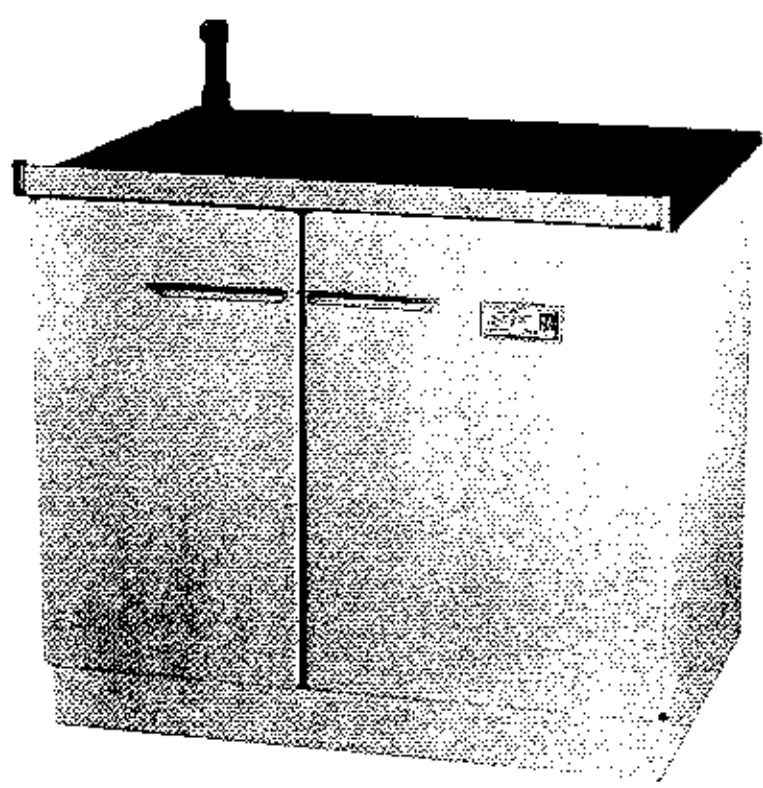


FOR THE
PROFESSIONAL INSTALLER ONLY

FOR WOOD AND COAL AS WELL
AS ALL OTHER SOLID FUELS

3703 3705 3707



**TECHNICAL
MANUAL**

MODELS		3703	3705	3707
OUTPUT WOOD	BTU	38000	55000	75000
OUTPUT COAL	BTU	50000	70000	94000

 **FONDERIES
FRANCO BELGES**

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TECHNICAL DETAILS

	3703		3705		3707	
Output coal BTU/r	50,000		70,000		94,000	
Output wood BTU/r	38,000		56,000		75,000	
Dimensions	ins.	mm	ins.	mm	ins.	mm
Width	31,5	800	35,5	900	39,5	1000
Depth	25	630	29,5	750	32	810
Height	31,5	800	31,5	800	31,5	800
Firebox						
Width	10	250	14	350	16,5	425
Depth	10	250	12,5	320	14	350
Height	17	430	17	430	17	430
Oven						
Width	14	360	14	360	14	360
Depth	15,5	390	19	485	21,5	550
Height	9,5	245	9,5	245	9,5	245
Diameter of Chimney Outlet	5,5	139	6	153	6	153
Average draught in the chimney	0,06 à 0,08		0,06 à 0,08		0,06 à 0,08	
Distance from Floor to Centre of Rear Chimney Outlet	25	635	25	635	25	635
Capacity of Water Jacket	4,5 gals/20 l		5,5 gals/25 l		6,5 gals/30 l	
Weight Packed	440 lbs/200 kgs		550 lbs/250 kgs		750 lbs/340 kgs	

Dimensions in mm.

	A	B	C	D	E	F	G
3703	800	630	317,5	117,5	65	115	50
3705	900	740	370	70	125	120	135,5
3707	1000	810	427,5	52,5	130	136	153

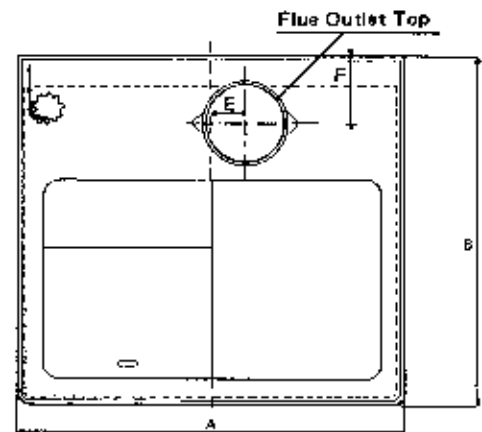
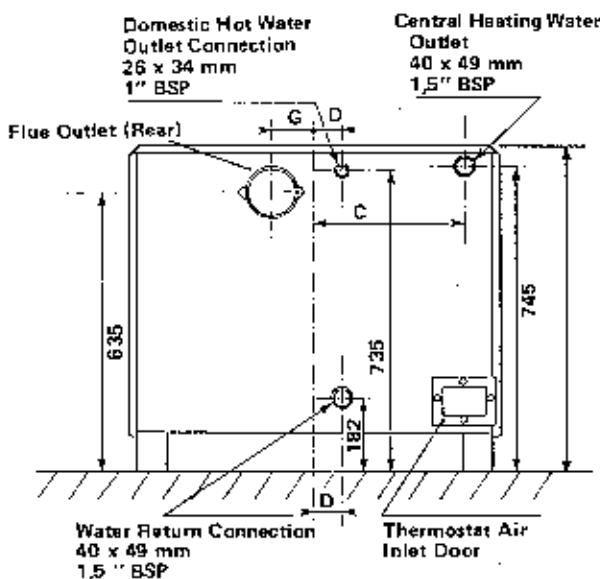


fig. 1

11 - General introduction

2 - 1 Description

Franco-Belge wood-burning central heating cookers provide central heating, domestic hot water and cooking from only one kitchen unit.

