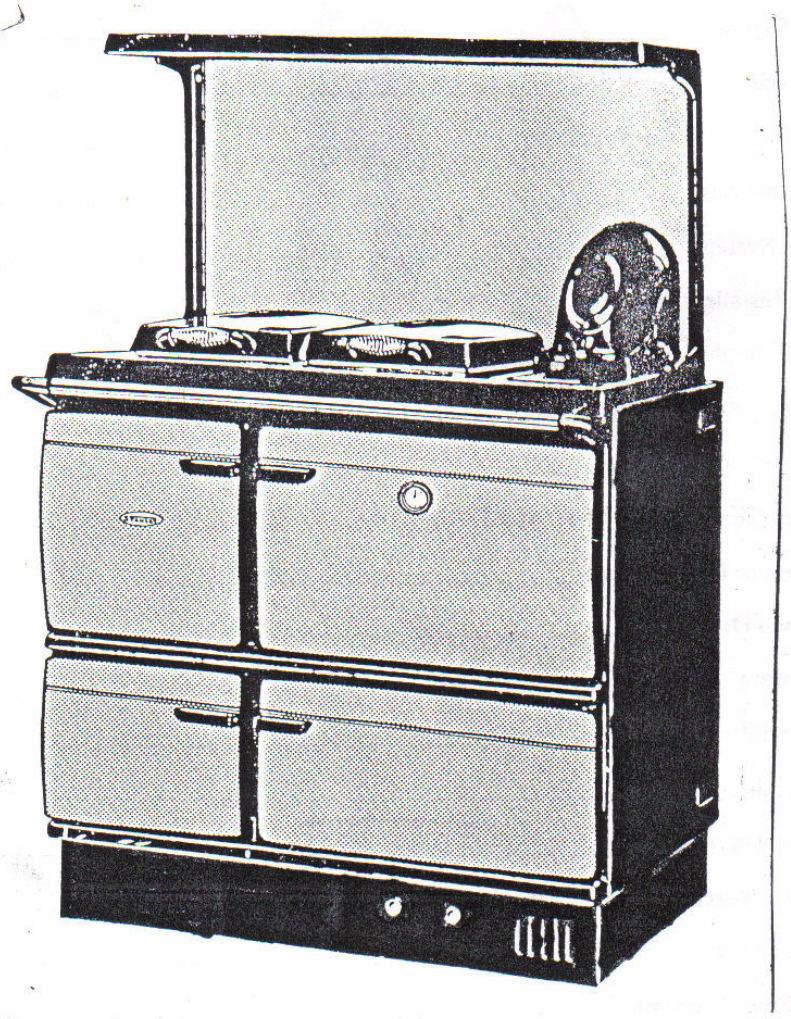
OIL FIRED
STANLEY 100K
TWIN SERIES



INSTALLATION & COMMISSIONING INSTRUCTIONS

CE

INTRODUCTION

To ensure safety, satisfaction and reliable operation, this quality cooker should be installed by a trained and competent person. The provision of the central heating facility, and the hot water systems involved, must conform fully to good plumbing practice, established standards and OFTEC recommendations.

As manufacturers and suppliers of cooking and heating appliances, in compliance with the following;

* Section 10 of the Consumer Protection Act 1987.
* Safety Health and Welfare at Work Act for Ireland, England,Wales and Scotland and any appropriate or current relevant legislation..

We take every possible care to ensure, as reasonably practicable, that these appliances are so designed and constructed as to meet the general safety requirement when properly used and installed.

IMPORTANT NOTICE: Any alteration to this appliance that is not approved in writing by Waterford Stanley, will render the guarantee void.

IMPORTANT -Control of Substances Harmful to Health -
It is the Users/Installers responsibility to ensure that the necessary personal protective clothing is worn when handling materials that could be interpreted as being injurious to health and safety. See below.

When handling Firebricks, Fire Cement, Fuels, use disposable gloves.
Exercise caution and use disposable masks and gloves when handling glues and sealants.
When working with fibre glass, mineral wool, Insulation materials, Ceramic blanket/board, Kerosene Fuel Oil avoid inhalation as it may be harmful if inhaled. Avoid contact with skin, eyes, nose and throat, use disposable protection.
Installation should be carried out in a well ventilated area.

TECHNICAL DATA

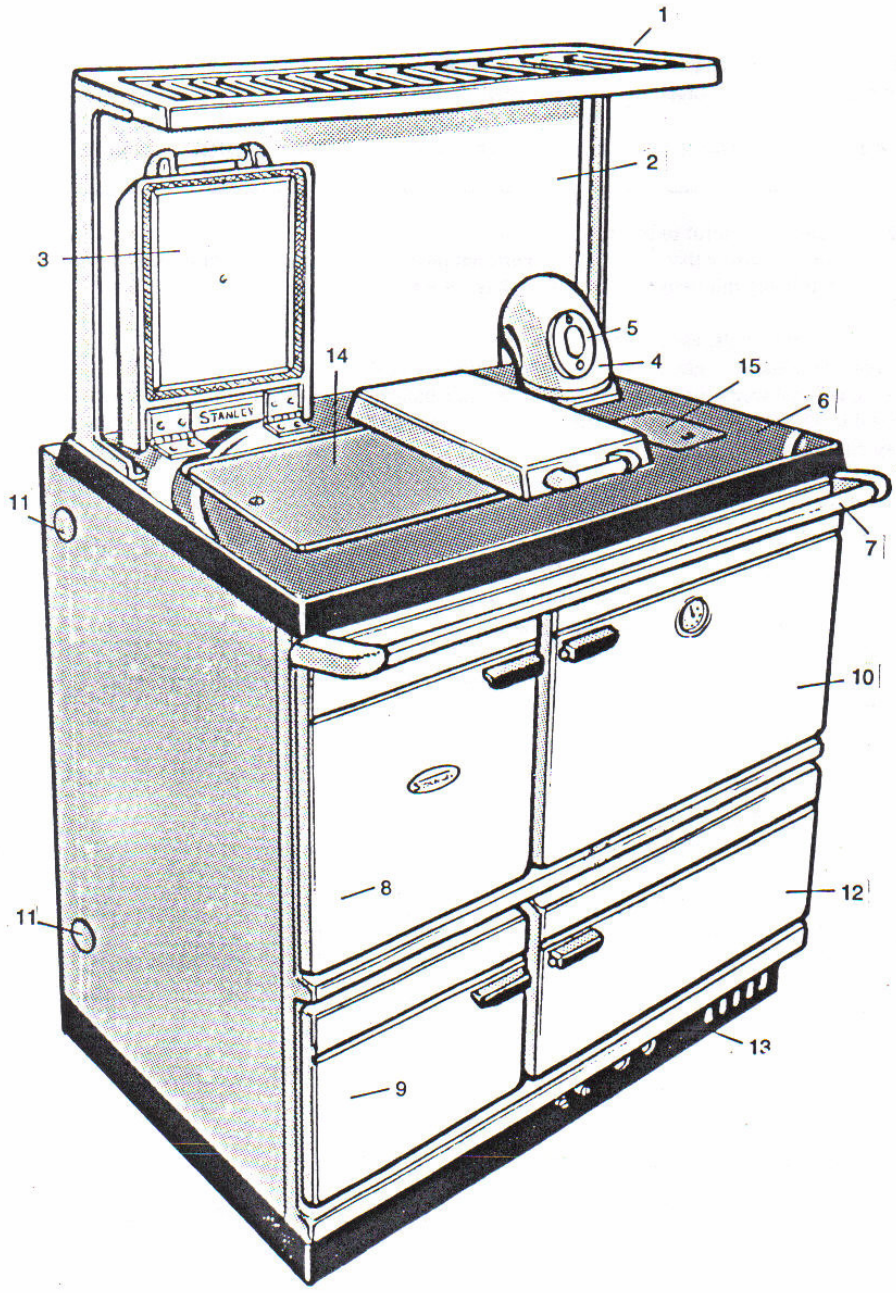
GROSS OUTPUTS:	35.2 kW - 120,000 Btu's/Hr
RADIATION SURFACE:	53 m^2 (571 $ft.^2$) heating surface only.
	48 m^2 (514 $ft.^2$) heating surface & domestic hot water
FLUE GAS FLOW:	Boiler: 0.005m^3/s Oven: 0.0026m^3/s
SPACE HEATING:	2.91 kW (10,000 Btu/hr) cooking mode / 2.2 kW (7,540 Btu/hr) boiler mode.
FLUE GAS TEMPERATURE:	Boiler 180°C Cooker 250°C
ELECTRICAL SUPPLY:	240V 50 Hz
FUSE:	3 A
BOILER CAPACITY:	17 l (3.74 gal)
BOILER MATERIAL:	Mild steel
COOKER WEIGHT:	385 kg (850 lbs)

SPECIFICATION		
	BOILER BURNER	**COOKER BURNER**
Burner Input	34.2 kW - 116,700 Btu/h	19.6 kW - 66,840 Btu/hr continuous running 4.4 kW - 14,950 Btu/hr cycling
Boiler Output Max. Continuous Running Mean Cycling	 29.3 kW - 100,000 Btu/hr N/A	 2.4 kW - 8,100 Btu/hr 1.4 kW - 4,818 Btu/hr
Nozzle Pressure	0.85 80° S (C.E.N.) 7.4 bar / 107 p.s.i.	0.5 60° S (C.E.N.) 7.6 bar / 110 p.s.i.
Fuel Consumption	3.61 l/hr (0.95 US gal/hr) continous running	0.51 l/hr (0.14 US gal/hr) cycling

All data are taken under laboratory conditions and may vary in use.

