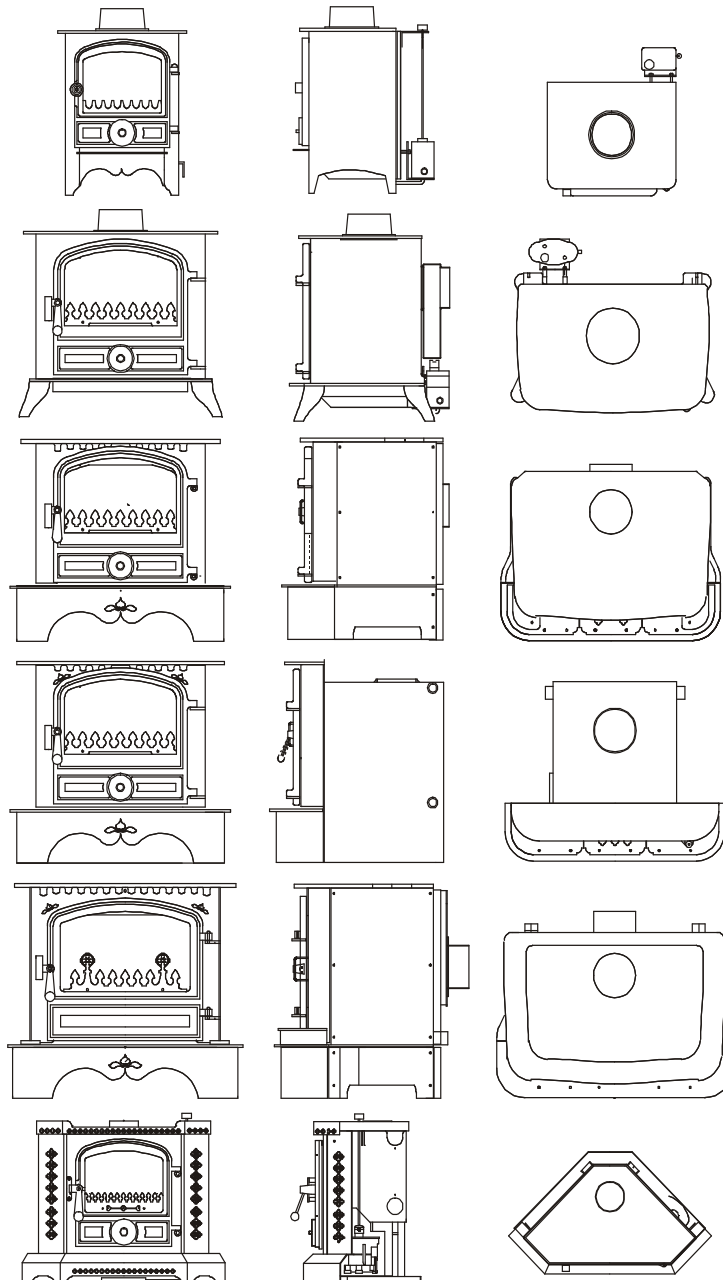




BUBBLE STOVES

GENERAL SERVICE INSTRUCTIONS ISSUE 4



<http://www.oilstoves.co.uk/>

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READ FIRST

These service instructions should be read in conjunction with the appropriate installer and user instruction sheets supplied with each appliance.

HEALTH AND SAFETY

CONTROL OF SUBSTANCES

Take great care when handling materials such as:

Insulation boards, glass fibre ropes, ceramic wool, artificial coals, kerosene oil, diesel oil they are all irritants and suitable protective clothing such as disposable gloves dust masks and protective goggles should be worn.

Wash off thoroughly after handling any of these materials.

Carefully dispose of redundant or surplus materials and always vac up after service or installation work.

SERVICING

1. Servicing should be carried out as per the **service schedule**.

(For those who are unfamiliar with vaporising pot burners read the appendix, which contains basic information, specific detailed information relative to the workings of them.

If you have difficulties with servicing please phone our sales department or visit our web site, which may contain additional information.

SERVICE SCHEDULE DETAILS

CHECK THE COAL KIT

Every 6 months

1. The coal kit system is designed so that it can be quickly and easily removed in its entirety.
2. Hold the front decorative fret and lift out the complete kit.
 - 2a. Place the kit on a dustsheet and carefully remove the coals, which are located on the coal support bars.
3. Examine:-
 - a. The coal support bars.
 - b. The cross ties.
 - c. The coals.

Note:

Distortion will occur on the bars and ties, if it is excessive, replace as a service item.

See the relevant parts list for identification of spare parts.

4. Care must be taken when positioning the coals on the spike follow the coal layout illustration for the relevant kit.

EXAMINE THE UPPER AND LOWER CATALYSERS

Clean the internal base of the pot

Every 8 Weeks

1. Clean the burner completely by removing all the inner components as follows,
2. Open front door.
3. Remove the coal kit by lifting it out in its entirety.
4. Remove the upper catalyser and ring.
5. Remove the lower catalyser.

Note There are two types of catalyser namely short and long, make sure that you order the correct one.

6. Scrape the bottom of the pot clean and remove all carbon build up.

If the small internal wick is disturbed make sure that it is refitted back into its correct position.

7. Reassemble in the reverse order and make sure that the wick is positioned so that it just touches the base of the pot to allow it to absorb oil.

CLEAN THE INTERNAL SURFACES OF THE STOVE

Every 12 months

1. To clean the stove internally use a soft brush and brush away any dust or combustion debris into a vacuum cleaner hose.

CHECK THE DOOR SEALS

Every 6 months

1. The door seal comprise of a length of 14mm-dia. ceramic glass rope, fitted into a socket cast into the door.

The seal is designed to stop the ingress of air into the combustion chamber and as such must form a good seal with the front of the stove all around the door opening.

2. Check via visual examination that it is forming a good seal with the stove body.

3. The seal is fastened into its socket via high temperature ceramic adhesive available from our spares department.

The ends of the ceramic rope are terminated with high temperature adhesive tape.

4. When replacing the door seal make sure that the socket into which the seal is fitted is cleaned out prior to the application of new adhesive.

Note if the seal does not form a good fit with the body of the stove it can be packed out via the use of 2mm flat ceramic gasketing available from our spares dept.

CLEAN THE DOOR GLASS

As Required

1. The door glass will require light cleaning occasionally and the frequency Of cleaning will depending upon how the stove is used.
2. Where stoves are ignited each day then the glass may soot up as the lighting process may generate a little soot until the stove has settled down into blue flame combustion.
3. Where stoves are running continuously then the glass will need cleaning less frequently.
4. When cleaning is required you will need to let the stove go out and completely cool down.
5. To clean the glass use a soft clothe and dampen it with vinegar or a proprietary stove glass cleaner.
6. Rub the glass gently in a vertical direction, do not rub the glass with horizontal motion otherwise the glass strips will be disturbed and dirt will be forced in between them.
7. After cleaning the glass, wipe it dry and make sure that the glass strips have not been dislodged.

Note: the glass strips have to fit together with no gaps.

CHECK THE DOOR GLASS SEALS

As Required

1. The door glass is in strip form.
2. It is loosely fixed to the door casting to allow for expansion and contraction in line with the changing temperature of the stove.
3. There are two metal clamps, one at the top and one at the bottom.
4. The glass is fitted on to a high temperature rope gasket.

5. When carrying out service work on the glass panels, it is important to make sure that the glass forms a good airtight seal, to allow full chimney vacuum to be applied to the burner.

NOTE-: SEE INDIVIDUAL STOVE SPARE PARTS LIST FOR REPLACEMENT PARTS.

ADJUST THE DOOR BOLT (BUBBLE 1 ONLY)

Every 12 months or as required

1. The door bolt may need adjusting occasionally to ensure that the airtight fit is maintained.
2. To adjust it loosen the locking nut and screw in or out as required, make sure that the small gasket is in good condition.

NOTE THE DOOR BOLT IS SOMETIMES BENT SLIGHTLY FOR ALIGNMENT WITH THE HOLE IN THE DOOR, TO MAINTAIN THE ALIGNMENT ADJUST THE BOLT THROUGH FULL TURN INCREMENTS OR RE ADJUST USING A SOFT HAMMER TO TAP THE BOLT.

CLEAN THE STOVE EXTERNALLY

As Required

1. To clean the stove externally, let it go out and simply brush away any dust with a very soft brush.

STOVES WITH BAROMETRIC DAMPERS – CHECK FUNCTION

Every Year

1. The barometric damper must be cleaned to remove any build up of dust and checked to make sure that it swings freely and is correctly adjusted.
2. The damper will only swing open under conditions where the maximum chimney vacuum is exceeded, normally this will be anything over .05"-.06" W.G.
3. At any vacuum below this figure the damper should be in a closed position.

Apply WD40 to the spindle tips.

