

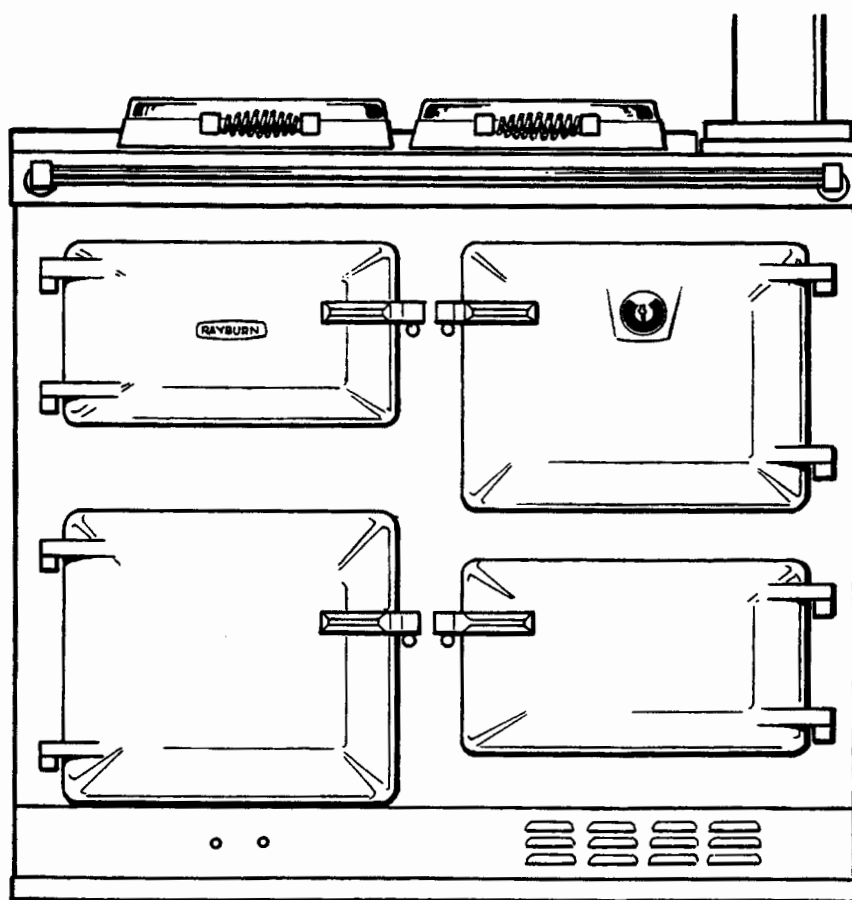


Home on the Range.

460/480/499G

Installation Instructions

For use in GB and IE



DESN 511593

PLEASE READ THESE INSTRUCTIONS BEFORE INSTALLING THIS APPLIANCE

WARNING

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

Consumer Protection

As manufacturers and suppliers of cooking and heating products. We take every care to ensure, as far as is reasonably practical, that these products are so designed and constructed as to meet the general safety requirement when properly used and installed. To this end, our products are thoroughly tested and examined before despatch.

IMPORTANT NOTICE: Any alteration that it is not approved by Aga-Rayburn 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

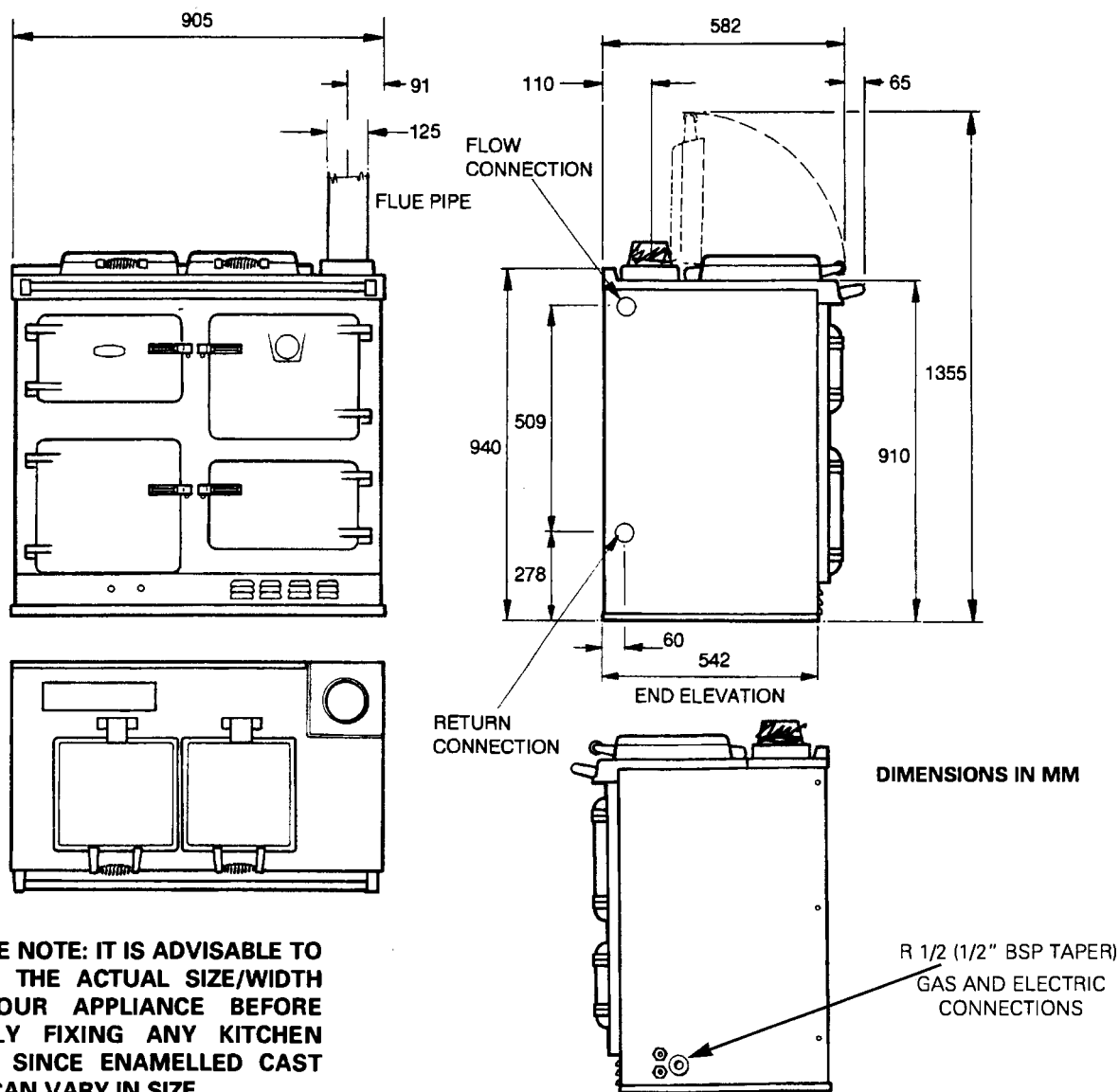
Exercise caution - if these are still in liquid form use face mask and disposable gloves.

