SOVEREIGN SELECT SOLID FUEL MODEL

INSTALLATION INSTRUCTIONS

THE AUTHENTIC ORIGINAL SINCE 1854

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GENERAL

The installation of the cooker: the chimney, hearth and walls adjacent to the cooker must conform with local or national regulations currently in force. In the United Kingdom, the appropriate sections of the Building Regulations must be conformed to.

The cooker is supplied for use with smokeless fuels or wood (See **Operating Instructions** – Notes on woodburning).

Important: For the cooker to function correctly, a steady chimney draught of 0.05"w.g. to 0.10"w.g. is required. The draught should be assessed with a reliable manometer when the cooker is operating with an oven temperature of approximately 400°F. A draught towards the higher limit is preferred.

A chimney draught lower than 0.05" will result in incorrect combustion with soot formation.

Where the draught exceeds 0.10", or is fluctuating, a stabiliser must be fitted.

Downdraught cannot be tolerated and arrangements must be made to over-come this condition where it occurs.

VENTILATION

A supply of fresh air is necessary for correct combustion and ventilation arrangements should be sufficient to supply this air together with air to allow an adequate number of air changes per hour in the room in which the cooker is installed. If the construction of the room is such that adventitious air is not available, then ventilation bricks, grids, etc., should be provided.

It should be noted that the cooker will emit a certain amount of convected heat and ventilation arrangements should allow for this.

Where an extract fan is provided to vent the room of cooking smells, steam, etc., arrangements must be made to avoid any possibility of reversing the flow in the chimney. Arrangements for ventilation must always comply with any local by-laws or Code of Practice relevant to the installation.

(See also under **Chimney and Flues**. Page 4)

CHIMNEY

A conventional chimney should not be less than 6" internal diameter. A continuous flexible metallic liner, suitable for solid fuels may be used to line an existing chimney.

It must be free from horizontal runs which may encourage gathering of solid or liquid combustion products like fly ash or creosote. Where wood is the predominant fuel the chimney must be constructed to cope with the special requirements for wood fuel.

A proprietary, prefabricated chimney should conform to BS.4343, the appropriate Building Regulations and ideally, be approved by the Agreement Board.

In all cases the chimney should conform to relevant Building Regulations.

The following General Points should be noted:–

1. The fabric of the chimney must be sound and the internal surface smooth and free from obstructions. Any air leaks and bad joints must be rectified.
2. The chimney should be capped to prevent ingress of rain.
3. The chimney must serve the cooker alone and not be shared with any other appliance.

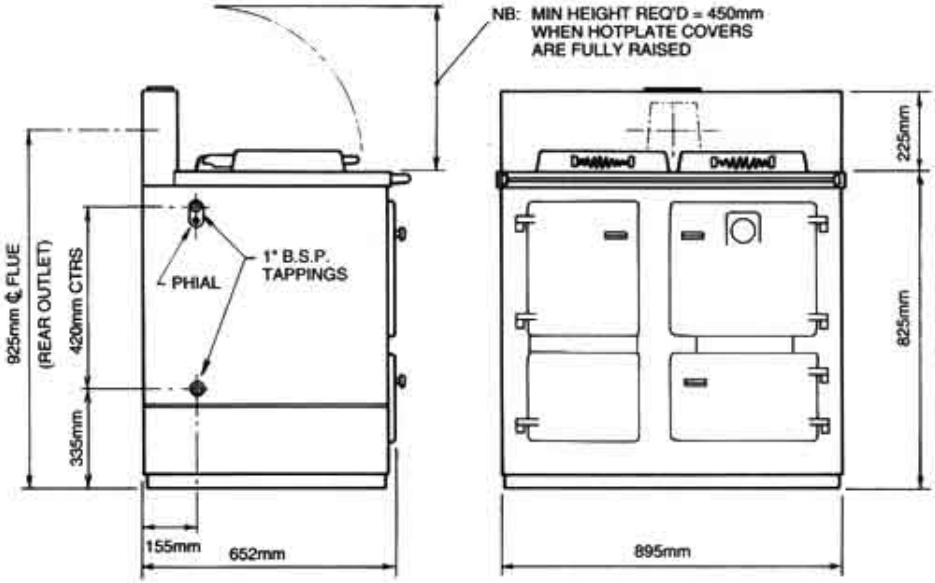


Fig. 1

The Company Policy is one of continual development. Sizes are approximate and variation may occur during manufacture.