STOVES WITH COMBUSTION AIR RESTRICTORS – CHECK FUNCTION

Every Year

1. The combustion air restrictor or restrictors should be carefully cleaned.

Check that it swings freely.

Apply WD40 to the spindle tips.

CHECK IF THE HOLES IN THE POT ARE FREE FROM OBSTRUCTIONS

Every Year

1. Each year the holes in the outer surface of the pot should be checked to make sure that they are not blocked,
2. Because of the running temperature of the pot it is unlikely that they will be blocked with hair or dust, however if the burner has been running sooty, it is possible that there could be some carboning or rust build up particularly around the bottom of the pot.

DESCALLING DEVICE

Check, clean and adjust the oil inlet descaling device.

Tighten the descaler gland nut and descale the oil inlet.

Every 24 Weeks or as required.

The descaling device is screwed directly into the vaporising pot.

It comprises of a cast brass tee piece into which is fitted a descaling rod sealed via a compression nut and small tubular gasket.

Oil enters the tee piece from a feed pipe connected directly to the outlet of the oil control valve.

Oil is fed to the pot from the valve, through the interconnecting feed pipe.

During normal running carbon deposits will build up in the bottom of the pot at the outlet side of the descaling device.

To keep the oil flowing freely into the pot the outlet must be de-scaled regularly and so to do this it is necessary operate the descaling lever by turning it completely two or three times, as you are rotating gently pull it out about 6mm (1/4") and then push it back to its start position.

(There should be a slight frictional resistance to turning; if it is loose the compression nut must be tightened slightly.)

If it is not possible by tightening the nut to establish a slight frictional resistance to turning, the internal tubular seal must be replaced.

Do not operate the appliance unless the descaling device is correctly maintained as described above.

There are occasions where stoves are run under high flue vacuum conditions where carbon deposits can only be removed from within the tee piece by

physically removing it completely from the pot, to allow access for descaling.

2. Remove and clean out the oil supply pipe from the oil control valve to the descaling device.

CHECK THAT THE OIL FLOWS FREELY INTO THE POT

After Annual Service

1. After servicing carry out a visual check to make sure that the oil is flowing freely into the pot.

Remove all the internals from the pot.

2. Turn the oil on to mini and look into the pot to make sure that the oil is flowing freely.

3. Remove any excess oil and leave the pot dry.

CHECK IGNITION AND LIGHTING WICK

After Annual Service

1. After carrying out a service test fire the appliance to make sure that it lights easily.

CHECK THE LOW AND HIGH FIRE FLAME

As Required

1. It is advisable to have a flue vacuum gauge available before carrying out this procedure.

2. When the burner has established combustion turn it up to half output. (Setting 3 on the fuel flow control knob) and let it settle down into blue flame combustion.

3. Allow at least half an hour for the chimney to warm up thoroughly before making any adjustments to the high or low fire screws.

4. Zero the vacuum gauge and insert the probe. (Each different stove has a vacuum test point, for location refer to the stove technical details.

5. The vacuum should read between (.02" - .03") minimum or (.05" - .06") max (If you can't get a reading investigate the cause by checking out the flue system and smoke bomb if required.)

6. Turn the stove down onto minimum firing rate and let the flame stabilise.

7. When the flame is stable the low fire catalyser should be glowing dull red in the bottom of the pot with wispy blue flames flicking in to the glowing edge of it.

8. If the flame drops out of blue flame combustion and falls into a dirty rolling yellow flame and the lower catalyser is not dull red then the low fire setting will need to be increased until it can support the required blue flame combustion.

Note to increase the low fire fuel flow, screw in on OCI valve and out on Toby valve, opposite for decreasing the fuel flow.

9. When you are happy with the low fire combustion, set the high fire as follows

10. Turn the oil flow knob up to setting 4; let the flame stabilise, and look at it, if it is stable and blue, turn it up slowly using the control knob, letting it stabilise after each movement.

11. If the flame starts to go yellow and progresses into long yellow flame combustion, it is running fuel rich and the high fire screw needs adjusting to reduce the flow of oil. (Screw in for both types of valve)

12. Do not make any attempt to adjust the high fire screw, until you have brought the flame back into blue flame combustion.

To do this turn the fuel flow down until the yellow flames drop back into blue flame combustion.

13. Adjust the high fire screw by half a turn in and try turning the fuel flow up, if it is still fuel rich repeat the process until the high fire flame is running blue with flicks of yellow in the tips.

14. When you think that you have the flame as you want it leave it running for ten minutes to see if it is stable.

15. Adjustment of the flame will not be possible unless our instructions on chimneys and flue vacuum are followed.

16. If the burner does not burn with a blue flame recheck -:

- a. The chimney vacuum
- b. The oil flow rate
- c. The seals in the stove and that there is no ingress of air into the appliance flue ways.

OIL VALVE CONTROLS

(FOR FURTHER INFO SEE **CONTROLS LIST** IN COMMISSIONING THE HIGH AND LOW FIRE SECTION)

CHECK ACTION OF SAFETY THERMOSTAT

CHECK ACTION OF OPERATING THERMOSTAT

1. Stoves with large boilers also have an automatic water temperature control thermostat and automatic oil cut off device (should the appliance water temperature become too high)

(Assuming that the oil flow control knob is set to 5 or 6)

2. If the stove is operated with the thermostat controls set to maximum it will run on full flame, until it achieves the target water temperature and then drop the flame onto mini, from there on it will automatically modulate the flame from high to low in line with the heating load demand.

3. To check the action of the control stat proceed as follows:-

3-1 Turn the central heating pump off.

3-2 Fix a pipe thermometer to the hot water outlet.

3-3 Turn the appliance up to full fire (Setting 6 on the oil valve)

3-4 Turn the thermostat up to full output (fully anticlockwise)

3-5 Watch the water temperature thermometer and as the water temperature comes up to 70 deg C the valve should drop the stove onto low fire.

3-6 To check the action of the safety stat allow the water temperature to come up to 90 deg C and the safety stat should shut the oil flow off.

NOTE 1. THAT IT WILL NOT BE POSSIBLE TO RESET THE VALVE UNTIL THE WATER TEMPERATURE HAS DROPPED.

NOTE 2. DETAILS ON ADJUSTMENT OF THE OPERATING AND SAFETY STAT CAN BE FOUND IN THE APPLIANCE INSTALLATION DETAILS, OR IN THE COMMISSIONING ROUTINE.

VENTILATION

Check Ventilation Area

OFTEC TI 112

AS REQUIRED

1. To accommodate the combustion air requirements of the appliance

Check that adequate free air ventilation is provided.

(550 mm sq per kW of appliance rating.)

OIL TANK, VALVE FILTERS AND LINE

Check that the Isolation Valve is Easily Accessible

Visual Inspection

As Required

1. Check that the isolation valve is working correctly and easily accessible

CHECK THE ACTION OF THE KBB FIRE SAFETY VALVE (OFTEC OFS E101)

Every 2 Years

1. To check the action of the KBB fire valve carefully heat up the bulb and make sure that the valve shuts off.

2. Allow the bulb to cool down and then reset it ready for use.

Oil Tank Risk Assessment (OFTEC TI 133)

Every Year

1. Carry out an oil tank RISK ASSESSMENT in line with OFTEC TI133

Oil Tank Location for OFTEC Compliance (OFTEC TI 120)

As Required

2. Carry out an oil tank LOCATION CHECK in line with OFTEC TI 120

Oil Line INSPECTION (OFTEC TI/134)

As Required

1. Carry out an oil line inspection in line with OFTEC TI 134

2. Clean or change the oil tank filter every year.

3. Clean the filter in the Oil Control Valve every three years.

FLUE

Check flue type and suitability, as required

Flue Terminal Compliance Check, as required

Fire Guard Compliance Check, as required

ELECTRIC IGNITION

Remove and clean the plug

Refit and test the function

Every 6 Months

1. The spark plug should be carefully removed and cleaned.

2. Take care when refitting the plug.

3. Make sure that the metal wick lies on the bottom of the pot.

4. Make sure that the supply leads do not foul or fret on thin metal heat shields.

5. Make sure that the leads are not taped up together as they need to have an air gap around them for cooling purposes.

6. If the plug does not form a good seal with the plug port, air will be drawn into the pot and consequently upset the combustion process

7. This will manifest itself in the form of intensive and heavy carbon build up in the bottom of the pot reaching up behind the inner skin of the pot.

GENERAL DESCRIPTION OF BUBBLE STOVES

1. Bubble stoves are room heaters, which burn kerosene or diesel in a controlled manner utilising an open flue to discharge the products of combustion.

2. When lighting a stove it is very important that the lighting instructions are carefully followed.

3. The stoves are designed to run with or without a coal fire effect kit.

(It must be clearly understood that coal effect will only be available when the stoves are running at maximum or near maximum performance as per information given in our sales literature).

