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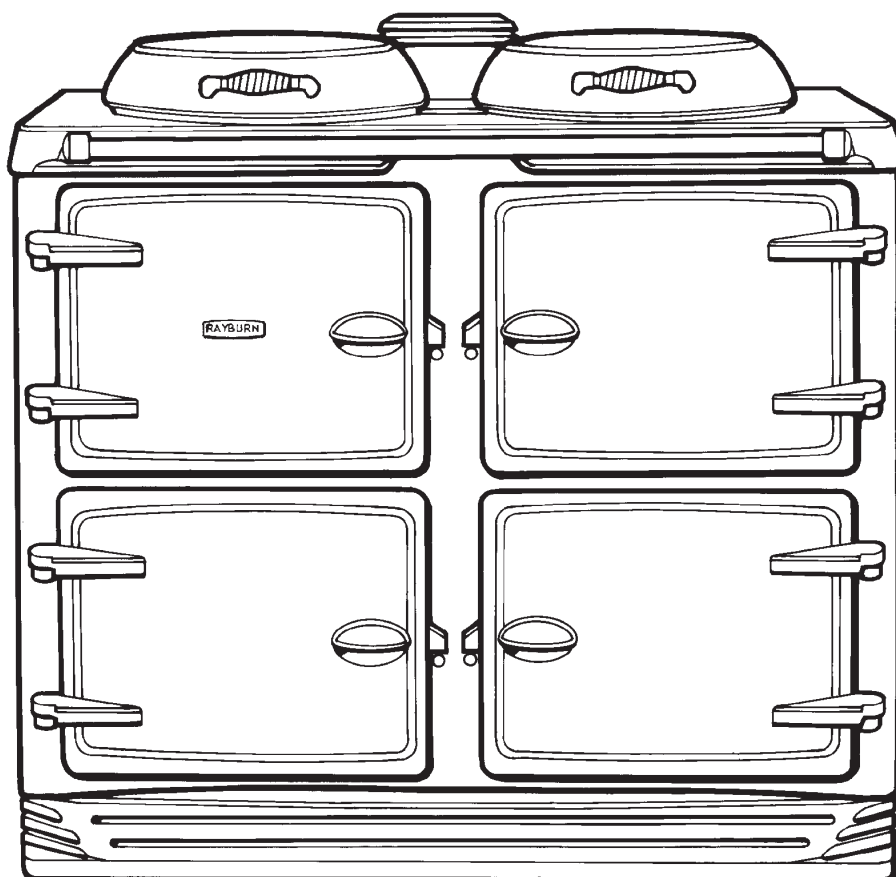


Installation Instructions

Better than you ever imagined

Heatranger 880/8120/8150K

For use in GB and IE



DESN 514286

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

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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 safety 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

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.

Kerosene and Gas Oil (mineral oils)

1. The effect of mineral oils on the skin vary according to the duration of exposure.
2. The lighter fractions also remove the protective grease normally present on the surface of the skin. This renders the skin dry, liable to crack 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 oils 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.

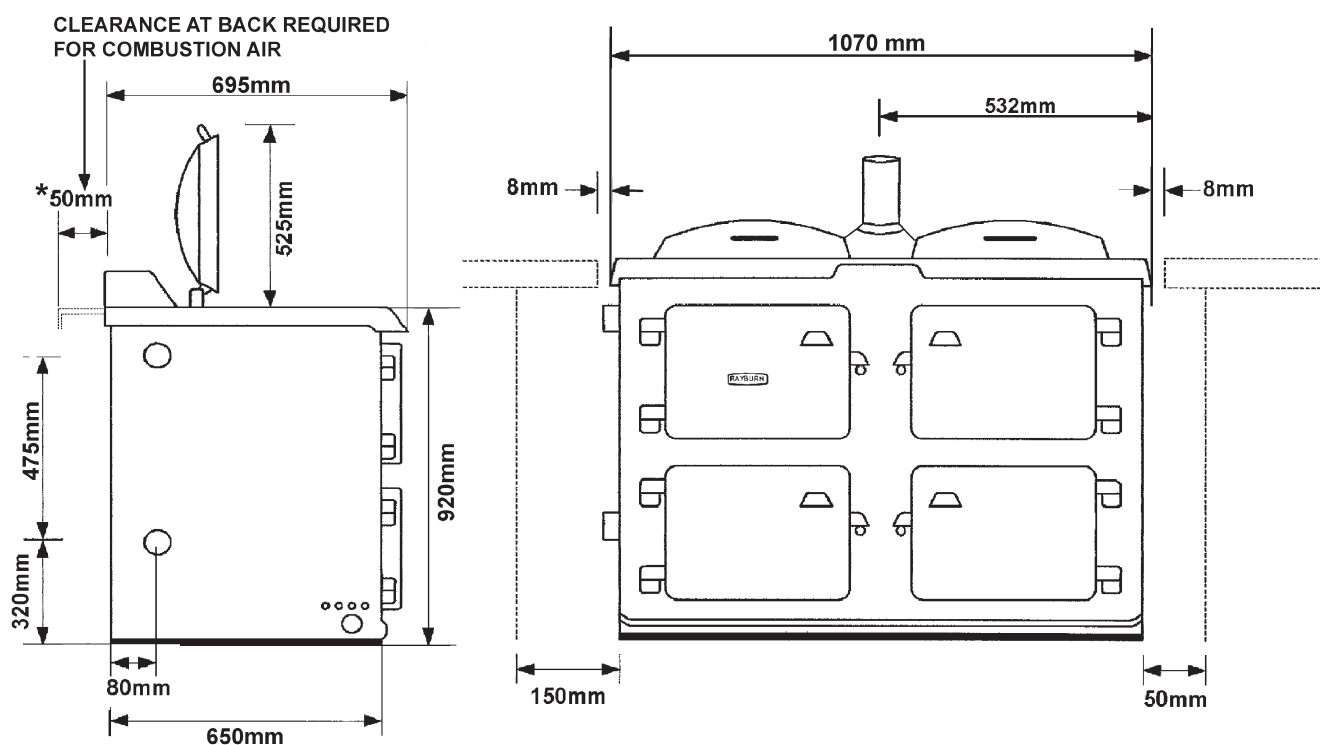


FIG. 1

* 50mm Air Gap - Please use Air vent plate provided with the appliance.

