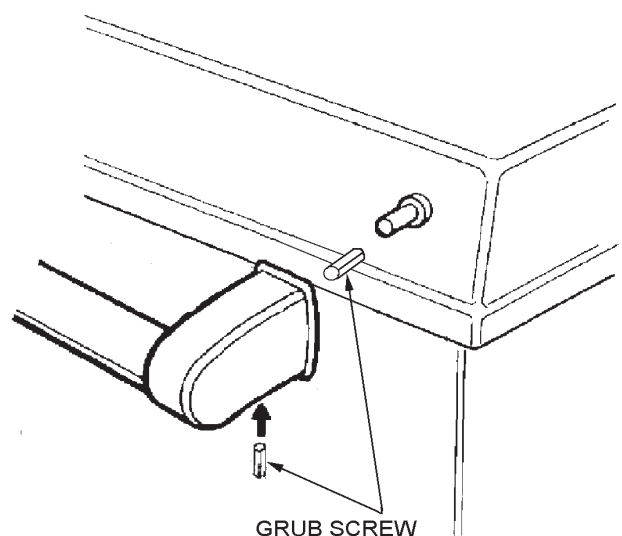


Fig. 8

DESN 515617

Installation requirements

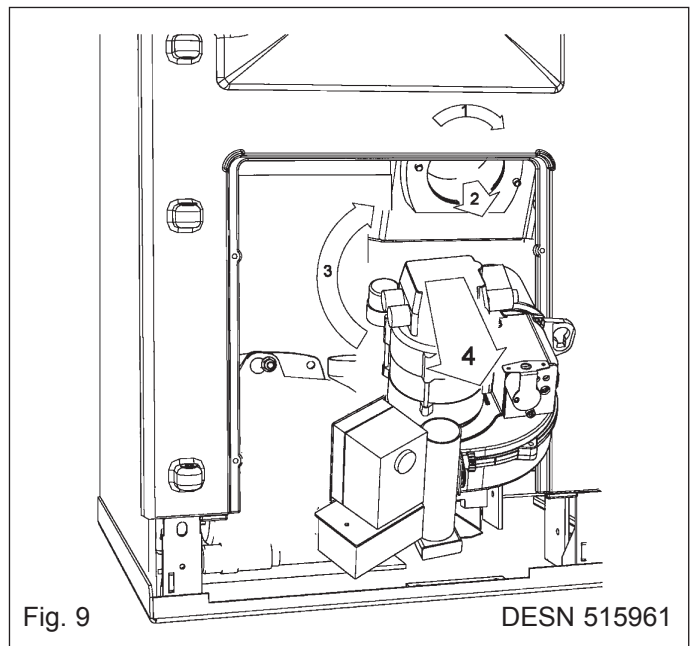
OIL CONNECTION

IMPORTANT: DURING BURNER REMOVAL CARE MUST BE TAKEN NOT TO DAMAGE THE CERAMIC FIBRE INSULATION.

SEE FIGS. 9 & 10

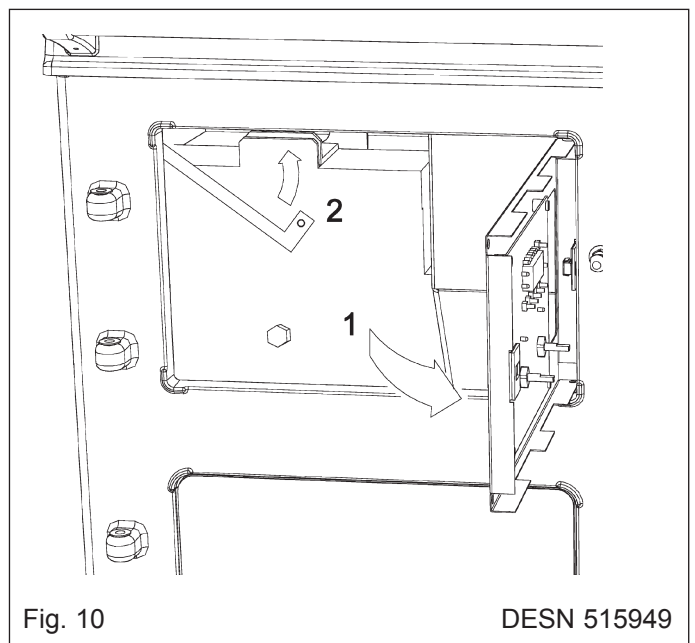
COOKER BURNER - SEE FIG. 9

1. Unscrew jubilee clip and remove flexi air intake.
2. Using a 13mm spanner, unscrew top securing bolt and remove burner by rotating clockwise and drawing it away from the cooker.



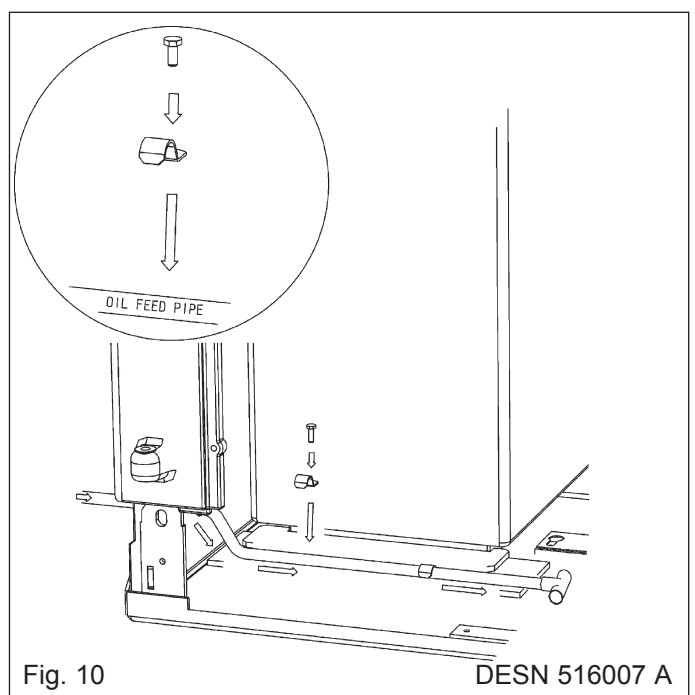
BOILER BURNER - SEE FIG. 10

1. Place a sheet on the floor in front of the cooker to act as a working area.
2. Remove lower LH door (**Rayburn 680KCD only**) and burner aperture cover and store in a safe place.
3. Unscrew jubilee clip and remove flexi air intake pipe from burner.
4. Using a 13mm spanner, remove top securing bolt and remove burner by rotating it approximately 90°, counter clockwise drawing it away from the burner.



SEE FIG. 11

10mm copper pipe entering through LH side panel should be routed through as (Fig. 11) and fixed using clips provided.



SITE LOCATION

Check that the hearth is level, then remove the appliance from its transit wooden pallet.