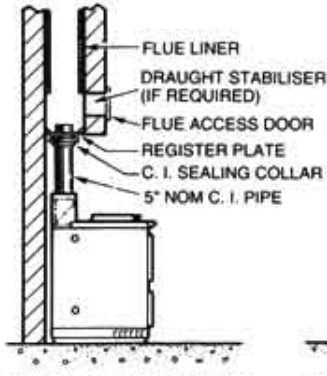


Fig. 2 – RECESS WITH FLUE CAVITY

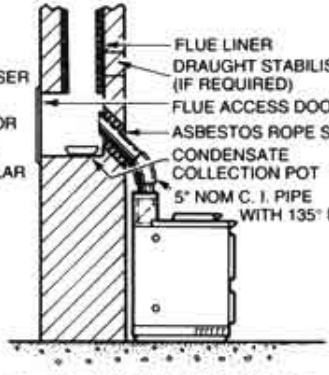


Fig. 3 – PLAIN WALL USING TOP CONNECTION

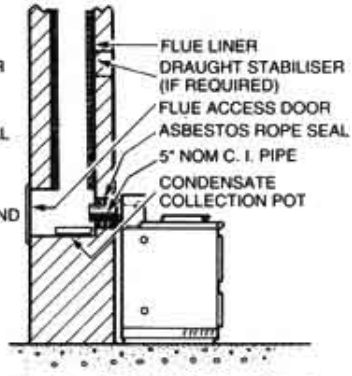


Fig. 4 – PLAIN WALL USING REAR CONNECTION

4. External flues of asbestos or cast iron pipe must not be used. Excessive exposure will result in heat loss and poor performance.
5. The chimney should include means of sweeping.

FLUE

The flue outlet is set for top connection and is suitable for a 5" cast iron smoke pipe to B.S. 41. For rear connection simply reverse the top half of the flue outlet (2 screws).

(See also under **Chimney and Flues**, Page 4)

HEARTH

The cooker weighs 250 Kg. approx. The hearth must be solid, level, of incombustible material and constructed in accordance with any Building Regulations which apply to the particular site.

HOT WATER SYSTEM

1. Maximum output without regard to maximum oven temperature is 70,000 Btu/h. Output with an oven temperature at 450°F is 55,000 to 65,000 Btu/h.

   Minimum output "summer running" is 15,000 Btu/h with oven at 450°F.

   The system must be designed to cope with loads between the maximum and minimum figures. When the central heating load is turned off there must be sufficient gravity load to absorb at least 15,000 Btu/h for periods when the oven is being used for cooking; e.g. domestic hot water plus gravity operated radiator.

2. An indirect storage cylinder is essential for domestic hot water supply, irrespective of whether the water supply is hard or soft.

   Minimum capacity – 40 gallons.

3. The boiler tappings are 1" BSP and cookers are supplied for left-hand connection.
4. The central heating circuit may be gravity circulation, but a pumped system is preferred. To allow heat from the boiler to be absorbed there should be a pump stoppage on an accelerated circuit, the primary domestic supply must be gravity operated.
5. Installation as a central heating system alone; i.e. without a domestic supply; is not recommended as the boiler will produce heat when the cooker is in use, irrespective of central heating demand and primary absorption must be provided.
6. Whichever system is chosen the layout must follow established heating engineering practice. To avoid trapping air in the boiler a 1" BSP connection must be used on the flow tapping, any reduction in pipe size thereafter being made on vertical rising pipe. The cooker must be level when fitted and the flow pipe must rise from the boiler. A drain cock must be fitted on the lowest point of the return pipe and a vent to atmosphere at the highest point of each circuit.
7. The cylinder and pipework should be lagged to avoid heat losses.
8. The static head must not exceed 60 feet of water.

SPACE REQUIREMENTS

When the rear or side walls are of combustible material, space between wall and cooker should conform to regulations.