DESN 514275

GENERAL SPECIFICATIONS

Boiler Water Connections

Flow (one) 1.5" BSP / 42mm
Return (one) 1.5" BSP / 42mm

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

Oil Inlet FRONT LH SIDE

Electrical Supply 230V ~ 50Hz 210 W
5 Amp Fused

Flue Outlet 880 / 8120 - 125mm
8150 - 150mm

CO₂% - BOILER 11 - 12%
- COOKER 9 - 10%

Max. Water Temp. 82°C

Weight of Appliance 580kg

Max. Operating Pressure of Boiler 3 bar

Fuel - Kerosene C2

Max. flue gas temp. - In excess of 290°C

Technical Data

880K	BOILER BURNER	COOKER BURNER
BURNER NOZZLE (US g/h)	0.75 (80°EH)	0.5 (60 ES)
OIL PRESSURE Bar (psi)	7.8 (110)	8.3 (120)
OIL BURNING RATE cc/m	47.5	28.5
HEAT INPUT kW	29.3	17.4
BOILER OUTPUT kW	23.4	

8120K	BOILER BURNER	COOKER BURNER
BURNER NOZZLE (US g/h)	1.35 (80°EH)	0.5 (60 ES)
OIL PRESSURE Bar (psi)	7.3 (105)	8.3 (120)
OIL BURNING RATE cc/m	72	28.5
HEAT INPUT kW	44	17.4
BOILER OUTPUT kW	35.2	

8150K	BOILER BURNER	COOKER BURNER
BURNER NOZZLE (US g/h)	1.35 (80°EH)	0.5 (60 ES)
OIL PRESSURE Bar (psi)	10.4 (150)	8.3 (120)
OIL BURNING RATE cc/m	86	28.5
HEAT INPUT kW	52.3	17.4
BOILER OUTPUT kW	44	

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. It may be an open vented or alternatively a sealed system limited to 3 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 AND HEAT SINK RADIATOR (MIN 1.5 kW) should be fitted. (See Figs. 5 & 6) - Page 12**
- **An OFTEC approved Fire Valve MUST be fitted in the oil supply line.**
- **The supplied in line filter MUST be fitted.**
- **Permanent Ventilation must be provided.**

REGULATIONS

THIS APPLIANCE IS A CONTROLLED SERVICE BY DEFINITION AND REQUIRES EITHER FITMENT UNDER THE REMIT OF BUILDING CONTROL OR INSTALLATION BY 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 engineer. Failure to install the appliance correctly could lead to prosecution.

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 purposes. 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 & 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 (Northern Ireland) Part L - Heat producing appliances.

The Control of Pollution (Oil) Regulations.

LOCATION

Location and Siting of the Appliance

To choose a location for the Rayburn, the following must be considered:

- a. Satisfactory provision for installation of the flue.
- b. A solid non-combustible hearth.
- c. Sufficient space for installation.
- d. Adequate space for combustion air vents (rear of cooker).
- e. Sufficient forward space must be available to allow the right hand doors to be opened, in excess of 110° from the closed position.

Hearth Construction

The hearth or base on which the appliance will stand must be of sound construction, being able to bear the weight of (580kg) the appliance. This must be of a non-combustible material and must be level.

The location chosen for the appliance must permit the installation and the provision of a satisfactory flue and an adequate air supply. The location must also provide adequate space for servicing and air circulation around the appliance. See Fig. 1 for minimum appliance dimensions.

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 such as ceiling or roof, must be enclosed in a non-combustible sleeve providing an air space of at least 25mm.

Space around the flue pipes passing through walls or floors should be sealed against the passage of smoke and flame. A fire stop must be provided where the flue passes through a ceiling.

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.**

OIL INSTALLATION

The installation of the oil supply must be carried out in accordance with current building regulations and OFTEC recommendations.

It is the installers responsibility to correctly plan and size the siting and fitting of the oil tank and run of pipework to the appliance, ensuring that the oil tank is suitably sized for the model of Rayburn in use and that the oil supply pipe is run correctly i.e. a two-pipe system **NOT A DE-AERATION DEVICE** if the tank is position lower than the appliance.

Site requirements

PIPE LINE CONSTRUCTION

The oil line should consist of at least an isolator and fuel filter at the fuel tank, a remote sensing fire cut-off valve at the point of entry into the cooker.

The oil line **MUST** be installed as per OFTEC guidelines and Building Regulations.

OIL SUPPLY LAYOUT

Oil can be transferred from the storage tank to the burners via a **single pipe** gravity flow providing there is sufficient head of oil between the base of the storage tank and the burner pumps. See Fig. 4.

If the tank is to be situated so that its base is lower than that of the burner pumps then a **two-pipe system** as per OFTEC guidelines incorporating a non-return valve. See Fig. 3.

Under no circumstances should a **de-aeration device (Tiger Loop)** be used. The appliance will not be commissioned if a de-aeration device is fitted on the oil supply.

- a. **Single Oil Supply** - The oil tank serving the appliance by means of a single pipe needs to be positioned so that it will provide the minimum required head of oil to the burners when the fuel level is at its lowest point. In this case it is necessary to locate the oil tank so that its base is 300mm higher than that of the floor level of which the cooker is situated.
- b. **Two Pipe System** - When the oil tank is to be situated so that its base is lower than that of the floor level of the appliance, the burners will need to be converted to operate on a two-pipe system (this is carried out by the installer). De-aeration devices are not to be used in place of a complete two-pipe system. The two-pipe system must incorporate a non-return valve situated at the half-way height of the oil tank so as to keep the oil supply primed at all times. This valve must be fitted in a suitably accessible enclosure. See Fig. 5 for the layout and positioning for the non-return valve.

The oil pumps will also need to be modified as follows:

COOKER BURNER ONLY - SEE FIG. 2

BURNER ACCESS, Steps 1 to 3, BURNER REMOVAL, Steps 1 to 5. (See Servicing Instructions pages 5 & 6).

1. Remove blanking plug.
2. Fit by-pass screw.
3. Refit blanking plug.
4. Remove return port blanking plug and fit nipple, connect as per Fig. 2.

BOILER BURNER ONLY - SEE FIG. 3

BURNER ACCESS, Steps 1 to 3, BURNER REMOVAL, Steps 1 to 5. (See Servicing Instructions, pages 5 & 6).