Connect and terminate the flue system in accordance with the regulations in force. Refer to section 'BALANCED FLUE INSTALLATION' for terminal kit installation details.

SEE FIG. 12

1. Remove top LH door (**Rayburn 680KCD only**) and facia glass. Remove 2 fixing screws from control panel chassis and hinge open.
2. Remove lower bolt from control panel fixing bracket and pivot bracket upwards, away from boiler access door.

SEE FIG. 13

1. Remove four securing nuts and withdraw access door from below through burner aperture,
2. Remove stack of 5 sheet metal baffles, check assembly and replace as shown in Fig. 14.
3. Check aluminium twisted baffles are in position and there are 28 baffles, one in each recuperator tube.

NOTE: LH set of x 4 aluminium twisted baffles are half length.

4. When replacing access door, tighten the 4 fixing screws to a torque setting of 7.5 NM.

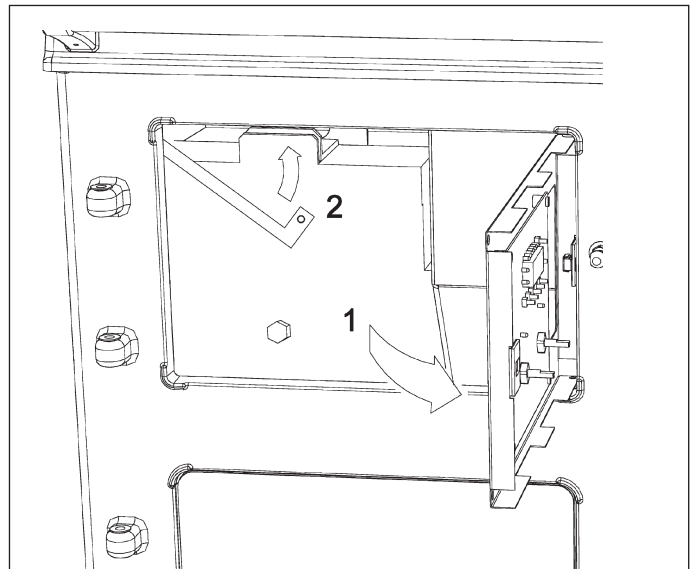


Fig. 12

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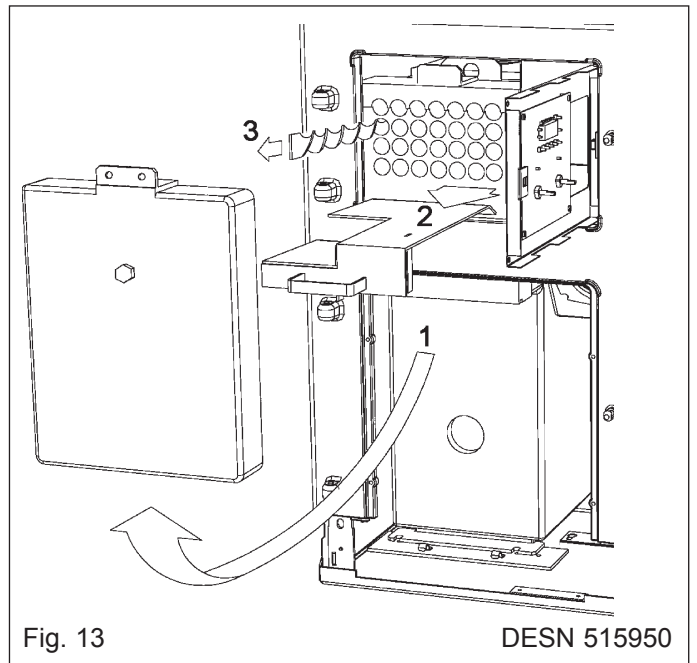
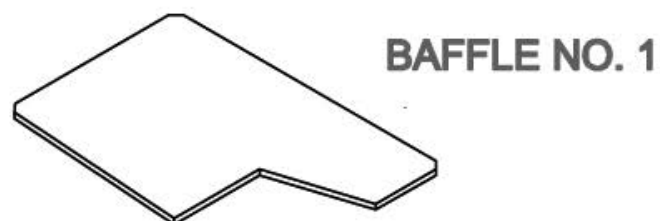
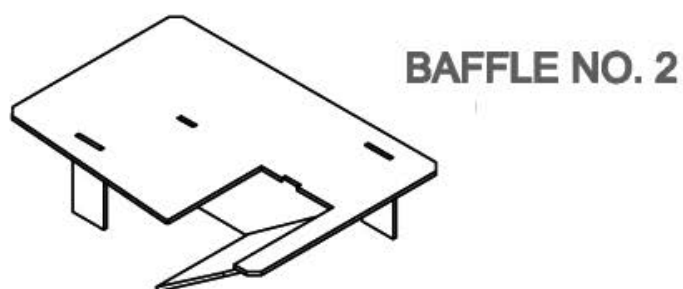
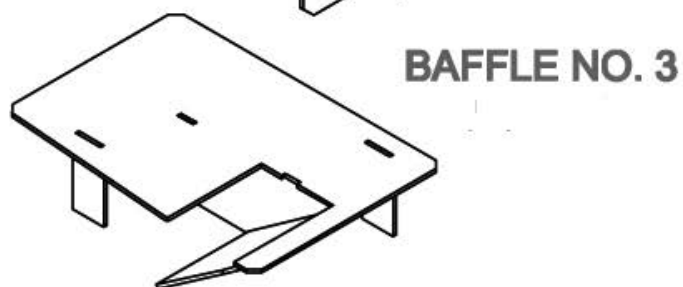
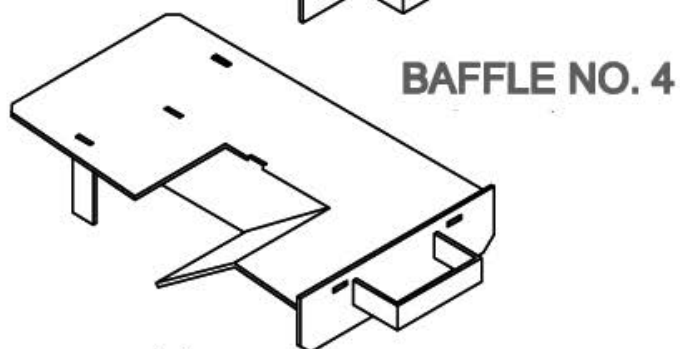
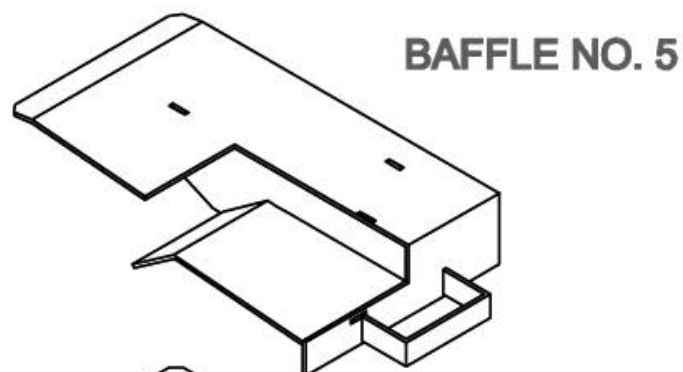


Fig. 13

DESN 515950

TOP



BOTTOM

**ALL BAFFLES MUST BE STACKED IN
PLACE AS DIAGRAM ABOVE**

Fig. 14

BURNER ACCESS

SEE FIG. 15

NOTE: PLEASE REMOVE PLASTIC PROTECTION ON DOOR LININGS.