4. For spacing from combustibles and fire guarding this range of stoves must be treated in the same way as a SOLID FUEL APPLIANCE and so to prevent the risk of injury through burning a fireguard complying with BS6539 or 6778 must be fitted

5. THE STOVE MUST NOT BE OPERATED WITH THE GLASS FRONT DOOR OPENED OR CRACKED.

6. THE STOVE MUST NOT BE OPERATED WITHOUT THE LIGHTING PORT PLUG FITTED.

STOVE TYPES

1. Normal freestanding stoves.

2. Inset stoves

3. Front control stoves

4. Normal free standing stoves will have rear mounted oil control valves and air dampers.

5. Inset stoves are designed to be inserted into chimney breasts and as such have:-

- a. front mounted oil valves
- b. front mounted air dampers

The dampers can be either:-

- a. normal counterweighted swinging barometric type
- b. or automatic counterweighted combustion air limiters.

FRONT CONTROL STOVES ARE SIMPLY FREE STANDING VERSIONS OF THE INSET STOVES.

HOW THEY WORK

1. The stove generates heat from burning oil mixed with air in a vaporising pot located in the bottom of the stove.

2. Once alight, the performance of the appliance is controlled by the oil control valve, which has oil flow control from mini to maxi via six graduations.

3. Stoves with large boilers also have an automatic water temperature control thermostat and automatic oil cut off device (should the appliance water temperature become too high)

4. The water temperature is controlled automatically by a thermostat on the valve, which is simply set by turning clockwise to increase the temperature and anti clockwise to decrease the temperature.

5. If the stove is operated with the thermostat controls set to maximum it will run on full flame until it achieves the target water temperature and then drop the flame onto mini, from there on it will automatically modulate the flame from high to low in line with the heating load demand.

(Assuming that the oil flow control knob is set to 5 or 6)

CONTROL INFORMATION

1. APPLIANCE CONTROLS

The appliance is controlled via an oil control valve, which can be fitted with one or more of the following devices, depending upon which model stove is installed:

1. A manually operated oil flow control knob

2. A manually set, automatic thermostat with capillary phial and bulb

3. A manually and automatically operated oil cut off lever.

4. An automatically operated safety shut off thermostat with capillary phial and bulb, which trips the oil flow cut off lever mentioned in 3 above.

5. The valve operates as follows, it has flow control potential from mini to maxi via six graduations and so the appliance can be manually controlled from MINI to MAXI by simply turning the flow control knob (1 above), in addition it also has a water sensing thermostat and an automatic safety oil cut off device should the appliance water temperature exceed 85 degree C.

6. The water-sensing thermostat will automatically control the boiler water temperature at whatever setting is required up to a maximum of 70 degree C. (2 above) and a control knob situated alongside the oil flow control knob operates it.

7. If the stove is fired up at full output it will run on full flame until it achieves the target water temperature, set by rotating the stat knob to the desired position, (clockwise to reduce temperature, anti clockwise to increase temperature)

8. The flame then drops to its low fire position, from there on it will automatically modulate the flame from high to low in line with the heating load demand.

2. SYSTEM CONTROLS

1. The circulating pump may be controlled by means of time switches, or room thermostats.
2. Radiators may be either manually or thermostatically controlled.
3. These controls will all work in conjunction with the thermostat on the appliance and the low limit pipe thermostat.
4. We recommend fitting a pipe thermostat onto the gravity return to act as low limit thermostat. This should be wired into the mains supply to the pump so that if the gravity return temperature drops below 45 deg C, the pump will cut out.
5. This will help to prevent condensation forming on the boiler faces and will thereby increase the life of the boiler. It will also ensure that priority is given to the domestic hot water. These thermostats are available from us if you are unable to obtain them locally.

LIGHTING INFORMATION

1. Before attempting to light the stove we hope that you read this simple preamble on how a pot burner works.
2. The function of the burner is to
 1. **Turn the oil into a gas**
 2. **Mix the gas with air**
3. Before it can do this it needs -:
 1. **An oil supply**
 2. **An air supply**
 3. **Heat to convert the oil into gas.**
4. Inside the burner are two catalysers, one for low fire combustion and the other for high fire combustion.
5. The low fire catalyser is the one, which starts the whole process off. It is designed to rapidly heat up and then to radiate this heat back down onto the incoming oil, to turn it into an oil vapour.
7. Once the vaporisation process has started, the burner is up and running in what we call equilibrium, which means that the heat from the burner is sufficient to turn all the fuel running into the burner, into gas and so maintain blue flame combustion.
8. All around the outer edge of the burner are small holes, which allow air to be drawn into the burner by the sucking or pulling action of the chimney.
9. The air will then mix with the vaporised oil and burn as a blue flame in a similar way to a gas burner.

10. If Excess fuel is allowed to run in to the burner, it will cause the burner to be chilled and then it will not be able to turn all the fuel into gas, at this stage the burner is said to be out of equilibrium.
11. It all sounds very simple and indeed it is, however there is one major difficulty, which is as follows.
12. To get all this simple process working, the catalyser has to be brought up to temperature, once it is up to temperature the whole process of vaporisation as described above is self maintaining whilst ever there is a continuous supply of oil and air in the correct proportions.
13. To get the catalyser up to temperature and so start the whole process of vaporisation is where the lighting process comes in.
14. The skill is to get the catalyser hot without allowing too much oil to build up in the pot, as obviously whilst the burner is being ignited it is out of equilibrium.
15. If you don't allow enough oil into the pot to keep the ignition flame going, it will simply go out through lack of fuel.
16. The skill is allowing enough oil in to get the wick well alight and then allowing oil in slowly just to allow the ignition flame to grow slowly, and then start to heat up the catalysers and so set the self perpetuating process of vaporisation into action without allowing excess oil to build up in the bottom of the pot.
17. When lighting stoves with water temperature control (THERMOSTAT), you must also know how the thermostat will influence the operation of the oil flow, it operates as follows -:
 - a. ANTI CLOCKWISE TO INCREASE THE WATER TEMPERATURE
 - b. CLOCKWISE TO DECREASE THE WATER TEMPERATURE
18. When lighting the stove you must
 - a. Keep your eye on the pot to make sure that it stays alight during the lighting process,
 - b. Carefully control the flow of oil in the pot.
19. To help make lighting easier we have provided lighting wicks fitted as follows -:
 20. The lighting port plug, has a wick attached, this wick is used to ignite the burner.
 21. Before attempting to light the stove take all the inners out of the pot and make sure that there has not been an accidental build up of oil in the pot bottom.
 22. The skill involved in lighting is making sure that just enough oil is allowed into the pot to get the wick burning, turn the oil on and allow enough oil into the pot so as to dampen the wick, (a little pool about the size of a biscuit) then turn the oil off.

23. Light the wick and when it is well alight allow a little more oil into the pot on setting no 1 only, too much oil at start up will flood the pot and cause racing when the burner eventually gets going.

27. THERE ARE THREE WAYS TO LIGHT THE STOVE:

1. Through the front door, directly into the base of the pot.
2. Through the lighting port.
3. Via Electric ignition kit. (Optional extra)

28. OVERFIRING DURING IGNITION

If during the lighting stage, excess oil is allowed to build up in the pot, the burner will race and generate quite loud audible vibrations, if this occurs don't panic, turn the oil flow control knob to off and just open the front door and hold it open 15mm or 1/2" to take the pull off the fire, the more you open the door the more the flame will die down, hold the door slightly open until the flame starts to reduce in size, at this stage restart the flow of oil at setting No 1 so allowing the burner to run correctly at its low speed.

29. OPTION 1

On the first light up you may find the first option easier, as you can see the oil trickle in to the pot more easily.

You must use a heatproof glove when putting the catalysers back into the pot and it is important to replace them quickly whilst the flame is small.

1. Make sure that the oil is turned off.
2. Open the front door.
3. Carefully remove the coal kit,
4. Remove the catalyser,
5. Remove the ring,
6. Turn the oil on and allow a small pool of oil to flow into the pot about the size of a small biscuit.

NOTE WELL

For the next operation use a heatproof glove to avoid the risk of burning.

7. Light a small piece of firelighter and drop it into the oil, allow a few seconds for it to get going and then quickly replace the ring, catalyser and coal kit, and then close the door.

30. OPTION 2

1. Make sure that the oil safety cut off knob is lifted (tripped off) via an audible click.
2. Check that the isolation valve is turned on.
3. Press the oil safety cut off knob down to trip the oil on via an audible click.

4. Open the front door.
5. Remove the lighting port cover
6. Turn the oil on to the first position via the flow control knob and allow a small pool of oil to flow into the pot about the size of a small biscuit.
7. Turn the oil off.
8. Light the wick.
9. When the wick is well alight replace the lighting port cover.
10. Close the front door,
11. Turn the fuel flow on again at the lowest setting.