Note: Allow at least 150mm clear space between the left hand end of the cooker and any adjacent unit or wall to enable the lower left hand end panel to be removed for maintenance. An extension top, to form a continuous working surface, or a removable infill panel can be fitted provided the space formed is freely ventilated. The air inlets in the lower left hand end must not be obstructed in any way.

BUILDING IN THE COOKER

PROCEDURE FOR ASSEMBLY

Unpack the cooker completely and check for any damage. Lift off the three doors and store carefully to avoid damage.

Remove loose components from ovens, towel rail, etc.

Remove three part hotplate with lifting tool provided.

(See **Operating Instructions** Page 7)

CAUTION – The hotplates are heavy and if dropped on the hob will cause damage to the enamel. Cover the hob with paper or cardboard and lower the hotplate covers to their closed position.

Remove the splashplate by unscrewing the two knurled screws.

Check the flue box is correctly assembled dependent on choice of top or rear outlet. Position the flue box assembly over the flue outlet and seal all round with a fillet of cement.

For rear flue connection an infill casting is provided to seal the space between the platerack castings. For top outlets this infill is discarded.

Note: Carefully clean off all excess cement. Any restriction to the flue will create serious problems or at least cause the cooker to function inefficiently.

Three schematic diagrams of installation methods are shown in figures 2, 3 and 4, but modifications may be made to suit site requirements. In all cases, however, the important principle that no air must enter the chimney except through the inlets provided on the cooker, must be adhered to.

Move the cooker into position, connect to water. Remove the three firebricks. Check the cooker is level.

Connect the flue pipe with good quality fire cement make sure of an air tight seal between the flue box and flue pipe and flue. Any soot door, register plate etc must also be sealed to form an air tight joint.

Where a draught stabiliser is fitted then this must be in the same room as the cooker.

Check direct damper slides in and out freely.

(See **Operating Instructions**).

Replace the hotplates and check they are correctly positioned and level.

Should hotplates rock slightly, this must be corrected by bedding into the soft seal with a wooden mallet.

Remove anti-rust compound from hotplate top surface with clean rag and white spirits.

Check the two end hotplates lock in the 'open' position.

Remove the plastic covering from the underside of the hotplate covers.

Replace firebricks, L.H. side brick first making sure the brick locating casting is at the right hand side, then the rear brick and finally the front brick.
(See **Operating Instructions**).

Check bottom grate is correctly located and the ashpan is in place.

Check thermostat knob rotates freely.

Fit towel rail as follows: Attach one towel rail bracket to the hob using one screw, leaving the bracket just slack; the graphited gasket goes between bracket and hob. Repeat for right-hand bracket. Slip towel rail over square projections and tighten the fixing screws from the back of the hob using a ¼" BSW spanner.

Replace the three doors, the shelves and roasting tin, and the hotplate lifting tool.

TESTING

After installation, kindle a fire and allow the cooker to heat up gradually.

(See **Operating Instructions**).

CHIMNEYS AND FLUES

DEFINITIONS

Flue: A passage for carrying the products of combustion from an appliance to the external air.

Chimney: Includes any part of the structure of a building forming any part of a flue, other than a flue pipe.

Flue Pipe: A pipe forming a flue, does not include a pipe built as a lining into a chimney.

FUNCTION

The function of a chimney and flue pipe is two-fold:

a) To carry away the products of combustion.

b) To assist in the supply of combustion air to the burner.

Draught: Draught is necessary for both these functions. The hot combustion gases in the chimney are less dense and lighter than the colder air outside and draught is created by this colder air pushing the lighter flue gases upwards.

Draught is expressed as a difference in the pressure of the hot flue gases and that of the colder surrounding air. The difference is very small and is measured for practical purposes, as fractions of an inch or mm water gauge.

Ventilation: Providing adequate air for combustion and ventilation of the appliance is very important for safe and efficient operation. If the flow of air for combustion is inadequate then the flue system will fail and hazardous conditions may arise.

When replacement windows and doors have been installed as refurbishment work in a building, ventilation to a room is very much reduced. It is therefore essential to provide the correct amount of free air to appliances.