1. Open the burner access door. Remove door and put in a safe place. **(Rayburn 680KCD only).**
2. Remove 4 inner panel securing screws and remove panel.
3. Remove the 3 plinth securing screws and remove plinth.

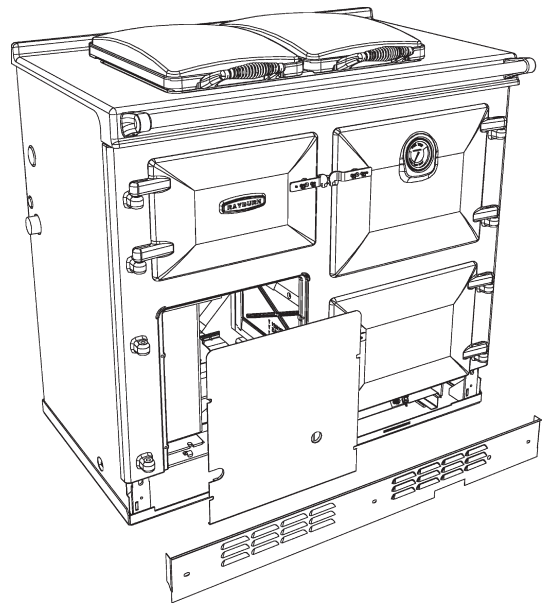


Fig. 15 - Rayburn 680KCD shown

DESN 515911

ELECTRICAL CONNECTION

1. Make electrical connections to terminal strip as wiring diagram. (See Fig. 18).

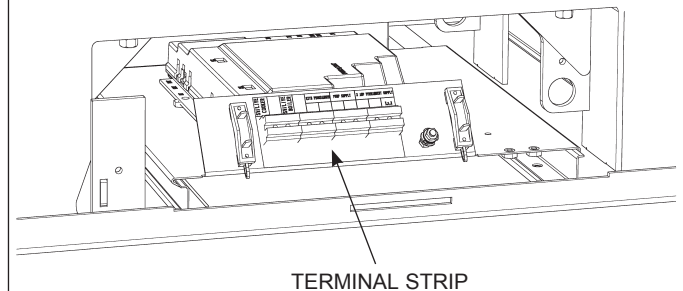


Fig. 16

DESN 515623

OIL PUMP

1. Before connecting the flexible oil pipe to the pump inlet, open the stop valve slowly and run off some of the oil into a receptacle to establish an air free and clean supply to the pump. Make the connection onto the oil pump tight and leave valve open.

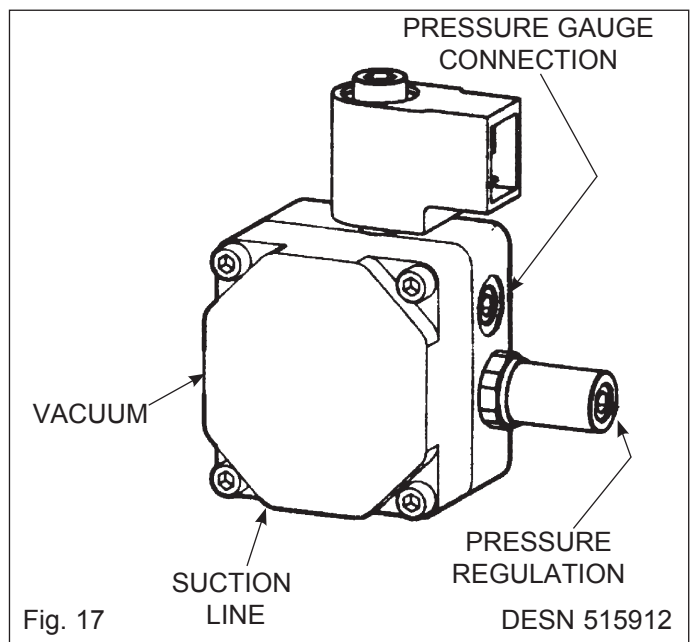


Fig. 17

DESN 515912

Commissioning Instructions

TERMINAL STRIP CONNECTIONS

of room stat.

The system pump and mains should be connected as shown in Fig. 18.

ELECTRICAL CHECK

by a competent person.

FIT PRESSURE GAUGE

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

Switch on the Electricity

Set the boiler burner thermostat to maximum. The boiler burner should run on pre-purge for 7-15 seconds, with the ignition spark energised. The solenoid valve should then open allowing the burner to fire.

Until all the air from the oil pump is flushed out there may be some flame instability resulting in the burner locking out.

This will be shown by the burner stopping and the illumination of the signal light in the reset button of the control box (See Fig. 19). In this event, **wait at least one minute**, then press the re-set button to restart.

VENT OIL PUMP

loosening the pressure gauge connection sufficient to allow air to bleed out. When bubble free oil seeps out re-tighten.

ADJUST OIL PRESSURE

Whilst the burner is running check the oil pressure on the pressure gauge.

If the pressure gauge is not indicating the correct reading, then adjust the pressure by turning the pressure regulator clockwise to increase or anti-clockwise to decrease the pressure until the pressure gauge reads 10 bar (145 lb/in²) for the cooker and 8.5 bar (125 lb/in²) for the boiler.