31. OPTION 3

1. If your stove is fitted with an electric ignition kit, make sure that the oil safety cut off lever is lifted (tripped off) via an audible click.
2. Check that the oil isolation valve is turned on.
3. Press the oil safety cut off lever down to trip the oil on via an audible click.
4. Press the push button ignition and turn the oil on to minimum flow.
5. When the burner is running correctly on position 1 (LOW FIRE) the lower catalyser will be glowing dull red, at this stage slowly increase the flow of oil by one increment at a time.
8. On full output, after approximately fifteen minutes, the coals should begin to glow red and there should be wispy blue flames licking through them, to get the maximum effect the stove will need to be left for half an hour or so.
If there are a lot of yellow flames re adjust the oil flow. (A few yellow flames are acceptable.)
9. Excess oil flow, poor flue vacuum, bad coal positioning or bad lighting technique will cause rapid sooting of the glass and coals.

NEVER TRY TO RE-LIGHT A HOT BURNER, MAKE SURE THAT THE BURNER IS COMPLETELY COOLED DOWN BEFORE RE LIGHTING.

FAULT FINDING

To assist with servicing and fault finding we categorise problems under the headings listed.

A. THE FUEL

Check that there is no contamination.

Check that the fuel is the correct type and quality.

B. THE CHIMNEY

The chimney can cause a variety of problems which are generally caused by the effects of either excessive, inadequate or fluctuating vacuum affected by

An unusual wind condition

Dampers jammed or stuck open.

Obstruction in the chimney causing a loss of vacuum

Stove seals need renewing Door seals, Glass seals, Pot to closure plate seal, damaged door glass

c. LACK OF SERVICING

Burner choked with carbon scale.

Carbon deposits in the oil inlet pipe.

(Remove the feed pipe between the pot and the oil valve and clean it out.)

D. INCORRECT COMMISSIONING

Commissioning or lack of it is the biggest single problem associated with alleged faults on Bubble stoves.

See commissioning for further info.

F. UNSUITABLE PLUMBING CIRCUIT DESIGN

Problem F is linked to D, if the circuit is not suitable for the stove then it will not be possible to carry out commissioning.

DE-FLOODING A FLOODED POT

If the pot has become flooded with oil proceed as follows:-

1. Wear plastic gloves do not allow fuel oil to contact your skin, if it does wash off immediately with soap and warm water.
2. You will need a plastic bag and a small sponge, remove the coal kit ,upper catalyser and ring and the lower catalyser to give clear access to the base of the pot.
3. Sponge out the fuel and squeeze the sponge into the plastic bag, (it helps to keep drips to a minimum if the bag is put inside the stove) when all the oil has been sponged from the stove it will be safe to re assemble and re-ignite .

DO NOT ATTEMPT TO BURN OFF A FLOODED POT

Never try to ignite a flooded pot, this is very dangerous procedure and can result in a serious fire.

RACING

1. The term racing is used to describe audible vibrations, generated by the flame and caused by allowing excessive oil to build up in the bottom of the pot too quickly during the ignition process.
2. Turn the oil flow off until the burner has settled down into a steady burn rate.
3. Turn the fuel on again but don't let the flame go out, otherwise the burner **MUST** be allowed to cool down fully before a re ignition is attempted.

BURNER DOES NOT LIGHT EASILY

1. Check the level of the bottom of the pot and make sure that the stove is levelled so that the oil flows very slightly towards the ignition wick.
2. Check the chimney vacuum cold.
3. Check that all the seals in the stove are sound.
4. Check that the swinging dampers are not jammed open.
5. Check that the oil is flowing freely into the pot.

STOVE GOES OUT WHEN THE CENTRAL HEATING PUMP IS TURNED OFF

1. Generally this is caused by the action of the safety stat which shuts off the flow of oil to the appliance from the oil control valve.

This will be observed via a tripped off oil valve.

Re set the valve to re commission the oil supply.

Note each different valve has a different re setting procedure which should be detailed in the appliance manual.

2. To check this out, feel the trip lever to see if it has tripped off, if it has this will confirm the cause.
3. Unwanted trip offs can be caused by one of the following-:
 - 3-1. The flow of water to the heat leak rad is inadequate.
 - 3-2. The size of the heat leak rad is inadequate.
 - 3-3. The safety stat set point needs increasing.
 - 3-4. The heat leak circuit has been inadvertently eliminated or reduced via the turning off of the upstairs radiators, (as could be the case in summer time running.)

FLUE VACUUM

1. The pot type burner is extremely sensitive to flue vacuum variations.
2. Good combustion will not be possible unless our instructions on chimneys and flue vacuum are followed.
3. If the burner does not burn with a blue flame, recheck the chimney vacuum and oil flow rate.
4. If the burner does not run well check that the seals in the stove are good and that there is no ingress of air into the appliance flue ways.
5. Check that the swinging damper is not jammed open.
6. Check that the correct fuel oil is being used.
7. Check the levels.

DOOR GLASS SOOTS UP

Comments made on this subject assume that the appliance has been running normally and correctly, for sometime since it was first installed or last serviced.

If it has never run without the glass sooting up from date of installation, then the appliance has not been correctly commissioned for whatever reason.

Before carrying out any adjustments it is important to know that there are two situations where the burner can produce soot and additional secondary reasons which can make a burner, which has been correctly set up, start to make soot.

Situation 1

LOW FIRE SOOTING

Is caused by inadequate oil flow on low fire setting causing the burner to drop out of blue flame combustion.

Adjust this by increasing the low firing rate.

Situation 2

HIGH FIRE SOOTING

Is caused by excess fuel on high fire setting or lack of applied chimney vacuum.

Adjust the firing rate with the high fire adjustment screw.

Secondary reasons

LOW FIRE SOOTING

If the burner is set up correctly excessive flue vacuum brought about by gusty conditions will cause the burner to run with excess air on low fire which may cause the burner to drop into yellow flame combustion and create soot.

Note that this condition will cause the lower catalyser to rapidly erode away, catalysers will not be replaced under warranty for this type of damage.

HIGH FIRE SOOTING

If the burner is set up correctly high fire sooting can be caused by a drop in chimney vacuum caused by intermittent wind effect.

1.If the stove door glass soot's up

Check that the chimney is working correctly. (This means pulling enough air into the burner to allow correct blue flame combustion to occur.)

3. Check that the fuel is the correct type and quality.

4. Check that the flow rates are correct.

5. Where burners are run at high fuel flow rates on low chimney vacuums, long unsatisfactory yellow flame combustion and bad sooting will occur.

6. To rectify this problem reduce the high fire flow rate screw on the Oil Control Valve until blue flame combustion occurs.

7. Never switch from low settings to high settings, a longer burner life will be achieved if the regulator is moved by one number at a time leaving approximately one minute between each setting change.

BURNER QUICKLY CARBONS UP

1. If the burner carbons up in a short period of time say less than three weeks, the following can cause it.

2. The low fire is incorrectly adjusted and the burner is not running in blue flame combustion.

2-1 To fix this problem see the section on adjusting the low fire rate in the service schedule SECTION 17 & 18.

3. There is an air leak into the bottom of the pot, which can be caused by a loose fitting ignition plug or a loose fitting ignition port plug.

3-1 To fix the ignition plug call our service dept for a supply of high temperature, glass fibre tape to apply around the plug body.

3-2 To fix the ignition port plug problem contact our service dept for the supply of an oversize plug.

4. The chimney vacuum is not adequate.

NOTE

REMOVING A HEAVY CARBON BUILD UP CAN BE A TIME ABSORBING JOB.

MAKE SURE THAT ALL CARBON IS CHIPPED OR SCRAPED AWAY FROM THE BASE OF THE POT. CHECK TO SEE IF THE CARBON HAS

BUILT UP IN BETWEEN THE LOWER INNER AND OUTER BURNER SKINS, IF IT HAS, MAKE A BENT SCRAPER TO FIT IN THE GAP BETWEEN THE SKINS AND REMOVE ALL OF THE CARBON BUILD.

WHEN THE BURNER IS CLEAN, IGNITE IT AND LET IT STABILISE ON SETTING THREE.

LOOK INTO THE FLAME AND IF THERE ARE ORANGE STREAKS IN THE FLAME AIR IS STILL LEAKING.

CHECK OUT FOR FURTHER AIR LEAKS AND TRY TO CURE THE PROBLEM.

CLEANING A BADLY CARBONED BURNER

This information is given on the assumption that the appliance has run correctly for some time and then has started to run sooty.

If the burner in the appliance has never been able to run in blue flame combustion there will be a problem associated with either the flue vacuum applied to the burner or oil flow available into the burner pot.