SCHEMATIC

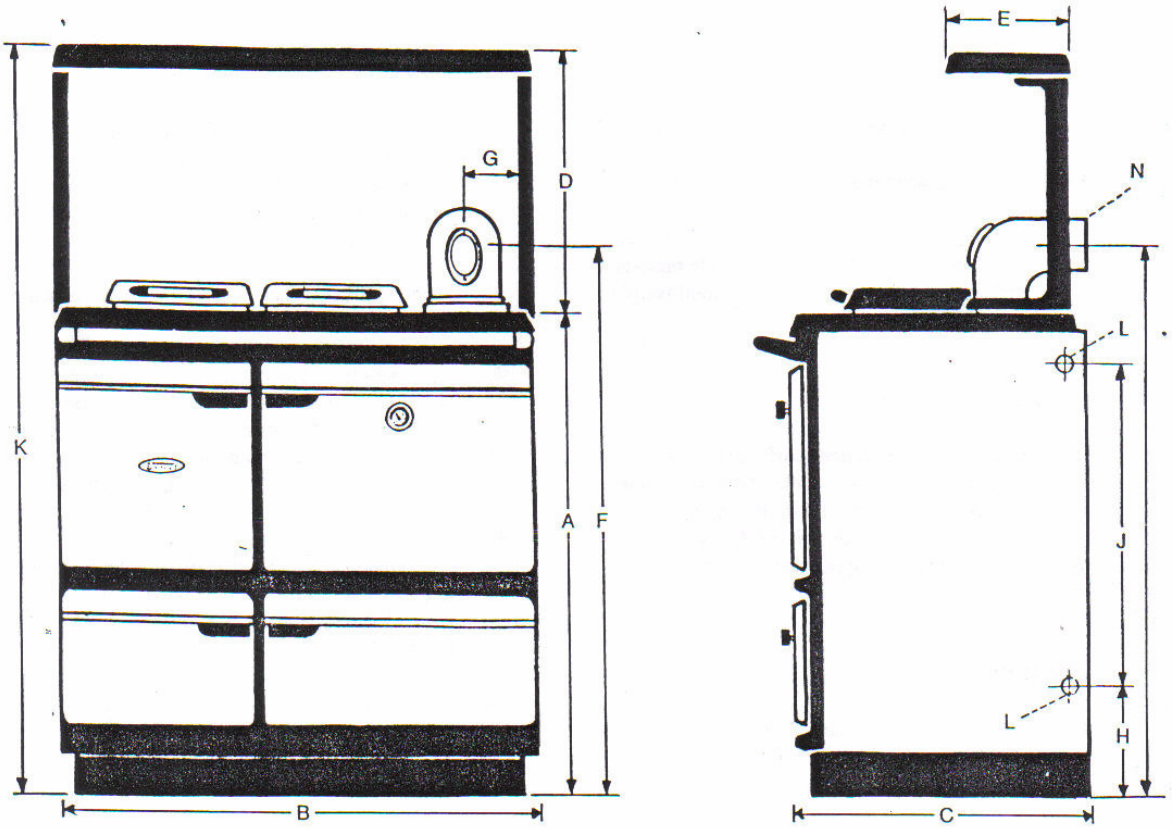
Fig 1.



1. Platerack (to order)
2. Splashback (to order)
3. Hotplate Covers
4. 150mm (6") 90* Bend
5. Bend Cleaning Plate
6. Hob
7. Towel Rail
8. Firedoor
9. Burner Door
10. Main Oven Door
11. Boiler Tappings
12. Simmer Oven Door
13. Base Frame
14. Hotplate
15. Simmer and Cleaning Plate

SPECIFICATION

Fig. 2.



DIMENSIONS	A	B	C	D	E	F	G	H	J	K	L	N
METRIC (millimetres)	920	920	630	510	300	1065	130	250	540	1430	25	150
IMPERIAL (inches)	36	36	25	20	11	41	5	9	21	56	1"BSP	6

FEATURE	METRIC	IMPERIAL
HOT PLATE:	550W X 323L	21 W X 12L
ROASTING OVEN:	390W X 310H X 406D	15 W X 12 H X 16 D
SIMMERING OVEN:	390W X 220H X 406D	15 W X 8 H X 16 D

LOCATION

When choosing a location for this appliance you must have:

(a) Sufficient room for the installation (see clearances), a satisfactory flue (see flue system), and an adequate air supply for correct combustion and operation (see air supply).

(b) Adequate space for maintenance and air circulation.

(c) Solid floor or base of non-combustible material which is capable of supporting the total weight. (see specification).

HEARTH CONSTRUCTION

When a non-combustible floor surface is not available then we recommend that the cooker be placed on a slab of pre-cast concrete 4cm deep or a slab of other insulating material. This hearth must extend 150mm (6") to either side of the appliance and 300mm (12") to the front.

AIR SUPPLY

1. It is imperative that there is sufficient air supply to the burners of the cooker in order to support combustion and fire correctly.

2. The air supply to this appliance has to comply with BS 5410 Part 1.

3. When calculating combustion air requirements for this appliance use the following equation: 550mm² per kW of maximum rated output above 5 kW. These requirements are illustrated in OFTEC Technical Book No. 3.

4. If there is an air extraction fan/s fitted in the room or adjacent rooms to where this appliance is installed, additional air vents must be provided so the performance of the appliance is not affected when the fan/s are running at their maximum setting with all external doors and windows closed.

5. We recommend that air supply to extract fan/s be located where it can serve the fan/s without the air stream passing through the area where the appliance is installed.

OUTSIDE AIR CONNECTION

If this option is used additional air as indicated in BS 5410 is not required.

1. This stove may be connected direct to the outside of the house for its combustion air supply.

2. Remove the blanking plate located at the back right hand corner and take off the primary air grill located at the front right hand corner. Fix the blanking plate over the front primary air inlet. (See fig. 3 & 4).

3. Connect the optional 5" spigot to the base, see fig. 4.

4. To connect this stove to an outside air supply use either 5" rigid or flexible stainless steel pipes or non-combustible corrosion-resistant materials not more than 38" in length and having no sharp bends or corners other than the down turn at the terminus.

5. The outside air inlet terminus must be fitted with a 1/4" x 1/4" corrosion-resistant wire mesh to prevent leaves, and rodents entering from the outside.

6. Air inlets traversing cavity walls should include a continuous duct across the cavity. The duct should be installed in such a manner as not to impair the weather resistance of the cavity.

7. Joints between air vents and outside walls should be sealed to prevent ingress of moisture.

Fig 3

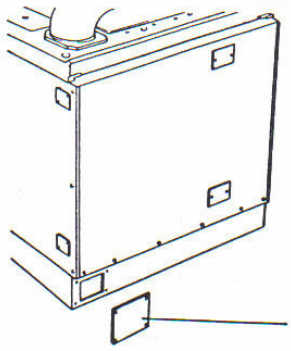
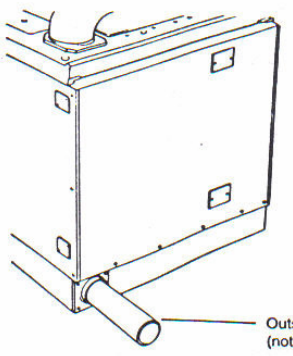


Fig 4



CLEARANCES TO COMBUSTIBLES

When bringing your kitchen units up to the sides of the cooker it is advisable to leave a 10mm gap between the Stanley and adjacent units, this gap can be masked by fitting a filler strip to the Stanley leaving a 3mm gap (see fig. 5 & 6). Likewise the base of your units can be brought up flush to the Stanley's built in plinth.

When bringing the work top up to the side of the hob leave a 10mm gap to combustible material (see fig. 5).