VENT FAN		PUMP		SWITCH	MAINS IN	
N	L	N	L	L	N	L
BLUE	BROWN	BLUE	WHITE	RED	BLUE	BROWN

Fig. 18

DESN 515951

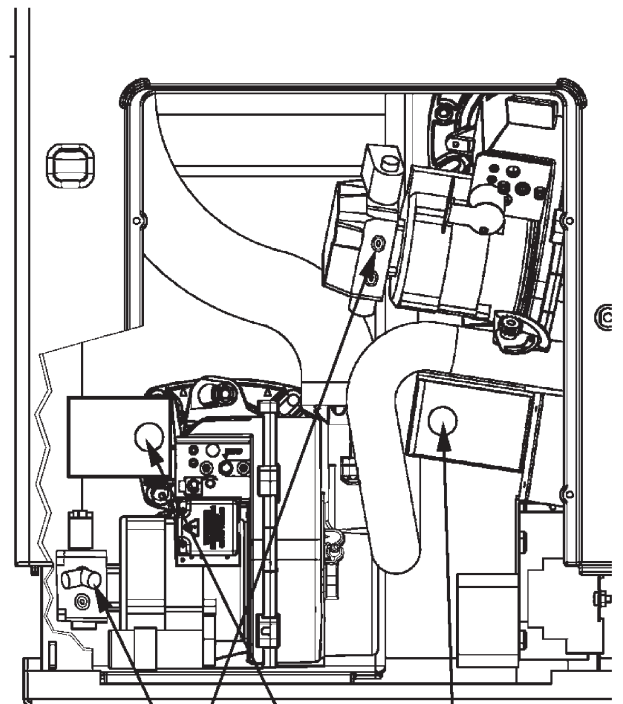


Fig. 19

COOKER
BURNER
RESET BUTTON

DESN 515952

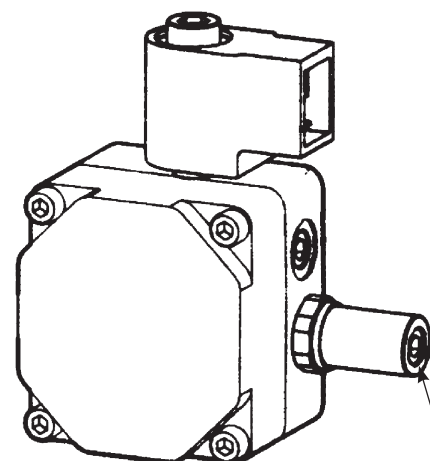


Fig. 20

PRESSURE
REGULATION

DESN 515912

SET COMBUSTION AIR - COOKER

The air controls of the cooker burner are factory pre-set, however small adjustments may be necessary to suit the site conditions. (See Fig. 21).

Turn cooker burner on.

After 15 minutes running, sample the flue gases from the cooker burner. Lift up the RH insulating cover and remove the countersunk headed screw (right hand side) in the hotplate. The cooker burner should be set to 11.0-11.5% CO₂ with a maximum smoke No. 2. Replace the countersunk headed screw on completion ensuring that it will not interfere with any pots and pans placed on the hotplate.

When satisfied with combustion check, run combustion check for boiler burner (See Page 21).

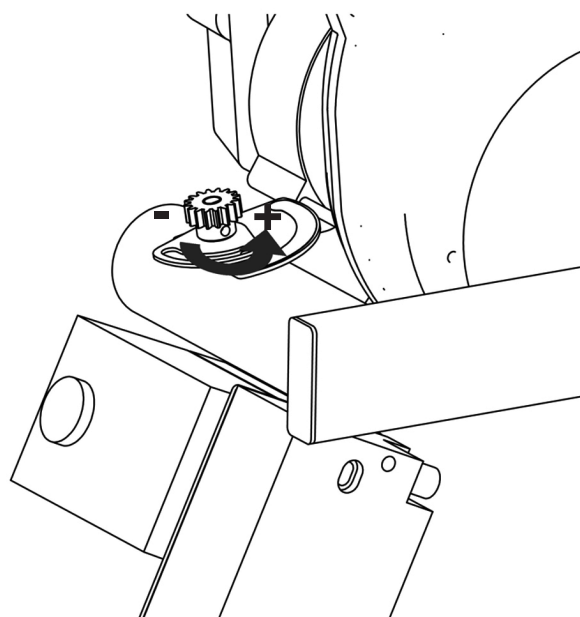


Fig. 21

DESN 515955

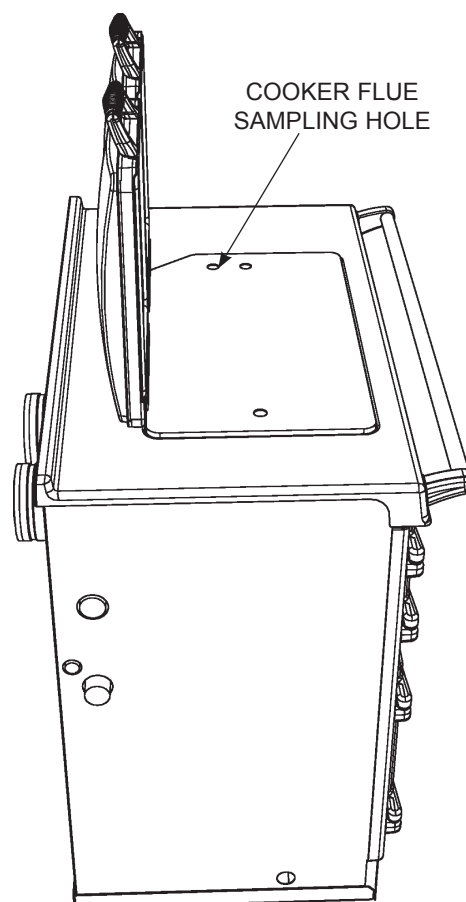


Fig. 22

DESN 515913

Commissioning Instructions

SET COMBUSTION AIR - BOILER

To access the boiler burner flueways:-

1. Remove top LH door (**Rayburn 680KCD only**) and facia glass. Remove 2 fixing screws from control panel chassis and hinge open.
2. Remove plug from sampling point. (See Fig. 24).

The controls of the boiler burner are factory pre-set, however small adjustments may be necessary to suit the site conditions.

Turn boiler burner on.

After 15 minutes remove the cover plug for the Boiler Sampling Point (behind the controls doors). Remove the plugging screw and insert the sensing end of a portable indicator to check the CO₂ (Carbon Dioxide) level. Adjust the boiler burner air intake until a reading of 11-11.5% CO₂ is recorded on the indicator.

Check Smoke

Remove CO₂ sampling tube for flue sampling insert the sensing end of a Baccarach Smoke Pump and check that the smoke in the boiler flueways do not exceed No. 2 on the scale. Replace the plugging screw, and plug.

When satisfied with combustion check, refit burner door inner panel.