1. Remove middle screw.
2. Remove horseshoe washer.

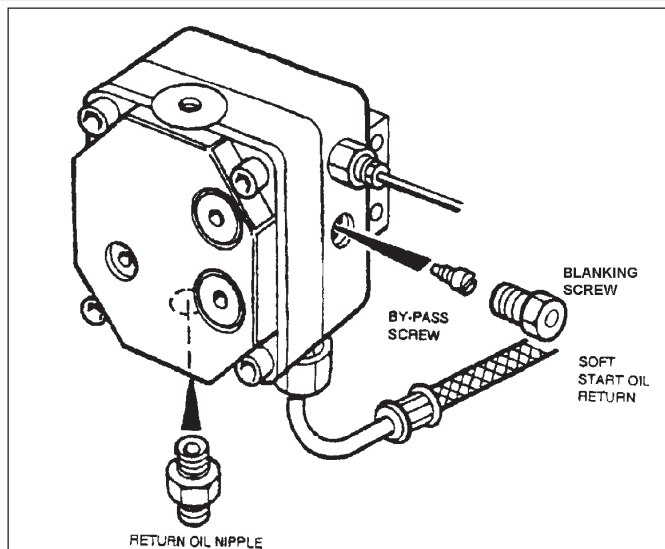


FIG. 2

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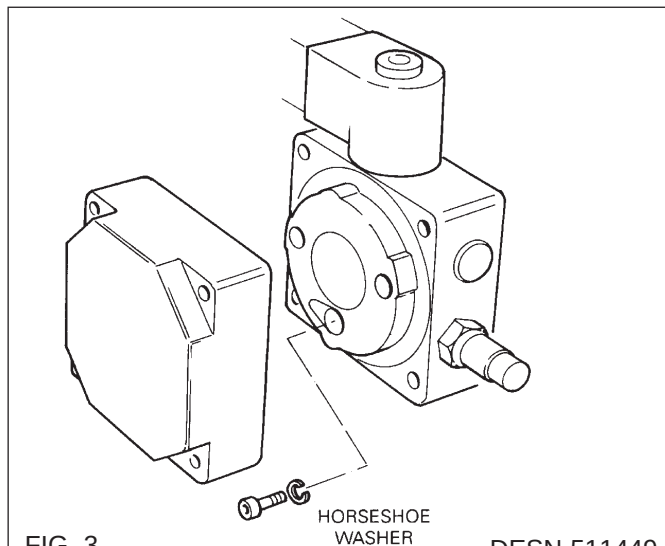


FIG. 3

DESN 511449

3. Replace screw.
4. Remove return port blanking plug and fit nipple pipework as in Fig. 2.
5. Re-assemble in reverse order.

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, 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.

- C. **Oil Lifter**- When the oil tank is lower than the base of the appliance another option is to use a proprietary oil filter with secondary storage, situated above the appliance.

Gravity Fed One Pipe System

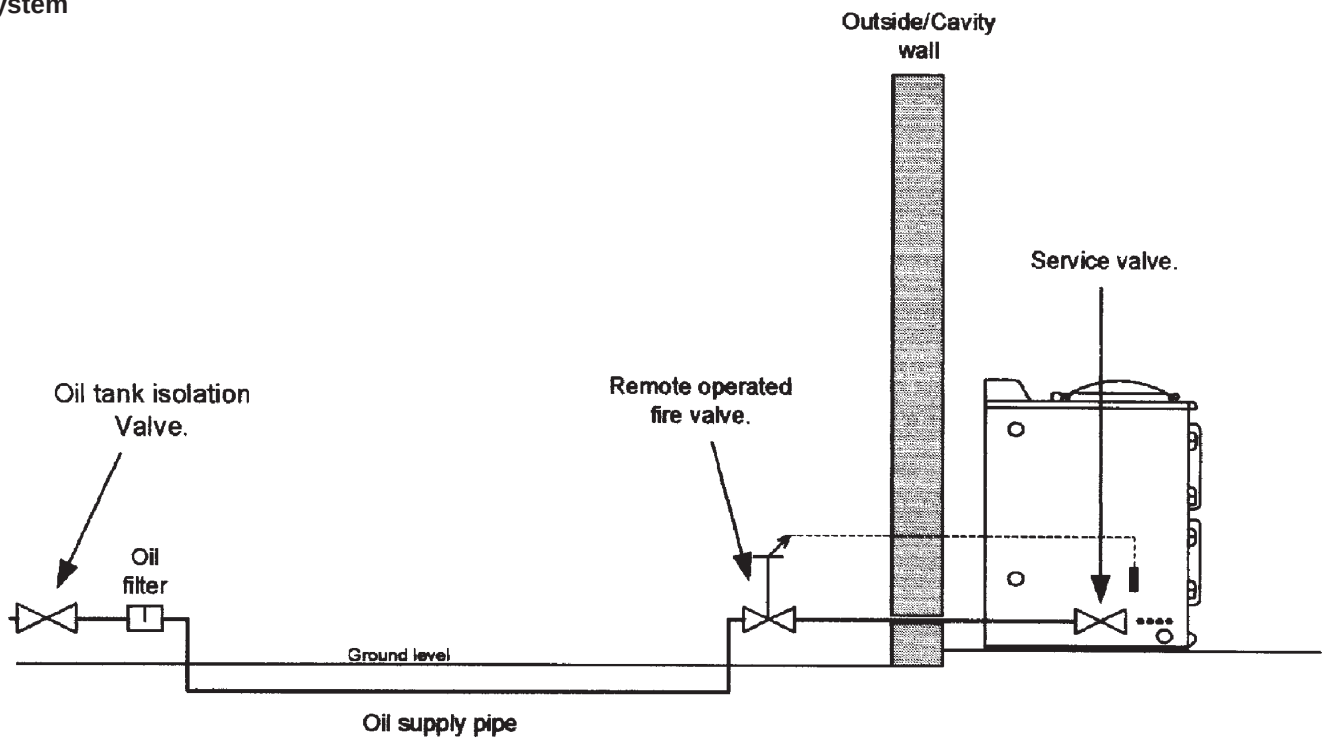
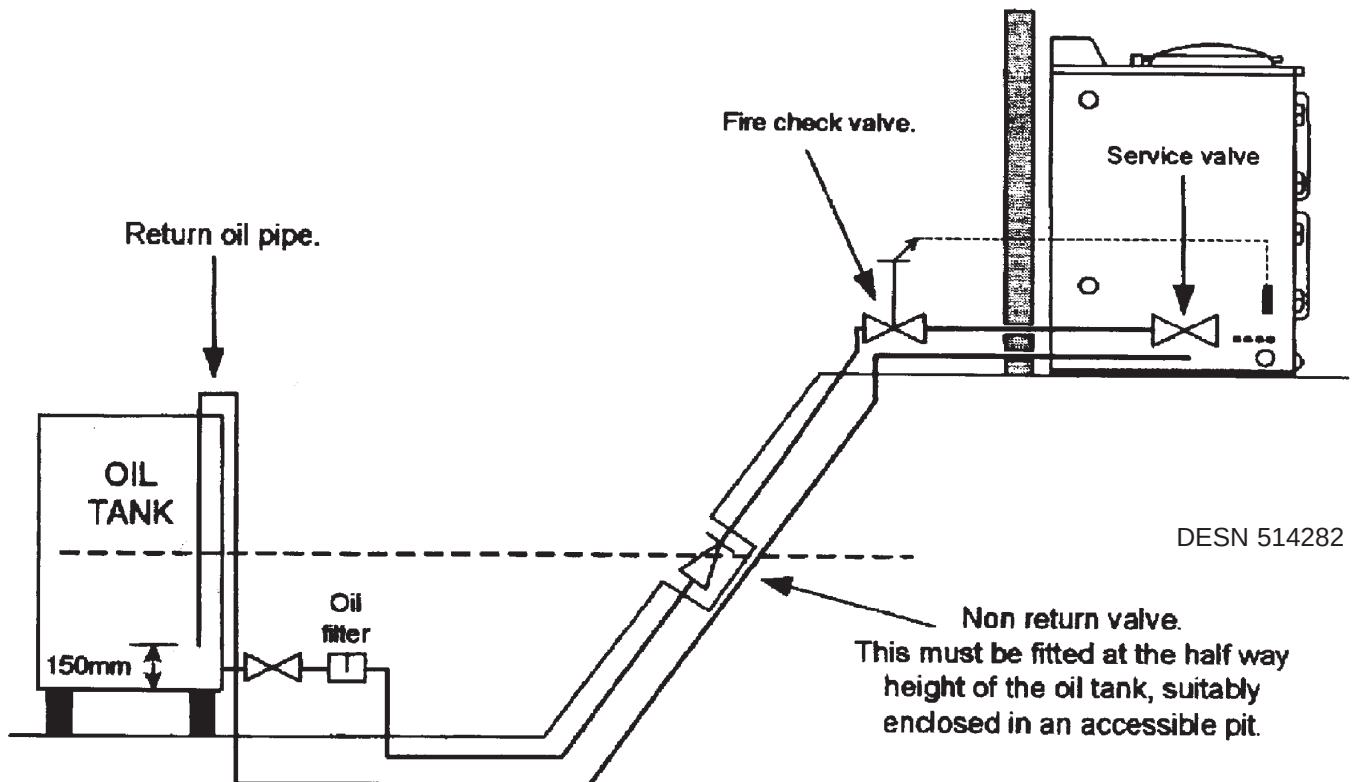


