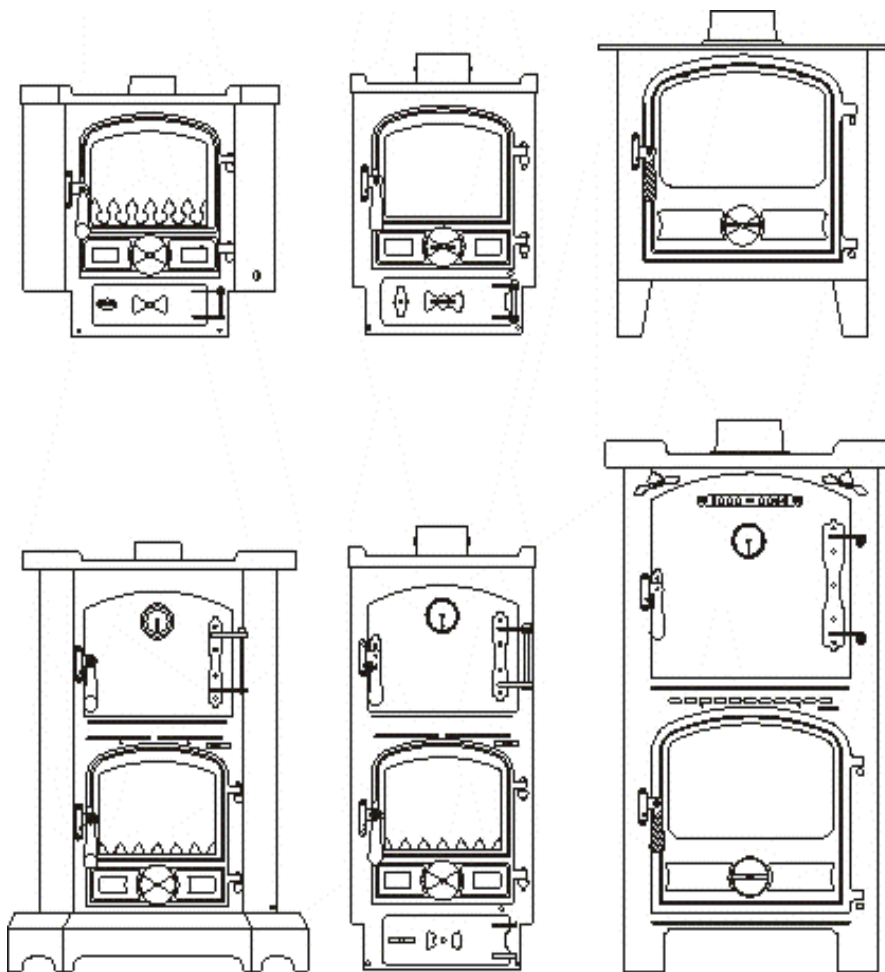




## WOOD AND SOLID FUEL OVEN STOVES ©

### USER INSTRUCTIONS ISSUE 2@ 07-08-12



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**1. WARNINGS.**

- **During normal use, many parts of this appliance and appliance chimney can become too hot to touch. It is essential that you provide secure and suitable fireguards.**
- **Always use fireproof gloves when attending to or using the appliance.**
- **The lower glass door panel on this appliance conforms to the requirements of BS 1945: 1971 and satisfies the heating appliance (Fireguards Safety) regulations 1991.**
- **On initial firing of the appliance the paint finish on the appliance and chimney will cure through the application of heat. During this process open all windows, door and ventilators until all traces of fumes have cleared.**
- **Before purchasing fuel for your appliance, always check with the supplier that the fuel does not contain Petro Coke.**
- **Do not use Petro Coke or any petro Coke derivatives on this appliance. This type of fuel will cause damage to the stove grate, door glass and other internal components.**
- **When using this appliance always make sure that adequate ventilation is available, do not block or obstruct purpose made vents. The appliance must have an adequate and unrestricted supply of fresh air.**
- **Frost Protection, if you have a boiler version appliance, make sure that the water**

in your heating system circuit has a suitable water treatment is added, your installing engineer will advise you on this.