Glass Yarn, Mineral Wool, Insulation Pads, Ceramic Fibre

May be 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.

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.



PLEASE NOTE: IT IS ADVISABLE TO CHECK THE ACTUAL SIZE/WIDTH OF YOUR APPLIANCE BEFORE FINALLY FIXING ANY KITCHEN UNITS SINCE ENAMELLED CAST IRON CAN VARY IN SIZE.

DESN 511609

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.

Gas Inlet R 1/2 (1/2" BSP TAPER)

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

Flue Outlet 125mm

CO₂%* 93 ppm (MAX)

CO₂%* 8.5 *480/460 Boiler.*
9.0 *499 Boiler.*
8.0 *COOKER.*

* FOR BOILER AND COOKER

Max. Flue Temp. 229°C

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 - Nat Gas (G20) CAT 1_{2H}

Technical Data

460G		BOILER BURNER	COOKER BURNER
	INLET PRESSURE mbar	20	20
	BURNER PRESSURE mbar (nominal)	12	12
	INJECTOR	16 x 1.6mm	16 x 1.6mm
	HEAT INPUT kW	22	15.8
	HEAT OUTPUT kW	17.6	0.8 max.

480G		BOILER BURNER	COOKER BURNER
	INLET PRESSURE mbar	20	20
	BURNER PRESSURE mbar (nominal)	12	12
	INJECTOR	16 x 1.6mm	16 x 1.6mm
	HEAT INPUT kW	29.3	15.8
	HEAT OUTPUT kW	23.5	0.8 max.

499G		BOILER BURNER	COOKER BURNER
	INLET PRESSURE mbar	20	20
	BURNER PRESSURE mbar (nominal)	15	12
	INJECTOR	16 x 1.6mm	16 x 1.6mm
	HEAT INPUT kW	35.2	15.8
	HEAT OUTPUT kW	29.3	0.8 max.

INTRODUCTION

The Rayburn is a floor standing combined cooker and central heating boiler. It gives independent operation for space heating, domestic hot water and cooking. The appliance is fired by two independent gas burners. Either burner can be operated under 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

The burners fitted to this appliance have been designed and constructed exclusively for use with the Rayburn 400 Series Cooker/Boiler and MUST not be used on any other appliance.

An Indirect Cylinder 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 PERMANENTLY OPEN BYPASS LOOP should be provided.

REGULATIONS

In the interests of safety all gas appliances should be installed by competent persons in accordance with the regulations in force.

Failure to install appliances correctly could lead to prosecution.

LOCATION

Appliance Hearth

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

The location chosen for the appliance must provide adequate space for servicing and for air circulation around the appliance. See 'Installation of the Appliance'.

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

Between wall and LH side of appliance - 10mm

Between wall and RH side of appliance - 50mm

IF THE WALL PROJECTS BEYOND THE FRONT OF THE APPLIANCE.

Above the raised insulating cover handle - 60mm

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

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.**

GAS SUPPLY

Pipework from the meter to the appliance must be of adequate size. It is recommended that a minimum of ø22mm copper tubing is used to within 1m of the appliance. A reduction to ø15mm is permissible over the last metre of the appliance. Do not use pipes of a smaller size than the appliance gas connection. The complete installation must be tested for soundness and purged in accordance with the regulations in force.

Site requirements

FLUE SYSTEM

The following notes are intended to give general guidance. The cross sectional area of the flue serving the cooker must not be less than the area of the flue outlet of the cooker. If flue pipe is to be used it must not be less than 125mm internal diameter.

NOTE: To achieve the optimum operational sound level from the appliance it is recommended that cast iron flue pipe is used where possible. For the first section of flue, off the appliance.

In any event the minimum equivalent vertical flue height must not be less than 3m.

Flue pipes and fitting 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 a chimney is to be used, it preferably should be one that is composed of or lined with a non-porous acid resistant material.

A flue pipe constructed in cast iron, 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 in accordance with the relevant standards.

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 materials. If a baffle plate, 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 relevant standards in force.

AIR REQUIREMENTS

The can only be installed in a room which meets the ventilation regulations in force. But, in any event the room must have a permanent vent of minimum free air area, see below.

MODEL	MIN. AIR REQUIREMENT
460G	138cm ²
480G	172cm ²
499G	198cm ²

IMPORTANT: THE LOUVERED AIR INTAKE AT THE BOTTOM FRONT OF THIS APPLIANCE MUST BE KEPT CLEAR OF ANY OBSTRUCTIONS.

WATER CIRCULATION SYSTEM

The following notes 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 calorifer type.

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

Pipework not forming part of the useful heating surface should be insulated to prevent heat loss and possible freezing, particularly where pipes run through ventilated roof spaces. Cisterns situated in areas which may be exposed to freezing conditions should also be insulated. The bypass balancing valve should be of a type non-adjustable by the householder and must have at least 2.5 metres of 28mm pipe each side between it and the appliance.

Alternatively the bypass loop can incorporate a towel rail controlled by a non-adjustable balancing valve.

The bypass loop must not 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.

The appliance boiler section should be connected to cistern water supply, subject to a maximum head of 2 bar (20m), minimum of .1 bar (1m).