The fire box is designed to use all solid fuel : wood, coal, peat or smokeless fuels. Complete combustion of all fuels is ensured by secondary air inlets positioned at the top of the fire box which introduce extra air to burn off all volatile gases.

A highly sensitive thermostatic control automatically regulates the air inlet and thus the burning rate.

The cooker can be riddled by means of one or more movable grates controlled from the outside by a special handle. When burning wood, an additional «wood grate» is placed above the movable grate (see fig. 3).

The heat exchanger is made of special steel and provides a large surface area. This produces a highly efficient heating appliance.

The heat exchanger and the flue passages can all be easily cleaned through special access covers.

Because of it's original design, the Franco-Belge central heating cooker meets the requirements of both a cooker and a central heating boiler. Its high efficiency makes it an especially economical appliance.

2 - 2 Operating Principles

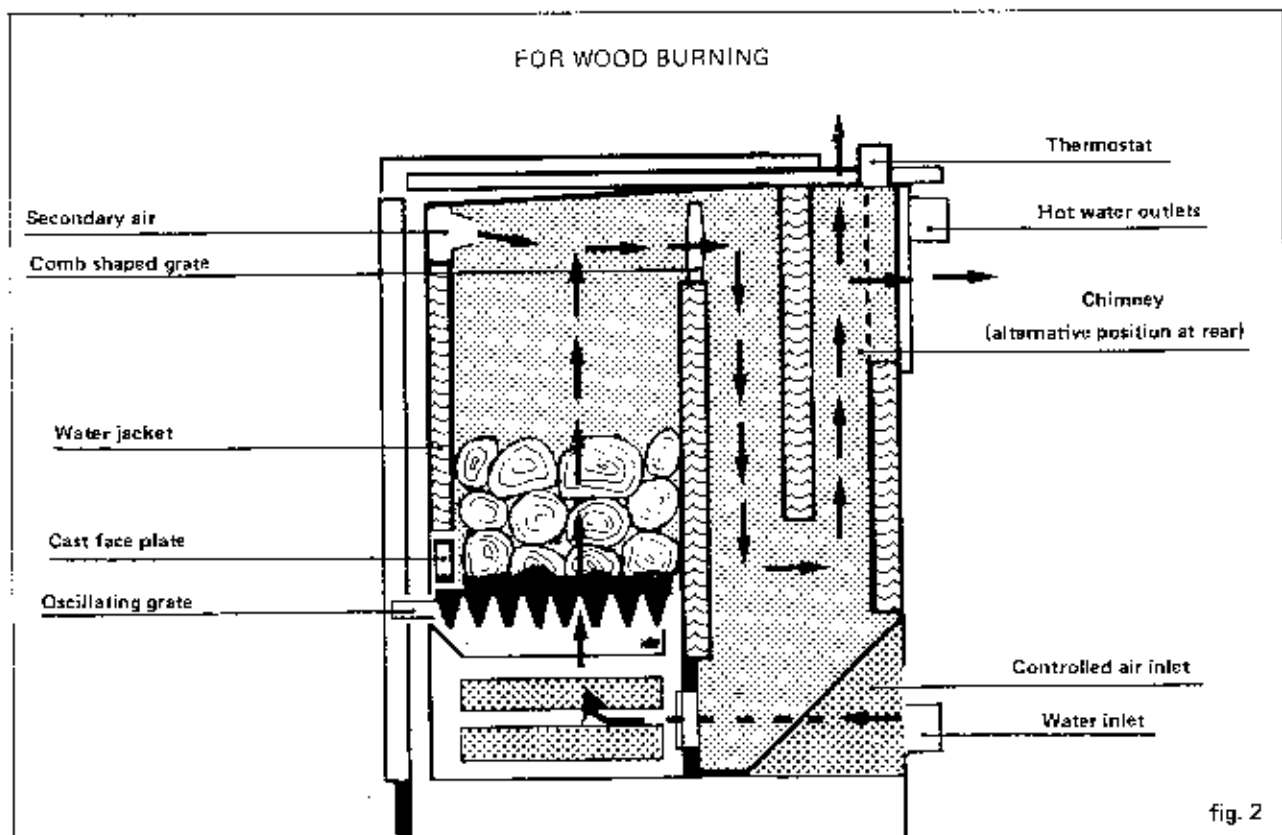
The thermostat regulates the burning rate and seeks to maintain a constant predetermined central heating water temperature. If the water temperature falls, the thermostat opens an air inlet which boosts the fire. Similarly, as the water temperature rises, the inlet closes to damp down the fire to maintain a roughly constant water temperature.

The draft slide in the fire box door introduces additional air for lighting the fire, boosting the output after slow night burning and providing extra heat when using the oven and hot plates for cooking. Thus, it is possible to maintain the heat output into the central heating, as well as provide additional heat for cooking and baking.