FIG. 4

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Two Pipe System



DESN 514282

FIG. 5

	H METRES	0	0.5	1.0	1.5	2.0	2.5	3.0
MAXIMUM LENGTH (METRES)	10mm OD	35	30	25	20	15	8	6
	12mm OD	100	100	100	90	70	30	20

Site requirements

OIL STORAGE

The minimum recommended oil tank size is 1400 litres and the code 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

Detailed recommendations for flueing in England and Wales are given in Part J of the Building Regulations. For Scotland in Technical Standard F to the Building Standards and in Northern Ireland in Technical Booklet L to the Building Regulations. Guidance is also given in BS 5410: Part 1.

FLUE LINERS

When an existing brick chimney is to be used, the chimney must be lined with an appropriate stainless steel flexible lining.

Chimneys incorporating a clay lining must also be fitted with a flexible stainless steel lining.

This must be carried out to reduce condensation levels in the flue and maintain a higher flue gas temperature. This would ensure no pressurisation of the flue due to condensation.

NOTE: TO ACHIEVE THE OPTIMUM OPERATIONAL SOUND LEVELS FROM THE APPLIANCE IT IS RECOMMENDED THAT CAST IRON FLUE PIPE IS USED WHERE POSSIBLE.

Chimney Termination

All chimneys should terminate at least 600mm above the roof level in accordance with current Building Regulations and statutory requirements as outlined in BS 5410: Part 1, BS 6461: Part 1 and BS 7566 Parts 1 to 4.

Chimney Cleaning

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

FABRICATED CONVENTIONAL FLUE INSTALLATION

An appropriate prefabricated insulated flue, temperature rated at not less than 290°C.

Care should be taken with positioning of the appliance in conjunction to the run of the flue pipe.

Flues and chimneys should be as near vertical as possible. Bends should not be greater than 45° from the vertical. **90° bends must not be used on any conventional flue.**

It is important to route the flue, so that the temperature of the combustion gas is maintained to the highest possible level.

Installation of a conventional flue

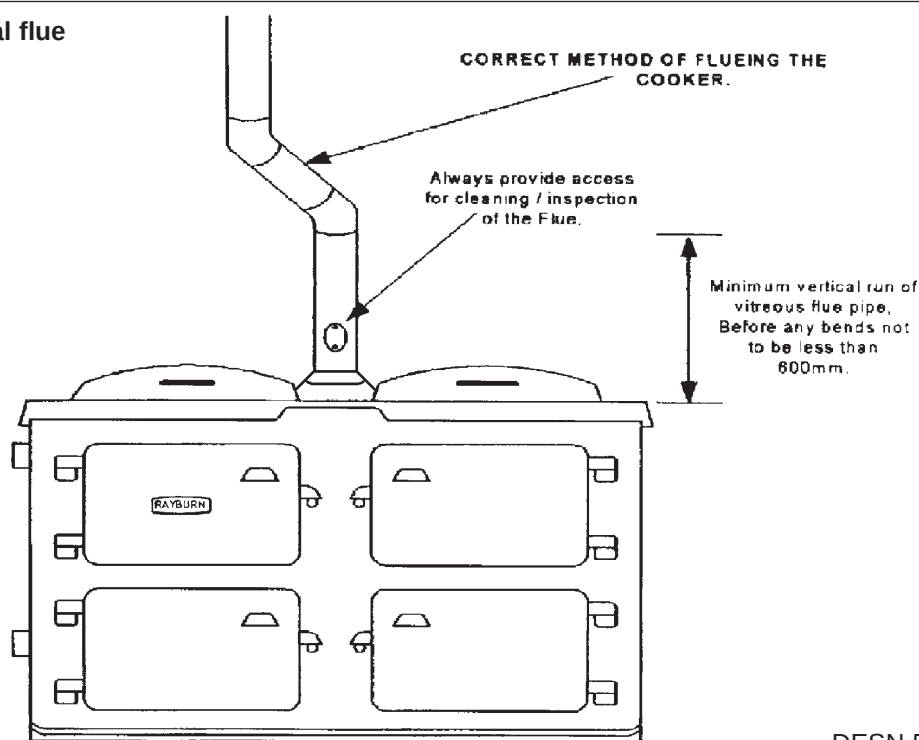


FIG. 6

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FLUE SIZE AND RUN

The cooker flue pipe must be a minimum of **5 metres (16 feet)** in length from the top of the cooker to the outlet. The flue must start with a straight length not to be less than **600mm (2 feet)** and must incorporate an access door for inspection and cleaning. **Do not use more than two bends on a conventional flue.**

Vitreous enamel flue or other single skin pipe can be run for a maximum of 1.2 metres (4 feet) before converting to a twin wall insulated flue

Flues passing through any walls or cavities must be of the insulated type and approved for use with oil pressure jet burners as per the building regulations.

Flue outlet size on the cooker is 5" for 880K and 8120K and 6" flue on the 8150K Btu model. The flue pipe must be increased a size if the run of flue exceeds 9 metres (30 feet).