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. 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 pipe 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 (See Fig. 1) and therefore adequate to give the required temperature differential between the flow and return.

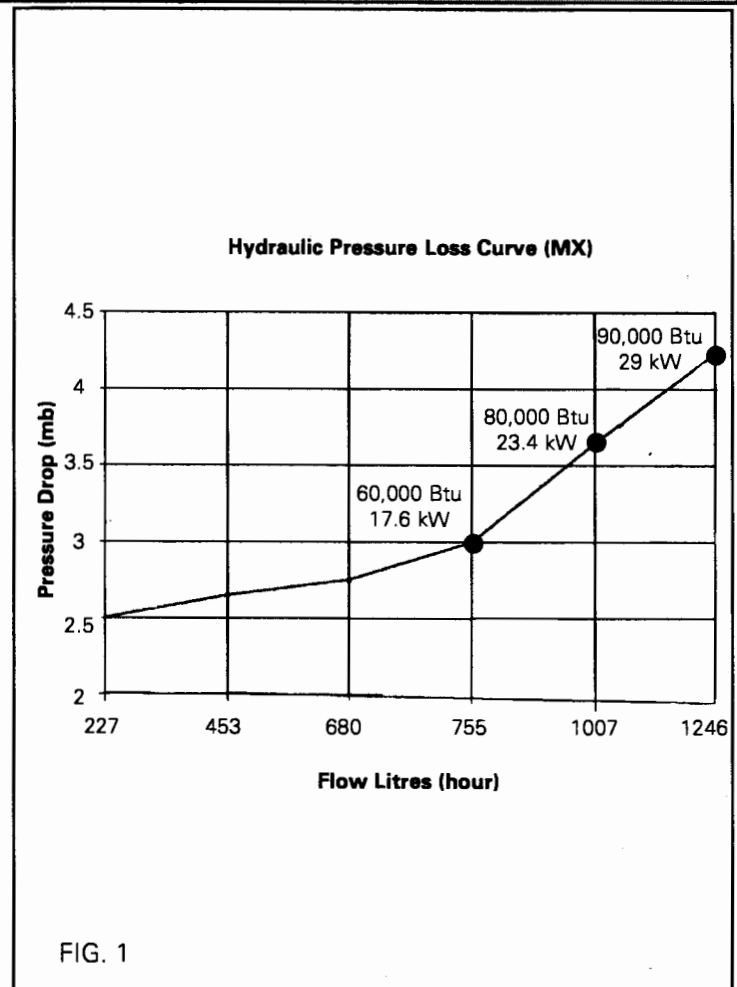
the pump should be able to meet the requirements of the system design and fitted in a readily accessible position. It is recommended that the pump is installed on the flow side of the boiler.

Isolating Valves

Isolating valves; must be (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.



Site requirements

HEATING CONTROLS

Internal temperature and time controls are supplied. These provide control of cooking and hot water temperatures. The cooker is supplied with 2-channel programmer:-

Channel 1 - Marked "COOKER".

Channel 2 - Marked "HEATING" and supplies hot water from the boiler.

A separate switch in conjunction with the hot water channel gives priority to either domestic hot water or the supply of hot water for central heating/DHW (if external controls are fitted).

It is recommended that independent temperature controls are provided for comfortable room temperatures, for economic operation and for control of the domestic hot water flow to the cylinder.

Consideration should be given to fitting a frost thermostat which should be set to operate at a temperature of approximately 4°C.

Consideration must be given when selecting 3 port mid-position, or 2 port zone valves.

It is essential that the capacity of the individual valves is considered, to enable the correct size to be chosen.

For this range of appliances; where Honeywell valves are selected, a guide to selection is as follows:-

Model:-

460G, 22mm (3/4"): 2 port or 3 port

480G, 28mm (1"): 2 port or 3 port

499G, 28mm (1"): 2 port only

3 port mid position valves are inappropriate for selection with the 499G model.

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 electrical isolation of the appliance, by the use of a fused double pole switch having a 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

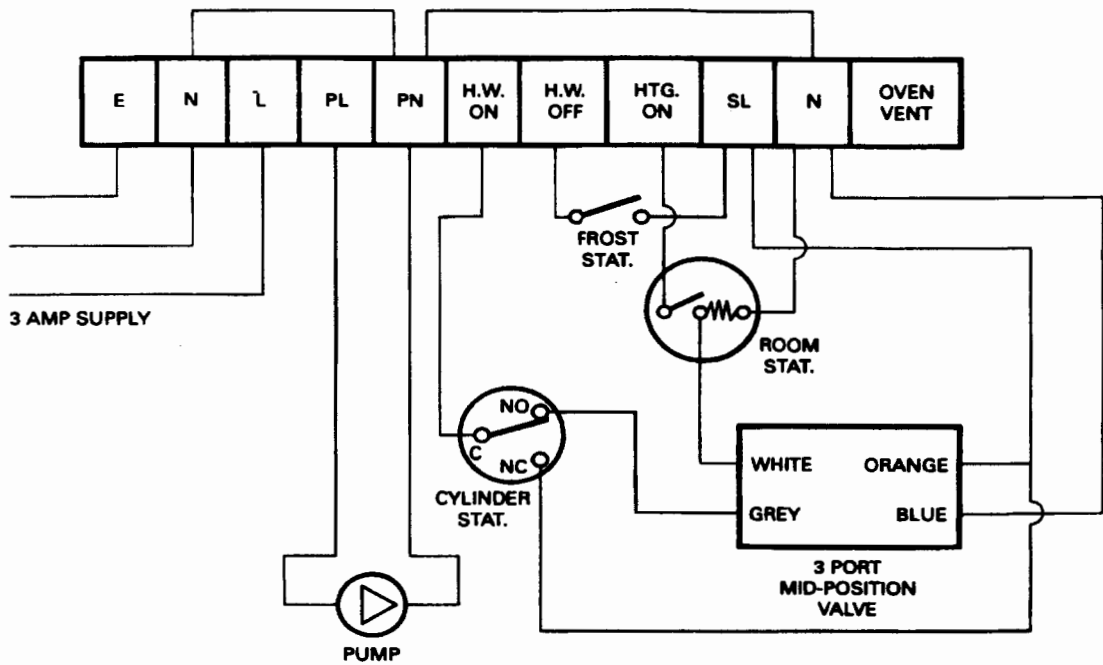
In the event of an electrical fault after installation of the appliance, preliminary electrical system checks must be carried out i.e earth continuity, short circuit, polarity and resistance to earth.