Other points worth noting are that it is not permitted to fit 'Fly Screens' over vents or airbricks due to the possibility of the screen clogging up and reducing the air flow, nor is it permissible to use a 'Hit and Miss' vent that can be closed down stopping free air supply. If an 'Extractor' fan is fitted in the same room as the appliance extra ventilation may be needed and this also applies to powerful 'Tumble dryers' and Cooker hoods.

FACTORS AFFECTING CHIMNEY AND FLUE PERFORMANCE

Several factors contribute towards the satisfactory, or unsatisfactory performance of a chimney and flue. Although these are discussed individually here they should, in practice, be regarded as interrelated and interacting.

Temperature Differential: The hotter the flue gases in the chimney the greater the pressure differential and therefore the greater the draught.

Height: The height of the chimney has an influence on draught; the higher the

chimney the greater the pressure differential and the greater the potential draught. Any interference with the free exit of the flue gases at the chimney top will affect the draught available to the burner. If the chimney is terminated at eaves level or less than three feet above a roof surface, it is probable that the exit of flue gases will encounter opposition from the effects of wind (see Fig 5). This is most likely to occur with pitched roof construction, although turbulence may also be troublesome with flat roofs. Houses may be built in positions where external wind effects can produce excessive chimney draught and cause the burner to operate incorrectly. A serious pressure difference between windward and leeward sides of an exposed house can increase, or even reverse, the gas flow in the chimney. The outlet of any flue in a chimney or flue pipe should always be situated so that the top of the chimney or flue pipe is not less than 1m (3ft) above the highest point of contact between the chimney or flue pipe and the roof, except where the roof has a pitch on both sides of the ridge of not less than 10 degrees with the horizontal and the chimney or flue pipe passes through the roof at the ridge or within 600mm (2ft) of it, the top of the chimney or flue pipe may be less than 1m (3ft), but not less than 600mm (2ft) above the ridge. The top of the chimney or flue pipe should not be less than 1m (3ft) above the top of an openable window or skylight in the roof or external wall and which is not more than 2-3m (7ft 6in), measured horizontally, from the top of the chimney or flue pipe. The drawings in Fig. 6 illustrate these points which are in accordance with the Building Regulations. Adjacent buildings or trees higher than the chimney can deflect wind currents and create pressure zones which have an adverse effect on the exit of flue gases (see Fig. 7). In bad cases this is almost impossible to correct and, although a cowl may be successful in countering downdraught, fumes may still be carried down to ground level.

To provide an acceptable draught value for a natural draught burner, for example, it is necessary for the chimney to have a minimum height of 4.8m (16ft). Excessive draught conditions can be controlled by a draught stabiliser. A draught stabiliser consists of a hinged and weighted flap covering an opening in the flue. The weight can be adjusted so that the effect of the stabiliser will suit individual burner operating conditions, and the flap will thereafter function automatically, swinging open when the draught exceeds requirements and allowing air to by-pass the burner and be drawn directly into the flue. The stabiliser should always be fitted as close as possible to the flue outlet from the appliance and always in the same room.

IMPORTANT NOTE!

The information given in the section "General Notes on Chimneys and Flues" is for general information only.

Details shown in the main text are definitive and override any conflicting information in this section.

e.g. Chimney diameter must not be less than 150mm (6").

Construction: A chimney or flue enclosed within the structure of a building, or having only one or two walls exposed, usually has tolerable heat losses, and to some extent these help to warm the building.

Heat can be lost by conduction if the chimney or flue pipe material possess low insulated properties, and an unlined brick chimney with three or four external walls will lose heat rapidly, and thus reduce the draught potential of the chimney. Where the use of an external chimney or flue pipe is unavoidable, it will be necessary to install a lining to conserve the heat in the flue gases.

Heat can also be lost by convection in an existing flue where the cross-sectional

area is too large for the requirements of the appliance. In consequence, the flue gases will be exposed to excessive cooling on contact with the flue surfaces. This can introduce recirculation of the flue gases within the flue to detriment of draught. Considerable reductions in convection and conduction heat losses can be obtained by reducing the flue to minimum acceptable diameter.

The combined heat losses by conduction and convection can be sufficient in most cases to chill the flue gases to the point at which condensation can occur in internal flue surfaces. This condition will affect the chimney performance and accelerate the break-down of pargeting and mortar joints and in such cases the chimney should be lined.