For correct operation, the flue must provide a draw of 0.15 - 0.60 mbar negative after the burners have fired for 15 minutes.

AIR SUPPLY

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

MODEL	MIN. AIR REQUIREMENT
880K	182cm ²
8120K	247cm ²
8150K	287cm ²

Detailed recommendations for air supply are given in the Building Regulations and in BS 5410: Part 1. The following notes are intended to give general guidance.

1. Combustion and ventilation air supply to oil fired appliance has to comply with the Building Regulations and with BS 5410: Part 1. The air supply requirement for oil fired appliance is 550mm² per kW of maximum rated output above 5 kW. These requirements are illustrated in OFTEC Technical Book No. 3.
2. If combustion air is supplied through an under floor duct the grilles at each end should be positioned in the vertical plane to reduce the risk of blockage. Ducts should be sized so as to reduce the resistance to air flow.
3. The ventilation requirement for kitchens in Part F of the Building Regulations (England & Wales) is for mechanical extract at the rate of 30 litres per second.

Background ventilation is also required, either by producing a constant extract rate of one air change per hour or by having ventilation openings of not less than 4000mm².

4. Extract fan should be positioned as far away from the open flue as possible and should have a sufficient dedicated air supply. To undertake a test the oil fired appliance should be set in operation and the doors and windows of the room containing it should be closed. The extract fan should then be run at its maximum setting. The oil fired heating appliance should be observed to operate satisfactorily both before and after the fan is switched on.
5. It is preferable for the air supply for an extract fan to be located where it can serve the fan without the air stream passing close to the oil fired appliance.

Site requirements

WATER CIRCULATION SYSTEM

The various models will provide a heat output from 80,000 to 150,000 Btu's/hr (23.4 - 44 kW/hr).

The heating system **must** be of the fully pumped, pressurised or open vent type. The system must have a heat sink radiator of minimum 1.5 kW, fitted after the primary circulating pump and before any motorised valves.

Only two-port zone valves are to be used, not three port mid position valves.

Pipe Sizing

The boiler tapings are always on the left hand side of the cooker with the flow being at the top and the return at the bottom.

The primary flow and return pipes must be run from the cooker to and through the pump up to the motorized valves in the following sizes.

880K - 28mm
8120K and 8150K - 42mm

The pipework can then be reduced accordingly.

The installer must take full account for correctly sizing the heating pipework and the circulation pump so that it is suitable for the system.

Open Vented System

These systems are maintained full of water via small high-level cistern which is fed from mains water. The cistern is connected to the primary flow of the appliance's boiler by a feed pipe, which allows water to expand back into the feed cistern as it is heated. This is known as 'open vented'. Build up of air in the system would naturally vent to the cistern, however it is advisable to fit an automatic air vent. The water is circulated around the system by a suitably sized pump and then switched to the heating or hot water circuits by motorised valves. See Fig. 5.

Pressurised System

This system works by allowing the expansion of the heated water to take place in a closed vessel, and water filling is taken place by the means of a temporary connection directly to the mains water supply. It would be advisable for an automatic air vent to be fitted on the primary pipework. Any build up of excessive pressure is released to outside by an automatic pressure relief valve. See Fig. 6.

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

A 3-channel programmer controls the Rayburn cooker: two of these channels are used for the boiler control integrated with a room stat and a cylinder stat and two motorised zone valves. This in turn give full control of the central heating and domestic hot water independently. The cooker has a built in pump overrun control stat so the pump runs only when required or in the case of excess build up of heat.

HEATING LAYOUT

Please refer to Figs. 5 & 6 for the following.

1. Rayburn cooker
2. Primary circulating pump
3. Heat sink radiator
4. Domestic hot water zone valve
5. Immersion heater
6. Service valve (lock shield type)
7. Service valve (lock shield type)
8. Central heating zone valve
9. AutomaticBy-pass valve
10. Primary flow to heating circuit
11. Return from heating circuit
12. Expansion pipe
13. Fill pipe
14. Fill and expansion tank
15. Check valve
16. Isolation valve
17. Automatic air vent
18. Pressure vessel
19. Pressure gauge
20. Pressure release valve
21. Filling loop assembly

Open Vented Heating System using Two Zone Valves

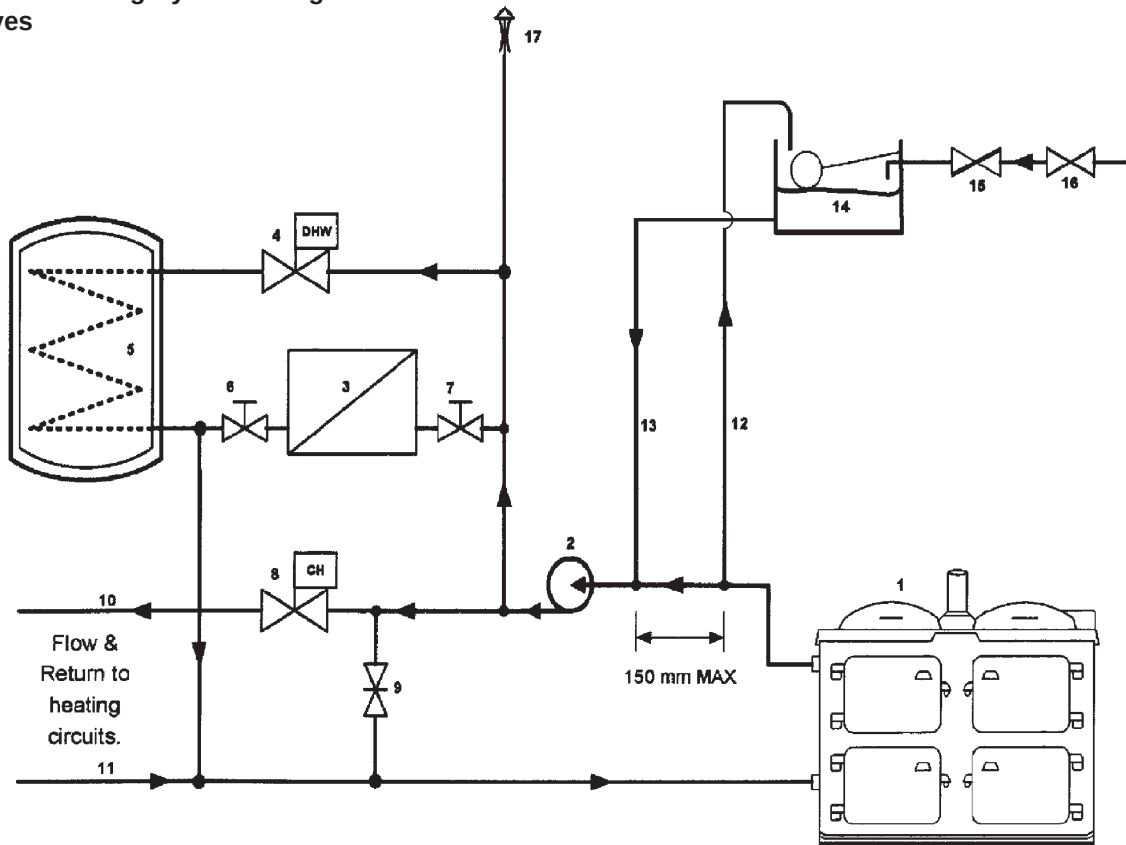


FIG. 7

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Sealed Heating System using Two Zone Valves