For wiring instructions see wiring diagram.

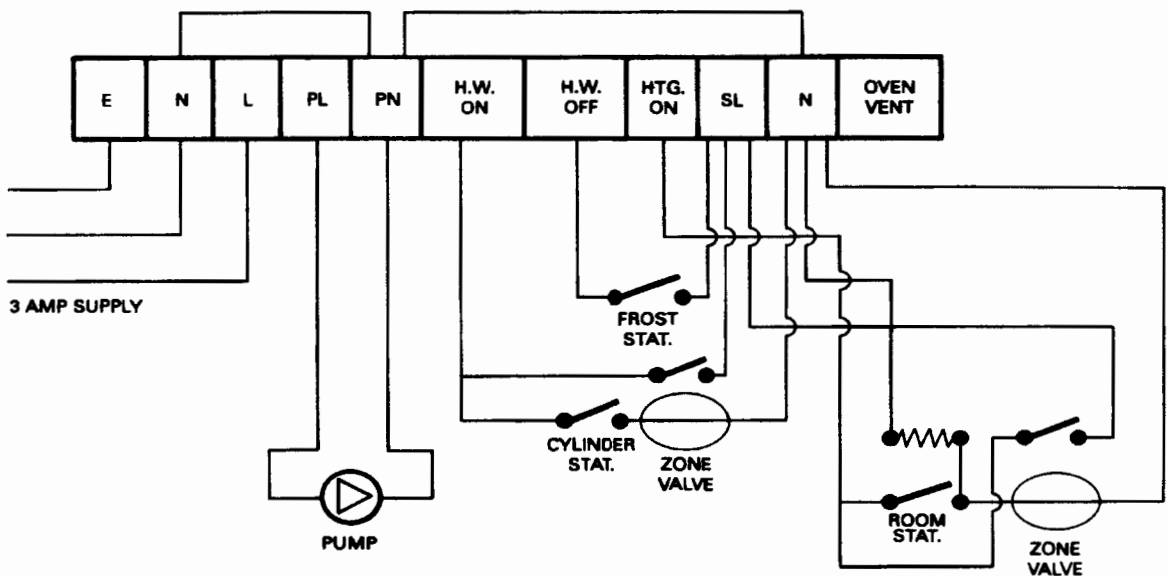
The circulating pump **MUST** be connected to PL and PN on the terminal block (See Fig. 3) and the cables passed through the grommet in the right hand side panel, at the front.



460/480/499G External Controls



Typical External Wiring with Honeywell 3 Port Mid Position Valve.
For use with appliance models 460 and 480G only.



Typical External Wiring with 2 Honeywell N.C. Motorised 2 Port Zone Valves
For use with appliance models 460/480/499G