There is a control lever which can be positioned on either HEATING or COOKING. In the HEATING position most of the heat is transmitted to the water, in the COOKING position some of the heat is deflected to the hot plate and oven.

When the appliance is on HEATING the heat is absorbed by the heat exchanger and transferred to the central heating circuit.

When the appliance is on COOKING and has been stoked up, the hot plates and oven quickly heat up, without greatly altering the temperature in the central heating circuit.



III Assembly and Installation

3 - 1 Positioning of cooker

The room in which the cooker is to be installed must satisfy all local regulations. These will stipulate an adequate fresh air inlet of at least 55 sq. ins. This must be installed in such a way, that in adverse wind conditions the air flow cannot be reversed as this may suck air out of the room in which the unit is installed.

The position of the cooker will be determined by the best position for the chimney, whilst ensuring that a safe distance is left between the cooker and combustible surfaces.

3 - 2 The Chimney and connection to chimney

The chimney must be in good condition and must satisfy all local heating regulations. It is vital that it is well insulated to ensure that the flue gases do not become so cold as to stop them rising. In extreme circumstances, there is a risk of gases escaping into the room if the flue temperature becomes very cold.

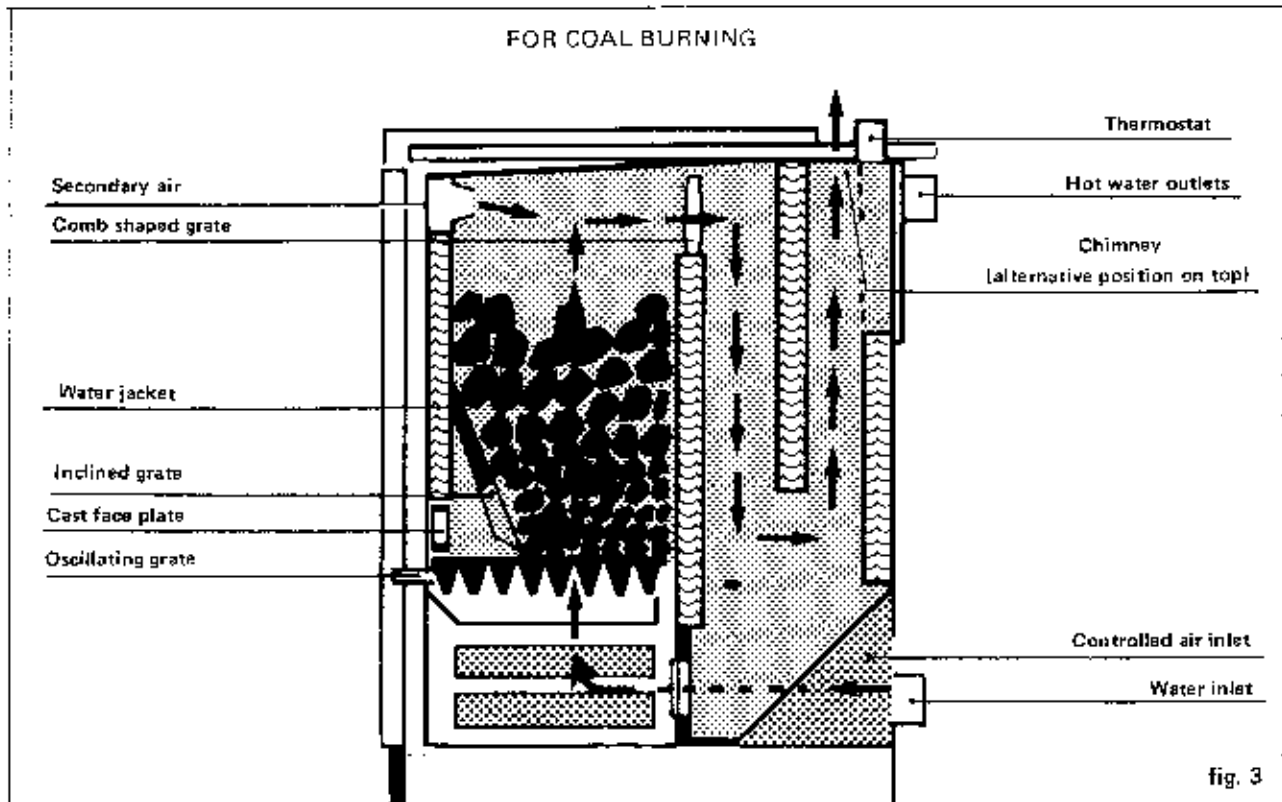
The flue can be fitted either vertically from the top or horizontally from the back. If the connection to the chimney is such that access is difficult, then a cleaning door should be provided to aid sweeping.

If the flue is connected to the back of the appliance, the cover plate which seals the top flue outlet position should be left unbolted. It can then easily be removed to clean the flue.

The efficient functioning of the flue is very important to ensure satisfactory performance of the unit. It should be at least 14 ft. high, must be air-tight and should not be shared with any other appliance. The optimum depression should be between 0.4 ins. and 0.7 ins. If this is not attained, the fire will either be sluggish and smoke when the top is opened, or burn too fiercely and not stay in overnight ; depending on which side of optimum the depression is. In any case the use of a flue draught regulator is advisable.