1. When 35-second diesel oil is vaporised in the burner, there will be a progressive build up of carbon in the bottom of the pot and around the inlet port of the burner, to deal with this a certain amount of service work is required.

1-1 Oil flows into the pot through the brass adaptor called the descaling device located at the base of the pot.

1-2 Through the centre of the descaling device is a round metal rod called a descaling lever?

1-3 When the descaling lever is rotated it is so designed to remove some of the carbon which builds up on the inside bore of the device.

2. Oil flows into the pot via gravity with very little head pressure and so the slightest build up of carbon around the descaler will cause a resistance to the flow of oil.

3. The burner needs a minimum flow of oil to generate enough heat to keep it up to its critical vaporizing temperature.

3-1 The critical vaporizing temperature is that at which the burner is hot enough to turn the oil into gas indicated by the presence of blue flame combustion.

4. The oil flow setting on low fire is deliberately set higher than is required for two reasons -:

To allow the burner a margin of excess to compensate for the progressive build up of carbon and subsequent progressive reduction of oil flow.

To give the flame enough energy to take the burner through the critical vaporising temperature barrier.

If the oil flow into the burner is allowed to reduce to a level lower than that required to keep the burner at or above the critical vaporising temperature, the burner can no longer do what it was designed to do and as a consequence oil just burns at a much lower temperature.

This will result in -:

Smoke issues from the chimney, the burner soots and carbons up, the stove glass soots up, the chimney soots up, the flue ways soot up.

The whole lot must then be thoroughly cleaned before the stove will operate properly again.

PROCEDURE

Before starting make sure that you have dustsheets down and plenty of tissue.

1. Remove the oil feed pipe in between the oil control valve and the descaling device.
2. Unscrew the descaling device from the pot and dismantle it making sure that every scrap of carbon is removed from the descaler body and the descaling lever.
3. Check the gap between the inner and outer skins of the burner pot at the bottom of the pot and thoroughly clean the annulus to remove every scrap of carbon build up. (Use a mirror on a stick to view the carbon)
4. Clean the upper and lower catalysers with wire wool and a soft brush
5. Clean the flame ring with wire wool and a soft brush
6. Clean the stove or boiler internals with a soft brush (if there is a thick coating of soot or scale on the stove it may be necessary to use a scraper tool to remove it)
7. Check that the chimney is clean.

8. Check that your oil supply tank is not water contaminated by flushing oil into a settlement jar.
9. Clean or change all oil filters and water traps.
10. Remove the door and door glass and thoroughly clean in warm soapy water.
11. Check all door seals.
12. Drain the oil control valve using the drain screw.
13. Remove and clean the internal filter in the oil control valve.
14. Brush all dust from the stove.
15. Vac up, clean all brassware and repaint the stove.
16. Observe Good Health and Safety Routines (Suitable gloves and mask,)

OIL WILL NOT ENTER THE POT

NOTE.

ON NEW INSTALLATIONS, IT IS NOT UNUSUAL FOR AN AIR BUBBLE TO RESTRICT THE FLOW OF OIL THROUGH THE METERING STEM IN THE OIL CONTROL VALVE.

TO CURE THIS PROBLEM GENTLY TAP THE VALVE WITH A PLASTIC HANDLED SCREWDRIVER OR AGITATE THE OIL IN THE FLOAT CHAMBER TO TRY AND BREAK THE MENISCUS LOCK CREATED BY THE AIR BUBBLE.

1. Is there oil in the fuel tank?
2. Has the fire valve tripped?
3. Has the isolation valve been accidentally turned off?
4. Is the oil turned on at the oil flow control knob on the valve?
4. Has the level of the oil valve been disturbed?
5. The oil level mark on the side of the oil control valve should be set at 20mm from the bottom of the pot, check this out using a rule or height gauge.
6. Is the oil feed pipe from the valve to the pot blocked? (Unlikely)?
7. Check that the safety cut out lever has not been accidentally shut off.
8. If it is not possible to reset the safety cut off lever this would indicate that oil has flooded into the second float chamber.

9. (OCI VALVE)

In case of a failure of the first float, the second float chamber catches the excess oil and causes the second float to rise, this trips the safety cut

out lever, making it impossible to reset, until the excess oil has been removed from the safety float chamber.

10. Tripping can occur if a full oil control valve is disturbed causing the secondary float chamber to flood.

11. To deflood the second float chamber remove the aluminium top plate on the valve and depress the second float until adequate oil is displaced to allow the trip lever to be reset.

CHECK FOR OIL LEAKS

1. Check that oil does not leak from the pot, valve, and descaling device or pipe work.

CHECK THAT THE OIL IS IN THE CORRECT PLACE

1. Make sure that when the oil first runs into the pot, it is not running away from the oil inlet.
2. It should gather in a small pool around the oil inlet at the bottom of the lighting tube, if it does not do so, level the stove up until it does.
3. When you are happy that the oil pool is forming in the correct position, the stove will light easily and not be prone to ignition flairs.

FLOODED OIL CONTROL VALVE

See "Oil Will Not Enter the Pot".

OIL SMELLS

1. Carry out a visual check on all joints for any leaks.
2. Check that the descaling lever packing gland nut is adjusted.
3. If there is a slight lingering smell with no obvious visual signs of a leak, this will be attributable to the descaling lever packing gland nut requiring adjustment or possibly a new seal.

OPERATING FLOW RATES

Flow rates are shown in cc per minute AND DETAILED ON OUR PRICE LIST.

2. To achieve optimum burner performance at these flow rates you will need to have matching flue vacuums as stated IN TABLE REF

If the chimney does not generate enough vacuum the flow rates will have to be adjusted so that the burner maintains equilibrium, i.e. blue flame combustion. (Lowering the flow rate will result in lower output from the appliance.)

BURNER FLARES UP DURING IGNITION

1. If the burner flares up during the ignition cycle this can be caused by allowing too much fuel into the pot before the flame has had the time to come up to vaporisation temperature.
2. The other cause of this is the burner being out of level and the fuel not running into the correct position in the pot.

(See section 9 oil is not flowing into the correct position in the pot.)

COMMISSIONING ROUTINE

Before attempting to light the appliance checks should be carried out on the following:-

- ✓ Tank- check for leaks-stability-height-position-vent.
- ✓ Fuel- check for correct grade
- ✓ Filter- is it fitted-check for function and leaks.
- ✓ TANK Site Glass- check for function and leaks
- ✓ Oil line- check for function, positioning, material suitability and leaks.
- ✓ Fire valve-check for function and leaks.
- ✓ Through Wall Sleeving - Check that it is fitted and sealed
- ✓ Isolation valve-check for function, convenience of positioning and leaks.
- ✓ Flush at least 5 litres of oil through the line to check for contamination and to clear the oil line of installation debris and trapped air.
- ✓ Electrical- check for correct fusing, location and specification of any isolation devices.
- ✓ Ventilation make sure that ventilation is provided in line with O.F.T.E.C requirements.
- ✓ Chimney system should be checked to make sure that it complies with the relative standards, Building Regulations and all other instructions given.
- ✓ Check the appliance is fitted with adequate clearances from combustibles.
- ✓ Check high and low fire as per section

- ✓ Check action of barometric damper.
- ✓ Ensure that the customer is instructed on the basic use of the appliance, timers, controls and oil / electrical isolation devices if fitted.

COMMISSIONING THE HIGH AND LOW FIRE

1. ADJUSTMENT OF THE OPERATING STAT
2. The set point of the operating stat can be adjusted as follows.
3. The thermostat drive knob has a cover, which slips over it and grips it acting as an adjustable driver.
4. The driver has a dead stop, which acts against a small brass screw so restricting the rotational movement to one full turn, thus allowing adjustment of water temperature from mini to maxi through one full turn.
3. If the water temperature settings are not as required, remove the plastic push on cover and rotate the aluminium knob anticlockwise until the weight comes off.
4. Allow the stove to come up to the required temperature (say 65 deg c) and then rotate the aluminium knob until the fire starts to reduce, refit the plastic push on cover with the scale set as required.

2. ADJUSTMENT OF THE SAFETY STAT

1. The safety stat can also be adjusted if it does not trip off at the desired temperature of 85 deg C.
2. To adjust the set point on the safety stat the aluminium top cover of the oil valve has to be removed. It is held in place by the three slotted screws and the base casting of the thermostat stand.
3. Undo the three slotted screws and slacken the other two, lift the cover up and work it out from under the aluminium thermostat casting.
4. When the cover is removed it will reveal the operating bellows of the safety stat, on the left hand end of the bellows is a straight knurled nut, which if screwed in will decrease the temperature, set point and if screwed out will increase the temperature set point.
5. The knurled adjuster screw is very sensitive and needs only slight rotational movement

CONTROLS LIST

1. OCI VALVES

Depending upon the model, Bubble stoves have the following controls.