Site requirements

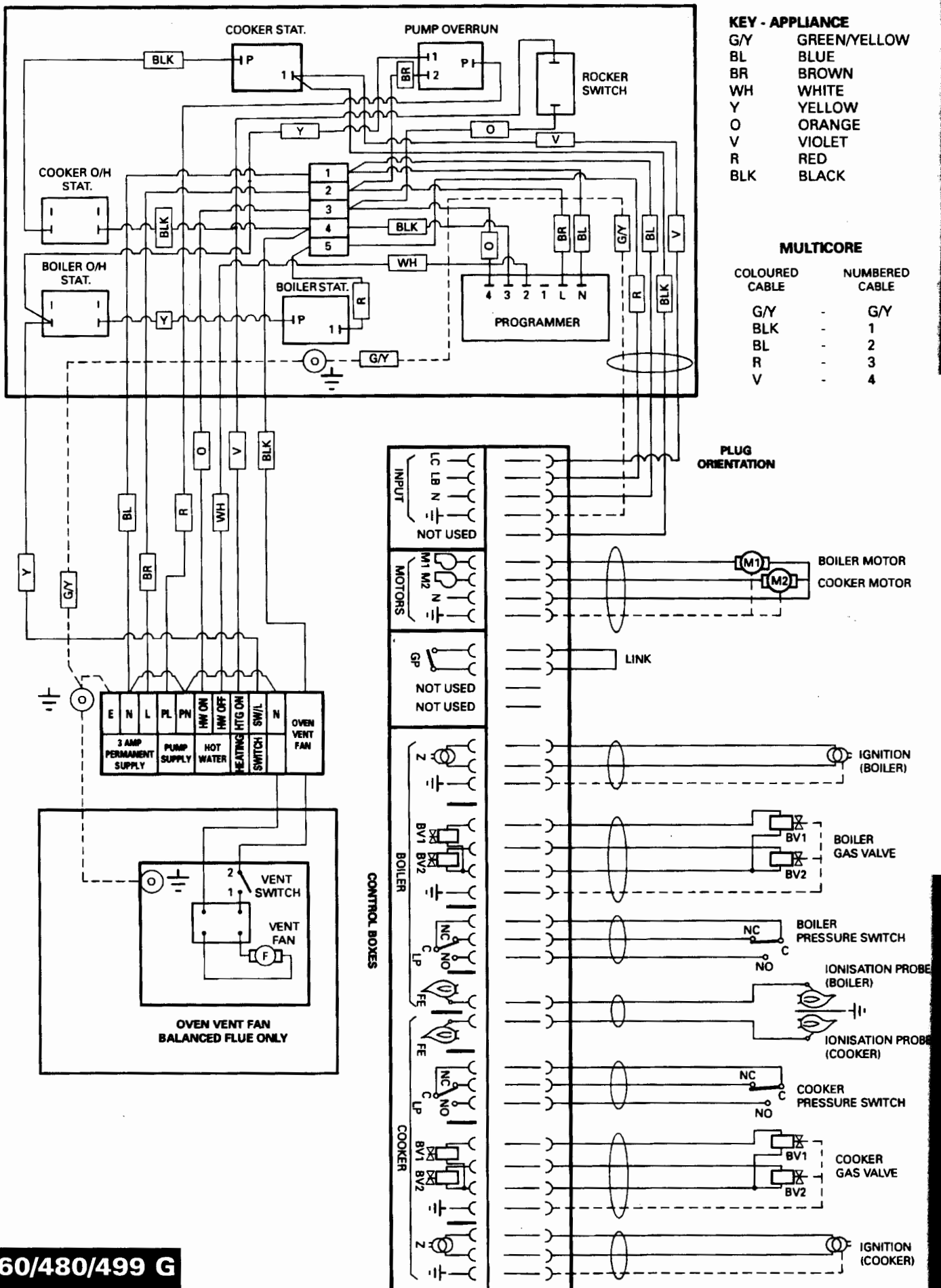


FIG. 3

CLEARANCES

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

Between wall and LH side of appliance - 10mm

Between wall and RH side of appliance - 50mm

IF THE WALL PROJECTS BEYOND THE FRONT OF THE APPLIANCE.

Above the raised insulating cover handle - 60mm

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

PRELIMINARY INSTALLATION

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

The appliance rear distance bracket

The cooker handrail

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 brackets as shown in Fig 4. Whenever possible it is recommended that the skirting is removed for the width of the appliance to enable the rear edge of the appliance top plate to make contact with the vertical wall and avoid a rear gap. (Combustible 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 edge of the cooker top-plate casting. Remove the travel nuts and replace with the handrail brackets ensuring the fibre protecting washers are in position. Insert the handrail with fitted endcaps into the brackets, positioning them correctly, and tighten the locating bolts. (Fig. 5).

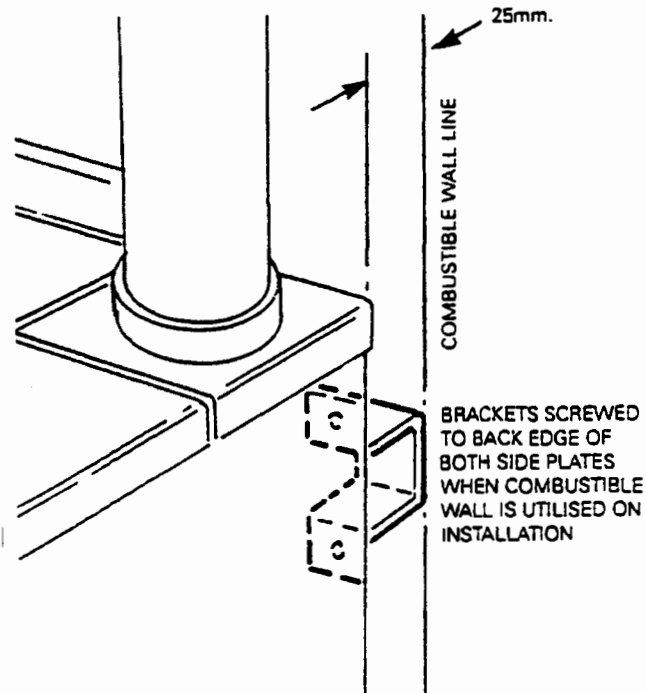


FIG. 4

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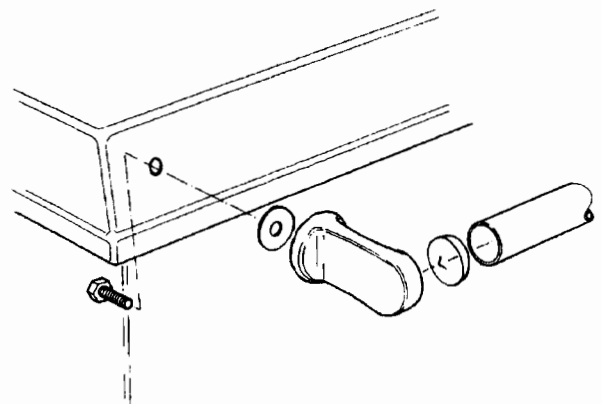


FIG. 5

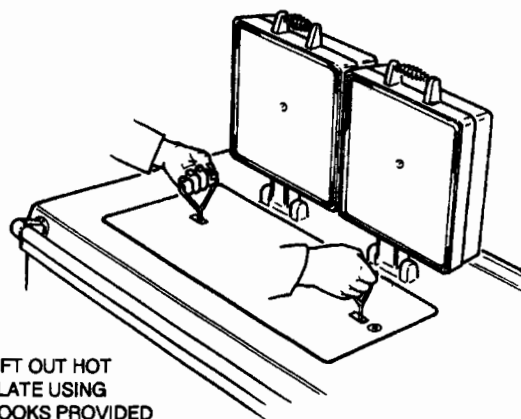
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Installation requirements

SITE LOCATION

SEE FIG. 6 & 7

1. Check that the hearth is level then remove the appliance from its transit wooden pallet, and position it with its back against the wall and in its intended position for flue connection.
2. Locate and fit flue pipe into socket of flue pipe adaptor, sealing joint with fire cement.
3. Connect and terminate the flue system in accordance with the regulations in force.
4. Lift up the insulating covers and remove the hotplate using lifting hooks provided. (See Fig. 6).



LIFT OUT HOT
PLATE USING
HOOKS PROVIDED

FIG. 6

DESN 510523

5. Remove the 4 flue cleaning access door securing bolts and remove door. (Fig. 7)
6. Check the position of the boiler flueway baffles. (Fig. 7A)
7. Replace door and refit bolts.

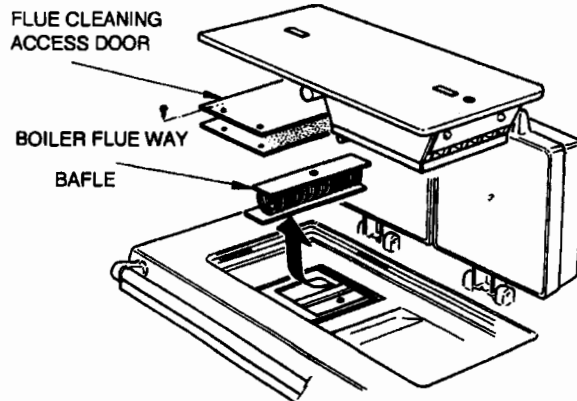


FIG. 7

DESN 511595

NOTE:

Lowest baffles are stainless steel and must be kept in this position.