- If you are unsure about these warnings, **seek advice from any HETAS registered engineer.**

#### Tools

- The stove is supplied with a wire handled poker and a cast iron tee bar riddling / de ashing tool.
- The tee bar inserts into the brass riddling rod eye and the other end is used to insert into the ash pan and acts as a handle.

#### Spare Parts

- If you need to replace any parts on your oven stove, make sure that you use genuine original Bubble parts.
- **Parts not covered by warranty are: -**
- Riddling Grate
- Riddling Grate Frame
- Firebricks
- Baffle plate
- Door Glass
- Paint finish
- **Note the use of Petro Coke or Petro coke based fuels will invalidate the warranty and lead to damage of all the components not covered under warranty.**



## 2. INTRODUCTION.

The oven stove brings a whole new dimension to home heating. In addition to all the outstanding features of Bubble Stoves the oven stove a new cooking feature is added.

As a user - owner you will need to familiarise yourself with how the stove side works and how the oven side works, once you have acquired the necessary skill you will be able to provide home cooked food for up to four persons.

### 2A STOVE DETAILS

Most small solid fuel stoves have legs, and this arrangement is fine, but it means that everything has to be squeezed into the space above the legs and to keep the stove small in height this invariably means that a compromise on the available space has to be made.

This compromise has several implications affecting -:

**The depth of the ashpan** is critical; if it is not deep enough ash spills out and generally creates excess dust and a requirement for regular emptying.

The space between the ash pan and the bottom of the riddling grate is very important as this space allows air for combustion to travel up through the riddling grate, the air for combustion has another important function which is to keep the riddling grate cool and so stop it from burning out.

As soon as ash is allowed to build up and touch the grate, air is then prevented from cooling it and as a consequence the grate can rapidly distort and twist or burn out.

The depth of the firebox is relative to the amount of fuel, which can be loaded into the stove, and this in turn part determines the length of time, that the stove will stay in for.

There are three air routes into the stove.

- Air wash air to help keep the door glass clean.
- Over fire air for wood burning.
- Under fire air for solid fuel.

Triangular construction creates a new layout allowing the most economical use of space, a rigid design and a better-shaped combustion chamber.

To eliminate the risk of cracking the whole body of the stove is manufactured from high quality steel.

The triangular body is inherently strong comprising of an 8mm top plate, an intermediate and base plate, further strengthens it.

The triangular shape allows plenty of width in the firebox so allowing good size logs to be easily loaded.

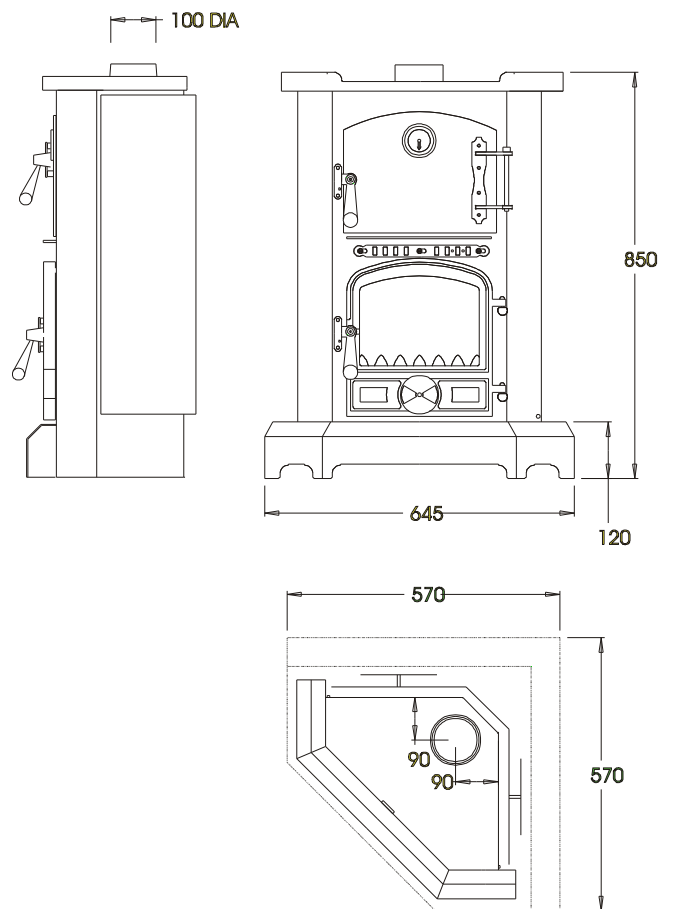
There are two choices of grate and three choices of air inlet that makes the stove uncompromising when used as a wood burner or solid fuel.