Fig 5

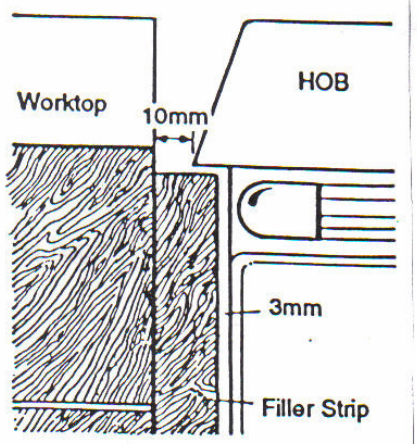
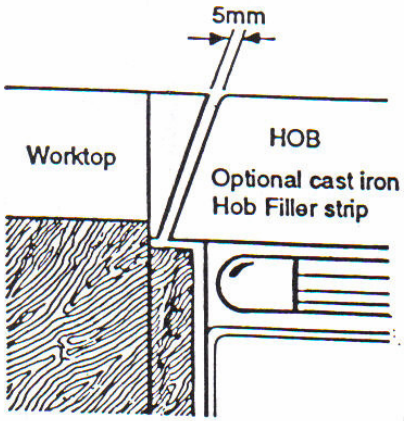


Fig 6



REGULATIONS

The installation must comply with the current editions of the following:

BS 5410: Oil Installations Part 1 under 45 kW
The Building Regulations: Part J England, Wales, Part F Section III Scotland, Part L Northern Ireland and Part J Ireland.
The Control of Pollution (Oil) Regulations.
BS 5449: Forced circulation hot water central heating systems for domestic installations.
Health and Safety at Work Act.
BS 7671: Requirements for Electrical Regulations.
Safety Document 635: The Electricity at Work Regulations.
BS 7593: Treatment of Water in Domestic Hot Water Systems.
BS 7074 Part 1 & 2: Hot Water Supply.
BS 4814: Sealed System.

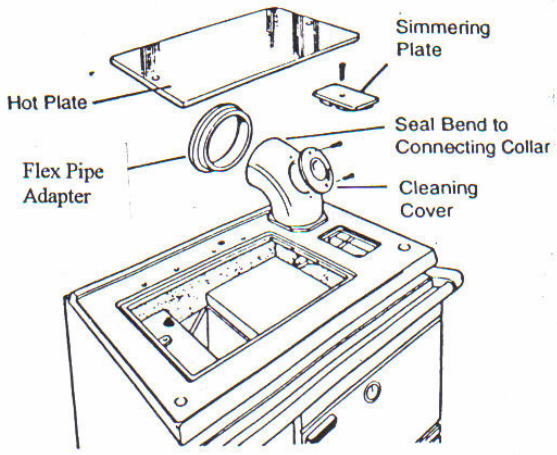
FLUE SYSTEMS

PRE-INSTALLATION CHECK

Before installing your cooker, check that the chimney is clean and clear of obstructions. Cracked brickwork and leaking joints should be made good.
Where flue piping passes through a closure plate with a sliding door, ensure that the pipe continues up and is ultimately connected to the flue liner and well sealed with fire cement.

Do not connect to a flue serving another appliance. Always ensure that the connection is to a chimney of the same size - never connect to one of smaller dimensions. Flues wholly constructed of single skin pipe are not recommended under any circumstances. Due to their inability to retain heat such flues will inevitably give rise to the formation of condensation.

Fig 7

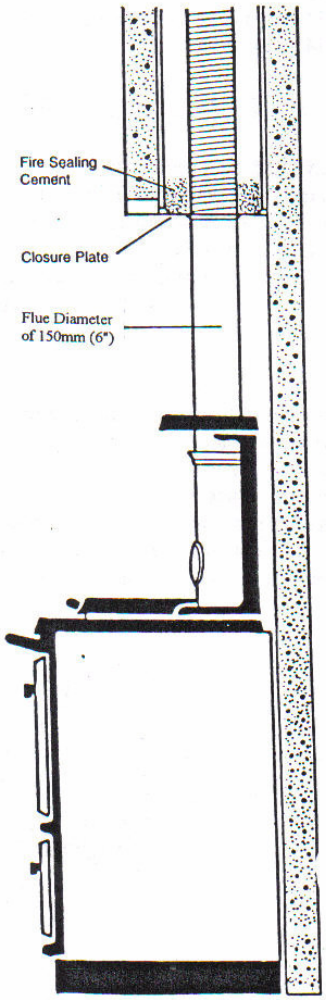


If connecting to an existing chimney it is necessary to line the flue using 150mm (6") rigid or flexible stainless steel flue liner.
This appliance should be connected to a 150mm (6") flue system.
Flue materials; Salt Glazed earthenware flue and purposely made pre-cast sealed concrete chimney's or rigid or flexible stainless steel liners suitable for oil firing.

Note:
Fill voids and area around liner with vermiculite or a comparable approved material.

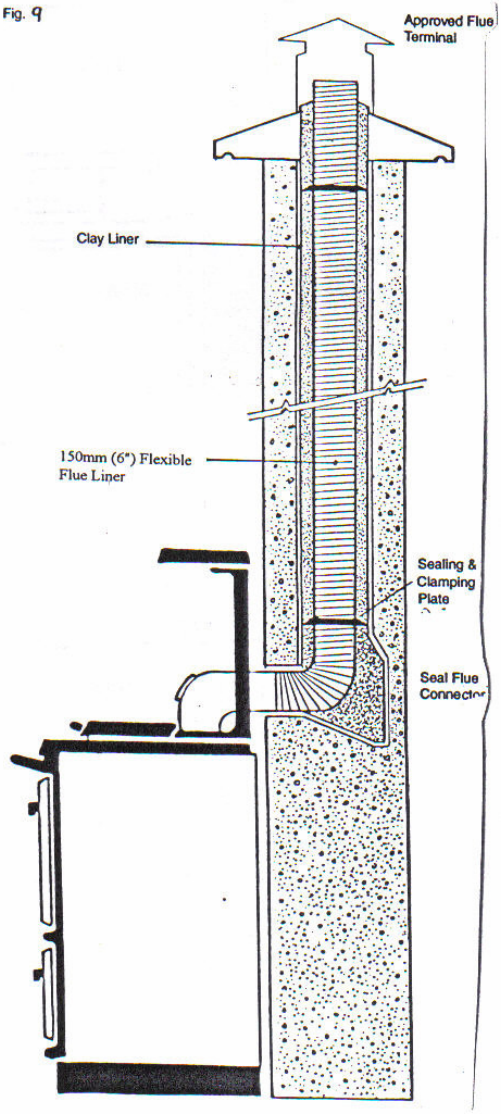
150mm (6") Diameter Flue Liner

Fig. 8



Flue Liner greater than 150mm (6") Diameter

Fig. 9

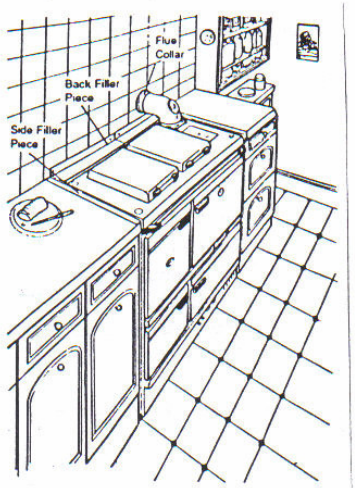


SEALING

This cooker and flue system operate under a positive pressure, it is essential that all flue joints are tightly sealed against flue gas leakage and tested accordingly.

There is a flue pipe collar available which surrounds the flue pipe where it meets the wall, giving a tidier finish to a tiled background (see fig. 12). The filler piece and flue pipe collar are available as optional extras.

Fig 10



FLUE HEIGHT

The flue must be high enough (15 ft. minimum) to allow the flue gases to vent into the clear air, away from the turbulence that may be caused by roof structures, other chimney stacks, etc. The venting position should be 1m above any obstruction within a 7.6m radius.

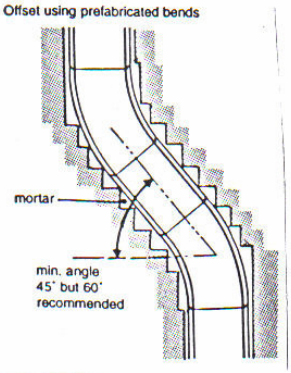
FLUE SYSTEM

Where the standard masonry chimney is not available, a propriety type of non-combustible or corrosive material 150mm (6") twin wall fully insulated pipe may be used. The pipe must terminate at a point not lower than the main ridge or adjacent outside obstructions. With such installations, access to the chimney must provided for cleaning purposes.

Horizontal runs more than 18" and 90° bends numbering more than 2 of per installation should be avoided.

If it is necessary to offset the chimney the recommended angle is 60° to the horizontal and the statutory minimum is 45°.

Fig 11



A cast iron 90° bend with cleaning door is available with the cooker. A vertical cast iron outlet pipe with cleaning door is also available. A flex flue adapter is supplied, this is to connect the cooker 6" bend or straight pipe to the 150mm (6") chimney liner.