If there is no existing house chimney, a prefabricated twin walled, stainless steel insulated flue can be used. It is easy to install, is long lasting and provides excellent insulation to ensure a good draw and will minimize condensation and tar build up. The use of single wall stove pipe at any point is **NOT RECOMMENDED**. Attention must obviously be paid to the terminal point of the flue to guard against down draught.

When connecting into an existing masonry chimney, check that the chimney is sound and that there are no air leaks or blockages. If the chimney is very large at the bottom, continue the insulated pipe as far as possible up the chimney as. Connecting from the back of the Franco-Belge into an existing chimney is acceptable providing that the insulated pipe doesn't enter into a very large area which would tend to cause the flue gas to stall and greatly reduce the draw. In general a lined flue is best, but never use flexible liners or asbestos, as these will quickly block up when burning wood.



Nearly all apparent faults which have been reported on Franco-Belge units have been due to faulty chimneys. It is vital, and cannot be overstressed that a good stable draught is required for any device burning wood and solid fuel. The chimney must be so well insulated that it remains warm under all conditions and that it holds heat to give a stable draught.

The efficient working of the flue cannot be overstressed, and a little time and effort will be well rewarded by the ease of operation that comes with a really good chimney.

3 - 3 Connecting the Central Heating Circuit

In any installation relevant building codes and practices must be observed. The appliance is not designed as a pressure vessel, so the circuit must be left open to the atmosphere and must not be constructed to allow any pressure build-up to occur. A gravity circuit MUST be provided, as a fail safe heat loss in the event of a circulating pump failure or a power cut. To achieve this, ensure that large diameter pipes leading to upstairs radiators have a direct flow from the boiler, or install a big hot water tank with large diameter heat exchanging coil, situated above the cooker.

If the system is going to be left unattended during winter periods, anti freeze should be added. In the case of an installation coupled to an automatic boiler, this should not be necessary.

In order to avoid condensation which could damage the water jacket it is necessary to maintain the temperature of the return water at a constant minimum temperature of 104 °F .

This can be achieved by installing a four way mixing valve (see fig. 8) or a recycling circuit. In case of the use of a four way mixing valve allowing a setting due to the different requirements during the heating season it is important to install a four way mixing valve with a 50 per cent by pass or to install stops on the valve to avoid that the valve can be set in the two extreme positions that are full recycling or full flow to the radiators. The limitation of the setting of the valve should be 50 per cent of the flow.

3 - 4 Expansion Tank

An expansion tank open to the atmosphere must be provided to ensure that no pressure build-up can occur, and this should be connected to the highest point of the circuit.

3 - 5 Positioning of the Grates

The oscillating grate or grates must be positioned in the fittings provided at the base of the fire box, a socket at the back and a slot at the front. They must be placed the correct way up with the narrowest gaps at the top and the fire bars tapering toward the bottom. If the cooker is to be used mainly with wood, the grate provided should be laid on top of the oscillating grates.

The comb shaped grate must be placed between the two supports at the top forming the back face of the fire box.

The cast face plate should be positioned in the fire box by opening the fire box door and placing it in position from inside.

The inclined grate for use when burning mainly coal, should be positioned on the supports which form a «U» at the sides and bottom of the fire box. This grate should not be used when burning wood.

summer grate (wood)
ref. 402.92 for the 3703
ref. 404.92 for the 3705
ref. 406.92 for the 3707

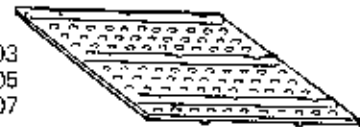


fig. 4

summer grate (coal)
ref. 402.94 for the 3703
ref. 404.94 for the 3705
ref. 406.94 for the 3707



fig. 5

summer hearth
ref. 702.168.9.0
for the cookers 3703

ref. 704.168.9.0
for the cookers 3705

ref. 706.168.9.0
for the cookers 3707

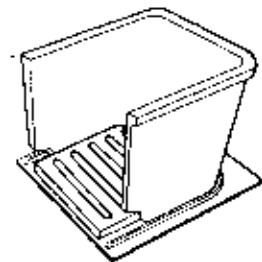


fig. 6

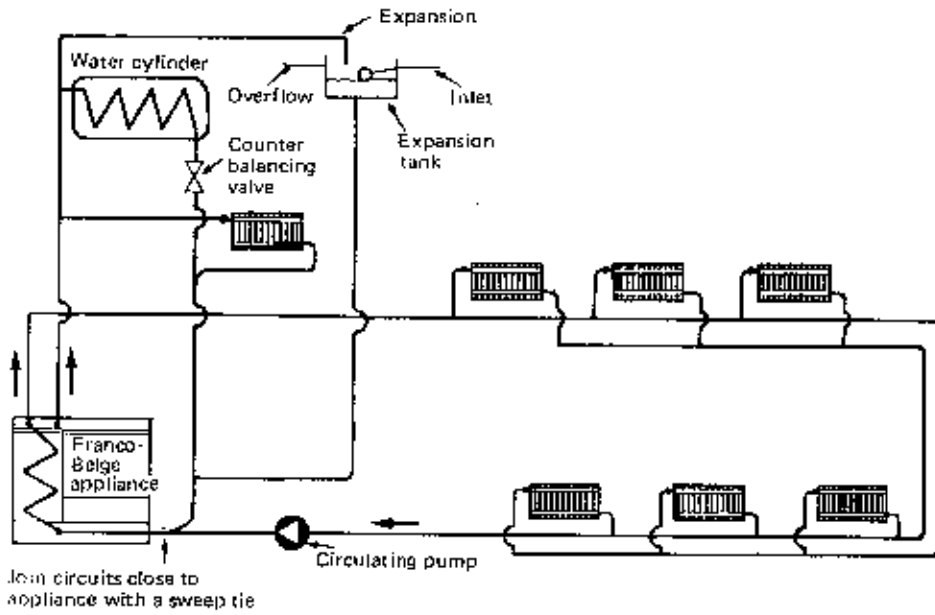


fig 7a
Example of installation : Gravity hot water tank, pumped central heating.