- ✓ Oil flow control knob 1 to 6. (you to set)

- ✓ Water temperature control knob. (you to set)
- ✓ Safety thermostat. (automatic)
- ✓ Oil trip lever. (you to set and automatic)

2. THE oil trip safety fuel cut off lever is situated on the side of the valve, it takes the form of a small bent metal lever projecting out from the side of the valve.

LIFT FOR OIL OFF.

PRESS DOWN FOR OIL ON.

3. The lever is designed to cut off the fuel supply into the oil control valve either manually or Automatically consequently stopping the stove by shutting off the oil supply from the oil control valve. It is also designed to warn you of a problem with the oil control valve, if the stove goes out unexpectedly and you can't get the trip lever to trip on there are two possible causes.

3-1. The water temperature has become too hot and caused the safety stat to shut off the oil supply.

3-2. Oil has entered the safety float chamber thus automatically shutting off the oil supply into the stove.

If item 3-1 has caused a shut down you will have to wait for the water temperature to drop before you will be able to reset the valve.

If item 3-2 has caused the problem you will have to de flood the valve see faultfinding.

2. OIL FLOW CONTROL KNOB

1. Controls the flow of oil into the pot and can be rotated to adjust the flow of oil from minimum to maximum or any setting in between, determined by where you set it, calibrated from off through 1 to 6.

2. Fully clockwise turns the appliance off,

3. Setting No 1 is the minimum

4. Setting No 6 is the maximum

3. WATER TEMPERATURE CONTROL KNOB

3-1. Also controls the flow of oil but this control is automatic and different to the oil flow control knob as it is related to the water temperature.

3-2. FULLY CLOCKWISE is for low water temperature

3-3. FULLY ANTI CLOCKWISE is for high water temperature.

3-4. The water-sensing thermostat will automatically control the boiler water temperature at whatever setting is required.

3-5. If the stove is fired up at full output. (oil control turned to 6) it will run on full flame until it achieves the target water temperature as set on the stat

knob, and then automatically drop the flame onto mini, from there on it will automatically modulate the flame from high to low in line with the heating load demand.

3-6. This means that when the required water temperature is achieved it will not be possible to turn the flame up via the oil flow control knob because the water temperature control has taken priority.

4. EXTINGUISHING

1. Shutting the burners off is a very simple manoeuvre.
2. Turn the oil flow control knobs FULLY in a clockwise direction until you feel it stop in its off position.
3. After a few minutes, the flame will die down and eventually extinguish itself.

DO NOT TOUCH THE STOVE UNTIL IT HAS COMPLETELY COOLED DOWN.

NEVER TRY TO RE LIGHT A HOT BURNER; MAKE SURE THAT THE BURNER IS COMPLETELY COOLED DOWN BEFORE RE LIGHTING.

DO NOT TURN OIL ON UNDER ANY CIRCUMSTANCES WHILST THE STOVE IS STILL HOT OR WARM.

WATER HEATING

1. Bubble stoves are all high water content boilers and as such can easily replace solid fuel installations with the minimum of complication.
2. An equivalent size for size Bubble stove is capable of giving approximately twice the output of a similar solid fuel appliance over a 24 hr period.
3. Before you start to install a water heating Bubble stove remember that the central heating system must comply with BS:5449 part 1.
4. If a combined heating and domestic hot water system is to be used, then a double feed indirect hot water storage cylinder to BS:1556 part 1 should be used.
5. In order to prevent the build up of scale and corrosion a suitable inhibitor should be used.
6. The system must be correctly vented.
7. The height differential between the header tank and the appliance must not exceed 15.2 metres (50 feet)
8. Whilst it is accepted that heating systems are sometimes already installed, you must be aware that if you are fitting a Bubble stove with non electric water temperature control the plumbing layout must be of a suitable design.
9. If it is not it will create a series of problems detailed in the faultfinding section of this publication.

10. GRAVITY SYSTEMS

1. On gravity- systems the hot water cylinder must be placed above the stove and as close as possible to it keeping horizontal runs as short as possible.
2. All gravity pipe work must rise on flow and fall on return and be a minimum of 28mm dia.
3. To reduce the resistance to flow, use swept bends, do not use elbows.
4. Use copper pipe work.
5. Use high water content radiators.
6. Use hot water cylinders with 28mm dia internal coils.
7. The primary circuit should have a total length of not more than 6 meters otherwise the recovery time of the hot water cylinder will be increased beyond an acceptable period of time.
8. Primary- circuit pipe work must not have valves or other devices that can be used to interfere with the free flow- of water.
9. A 1" safety valve must be fitted as close to the boiler as possible and the outlet from it must be directed to a safe location.
10. To reduce the build up of lime scale in the primary circuit pipe work the temperature of the water should not be allowed exceed 65 Deg C and a suitable water treatment should be added.

4.0 PUMPED SYSTEMS

1. Where pumped systems are employed, suitable injector tees should be used to induce the flow of water through the primary system.
2. Where additional radiators are fitted as heat leaks, the pipe work must be kept as short as possible, rise on feed and fall on return.
3. Where a common return is used an injector tee must be incorporated into the system to ensure adequate primary circulation when the circulating pump is operating.
4. The system must incorporate a gravity circuit which will normally heat the domestic hot water and unvalved radiators with a combined unvalved output of at least equal to the minimum water heating output of the stove (see individual stove specs for details.)

When the appliance is not connected to a domestic hot water system a gravity system must still be used with the unvalved radiator(s) on the gravity circuit having an output of at least the minimum output of the stove in case of pump failure.

6. All pipe work in the primary circuit must be 28mm diameter and the gravity flow pipe must rise continuously from the boiler to the open vent. Typical systems are shown in illustrations FIGS 15,16,18,19 and 20.

THE COAL KIT

1. The coals are located on the coal support bars, which are designed to glow red in the flame, passing on the incandescence into the coals.
2. Care must be taken when positioning the coals on the spikes.
3. The whole system is designed so that it can be removed in its entirety without the need to disturb the coals making routine cleaning and servicing very easy.
4. To remove it, turn the stove off and when it is cooled down, undo the front door knob, open the door and carefully lift it out, using the shaped front fret.
5. The coal support bars and coals may need replacing from time to time and they are available from your supplier as a service item.
6. Take care not to drop any coals into the pot.

FLUE REQUIREMENTS

Each different appliance will have appropriate flue details specified in its technical installation details.

Detailed below is a typical requirement.

1. Chimney

1. To ensure satisfactory performance from the BUBBLE STOVE hot and cold condition chimneys must be capable of maintaining a constant steady vacuum of not less than .02" W.G. when COLD or more than .07" W.G. when HOT, to achieve this the chimney needs to be about 7-8 metres high x 125 dia minimum and must terminate with an anti downdraft cowl.

2. It is most important that any existing chimney faults such as :-

- ✓ Occasional or permanent down draught
- ✓ Excessive up draughts
- ✓ Fume leaks
- ✓ Regular blockages are established and corrected before any installation work is carried out.

3. If you are unsure about the condition of the chimney, have it thoroughly cleaned and checked by a suitably qualified person who should be a member of N.A.C.S.

4. If the chimney is on an exposed wall, always reline and backfill around the lining with vermiculite to keep it warm and prevent condensation.(lining dia 125mm)

5. The chimney should terminate 2 feet above the ridge of the main or highest roof, in compliance with relevant legislation.

7. Provision must be made to allow adequate and easy access into the chimney for cleaning purpose.

8. The flue pipe from the stove must not be less than 5" diameter and must comply to one of the following:

9. Acid resistant vitreous enamelled flue pipe to BS 1344 Part 2.

10. Stainless steel to BS1449 Part 2.

11. Cast iron to BS41.

12. Mild steel with a wall thickness of 3 mm minimum.

2. CHIMNEY TERMINATION

- ✓ The chimney must be terminated with a suitable anti downdraft cowl such as a VEDETTE or EUROCOWL ETC.
- ✓ Abnormal chimney terminal locations are very likely to cause problems under certain windy weather conditions.

3. BENDS IN FLUES AND CHIMNEYS

- ✓ Flues and chimneys should always be vertical wherever possible.
- ✓ On installations where using a bend is unavoidable the maximum allowable bend angle from the vertical is 45 degrees.
- ✓ 45-degree runs should be kept as short as possible (less than 1 metre long) and there should never be more than two bends used.
- ✓ Horizontal flue runs are not allowed, unless the stove is fitted with a rear flue, in this case the maximum allowable run will be 400mm.

OIL FEED AND STORAGE REQUIREMENTS

NOTE

1. 28 Second Commercial Kerosene to BS2869 Part 2: 1988 Class C2 is suitable for use with this appliance. 35 second versions are available.

2. Installation of all oil feed pipe work and storage equipment should be in line with :- BS5410 Part1

Steel oil storage tanks to BS799 Part 5, if there is any doubt consult the tank manufacturer.