ALL FLUE CONNECTIONS MUST BE THOROUGHLY SEALED. Blocked chimney are dangerous, use only recommended fuels, keep chimneys and flue ways clean, read the operating instructions.

STANLEY CAST IRON PIPES AND BENDS ARE HIGHLY RECOMMENDED FOR INTERIOR USE.

FLUE CLEANING

The flue must be inspected annually and cleaned when necessary.

USE OF EXISTING FLUES AND CHIMNEYS

When connecting to an existing chimney it is necessary to line the flue using approved 150mm (6") rigid or flexible stainless steel flue liner.

An existing flue pipe or chimney that has proved to be satisfactory when used for solid fuel can normally be used for this appliance provided that it's construction, condition and dimensions are acceptable. Flues that have proved to be unsatisfactory, particularly with regard to down draught, should not be considered for this appliance until they have been examined and any faults corrected.

Before connecting this appliance to a chimney or flue pipe which has previously been used with another fuel, the chimney or flue pipe should be thoroughly swept and lined accordingly.

The combustion products on any oil burning appliance will have a descaling effect on hardened soot deposits left from burning solid fuels.

ALTHOUGH THE CHIMNEY MAY HAVE BEEN CLEANED OF LOOSE SOOT PRIOR TO INSTALLATION, IT IS IMPERATIVE THAT THE CHIMNEY IS INSPECTED FOR SCALED SOOT PARTICLES AFTER THE FIRST MONTH OF OPERATION AND ANY LOOSE MATERIALS REMOVED TO AVOID BLOCKAGE.

DRAUGHT REQUIREMENTS

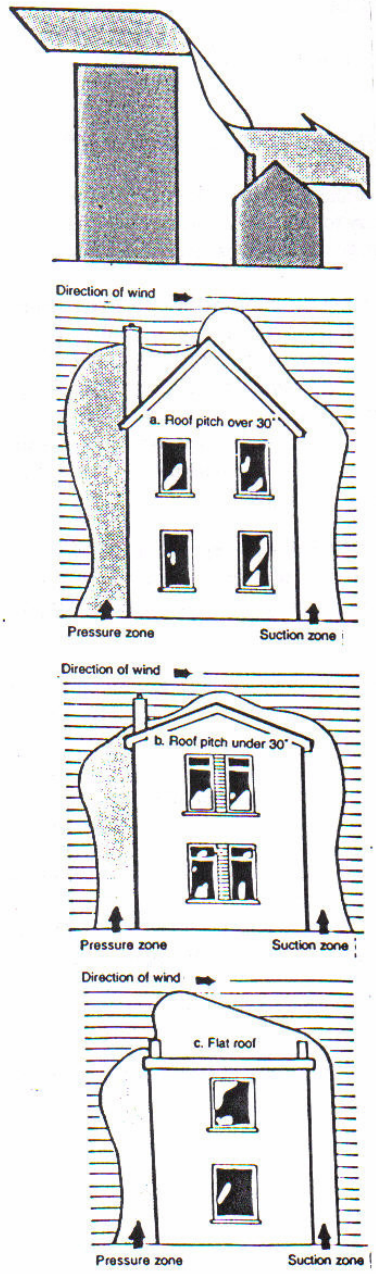
A steady draught of between .04 and .06 inches W.G. is required.

DOWN DRAUGHTS

However, well designed, constructed and positioned, the satisfactory performance of the flue can be adversely affected by down draught caused by nearby hills, adjacent tall buildings or trees. These can deflect wind to blow directly down the flue or create a zone of high pressure over the terminal.

A suitable anti-down draught terminal or cowl will usually effectively combat direct down draught but no cowl is likely to prevent down draught due to a high pressure zone.

Fig. 12



HEATING

PIPE FITTINGS

Materials used for installation work should be fire resistant and sound and should conform to the current editions of the following or their equivalent.

1.1 Ferrous Materials
B.S. 1387 Steel tubes
B.S. 1740 Steel pipe fittings
B.S. 5295 and B.S. 6956 Jointing Materials

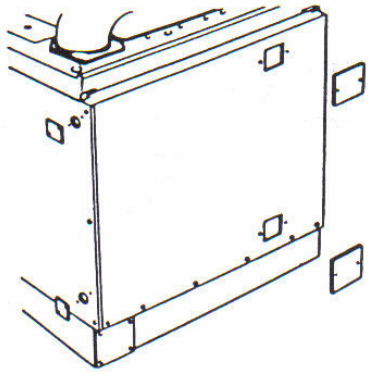
1.2 Non-Ferrous Materials
I.S. 238 Copper tubes
B.S. 4127 Stainless steel tubes
EN 29453 Solder
I.S. 239 Compression tube fittings
B.S. 1552 Manual shut off valves

The flow and return can be taken either side of the cooker.

1. To take off from the left simply connect direct onto the exposed boiler connection
2. To take off from the right side

a. Remove the two blanks on the right hand side of the cooker. Then remove the two cover plates.
b. Using the towel rail, punch out a passage way through the insulation material to the boiler connections.
c. Clear insulation away from the boiler connections.
d. To avoid insulation from going into the flow and return pipe, blank off ends using insulating tape before passing through cooker.
e. Remove insulating tape and connect to boiler.
f. Replace blanking plates.

Fig. 13



The common flow and return pipe should be in 28mm. Care should be taken to ensure that the heating installation is correctly installed and that it complies with all relevant codes of practice. If this appliance is being connected to an existing system, it is strongly recommended to check the following:

(a) That the system is sound.

(b) That pipework is adequately insulated (where applicable).

(c) Check all controls, i.e. pump, motorised valves, time control etc, are operating satisfactorily and are compatible with the requirements of the cooker.

(d) Are any modifications necessary to make the heating system more efficient?

The use of motorised valves, room thermostats, domestic hot water controllers, etc, can greatly enhance a heating system and we recommend their use.

It is important that no external control devices e.g. economisers be directly fitted to this appliance unless covered by these installation instructions or agreed with the manufacturer in writing. Any direct connection of a control device not approved by the manufacturer could make the guarantee void.

DRAINING

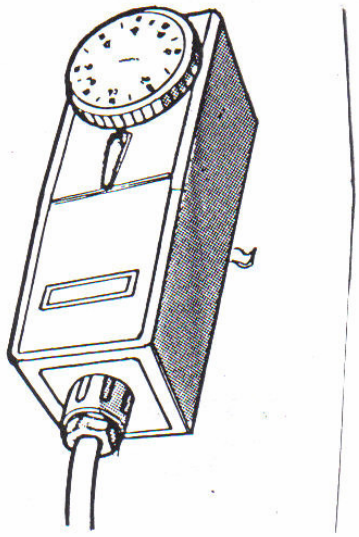
Key-operated drain taps to BS 2879 should be provided in accessible positions in all low parts of the system. However, it should be noted that there may be short sections of pipework, e.g. when passing under doorways, that it may not be possible to drain.

PIPE THERMOSTAT

The fitting of a pipe thermostat to the common flow pipe within 150mm (6") of the cooker is recommended in order to activate the water circulation pump when water in the boiler reaches 50°C. This will ensure that return temperatures are maintained and allow any residual heat to be transferred to prevent possible overheating.

When the flow temperature falls below 50°C the pipe thermostat will de-activate the circulation pump and allow the cooker to continue.

Fig. 14



WATER CIRCUIT TEMPERATURE

The return water temperature should be maintained at not less than 50°C so as to avoid condensation forming within the boiler. Fitting a pipe thermostat to the flow pipe and wiring it into the pump control (see wiring diagram) will not only ensure rapid circulation of the hot water to avoid premature burner shut down but also minimise the possibility of condensation.

INHIBITORS

We strongly recommend the use of corrosion inhibitors and anti-freeze solution in the system. Use only quantities specified by the inhibitor manufacturer. Add inhibitor only after flushing when finally re-filling the system. See BS 7953.

INDIRECT DOMESTIC CYLINDER

The cooker must only be connected to an indirect cylinder of no less than 180 litres using 28mm diameter flow and return piping. It is recommended that the cylinder is lagged together with pipework with runs in excess of 4 meters.