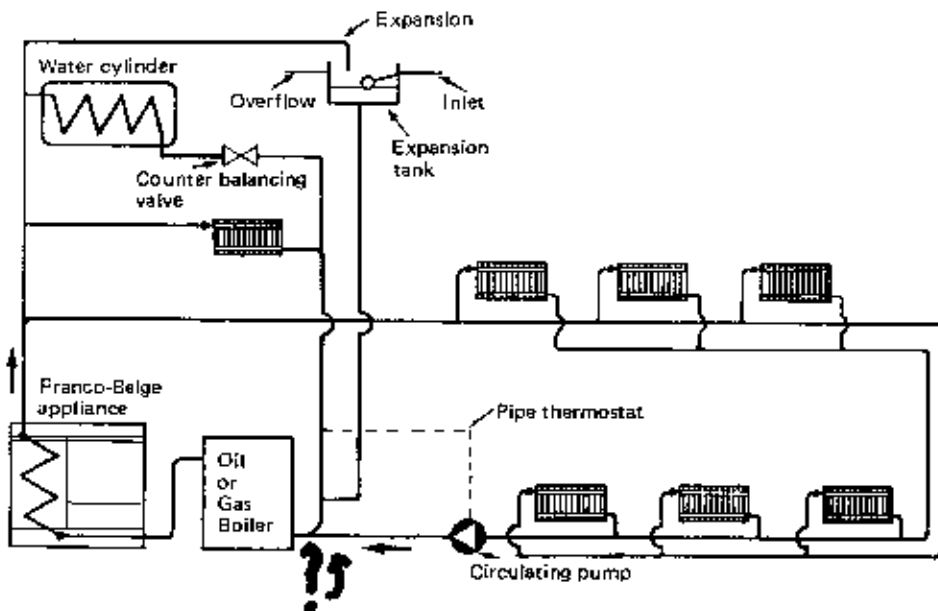


fig 7b
Example of installation : Gravity hot water tank, pumped central heating linked to existing oil or gas boiler. Pipe thermostat fitted onto return pipe from the tank.

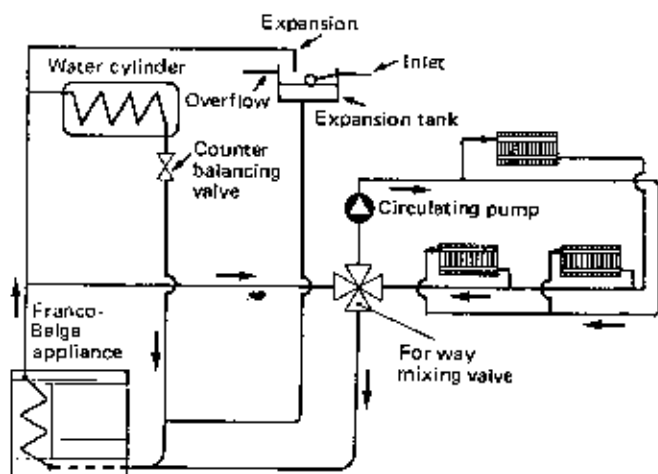


fig 8
Example of installation : Pumped central heating gravity hot water tank four way mixing valve.

3 - 6 Assembling and Installing the Thermostat

The thermostat is mounted into the threaded tapping in the left-hand back corner of the appliance. Screw in the thermostat using a sealant to make the joint water-tight. Be careful not to damage the thread by over tightening.

The chain provided with the thermostat, should be attached to the thermostat arm and the arm fitted into the thermostat and held in place with the hexagonal screw. The other end of the chain can then be connected to the draught flap positioned at the bottom rear corner of the cooker. It will be necessary to adjust the length of the chain in order that the automatic draught operation functions correctly. However, this can only be done when the appliance is lit and is described in the LIGHTING (Paragraph IV Section 4 - 1).

It is important that the thermostat be positioned as shown in the diagram below, with the small hexagonal nut facing the front of the appliance.

Note : On all models except the 3705, a hole is provided for the thermostat chain to pass through. On the 3705 model the lever arm extends beyond the edge of the top plate.