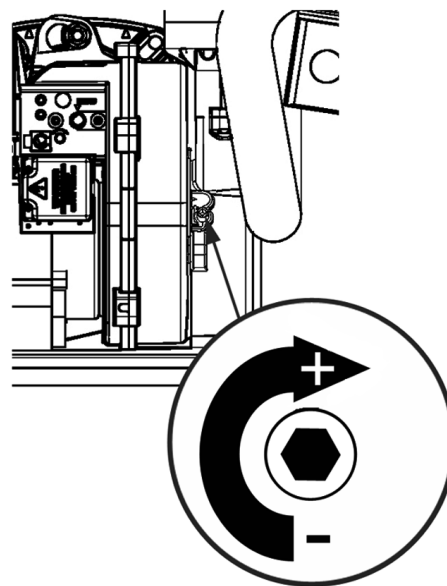


Fig. 23

DESN 515969

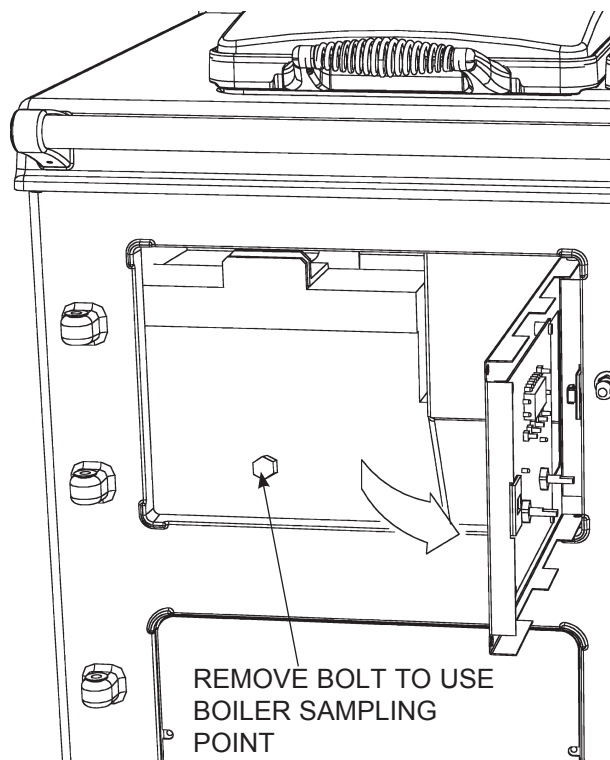


Fig. 24 - Rayburn 680K CD shown

DESN 515954

VENT FAN TIMER SWITCH CHECK

SEE FIG. 25

1. Disconnect 4-pin plug, slacken 2 fixing screws, slide forward and lift off keyhole slots

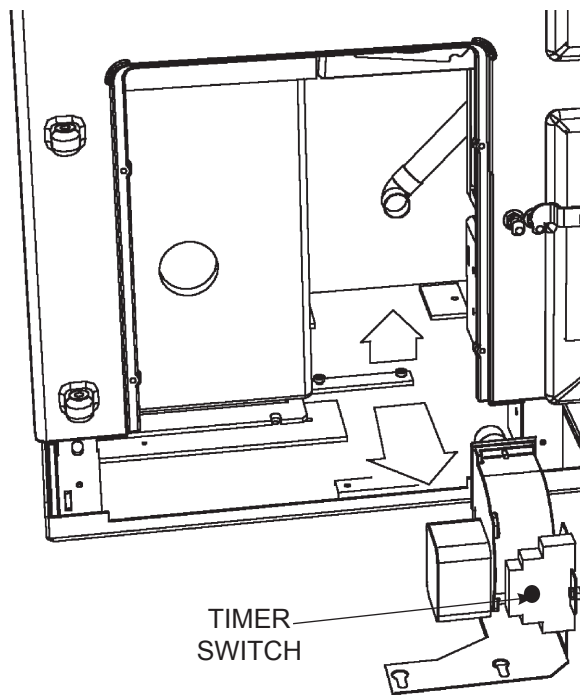
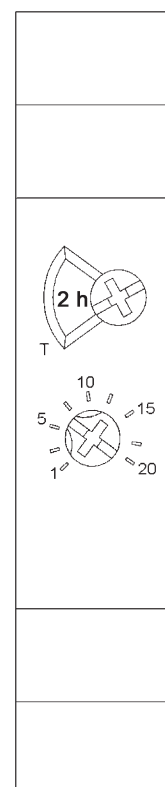


Fig. 25

DESN 515962

SEE FIG. 26

1. Check pre-set timer switch setting.



2 hrs

x

7/20 of 2 hrs

= 42 mins

Fig. 26

DESN 515975

Commissioning Instructions

ANCILLARY CONTROLS CHECK

Before leaving the site, check the operation of the programmer and the control thermostat are working correctly and are capable of controlling the burners correctly. Check the operation of both control boxes.

In the event of a flame failure, the control boxes should cut off the oil supply by closing the solenoid valves. The reset buttons will then be illuminated.

WAIT 1 MINUTE BEFORE RESETTNG THE CONTROL.

BOILER CONTROL CHECK

Check that:-

1. The boiler system is full of water and all the valves are fully open.
2. The programmer is set to continuous heating.
3. Ensure that the electricity supply is ON, that the pump is running and the boiler thermostat is ON.

The boiler and pump should run until the system is hot and an inspection is made for water leaks.

The system should then be turned off and rapidly drained whilst still hot, with all manuals and automatic valves in the open position. The system should then again be filled and cleared of any air locks. Whilst refilling the system it is essential that a corrosion inhibitor is added to the feed water.

When all air locks have been removed and the system is hot the by-pass should be adjusted to ensure a quiet operations and the radiators balanced.

4. Allow the pump adjuster to maintain a "flow and return" differential of 20°C.

Checks must be made by the installer to see that the 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 satisfactory water temperature at each emitter.

5. When the water system reaches working temperature check that the boiler thermostat operates.
6. Auto frost protection is provided, where by the water pump will run when the temperature falls below 15°C or if the temperature falls below 5°C the burner will also fire.

INSTRUCT THE USER

1. Advise the User of the precautions to prevent damage to the heating system and to the building in the event of the heating system being 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 12 monthly intervals.
3. Hand the Operating Instructions to the User and demonstrate the correct operation of the appliance and system controls.
4. Leave the Installation and Servicing Instruction with the User.

SEALED SYSTEM REQUIREMENTS

SEE FIG. 27

a. The installation must comply with the requirements of BS 6796 and BS 5449. Maximum water 82°C temperature.

b. A safety valve set to operate at 2 bar (30lbf/in²) shall be fitted in the flow pipe close to the boiler. There must not be any valve between the safety valve and the boiler. The valve should be positioned on a discharge pipe fitted to prevent and discharge or creating a hazard to occupants or cause damage to electrical components and wiring.

c. A pressure gauge covering at least the range 0 to 4 bar (0 to 60 lbf/in²) shall be fitted in the system, in a visible position.

d. A diaphragm type expansion vessel, to BS 4814 shall be connected at a point in the return pipe close to the boiler. The vessel must be chosen to suit the volume of water in the cistern and the system charge must not be less than the static head at the point of connection. Further details can be obtained from the 'British Gas Specifications for Domestic Wet Central Heating Systems Part 3 Sealed Systems'.