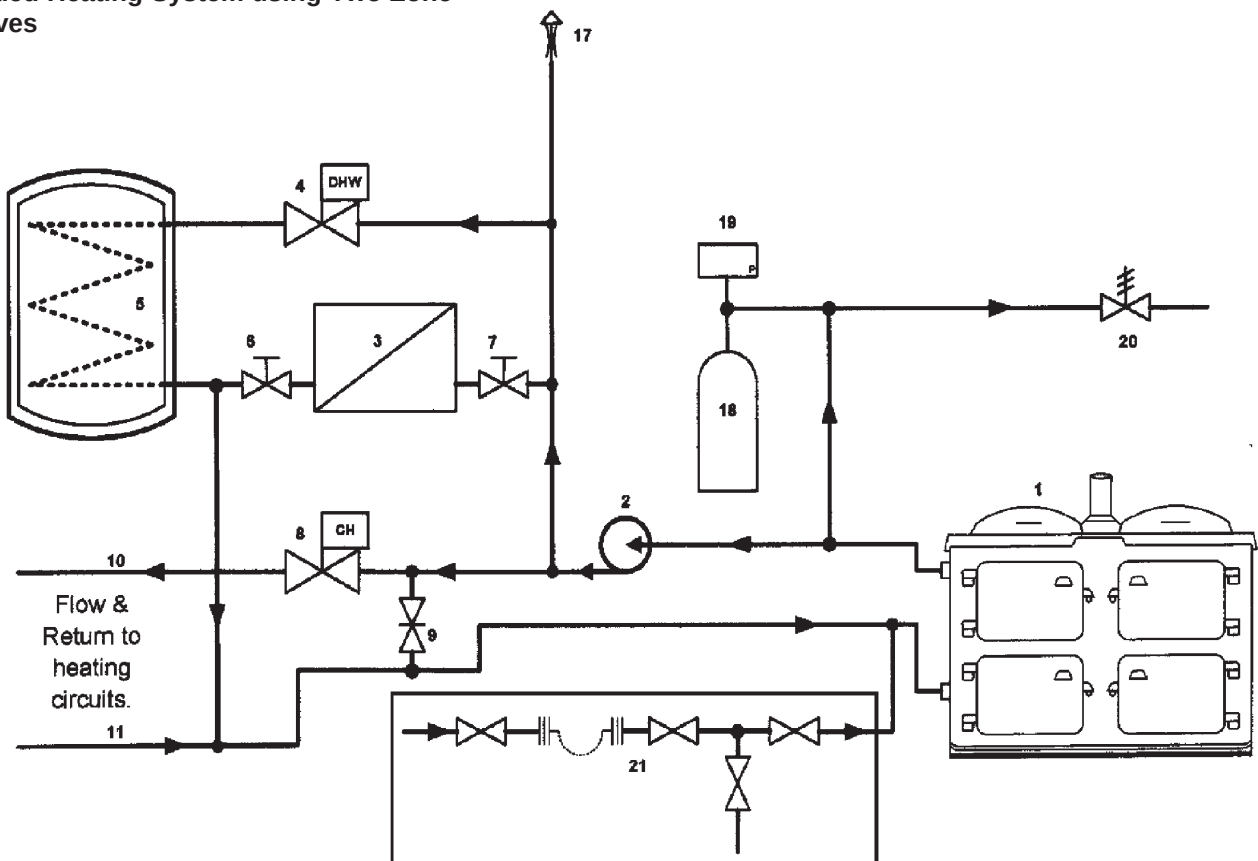


FIG. 8

DESN 514279

Site requirements

CONTROL WIRING

The cooker combined with the 3-channel programmer will operate the heating, hot water and cooking individually.

The control wiring must be as the following diagrams. Alteration to this could cause the appliance to overheat and fail.

The cooker is fitted with high limit and pump overrun control thermostats, which protect the appliance in normal operation. Failure to wire the appliance correctly could result in these protective controls/devices not operating, or operating incorrectly.

CONNECTION

Connection of the wiring is made in the bottom left hand side of the cooker.

Connection is made with a 12-way removable terminal block.

The appliance requires a 5 amp supply via switched fused spur or switched isolator.

There is then a protected supply out to the programmer and any other devices requiring power. Switched lives are then returned for the burners, via the room and cylinder stats.

The pump is wired directly as this is controlled by the pump overrun stat.

All cables entering the cooker should be made in heat resistant cable and comply with current IEE wiring regulations. Any other control devices/controls **MUST** also be wired from the protected outlet supply of the cooker.

EXTERNAL WIRING PREFIX

1. Switched fuse spur - 5 amp
2. Cooker/terminal block
3. Primary circulating pump
4. Programmer
5. Room thermostat
6. Cylinder thermostat
7. Central heating zone valve
8. Domestic hot water zone valve