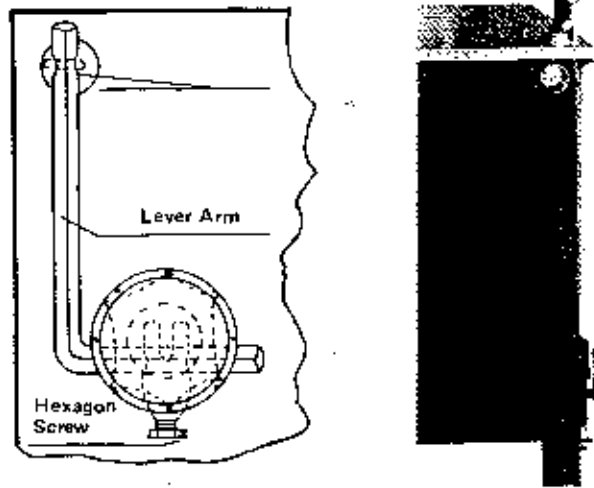


fig. 9

IV Operating

4 - 1 Lighting

Before lighting the cooker the following points should be checked :

- be sure that your installer has tested the water circuit ;
- check that the cleaning access doors are closed. They are located behind the ash pan (see fig. 11) on the front face below the oven and behind the warming drawer (see fig. 11). To lift out the warming drawer, close the drawer and push the drawer panel down so that the back sections lifts up. The drawer will then slide out ;
- check that all the grates are in their correct positions ;
- check that the shutters which control the smoke flow, operated by the knob on top of the cooker (control knob heating-cooking), can move freely, and that all the moving parts work normally ;
- check the working of the air inlet flap at the back of the cooker (see fig. 12).

Before the cooker left the factory, the hot plates were covered with a thin protective film to prevent rusting. This must be peeled off before the appliance is lit.

When the cooker is lit and set in operation, some condensation may collect in the heat exchanger. Therefore, it is advisable not to operate the central heating circulating pump until the appliance has warmed up. It is normal for a quantity of black water to leak from the unit as a result of condensation when the fire is first lit. Do not be concerned about this, but do take precautions to ensure that none of this liquid damages any furnishings. If this condensation persists, it is most likely that the return water is too cold and some radiators should be turned off to allow the heat to build-up in the heating circuit. The radiators can be turned on again gradually. The water jacket is tested in the factory, and there is no chance of a leak occurring. If condensation persists after a 48 hours period, consult your installer.

The cooker is lit exactly like an ordinary fire, with paper, and kindling. Open the ash pan door air control to get a good draught. Also open the chimney draught flap with the chrome ring in the top right-hand corner of the oven and accessible only with the oven door open. Once the fire is burning well, the cooker can be stoked up with the fuel.

When the cooker is well alight and the flue is warm, close the chimney draught flap. This flap will normally be kept shut except when a lot of cooking is to be done on the hotplate and none in the oven.

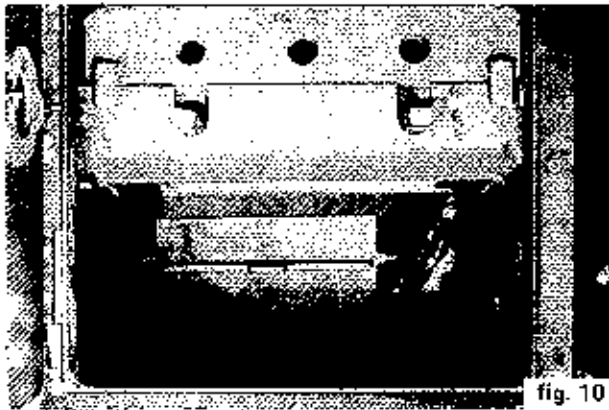


fig. 10

When the cooker is working satisfactorily and the circulating water is at a suitable temperature, say 140 °F adjust the thermostat. Fix the pipe thermometer onto the outlet water pipe and observe the temperature. Adjust the thermostat so that the white figure which corresponds to the temperature is directly above the white line. Cut the chain connecting the thermostat arm to the air inlet flap and connect it up so that the air inlet flap is just closed. When the temperature falls, the thermostat arm will rise and open the air inlet flap to increase the air flow. When the required temperature is reached, the thermostat will close the air inlet and damp down the fire. A fine adjustment is provided using the threaded rod and lock nuts to open or close the draught flap by small amounts.

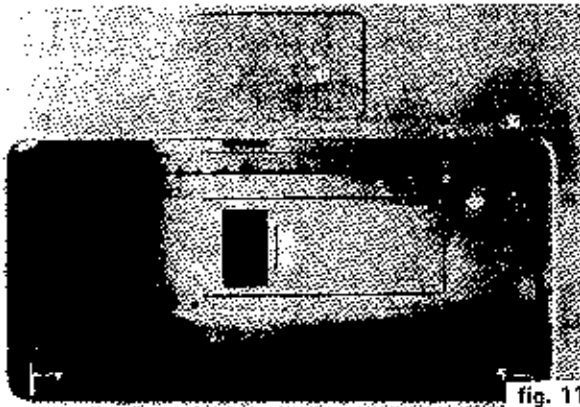


fig. 11

When the thermostat has been adjusted and the desired water temperature reached, the manual draught can be closed (see fig. 13). Set the thermostat to the desired temperature and allow it to control the fire.

4 - 2 Maintenance

The appliance is most efficient when all the surfaces of the heat exchanger are perfectly clean. If soot and ashes are allowed to build up, they can pit the walls of the hearth and shorten the life of the boiler. Therefore the boiler should be cleaned whenever the heat output deteriorates. When the appliance is used for burning wood, burn coal before cleaning the flue passages. This raises the temperature of combustion and burns off the tar which otherwise collects on the water jacket (fig. 14)



fig. 12

Use the scraper to clean the sides of the heat exchanger and the walls of the oven and to remove soot from below the oven. Also open the access door behind the ash pan and clean out inside the heat exchanger at frequent intervals (see fig. 10)

When the appliance is used for burning wood, clean the flue passage frequently. We would also advise that you burn coal occasionally, may be once a week, or have a roaring fire for a short period to burn off the tar which will otherwise collect on the water jacket. It is important to do this in order to preserve the life of the water jacket.