OFTEC requirements book T3 July 1995 rev.7.95

Minimum size storage tank should be 300 gals.

3. The burner can be supplied with oil via gravity or pumped oil feed system.

4. If a gravity system is used the base of the tank must not be less than half a metre or more than three metres above the burner.

5. Where the tank will be fitted at a lower level than the stove a lift pump must be used with max head above the burner base of 3 metres, the max head of the lift pump over the oil supply tank must not exceed 5 metres.
6. A suitable filter must be fitted and the minimum fuel line diameter is 10 mm but this is dependant upon the length of run.
7. If other appliances are being supplied from the same oil supply allowance must be made when pipe sizing to ensure that an adequate supply of oil be maintained for each appliance.
8. The oil line must be sleeved and sealed in a plastic tube where it passes through any brickwork.
9. A remote acting fire valve such as a Teddington KBB C 150 deg F must be fitted at the point where the fuel line enters the property.
10. There must also be an isolation valve fitted in the same room as the appliance in a conveniently accessible place.
11. Environment protection is of paramount importance.

Where properties are prone to be at risk from flooding take great care when fitting oil storage tanks.

Make sure that they are supported on reinforced concrete walls, which are built high enough to keep the tank well above any potential flood level and strong enough to withstand swollen river current or flood tide conditions. Make sure that the tank is firmly fixed to the supporting walls so as not to be washed away.

12. Tall, slim line plastic oil tanks must be secured to a substantial base to prevent them from being blown over when they are empty or have low oil content.

VENTILATION REQUIREMENTS

Air Supply to the Burner.

1. See Building Regulations J1/2/3 section 4. and BS5410 part1.
2. **Calculate air requirements at 5.5 cm sq. per kW of output.**
3. It is most essential that a permanent free air supply is established as the burner cannot function correctly without it.
4. Provision for an adequate FREE air supply in to the room, space where the appliance is fitted is required.

It can be established by multiplying the kW output of the appliance by 5.5cm sq.

5. The air supply will take the form of a purpose designed, NON hit or miss, air vent of correct cross sectional area.

It is important that this air vent should not be obstructed in any way.

6. If an extractor fan is fitted in the same room as the appliance or if there is an open fire in an adjoining room then extra compensatory air must also be made available for both these extra requirements.

7. Minimum extra requirement for extractor fans is 55 sq cm and it is preferred if the extra air supply can be positioned in such a way as it can supply air to the extractor fan without the air stream passing the stove.

8. Minimum ventilation requirement for open fires is 212 sq cm

9. Test for adequacy of air supply is to-:

- ✓ Set the oil fired appliance going and close all doors and windows in the room
- ✓ Turn the extractor fan on to its maximum capacity.
- ✓ Light the open fire and let it get well established,
- ✓ Test for adequate maintenance of chimney vacuum on the stove, both before and after the extractor fan is turned on, with the open fire going.
- ✓ During the tests the flue vacuum of the oil-fired stove should be measured to see if there is any noticeable reduction beyond that called for in the appliance installation literature.

FITTING ELECTRIC IGNITION



Applicable Regulations.

The installation of this equipment must be carried out by a technically competent person.

Electrical Regulation.

British IEEE wiring regulations, latest edition.

Introduction.

There are two types of ignition kits available for Bubble Stoves

Type 1 for B1 and B2 Appliances

A remote, push button, time delay switch, pre set to give an on time of about two and a half minutes. See fig 1 and 2

Type 2 for B2I and B3 Single Pot Appliances

An integral, manually operated push button switch fitted to the metal enclosure. See fig 16

Fig 1 Remote push timer



3.4 Fig 2 Time delay adjusting screw



3.5 An ignition transformer.

FIG 3



SPECIFICATION

PRIMARY 230 VOLTS

SECONDARY 2.9 VOLTS

AMPS 2.5

A glow type ignition plug

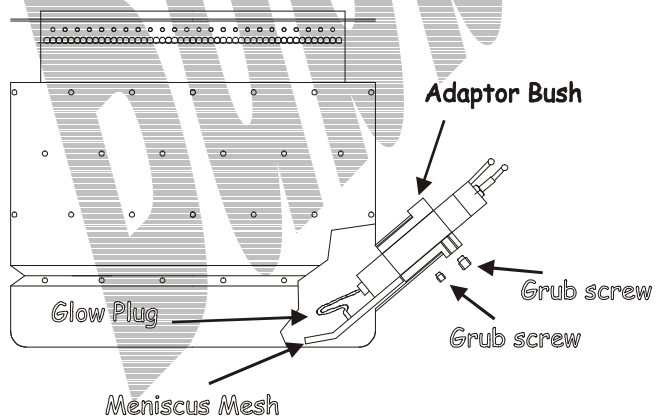
Attached to a steel adaptor bush.

Fig 4



The adaptor bush is secured to the ignition plug via a m4 grub screw and the whole assembly is then pushed down into the lighting port tube so that the tip only of the meniscus wire mesh touches the bottom of the pot.

Fig 5 Plug in Pot Arrangement



3.8 OPERATION Type 1

When the remote, push button timer is depressed, the transformer is energised via a switched live.

The output from the energised transformer causes the ignition coil on the ignition plug to glow.

Allow 20 seconds to elapse before turning the oil on to setting no 1 on the oil flow control knob.

The 20 seconds allows the glow plug to pre heat the base of the pot allowing the oil to ignite faster.

The meniscus mesh on the ignition plug draws oil up to the hot coil and ignition occurs.

The remote push button timer can be adjusted via the indicated slotted screw in the rear of the switch.

Out to decrease the time or in to increase the time See 3.4 fig 2.

Make sure that there is sufficient on time to allow the burner to ignite, normally about two and a half minutes is adequate.

Operation Type 2

When the integral button is depressed the transformer is energised via a switched live.

The output from the energised transformer causes the ignition coil on the ignition plug to glow.

Allow 20 seconds to elapse before turning the oil on to setting no 1 on the oil flow control knob.

The 20 seconds allows the glow plug to pre heat the base of the pot allowing the oil to ignite much faster.

The meniscus mesh on the ignition plug draws oil up to the hot coil and ignition occurs.

Keep the switch depressed until flame can be seen, this usually takes about 20 to 30 seconds.

5. Installation

Fitting of the electric ignition device requires the installer to make three considerations

Levelling

When levelling the stove make sure that the stove is set to allow the oil to flow slightly towards the glow plug.

This can be achieved by adjustment to the levelling bolts (B1 and B2 stoves).

5.2 Service Access

Allow adequate space around the stove for servicing or repairing any of the additional equipment fitted to the stove.

Wiring

When fitting electric ignition kits pay attention to the routing of the wiring from the transformer to the glow plug.

Make sure that the wiring is neatly fixed and is not placed close to the pot or it's immediate environs.

High temperature silicone insulators protect the copper conductors.

Wherever possible keep the conductors apart and do not allow the insulation material to fret or come into contact with sharp edges.

Always take care to make the future replacement and servicing of the plug as easy as possible.

We provide two porcelain connectors (ITEM 7 ON PARTS LIST), which should be fitted near to the plug as illustrated in figs 12, 13 and 14

On B1 and B2 appliances, the transformer is housed in a metal enclosure, which is fitted on two stand offs, attached to the rear heat shield. (See Figs 10 and 14)

There is a three-pin plug wired up to heat resisting cable for the power in and the transformed power out is connected into the bottom of the transformer. See fig 15a)

For future service work, easy access to the three-pin plug is essential

Make sure that good tight connections are made on all the low voltage output, it may be necessary to scrape the varnish off the conductors.

Setting Up The Burner

The stove must be levelled up so as to allow oil to run slightly towards the spark plug.

Checks Before Lighting

1. Before attempting to light the stove it is important that the following points are checked.
2. Check that the plug is pushed fully into its guide tube and that the tip of the meniscus mesh is just touching the base of the pot.

First Lighting

Open the door.

Remove the coal kit.

Remove the catalysers

Cock the oil valve trip button by pressing it down

Turn the power on at the switch isolator and press the timer.

After 20 seconds turn the oil on at no 1 or its lowest setting and wait until it touches the meniscus mesh.

Ignition should occur between 10 and 20 seconds after oil touches the metal mesh.

After you are satisfied that ignition is occurring as it should, turn the stove off and let it cool down, replace the inners of the stove and ignite it on setting 1, let it warm up to full output and then turn the oil off, when the appliance has cooled down try another ignition just to make sure that ignition occurs correctly.

Servicing.

The plug should be removed and cleaned at regular intervals.

Maximum 6 monthly intervals.

Make sure that the mesh is not burned or distorted.

Make sure that oil runs slightly towards the plug mesh.

Make sure that the mesh is clean.