Safety Valve Setting	2.0 bar	
Vessel charge and initial system pressure	0.5 bar	1.0 bar
Multiplying Factor	0.09	0.16
Expansion Vessel volume (litres) = System volume Vs x factor	L Vs x 0.09	L Vs x 0.16

V/s = System Volume Litres

e. The hot water cylinder shall be either the indirect coil type or a cylinder fitted with a calorifer which is suitable for the system pressure.

f. The Make-Up System

Provision shall be made for replacing the lost hot water from the system by either of the following methods:

a) From a make-up vessel or tank, and connected through a non-return valve to the system on the return side of the hot water cylinder or return side of all heat emitters or radiators.

b) Where access to a make-up vessel would be difficult, by a remote automatic pressurisation and make-up unit.

g. Mains Connection

There shall be no connection to mains water supply or to the water storage cistern supplying domestic hot water, even though a non-return valve may be fitted without the approval of the local water authority.

h. The Filling Point

The system shall be fitted with a filling point at a low level, and be used in accordance with the local water authority requirement and shall generally have a stop valve to BS 1010.

i. Commissioning - General

The system shall be filled by water by a method acceptable to the Local Water Authority.

Check the operation of the safety valve manually.

Test the operation of the high limit cut-out according to the manufacturers instructions.

After flushing and refilling the system either:-

a) If a make-up vessel is filled release water from the safety valve until the level in the make-up vessel bottle falls visibly, then top up the make-up bottle.

b) If there is no make-up vessel either release or introduce water until the desired cold water pressure level is reached.

COMMISSIONING

Follow the commissioning instructions as for open vented system. See section Commissioning Instructions with the following additions:-

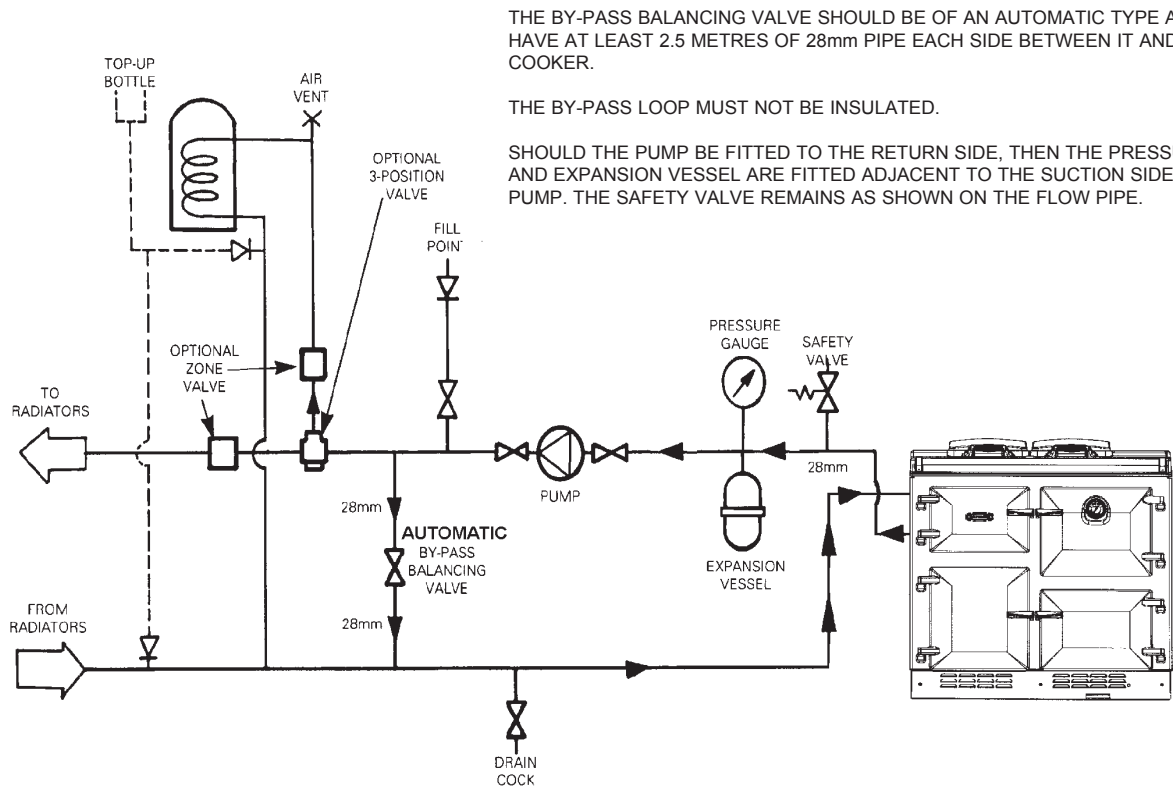
Fill the system until the pressure gauge registers 1.5 bar (22 lbf/in²). Clear any airlocks and check for water soundness.

Check the operation of the safety valve, by allowing the water pressure to rise until the valve opens. The valve should open with ± 0.3 bar (± 4.35 lbf/in²) of the pre-set pressure. If this is not possible conduct a manual check and test.

Release cold water for initial filling pressure.

Any set pointer gauge should be set to coincide with the recommended filling pressure.