They are assembled in alternate directions, to allow the gases to flow front to back through the assembly.

Each heat exchanger has two rows of baffles.

Total number of baffles fitted:-

$$460 = 6 \quad (2 \times 3)$$

$$480 = 8 \quad (2 \times 4)$$

$$499 = 10 \quad (2 \times 5)$$

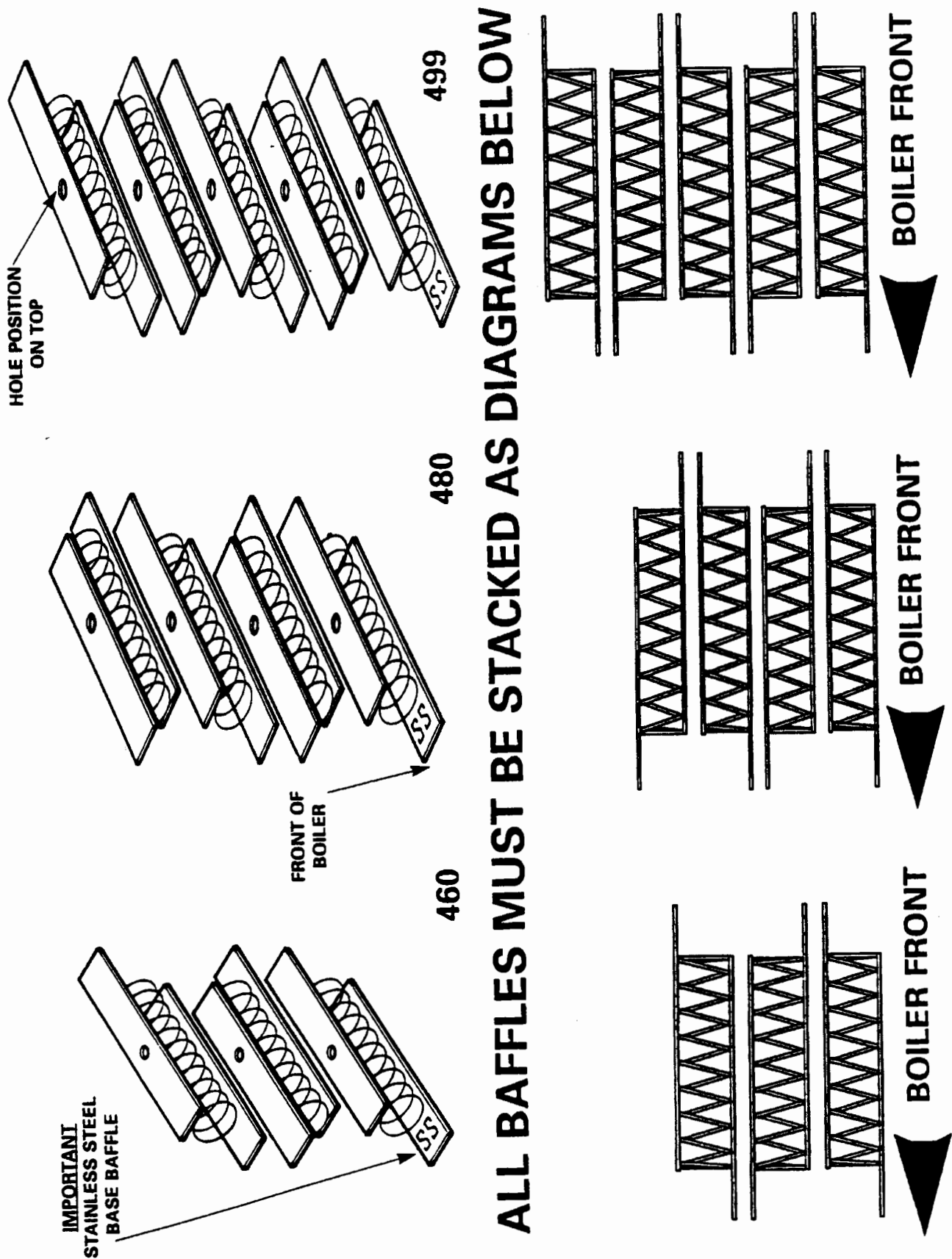


FIG. 7A

Commissioning Instructions

BURNER ACCESS

SEE FIG. 8

1. Open the burner access door. Remove door and put in a safe place.
2. Remove 2 inner panel securing screws and remove panel.
3. Remove the 3 plinth securing screws and remove plinth.

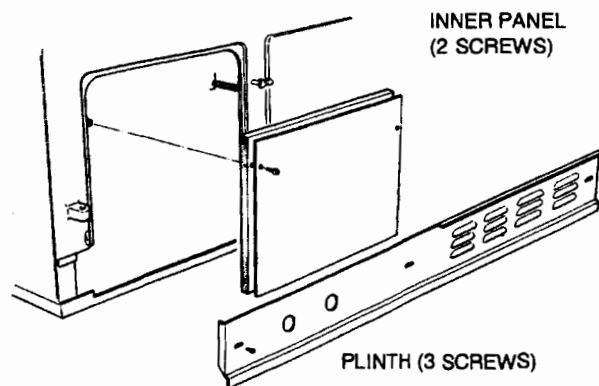


FIG. 8

DESN 511578

ELECTRICAL CONNECTION

SEE FIG. 9

1. Make electrical connections to terminal strip as wiring diagram. (See Fig. 10).
2. Always route cables from the external power supply and controls systems away from hot surfaces.

ELECTRICAL CHECKS

Check to ensure electrical safety should be carried out by a qualified engineer.