Site requirements

External wiring with 2 zone valves

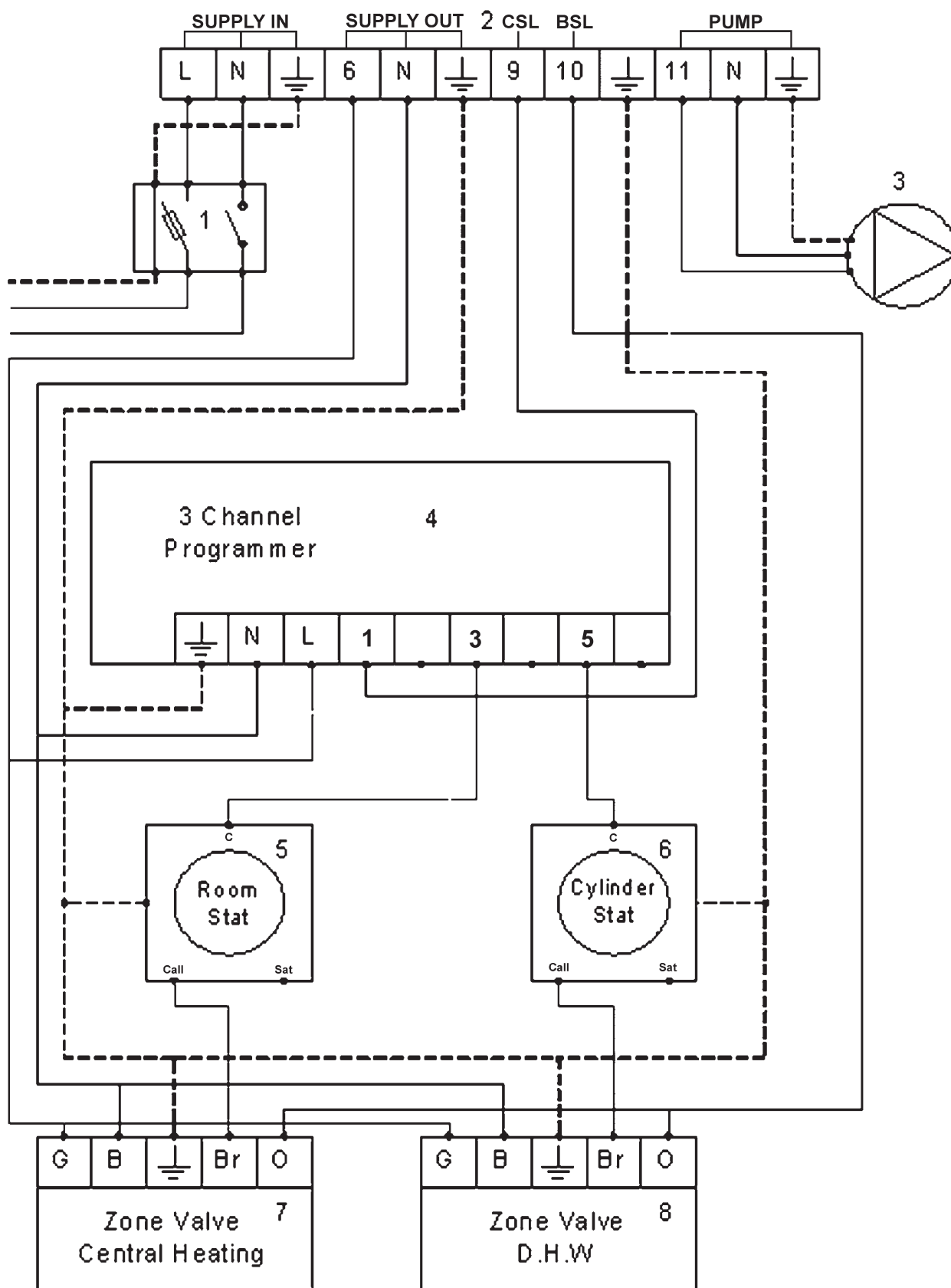


FIG. 9

COMMISSIONING

Before the appliance is to be used, an approved engineer **MUST** commission the appliance. Failure to have the appliance commissioned and the commissioning form returned to Aga, could invalidate the 12 month warranty of this appliance.

Failure to install and maintain this appliance correctly could lead to prosecution.

COMMISSIONING PROCEDURE

Pre-checks are the first thing to carry out.

Is the appliance correctly installed according to this manual?

1. Heat sink radiator - 1.5 kW.
2. By-pass fitted.
3. 2-port valves (Not 3 port)
4. Correct pipe size.
5. Pump wired directly to cooker.
6. Inhibitor in central heating.
7. Correct combustion air setting.
8. Correct run and type of flue.
9. Wired correctly as per this manual.
10. Oil tank correctly sited.
11. Correct oil line run (No de-aeration device).
12. Correct clearances around the cooker.
13. Carry out a full electrical check on the installation.

FIRING THE BURNERS

Before firing check:

- a. All air is bled from the oil lines and oil pumps.
- b. The correct nozzle size has been fitted.
- c. The oil pump pressure is set to the correct pressure.
- d. The air adjuster is set to the recommended setting.
- e. A suitable fire valve is fitted.
- f. There are no oil leaks.
- g. The boiler and system is full of water.
- h. All joints are properly sealed.

The bare cast of the cooker when built is coated with oil, and the seals are new. These will start to cure as the appliance warms up. It is advisable to vent the room with windows open during the commissioning process.

Make sure the domes are up and the centre cover is removed.

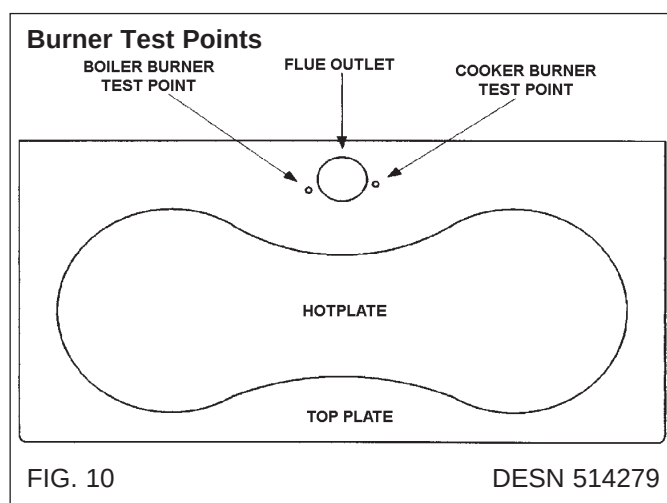
Once pre-checks have been carried out, fire the cooker burner with the cooker thermostat set at about 100°C. This will allow the cooker to warm up and burn off the oil that protects it during storage. This will reduce the risk of interfering with the combustion analysis. While the cooker is warming up, disconnect the boiler burner Wieland plug, advance the domestic hot water and check the operation of the cylinder stat and zone valve. If these are operating the boiler control box should go to lockout.

Now repeat the process with the heating controls.

Once the boiler side has been proven, the cooker burner can now be commissioned. Using a combustion analyser, sample the emissions from the cooker burner through the appropriate test port (See Fig. 8) achieving a CO₂ of 9 - 10% with a flue gas temperature in excess of 180°C, and zero smoke.

The boiler burner should be tested with the hot water circuit first. This way you can check the correct operation of the heat sink radiator as this should start to warm up. Sampling from the boiler port should indicate a CO₂ of 11 - 12% with a flue gas temperature in excess of 180°C and a zero smoke.