4 - 3 Fuels

WELL SEASONED and **DRY WOOD** is of paramount importance. By **WELL SEASONED**, we mean at least one year old and preferably more than two years old. By **DRY**, we mean wood that has been cut and allowed to dry in stacks and then kept under cover for at least six months before using. The ratio of satisfaction and heat output is directly proportional to the age and dryness of the wood.

COAL : Use coal or the larger diameter smokeless fuels. Coals which disintegrate in heat are not recommended nor are those producing a large amount of ash.

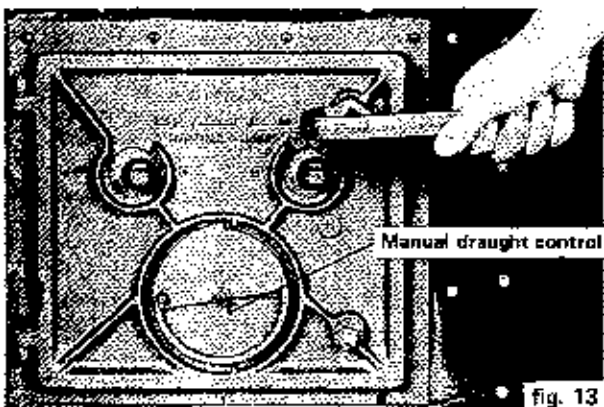


fig. 13

4 - 4 Operating

The amount of ashes in the fire is a very important factor in the performance of the Franco-Belge.

When burning wood, a good base of ashes is advantageous for slow controlled burning, but should be reduced by riddling before cooking, or whenever they accumulate too much and reduce the fire box capacity. Well seasoned dry wood is essential for satisfactory performance of the Franco-Belge.

When burning coal or smokeless fuels, the ashes must be riddled more frequently to allow a good airflow to the fire. Coal and especially smokeless fuel requires much more air to burn than wood. Obviously you will have to experiment with the type of fuel available in your area. Cooking with coal does require a long flaming fuel, and you will need to select the fuel carefully.

CAUTION : Ash pan door to be closed during operation to prevent excessive temperature.

During the time when heating only is required, the control lever on top of the cooker should be positioned on HEATING (see fig. 15) and the automatic thermostat control should be set to the water temperature required. Provided that the fire is stoked and the ash pan door manual air draught shutter is closed, the thermostat will control the burning rate of the fire to produce the required temperature.

When cooking is required, riddle the ashes, build up the fire, move the control lever to COOKING (see fig. 15) and open the manual draught on the ash pan door. You will appreciate that the water jacketing is so efficient that a long flaming fuel should be used in order to heat up the top plates and oven. The cooking temperatures are controlled by adjusting the manual draught as necessary.

During the summer when the domestic hot water supply and cooking, but not the central heating, are required, the appliance should be used with the «Summer Grate». This grate rests on four lugs situated in the fire box and reduces the size of fire by approximately half. Close the gate valve in the central heating circuit, until you next need heating.

There is a summer hearth which may be used when very small amounts of heat are required (see fig. 4). This shields the water jacket and therefore allows the unit to be used for cooking with little heat going to the water. However, for most applications the summer grate is adequate.

Your Franco-Belge will take a bit of getting used to. Initially you may find it hard to control and difficult to acclimatize your cooking techniques to the performance of your cooker. Many people take one or two months before they feel completely happy with the cooker and often during the first week or two wonder whether they will ever get it right. But do not worry, a well installed Franco-Belge is a joy to cook on and we now have thousands of experienced and enthusiastic Franco-Belge cookers.