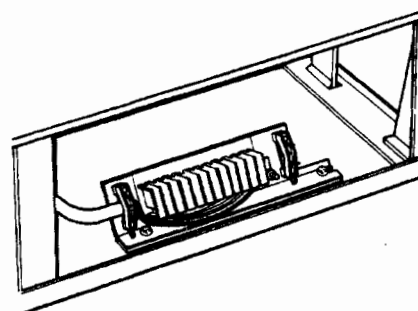
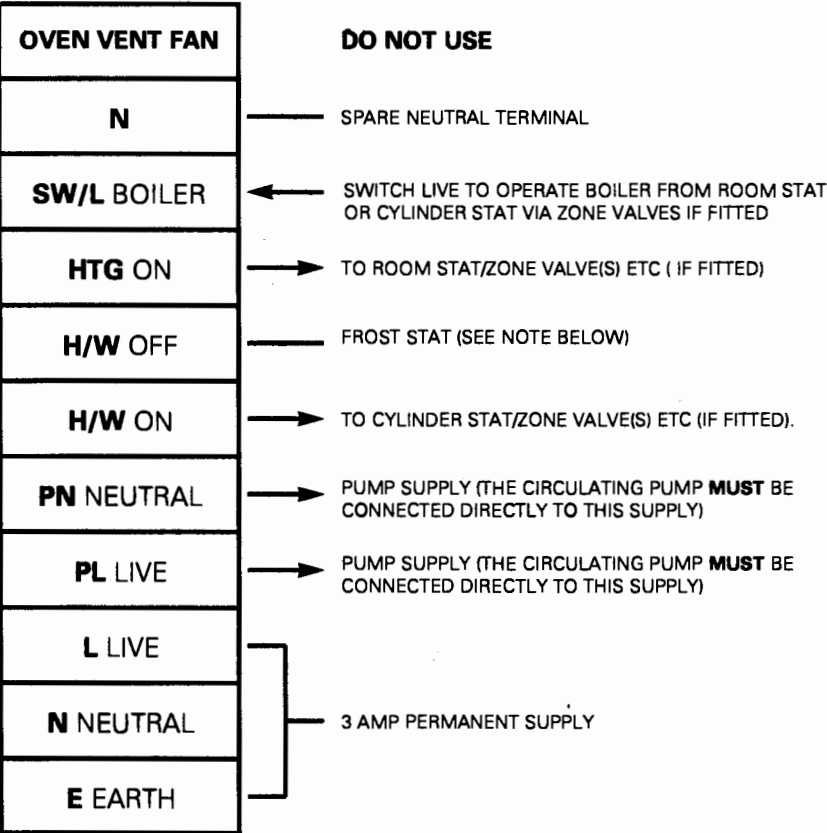


FIG. 9

DESN 511577

TERMINAL STRIP CONNECTIONS



NOTE:

If no Hot Water System Controls are used a link **MUST** be fitted between **H/W ON** and **SW/L BOILER**.

If no Central Heating System Controls are used a link **MUST** be fitted between **HTG ON** and **SW/L BOILER**.

If a Frost Thermostat is fitted it **MUST** be connected to **SW/L BOILER** and **H/W OFF**

FIG. 10

Commissioning Instructions

SET COMBUSTION AIR

SEE FIG. 11 & 12

The air controls of the burners are factory pre-set, however small adjustments to the air controls may be necessary to suit the site conditions. (See Fig. 11).

IMPORTANT: Ensure that the bottom louvered plinth is in place during combustion setting procedure.

No attempt should be made to adjust or reset the burner pressure settings.

Boiler Burner

With boiler burner on.

After 15 minutes remove the enamelled top cover panel (behind the LH insulating cover) and remove the insulation pad. Remove the plugging screw and insert the sensing probe of a portable combustion analyser to check the CO₂ (Carbon Dioxide) level. Adjust the boiler burner air intake until the CO/CO₂ are as specified.

CO%	93ppm (max.)
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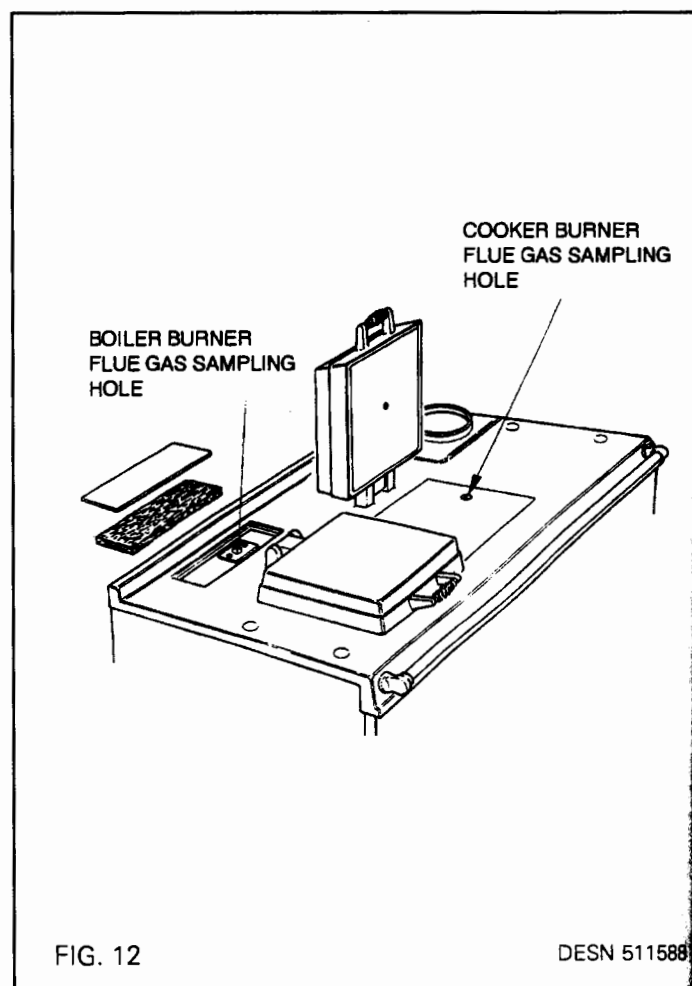
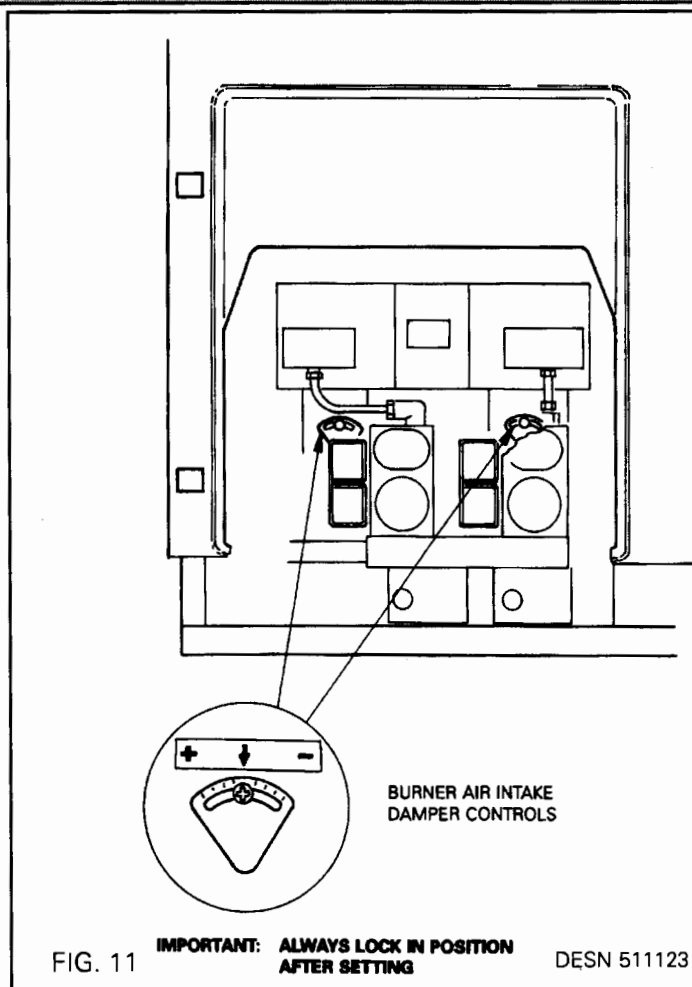
CO ₂ %	8.5 - 9.0
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Cooker Burner