PRESSURE DROP ACROSS 100K BOILER

Boiler Output = 29.31 kW (100,000 Btu/hr)

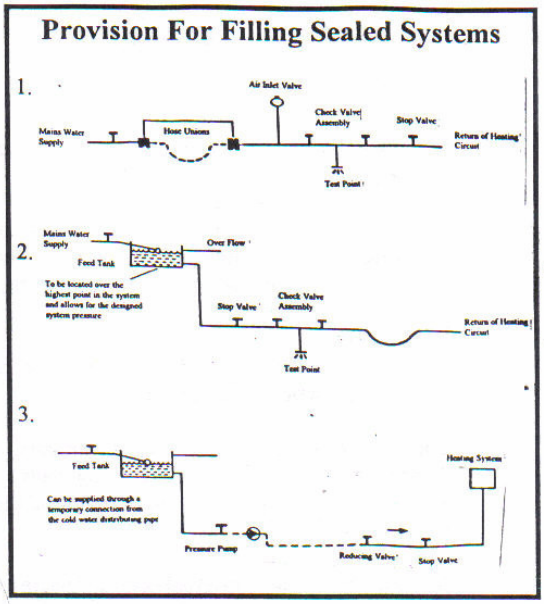
Design Temp. Differential across boiler = 11°C

Design flow rate through boiler = 38.2 L/min

Static pressure drop across boiler = 52.4 mbar / 21"WG

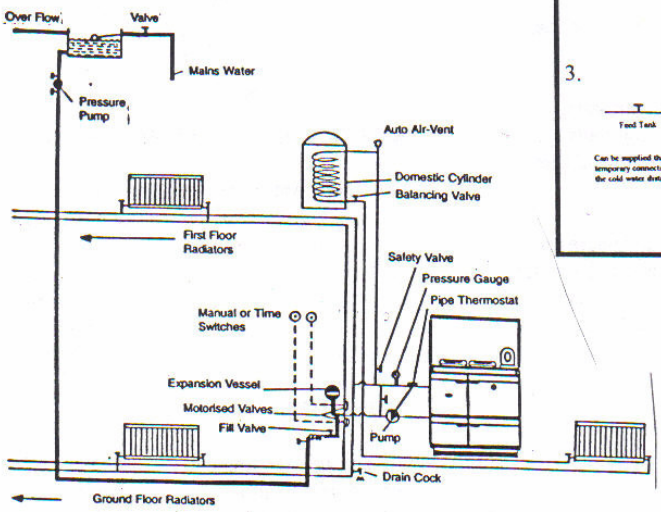
Dynamic pressure drop across boiler at a flow rate of 38.2 L/min = 33mbar/13.23"WG

The following diagrams illustrate the different of central heating systems to which this appliance can be connected, but are not to be used as working drawings.



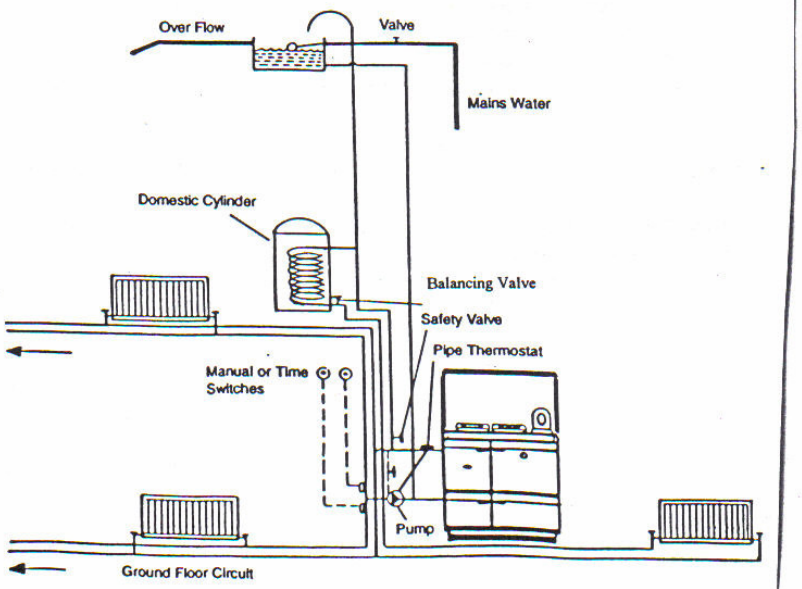
TWO STOREY SEALED SYSTEM

Fig. 15



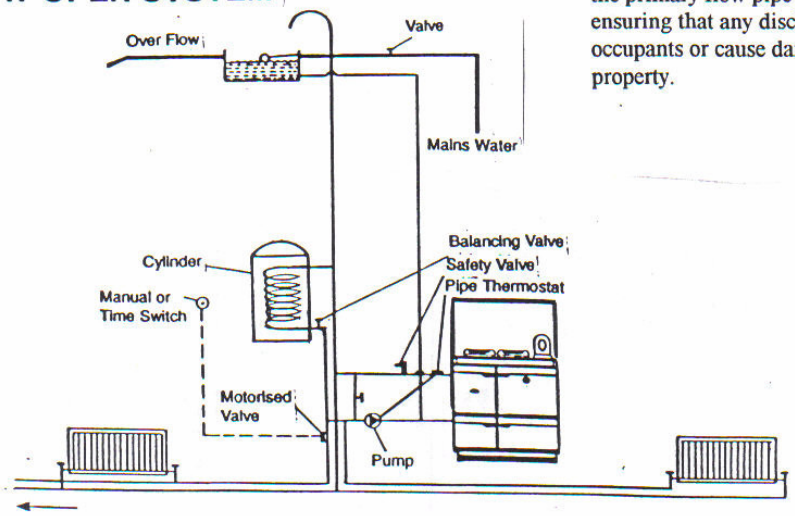
TWO STOREY OPEN SYSTEM

Fig. 16



BUNGALOW OPEN SYSTEM

FIG 17



Safety Valve

A non-adjustable 3 bar safety valve must be fitted to the primary flow pipe adjacent to boiler connection ensuring that any discharge will not create a hazard to occupants or cause damage to electrical components or property.

BUNGALOW SEALED SYSTEM

Fig. 18

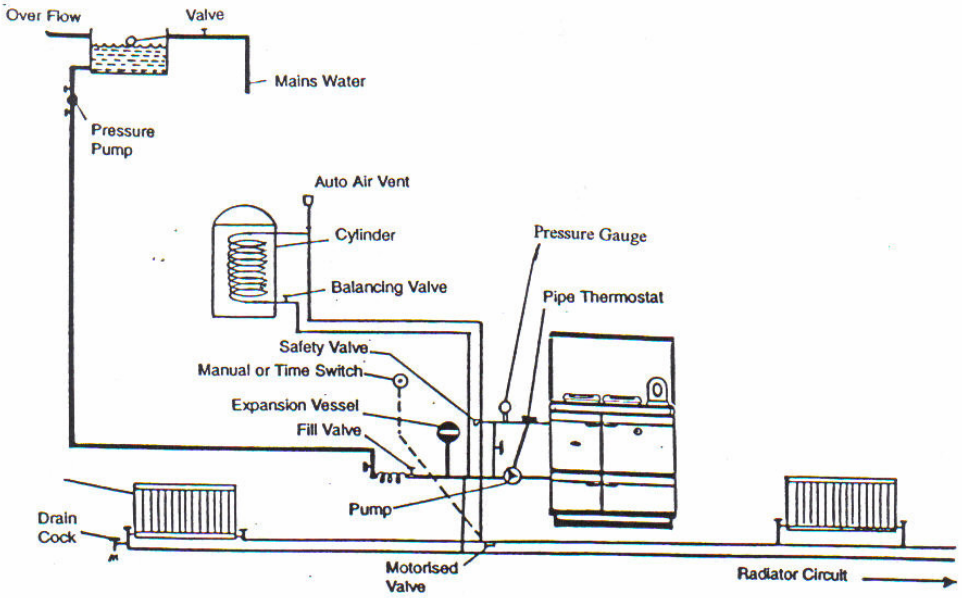
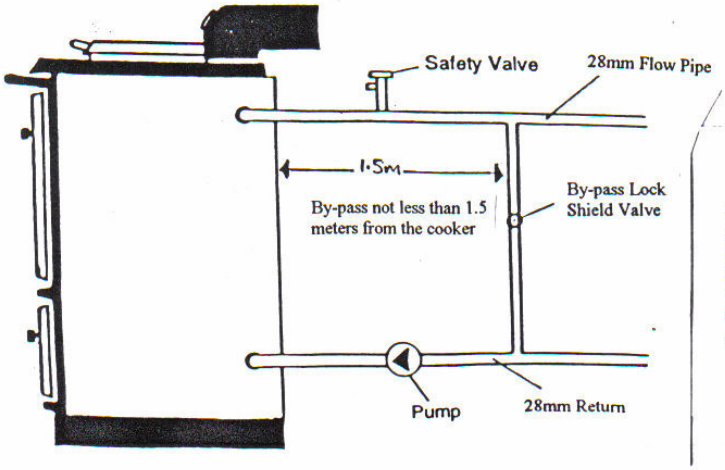