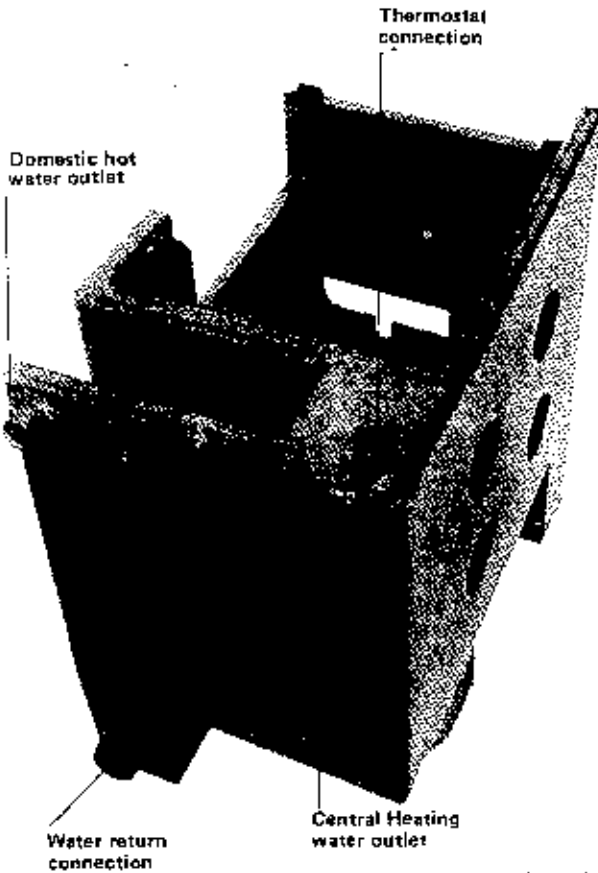


fig. 14

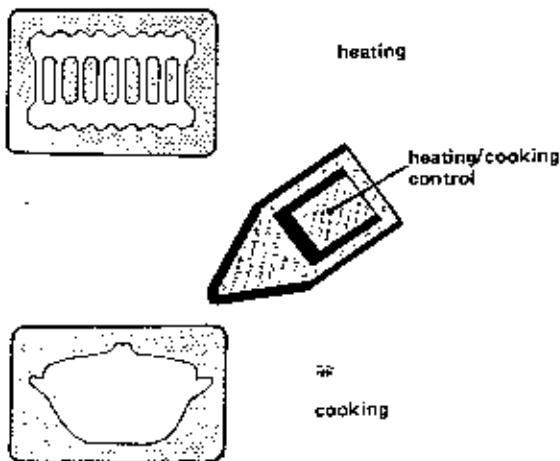


fig. 15

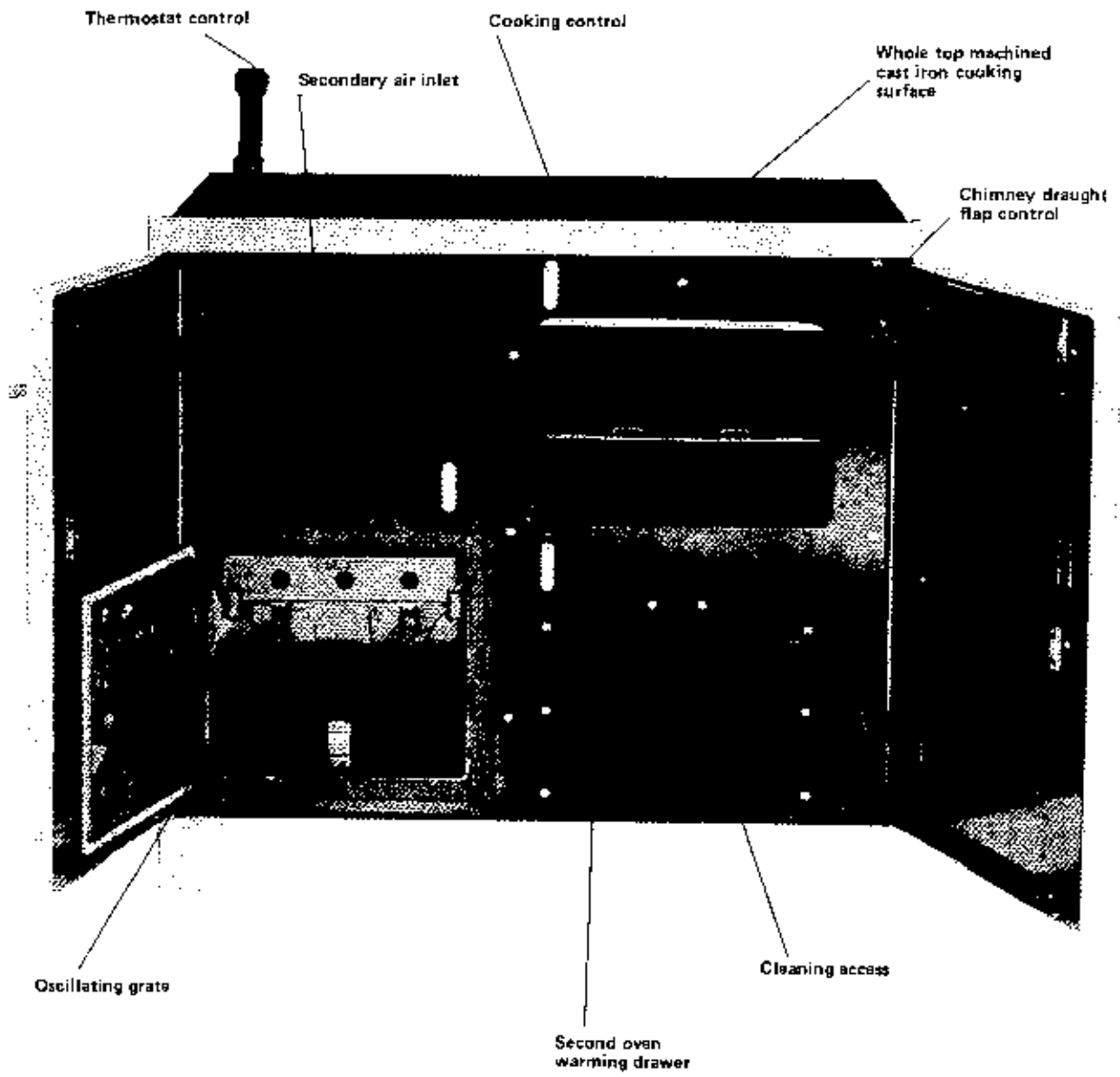


fig. 16

and the other side of the coin is that
 the same person can be seen in a
 number of different places at the
 same time. This is a very common
 phenomenon.

The following information is for
 your reference only. It is not
 intended to be used as a guide.

P 10