Switch off the boiler burner and repeat the above procedure with cooker burner. To sample the flue gases from the cooker burner lift up the R.H. insulating cover and remove the countersunk headed screw in the hotplate. The cooker burner should be as specified as above. 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, refit burner door inner panel.

Refit outer burner door.



BURNER CONTROL BOX OPERATION

When the boiler or cooker thermostat is calling for heat, 230V is supplied to terminal LB or LC of either burner control box and the air pressure switch checked to ensure that it is in the 'no air' position approximately 8 seconds. Providing the check is satisfactory, after a short delay, the burner fan will run (supplied from terminal M1 or M2). The combustion air supplied by the fan will be detected by the air pressure switch.

If this is also found to be satisfactory, after a delay 30 seconds of the fan pre-purging, the ignition device is energised (supplied from terminal Z), at the same time the twin gas valve solenoids are energised (supplied from terminal BV1 BV2).

Providing the start gas flame is established within 3 seconds and detected by the flame detection probe (connected to terminal FE), the burner will run.

The gas valves are a two stage design and although both solenoids open at the same time a low start facility initially operates and the gas will run at full rate after approximately 8 seconds.

ELECTRICAL CHECK

SEE FIG. 13

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

Check gas cock is in the on position. The gas cock is located behind the plinth on the Right Hand side.

Switch on the Electricity

Set the boiler burner time clock switch to continuous and turn the boiler thermostat to maximum. The burner should run on pre-purge for 30 seconds, the burner should then ignite.

Until all the air from the gas burner is purged out the burner may go to lock-out.

This will be shown by the burner stopping and the illumination of the red signal light in the rest button of the control box. In this event, **wait at least one minute**, then press the re-set button for at least one second but no more than three seconds as this will operate the fault diagnosis sequence. Should this occur repeat the reset operation.

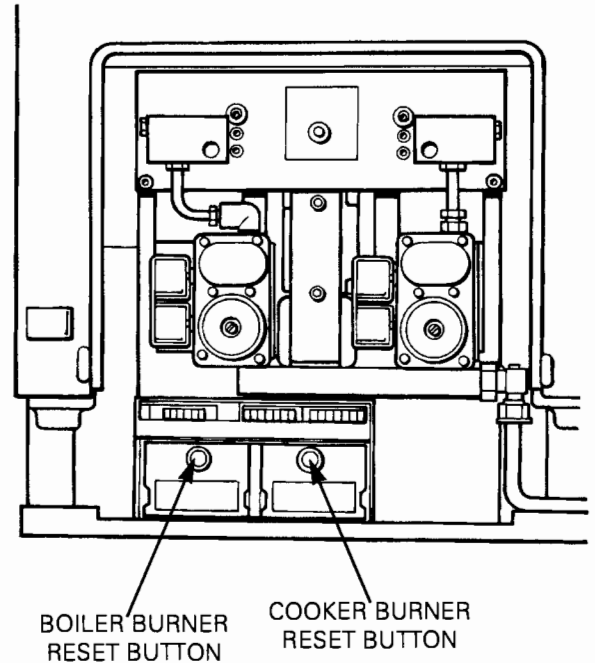


FIG. 13

DESN 511692

Commissioning Instructions

ANCILLARY CONTROLS CHECK

Before leaving the site, check the operation of the programmer, control thermostats are working correctly and are capable of controlling the burners correctly. Check the operation of both burner control boxes. See 'RECOMMISSIONING' section in Servicing Instructions.

ANCILLARY CONTROLS 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 and the heating switch set to 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 be run until the system is hot and an inspection made for water leaks.

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

When all air has been removed and the system is hot the bypass should be adjusted to ensure quiet operation and the radiators balanced.

4. Allow the pump adjuster to maintain a 'flow and return' temperature differential of 10°C - 14°C.

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 radiators to ensure a satisfactory water temperature at each emitter.

5. When the water system reaches working temperature check that the boiler thermostat operates satisfactorily.

INSTRUCT THE 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 being inoperative during frost conditions.
2. Advise the User 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, Servicing and Users Instructions with the User.
5. **Gas Safety** - Show the user the procedure for isolating the appliance from the gas and electric supply. As referred to in the Users Instructions - Ref Gas Leak or Appliance Fault.