Sealed System



Typical Open Vented System

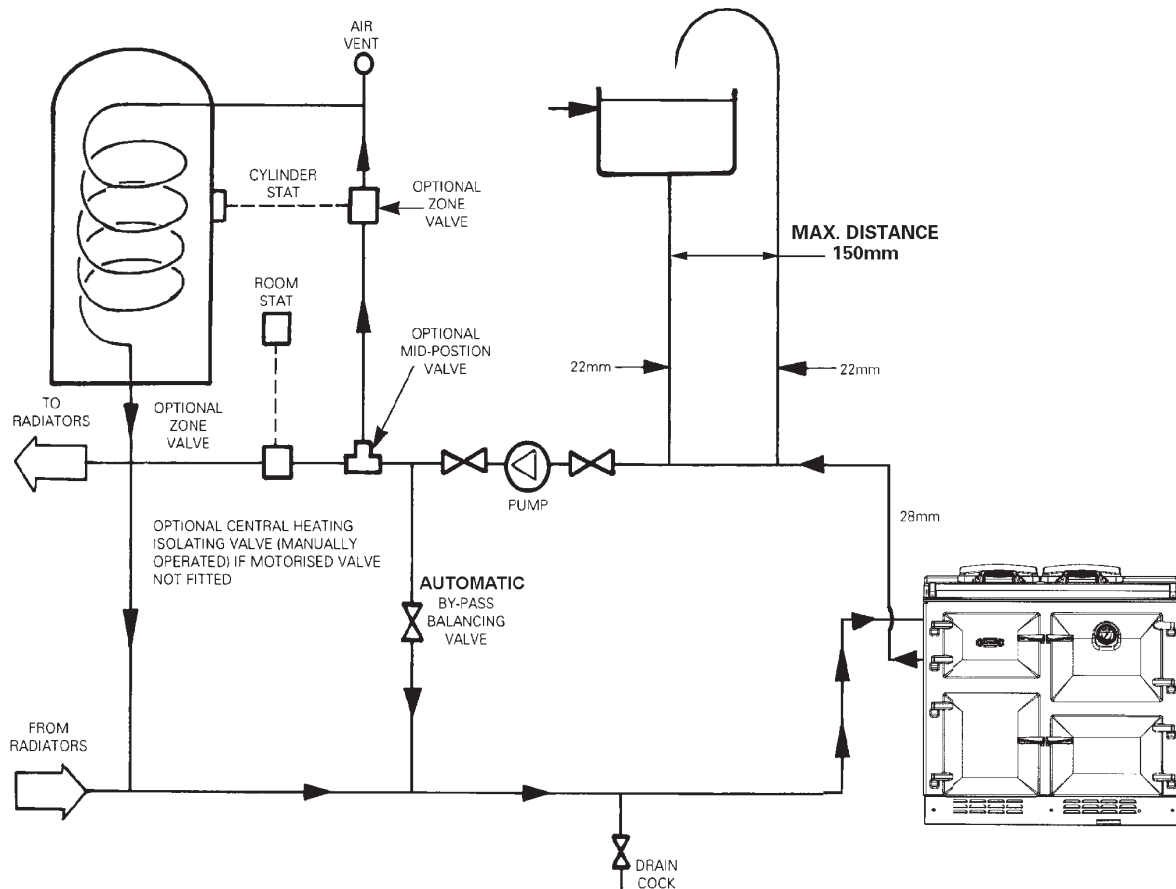


Fig. 27 - Rayburn 680K CD shown

CONDENSATE DISPOSAL

When in condensing mode the Rayburn boiler produces condensate from the water vapour in the flue gases. Provision must be made for the safe and effective removal of the condensate.

Condensate can be disposed either internally - into an internal domestic waste system or directly into the soil stack, or externally - to an external soil stack, gully, hopper or soakaway.

It should be noted that connection of a condensate pipe to the drain may be subject to local Building Control requirements.

Pipework

Condensate disposal pipework must be plastic (plastic waste pipe is suitable). Copper or steel pipe is NOT suitable and should NOT be used.

The internal diameter of condensate disposal pipes should not be less than 20mm - e.g. 22mm plastic plumbing pipe or 19mm 3/4" plastic overflow pipe.

Condensate disposal pipes must be fitted with a fall of 2.5° (1:20).

For boilers installed where it is not possible for the pipe to fall towards the point of discharge - either internally into a waste system or externally to a gully - e.g. in a basement, it will be necessary to use a condensate pump.

Condensate disposal pipes should be kept as short as possible and the number of bends kept to a minimum. Pipes should be adequately fixed to prevent sagging, i.e. at no more than 0.5 metre intervals.

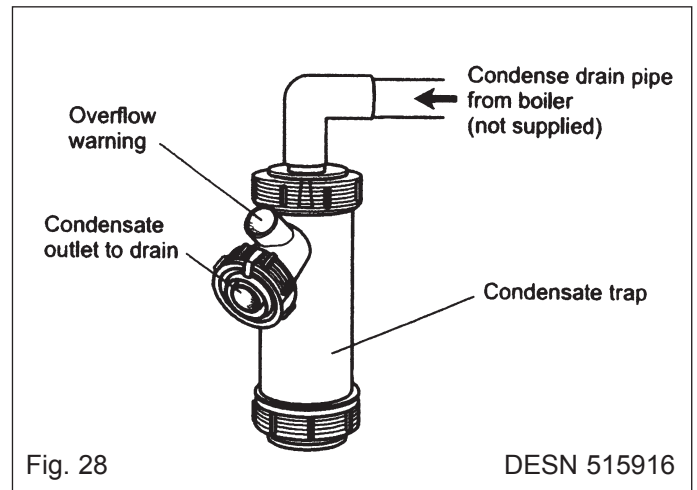
Ideally, external pipework, or pipework in unheated areas such as garages, should be avoided. If unavoidable, external pipework should be kept as short as possible (less than 3 metres) and 32mm waste pipe used to minimise the risk of freezing.

The number of bends, fittings and joints on external pipes should be kept to a minimum to reduce the risk of trapping condensate.

CONDENSATE TRAP

Condensate disposal pipes MUST be fitted with a trap - whether they are connected internally or externally.

Rayburn boilers are supplied with a condensate trap to provide the required 75mm water seal in the condensate discharge pipe from the boiler. This trap incorporates a float (which will create a seal when the trap is empty) and an overflow warning outlet (fitted with a rubber bung), See Fig. 28.



The trap must be located internally in an accessible position to allow for routine maintenance. The mounting bracket supplied with the trap **MUST** be used - the trap should **NOT** be supported by the condensate pipework only.

A 22mm push-fit plastic plumbing connector is supplied with the boiler to connect the plastic pipe to the stainless steel condensate outlet pipe - on the left hand side of the boiler.

Use 22mm plastic plumbing pipe between the boiler and the inlet of the trap. Either 22mm plastic plumbing pipe or 19mm (3/4") overflow pipe can be used from the outlet of the trap.

NOTE: Due to the wall thickness of plastic plumbing pipe, it may be necessary to chamfer the internal edge of the pipe before fitting it onto the spigot in the outlet of the trap.

If connecting the condensate discharge internally - into a waste system or soil stack - the bung must be fitted in the overflow outlet of the trap.

On external discharge systems to a gully or a soakaway, the bung should be removed from the overflow outlet. If connected to an external soil stack, the bung must be fitted on the trap.

If there is any discharge of condensate from the overflow, this could indicate a blockage (possibly due to freezing). Turn off the boiler and contact your service engineer.