Fig. 19

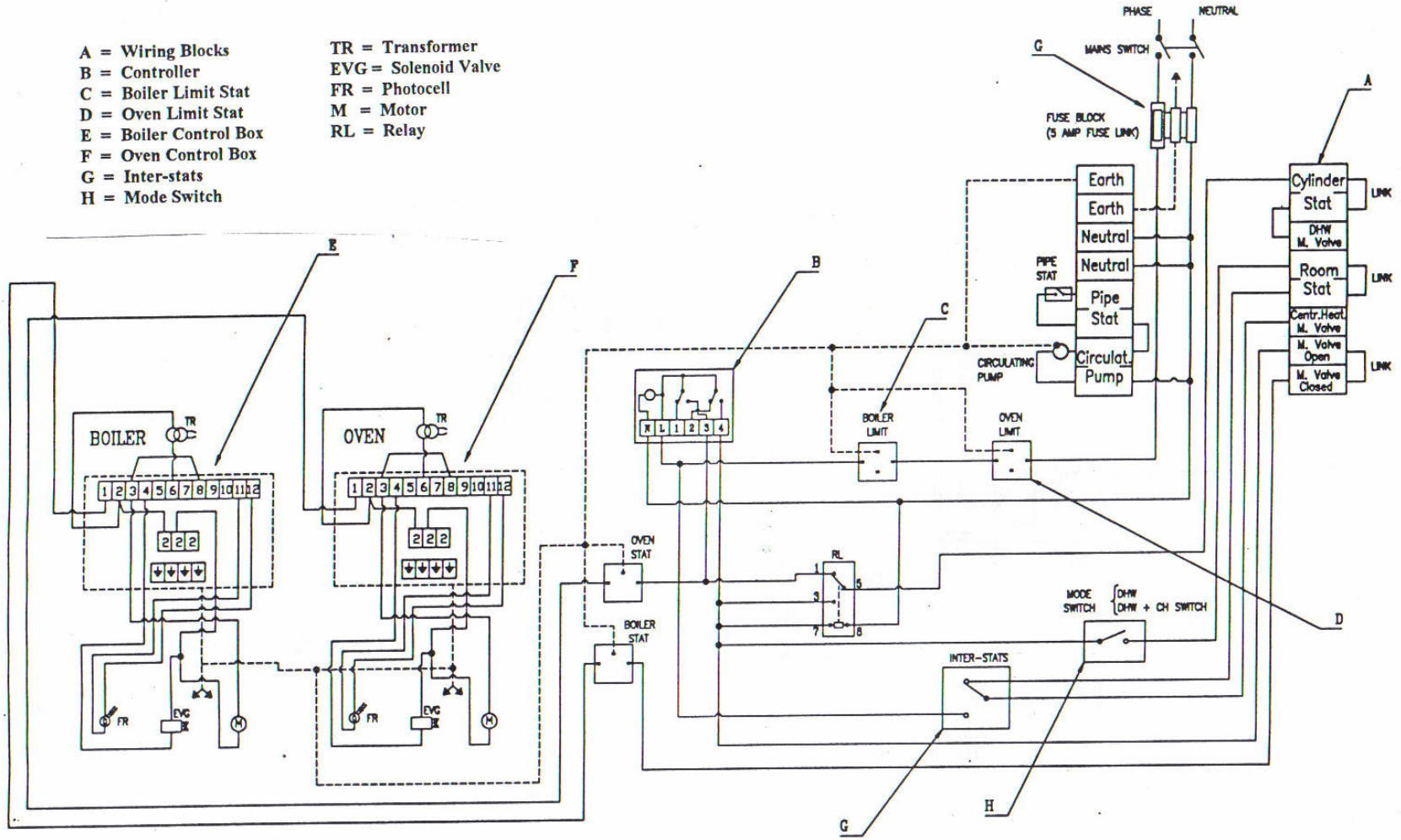


A system by-pass must be fitted to allow correct water circulation for the pump and to prevent condensation forming in the boiler. This should be balanced. As an alternative an uncontrolled towel rail may be fitted.

FIG 20

A = Wiring Blocks
B = Controller
C = Boiler Limit Stat
D = Oven Limit Stat
E = Boiler Control Box
F = Oven Control Box
G = Inter-stats
H = Mode Switch

TR = Transformer
EVG = Solenoid Valve
FR = Photocell
M = Motor
RL = Relay



100K WIRING DIAGRAM

FIG 21

A = Wiring Blocks
B = Controller
C = Boiler Limit Stat
D = Oven Limit Stat
E = Boiler Control Box
F = Oven Control Box
G = Inter-stats
H = Mode Switch

TR = Transformer
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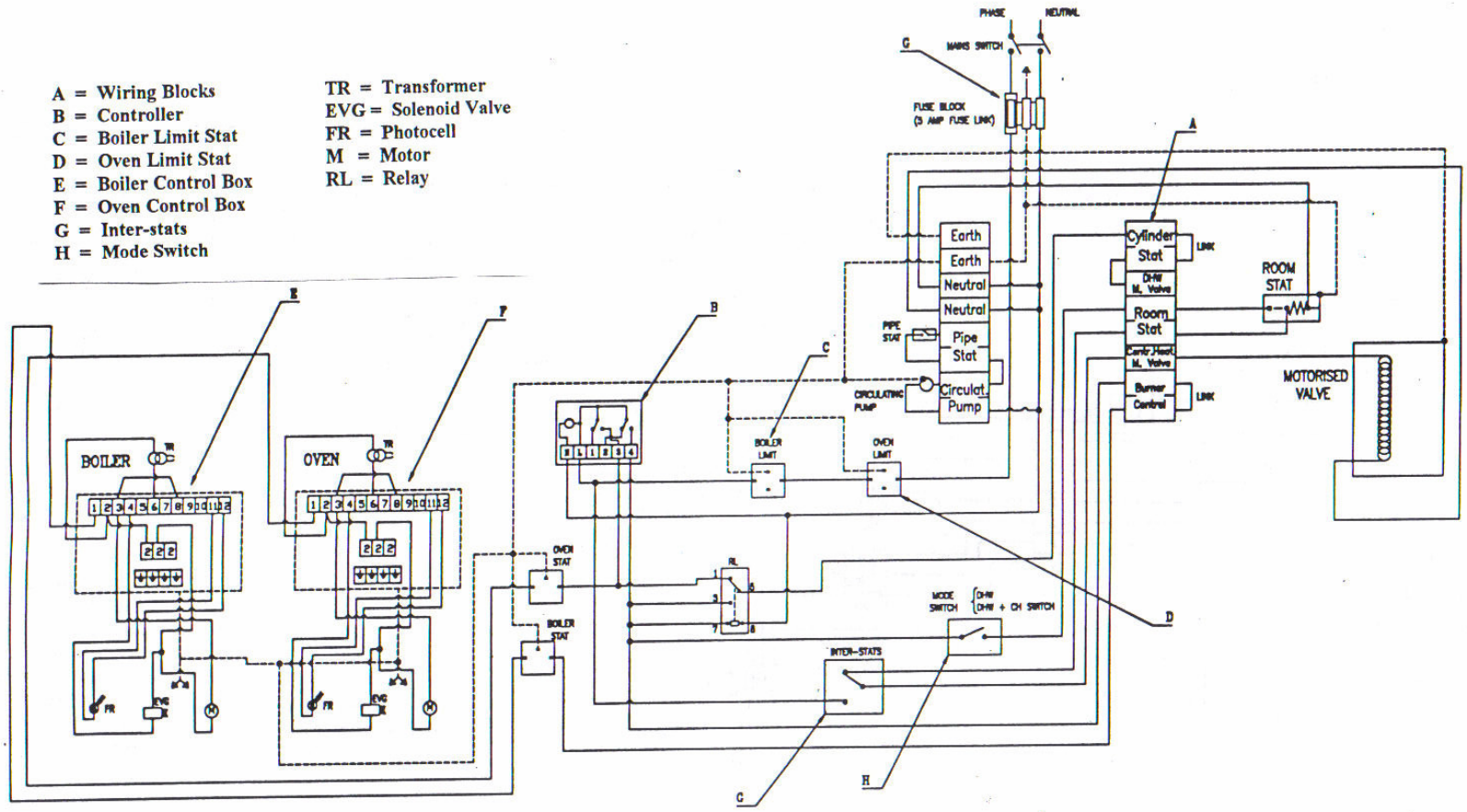

Wiring diagram for connection to Heating System using motorised valve.