Check the insulated supply wiring to make sure that it is not short circuiting or overheating.

Figures.

Additional information follows in the form of illustrations.

Fig 10 B1 transformer box fitted



Fig 11 B1 Stove



Fig 12 B2 Stove



Fig 13 B3 single pot stove



Fig 14 B1 rear mounted transformer box

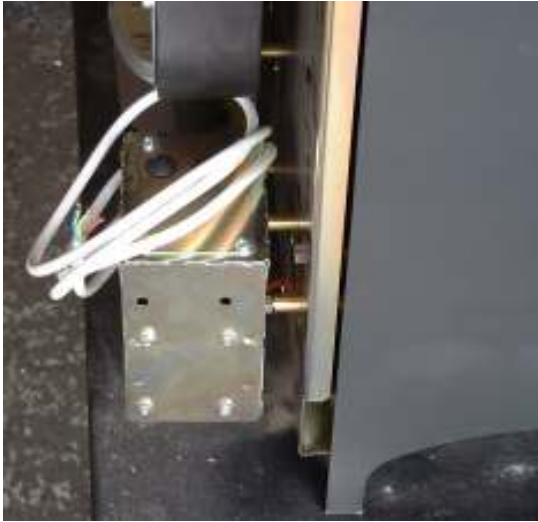
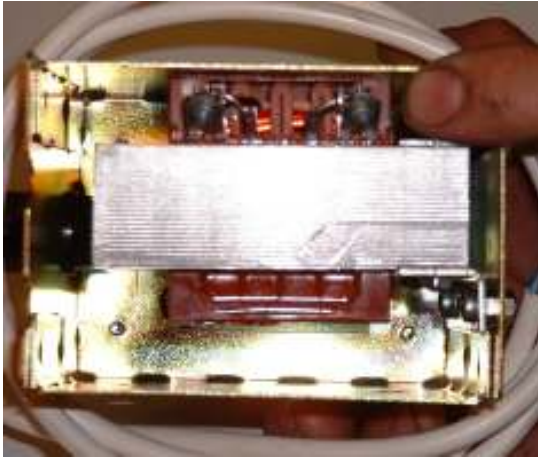


Fig 15 B3 single pot stove



Fig 15a Low voltage output terminals



12. SCHEMATIC WIRING DETAILS

L = 240V LIVE CONDUCTOR

N = NEUTRAL CONDUCTOR

E = EARTH CONDUCTOR

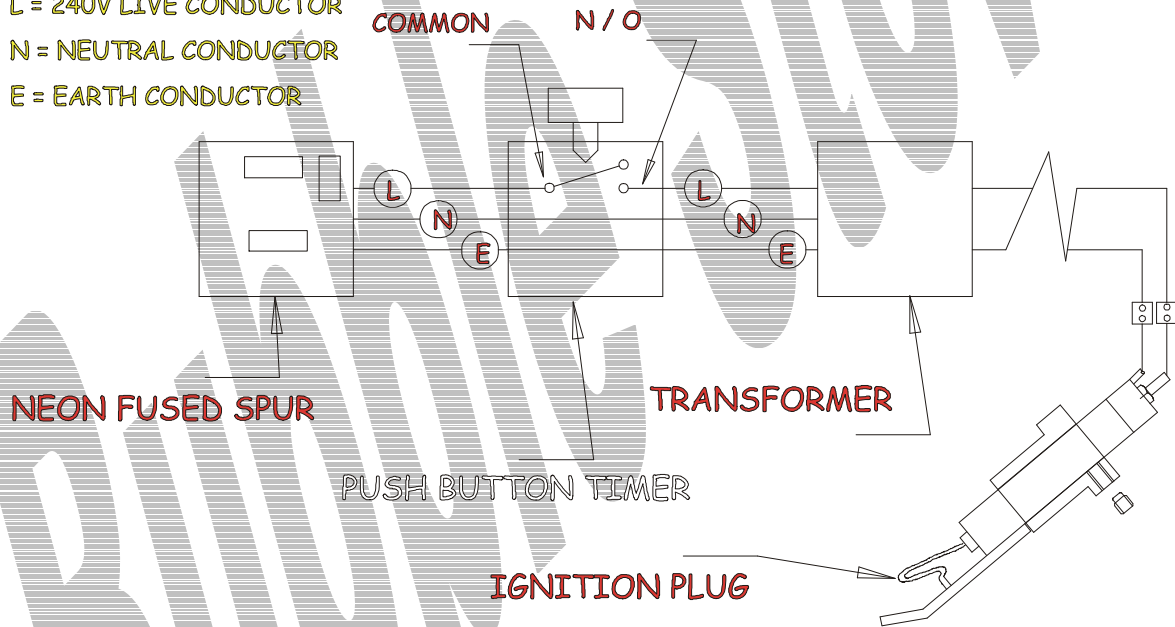
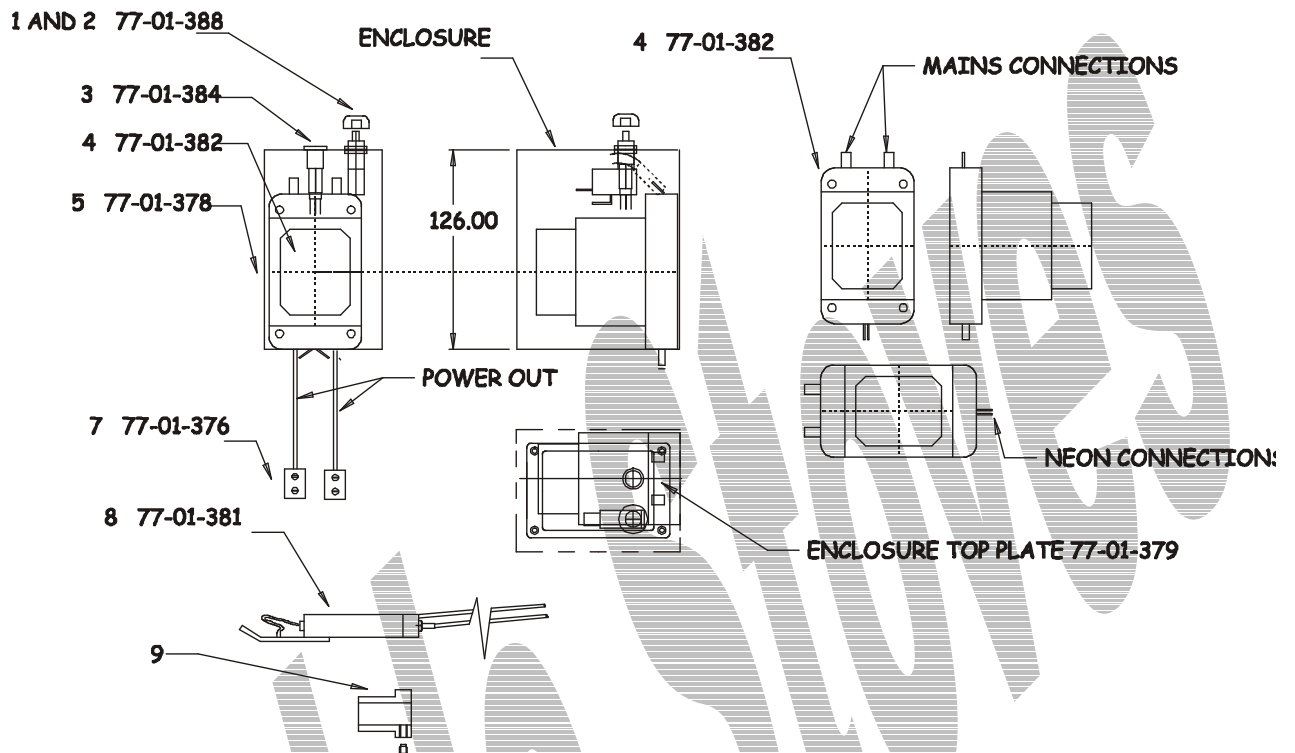


FIG 16 TYPE 1 TRANSFORMER ENCLOSURE AND CONTENTS

Ignition kits for B1 and B2 appliances have remote time delay switches



13. ELECTRIC IGNITION PARTS LIST

Item No	Description	PART NUMBER	Qty	Check y
1/2	PUSH BUTTON SWITCH	77-01-511	1	
3	NEON	77-01-384	1	
4	TRANSFORMER	77-01-382	1	
5	METAL ENCLOSURE	77-01-378	1	
7.	PORCELAIN CONNECTORS	77-01-376	4	
8.	GLOW PLUG	77-01-381	1	
9	ADAPTOR BUSH	STOVE DEPENDANT	1	
10	REMOTE TIME DELAY SWITCH	77-01-511	1	
11	BACK BOX FOR REMOTE TIME DELAY SWITCH	ELEC 010	1	

FIGURES