Installation Instructions

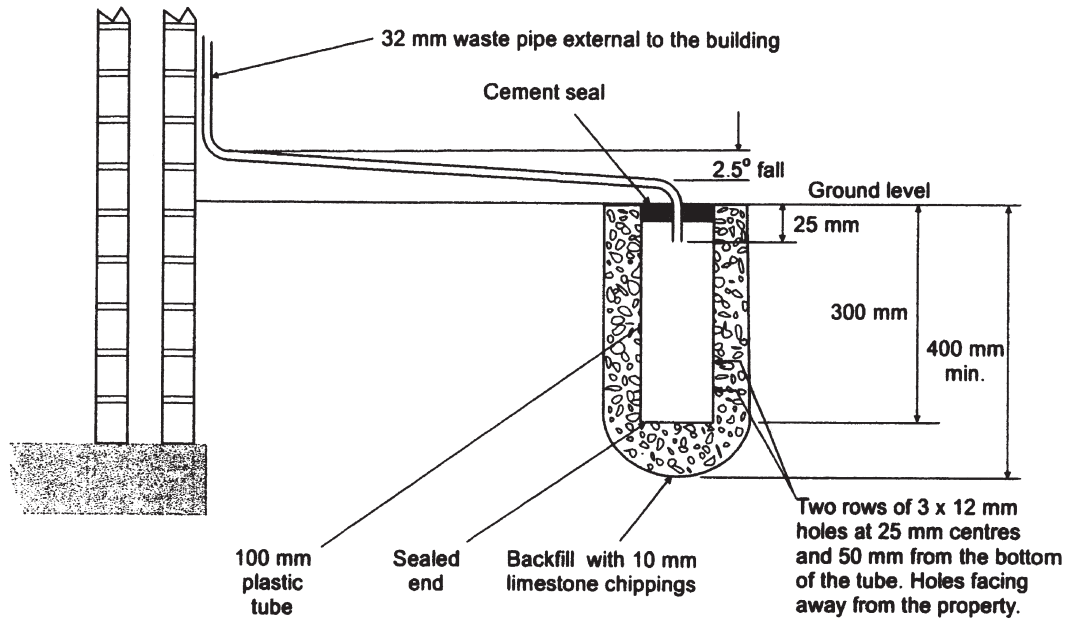


Fig. 29

DESN 515917

Care should be taken when siting the trap such that the overflow outlet is readily visible and that any condensate overflowing from the outlet cannot cause either a hazard to persons or damage to surrounding property or equipment.

IMPORTANT: The trap MUST be checked at regular intervals (e.g. on every annual service) and cleaned as necessary to ensure that it is clear and able to operate.

CONDENSATE SOAKAWAY

SEE FIG. 29

To keep external pipework to a minimum, locate the soakaway as close as possible to the boiler whilst ensuring it is located clear of building foundations and other services, e.g. gas, electricity, etc.

The soakaway should be located at least 500mm from any adjacent building.

Ensure that the drainage holes in the soakaway tube face away from the building.

Only use a soakaway where the soil is porous and drains easily. **Do not use in clay soils or where the soil is poorly drained.**

Back-fill the hole around the soakaway tube with 10mm limestone chippings.

Balanced Flue Installation (Standard Kit 550mm-680mm)

PREPARATION

SEE FIG. 30 & 31

1. Mark and cut holes in wall for terminal duct and oven vent.
2. Lubricate seals.
3. Position cooker into final position.
4. Slide on extension tubes.
5. Lubricate seals on telescopic tubes.
6. Slide into extension setting, distance to suit wall thickness.

NOTE: A minimum overlap of 25mm on telescopic flue pipes.

NOTE: If required, 2 flue extension kits are available (to be ordered and used separately).

RO4M345039 - 225mm Flue Extension Kit

RO4M345040 - 450mm Flue Extension Kit

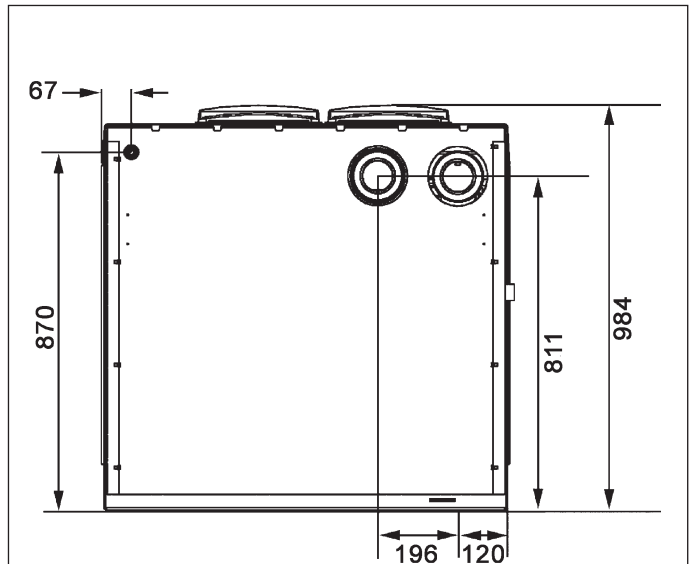


Fig. 30

DESN 515956

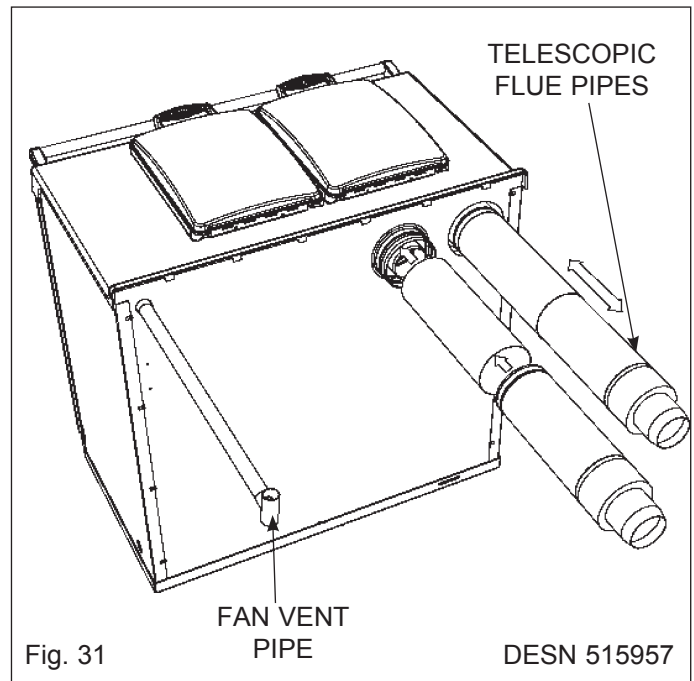


Fig. 31

DESN 515957

Balanced Flue Installation (Standard Kit 550mm-680mm)

VENT PIPE

SEE FIG. 31 & 32

1. Measure and cut to length.
2. Insert tube, making sure it is correctly located.
3. Fit terminal guards

CUT TO LENGTH

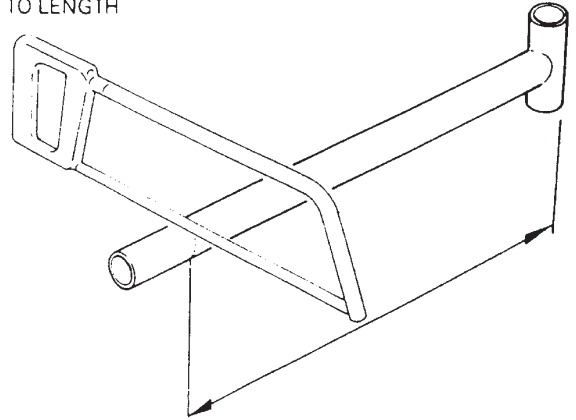


Fig. 32

DESN 511273

TERMINAL GUARD

SEE FIG. 33



Fig. 33

DESN 515958

**For further advice or information contact
your local distributor/stockist**

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



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