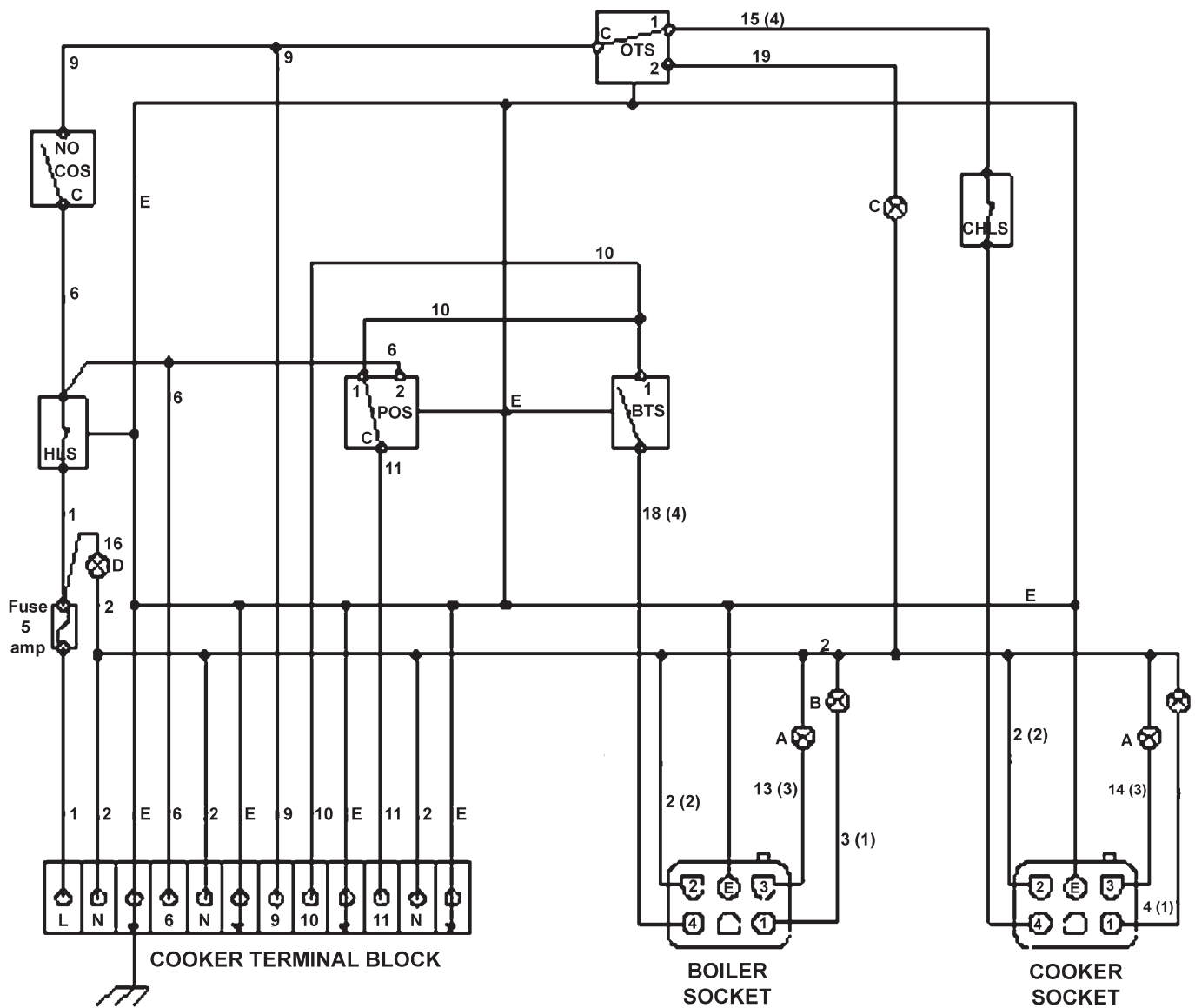
COMPLETE THE COMMISSIONING WARRANTY FORM.



FAILURE TO COMPLETE THE COMMISSIONING FORM MAY INVALIDATE THE APPLIANCE WARRANTY.

Appliance Wiring

Appliance Control Panel Internal Wiring



A	Run Light
B	Lockout Light
C	Oven To Temp
D	Mains On

COS	COOKER OVERRIDE SWITCH
HLS	HIGH LIMIT THERMOSTAT
OTS	OVEN CONTROL THERMOSTAT
POS	PUMP OVERRUN STAT
BTS	BOILER CONTROL THERMOSTAT
CHLS	COOKER HIGH LIMIT STAT

FIG. 11

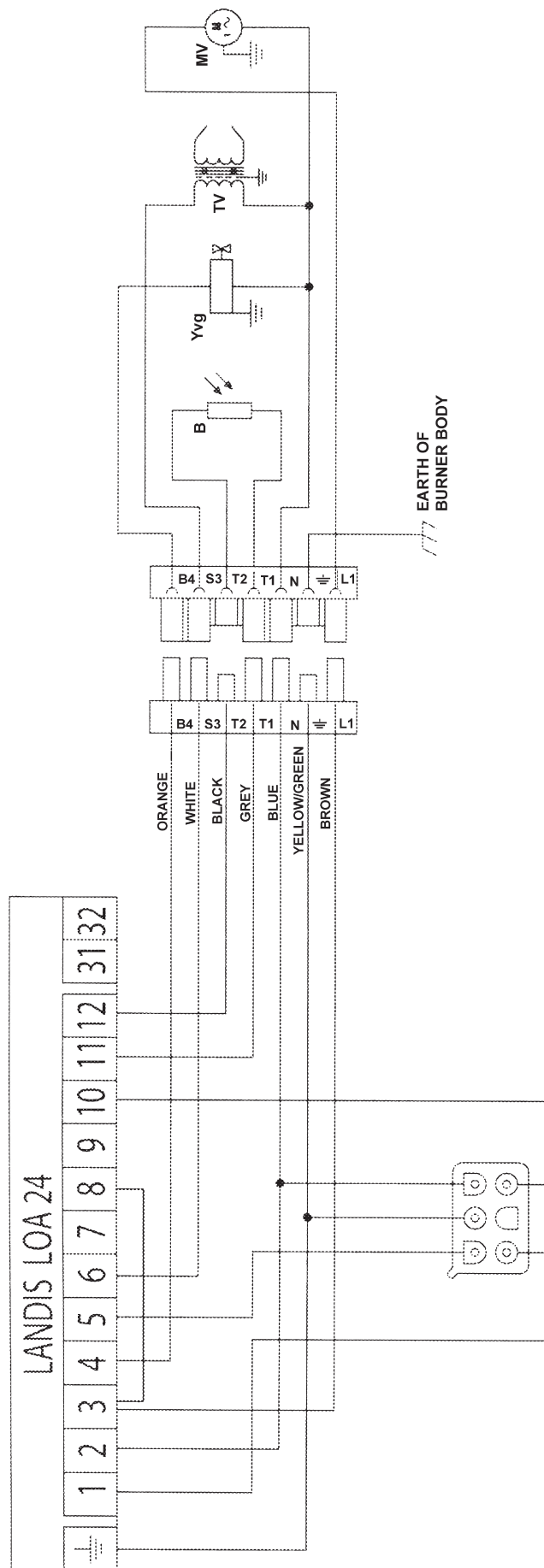


FIG. 12

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

With Aga'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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