100K WIRING DIAGRAM

Fig 22

A = Wiring Blocks
B = Controller
C = Boiler Limit Stat
D = Oven Limit Stat
E = Boiler Control Box
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G = Inter-stats
H = Mode Switch

TR = Transformer
EVG = Solenoid Valve
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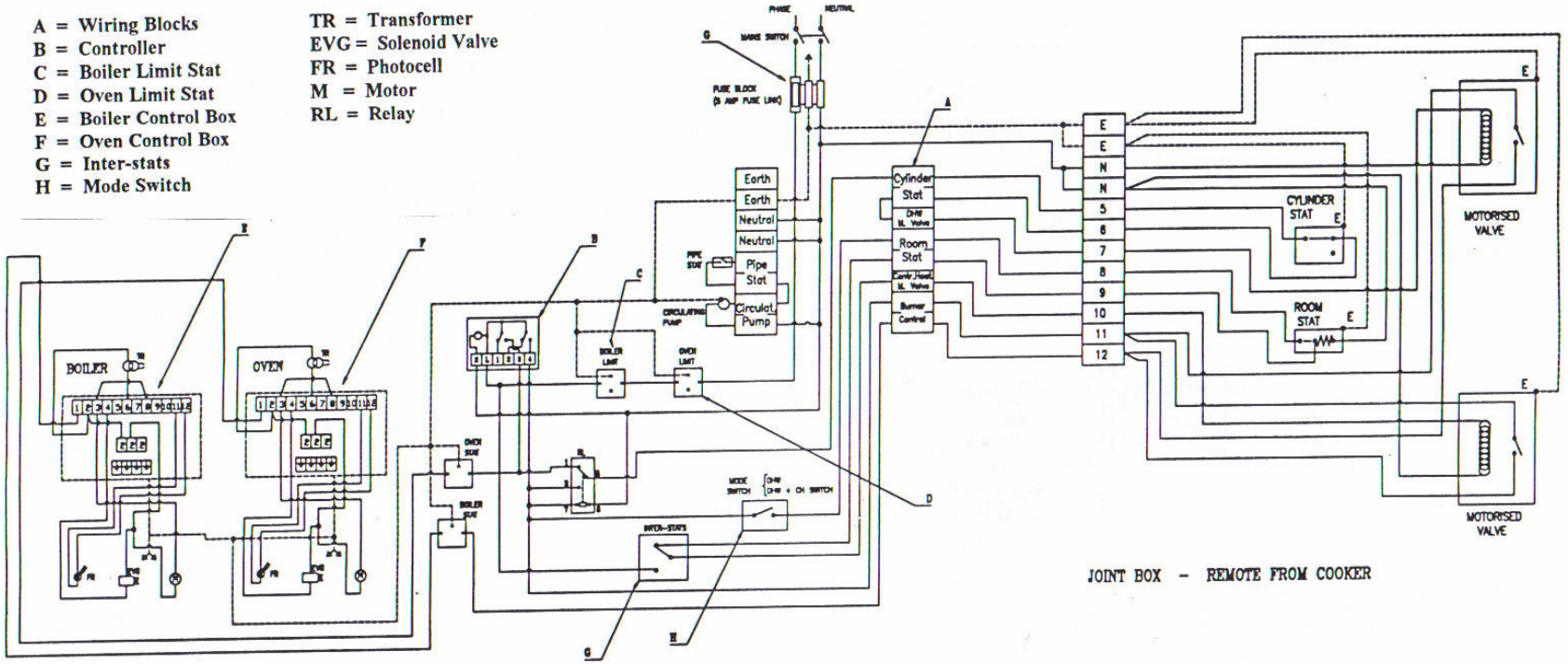


JOINT BOX - REMOTE FROM COOKER

S Plan Wiring diagram

100K WIRING DIAGRAM

FUEL INSTALLATION

OIL STORAGE TANKS
Mild steel tanks should be to B.S. 799: Part 5 Specification for oil storage tanks and plastic tanks to OFTEC standard OFS T100.

FUELS
THE RECOMMENDED FUEL IS KEROSENE 28 SECOND VISCOSITY FUEL OIL. TO BS 2869 PART 2 CLASS C2.

FUEL SUPPLY LINE
The oil supply line from the oil storage tank to the appliance should be of an approved and suitable pipe with a minimum internal diameter of 9mm (3/8") using 6mm (1/4") diameter flexible pipe supplied as the final connection to the pump.

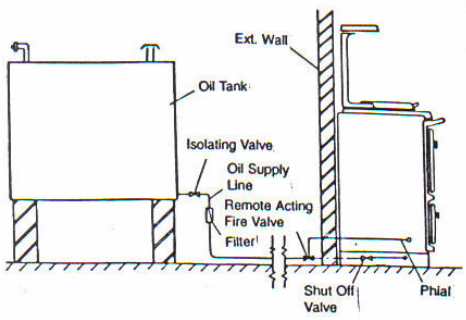
At the point where the oil line enters the building, the line must be fitted with an approved remote acting fire valve, which meets the requirements of B.S. 5410: Part 1, fitted with the appropriate length of capillary. The heat censoring phial of the fire valve must be fitted to the clips provided in the burner compartment.

It is absolutely essential that the fire valve is isolated externally and is as close as possible to the cooker location. A 5 - 10 micron oil filter and stop valve must be fitted to the fuel feed line and located near the supply tank.

The above requirements are in accordance with the following:
B.S. 5410: Part 1: Code of practice for Oil Firing Installations up to 44 kW output capacity for space heating and hot water supply purposes.
OFTEC Technical Information Book Three: Installation requirements for oil fired boilers and oil storage tanks.
OFTEC OFS A101: Oil fired cookers with atomising or vaporising burners with or without boilers that outputs up to 45 kW.

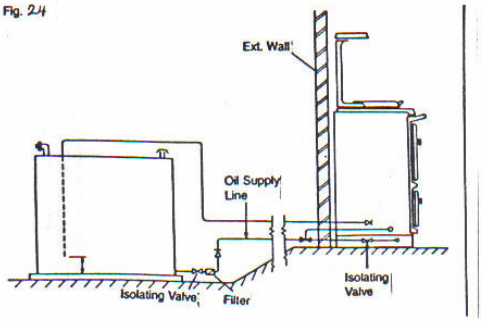
When gravity feed is used (the most common) the minimum head should not be below 1 meter (3' 3") and the maximum head should not exceed 6.5 meter (21' 3").
Note: The pump is factory set for a single pipe installation.

Fig. 23



SINGLE PIPE SYSTEM:
BOTTOM OF OIL STORAGE TANK ABOVE BURNER. (See fig. 23).
Single pipe supply system: Tanks servicing this appliance by means of a single pipe need to be positioned so that they will apply the minimum head required (1 meter) of oil to the burner when the fuel level is at its lowest point. In these cases it is necessary to locate the tank so that its base is higher than the burner by the amount required by 300mm.

Fig. 24



TWO PIPE SYSTEM:
BOTTOM OF OIL STORAGE TANK BELOW OR LEVEL WITH BURNER.

Fig. 25

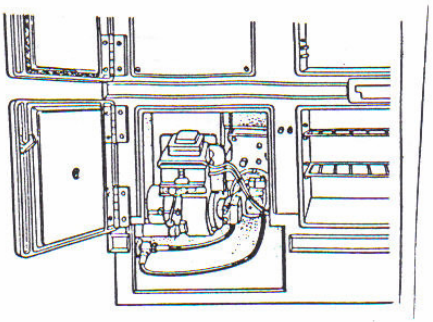
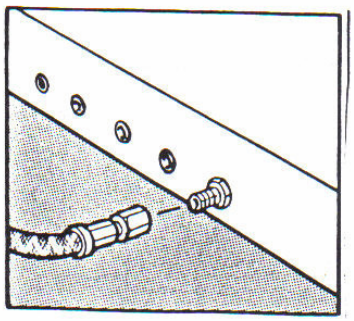


Fig. 26

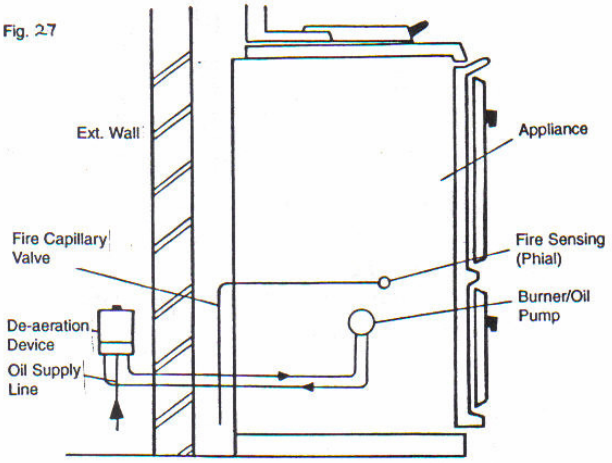


Before connecting the oil supply, secure cooker burners oil pipes to the base using the gland on the tee junction.

Two pipe supply systems:

If the tank base is below the level at which the gravity feed to the burner can be maintained and a burner incorporating an oil pump is used, a two pipe oil supply system may be adopted. The fitting and layout are shown above. The non-return valve in the supply line of the two pipe system is required to prevent oil running back from the burner and unpriming the oil pump. The non-return valve in the return line is only required if the top of the tank is above the burner. It's purpose is to prevent oil running back through the burner during maintenance.