The cure for condensation is the installation of a suitable lining to conserve heat, whilst at the same time improving the draught available.

The fabric of the chimney should be sound and the internal surface of both flues and chimney should be smooth and free from obstructions. The internal condition of the flue, such as rough surfaces, broken brickwork and pargeting, as well as dislodged materials and soot falls, can cause abnormal resistance to the flow of the flue gases. Abrupt changes in shape or cross sectional area or too small a cross sectional area or a large number of bends can also offer high resistance to gas flow.

Pointing and pargeting should be made good with cement mortar. In bad cases, where access is difficult, the fitting of a suitable liner is recommended. Where there is evidence of bird nesting the obstruction should be removed and a bird-proof terminal fitted.

All abrupt changes in section should be bridged with suitable flue pipe of offtake diameter which conforms to the general size of the flueway. Where a void exists above a register plate the flue pipe (offtake diameter) should be continued up and sealed at the gathering. Where a 229mm (9in) square flue opens out into one of larger diameter the flue should be continued by inserting a lining. Where there are bends and horizontal runs, the flue structure should be examined for the possibility of re-routing the flue in new brickwork or, preferably prefabricated chimney material.

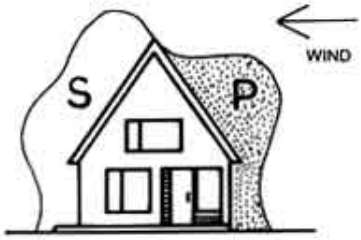
Air can enter through badly fitting soot doors and flue pipe connections, porous brickwork and damaged pointing. All accessible air leaks in brickwork, pointing and pargeting should therefore be sealed with cement mortar. Flue pipe joints should be carefully remade, using suitable jointing material. In old structures, where linings and brickwork are generally leaky, but mechanically sound, air entry may be prevented by installing a suitable lining.

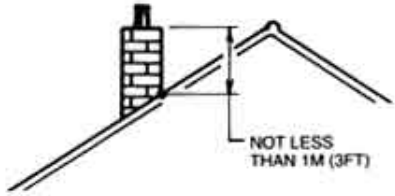
PREFABRICATED CHIMNEYS

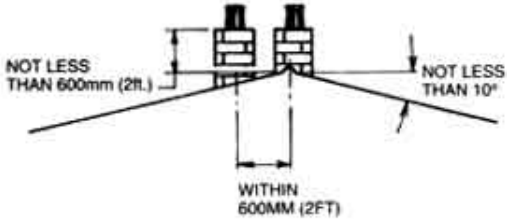
There are many proprietary, prefabricated chimneys available as a substitute for a conventional chimney, but it is necessary to ensure that both the design and the materials conform to the appropriate building regulations. Ideally, the selected chimney should have been approved by the Agreement Board.

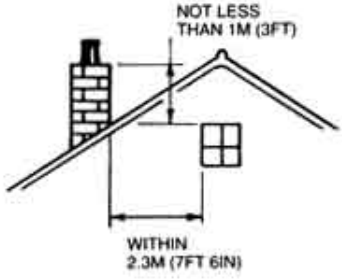
CHIMNEY LININGS

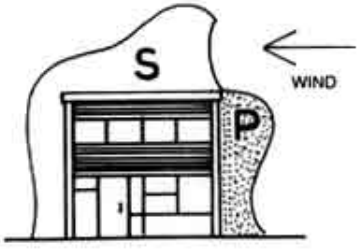
Material to be used for lining chimneys should possess low permeability to combustion gases to condensate and they must be chemically inert to acids. Suitable forms of clayware and stainless steel flexible material may be used.











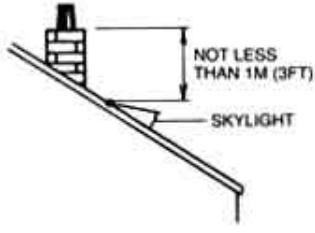


Fig. 5 – PRESSURE AND SUCTION ZONES CREATED BY WIND FLOW

Fig. 6 – THE POSITION OF CHIMNEY OUTLETS

Fig. 7 – THE EFFECT OF ADJACENT BUILDINGS, HILLS AND TREES ON THE EXIT OF FLUE GASES