Fig. 27



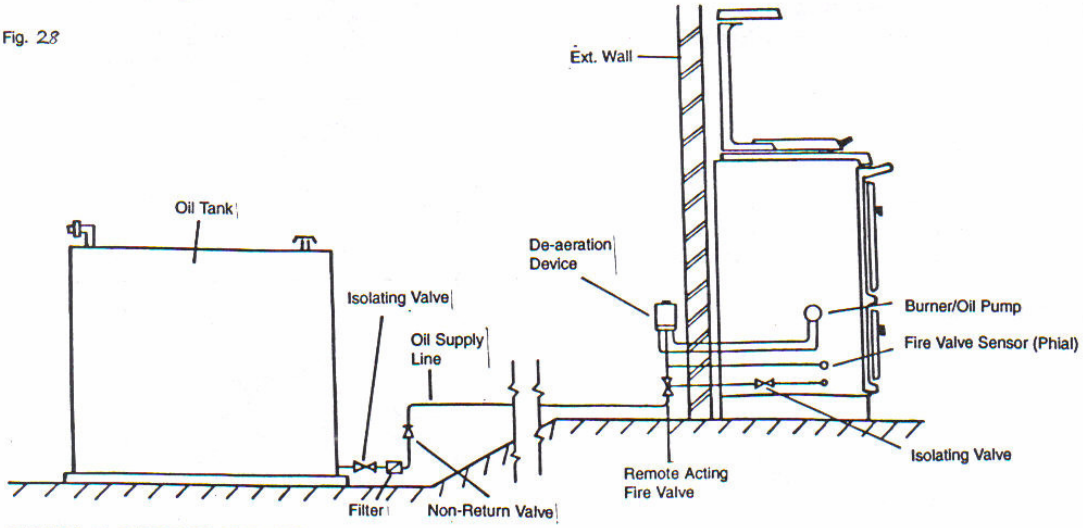
Single pipe supply system with de-aeration chamber:

This system can be used where the tank base is below the level at which gravity feed to the burner can be maintained and the oil pump. The chamber is fitted close to the burner and is linked to the tank by a single pipe, thus saving the return pipe required by the two pipe system as described above. Any air in the oil brought up from the tank is bled off in the de-aeration chamber.

De-aeration chambers must always be installed externally to buildings because they emit small quantities of vapour. The chamber is connected to the oil pump in the burner of the appliance by a normal two pipe loop.

DETAIL OF DE-AERATION DEVICE CONNECTORS

Fig. 28



SINGLE PIPE SYSTEM:

WITH DE-AERATION DEVICE BOTTOM OF OIL STORAGE TANK BELOW OR LEVEL WITH BURNER.

COMMISSIONING CHECKS

1. Check all items from packaging are removed from ovens and the shelves are properly positioned.

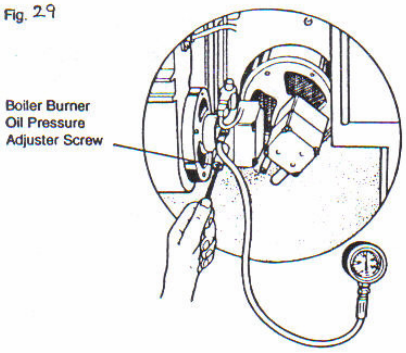
2. Check that the boiler and system is full of water and purged of air.

3. Check that all valves in the oil line are open and that the filter is purged of air.

4. Turn on the electrical supply and check that any time switches are on and room thermostats associated with the cooker are on and calling for heat. Burners should now fire.

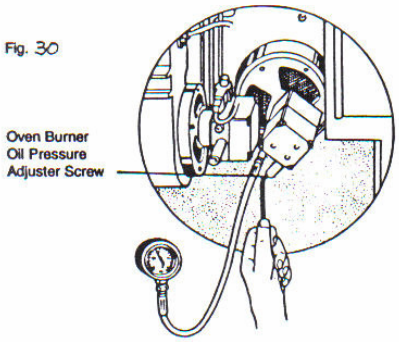
5. Check lockout (8 seconds). Ensure both pumps are purged of air. Check pump pressure and adjust if necessary. (see fig 29)

Fig. 29



Boiler Pressure Settings

Fig. 30



Cooker Pressure Settings

6. Check oven and boiler thermostats for correct operation.

7. Check oil line filter and fire valve.

8. Check that pipe stat is fitted and set at 50°C.

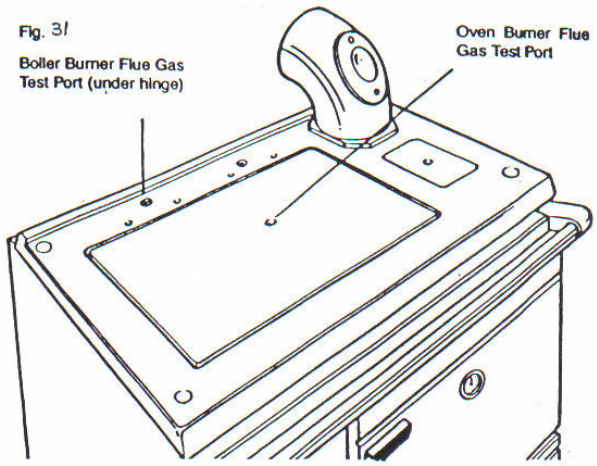
9. Check operation of pipe stat.

10. Check temperature differential between flow and return 11°C (52°F) and adjust pump or by-pass accordingly.

11. Check heating circuit and balance if necessary.

12. After the appliance has achieved its operating temperature a flue gas analysis and a check for smoke should be carried out. Undertake flue draught reading. Check for leaks.

Fig. 31



13. Check and set combustion: approximate settings;

Boiler		Cooker	
Air Setting	CO2 %	Air Setting	CO2 %
9	11.5	5	10
8	11.8	4	10.34
7	11.9	3	10.8
6	12.2	2	11.2
5	12.5	1	11.5

Fig 32

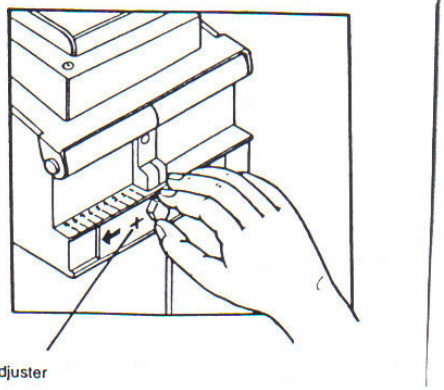
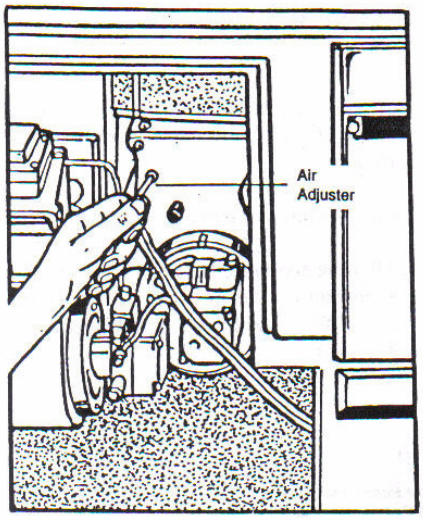


Fig. 33



14. Check the correct position of the air shutter, which gives the highest reading of CO_2 without exceeding a smoke of No 0 - 1 (Bacharach Scale).
15. Check the oil supply for leaks from storage tank via oil filter. Although the pump pressure is factory set, it must be checked and adjusted if necessary. This must only be done in conjunction with an oil pressure gauge.
16. Check if complete system is working correctly.
17. Ensure correct air supply for ventilation and combustion. Refer to page 6.
18. Instruct the user on cooker operation.

FUNCTION

Normal Start
Pre-ignition and pre-purging, or pre-ignition alone: 7 seconds oil released, and the burner operates, if the flame forms within the safety time of: 10 seconds.

Post ignition after oil release:
LOA 21 - 10 seconds.

False light at start
If oil is released and no flame is established the control will cut out withing the safety time of: 10 seconds.

Flame failure in operation
In the event of flame failure in operation the oil supply is cut off and the control restarts the burner as described under the heading "Normal Start". On flame failure, immediately after burner start, the control will initiate re-ignition.

Flame monitoring
The flame is monitored by photocell unit. Note: In accordance with the latest ISO and DIN standards, type LOA activates the safety relay if the photocell unit is exposed to light inthe pre-purging period.

Control of flame signal
The photocell current is measured with a d.c. ammeter (moving coil instrument) which is connected in series with the photocell unit (fig.). Min current for flame indication: 35 uA.

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