Of course in its solid fuel set up it can burn logs as well but to set the stove up as an out and out wood burner the special wood grate must be fitted.

### 3. MAIN FEATURE SUMMARY.

- Space saving.
- Fully adjustable door hinges.
- Fully adjustable door lock.
- Stay cool easy to use door handle.
- Stainless steel grate carrier.

- Stainless steel front fret.
- Stainless steel grate.
- Deep ash pan, capable of holding 12 hours of burnt ash.
- Deep combustion chamber capable of holding a large load of fuel.
- Air wash air to help keep the door glass clean.
- Over fire air for wood burning.
- Under fire air for solid fuel.
- If water heating is required it is taken care of via a fully integral triangular boiler, which forms the whole upper outer part of the stove reducing radiated heat to the fireplace.
- Built in heat shields on dry stoves.
- Constructional strength, the triangular body is inherently strong and it is cross-braced by an 8mm thick top plate, an intermediate plate and a base plate.



BUBBLE PRODUCTS

## 4. ASSOCIATED PROBLEMS.

The stove has a host of features designed to give the boat owner the best opportunity for installing and running a solid fuel heat source.

There are several problems involved in using any solid fuel heater on a boat and to help you make sure that you take the best course of action to minimise the effects of these problems you need to have a good understanding of why they arise.

The following information will detail problems specific to narrow boats.

Critical problems, order related.

- Safety.
- Fuel.
- Chimney.
- Location of Mooring

The boat is moored in a position near to high buildings, high trees or higher surrounding land.

If there are any of the above in the immediate location (within 100 -200 yards) of the boat, **under changing and fluctuating wind conditions, downdraughting will occur.**

If you have to moor in situations where the above-mentioned criteria exist, and the stove is running, you must **let it go out.**

**Don't leave the appliance running and unattended.**

**Don't leave the appliance running overnight.**

### 1. Safety.

Safety issues are set out below.

### 2. Installation / Use - Correct Compliance.

The appliance must be installed and used in line with our installation and user instructions.

### 3. Fumes - Protection From.

There are 4 main causes of fume or smoke to leak from the appliance.

- The chimney is blocked.
- There are too many bends in the chimney.

The above deck chimney extension is not high enough.

- The chimney is not airtight.
- The boat is moored in a position near to high buildings, high trees or higher surrounding land and downdraughting is occurring.

**Don't leave the appliance running and unattended.**

**Don't leave the appliance running overnight.**

### 4. Fire - Protection From.

Fire can be caused by a variety of potential danger points and because of the space limitation on boats; this risk is ever present and must be assessed.

Assure yourself by carrying out radiation tests.

Run the stove and check out the temperature on all surrounding, adjacent or nearby combustible materials and make sure that they are adequately protected from the effects of heat radiation.

**Protection can be gained by the use of -:**

- Sheet metal heat shields and spacers.
- Heat resistant boards.
- Fireguards.

**Combustible materials can be-:**

- Wooden furniture.
- Curtains.
- Wooden panels or frames adjacent to the flue pipe or where it passes through the deck of the boat.
- Carpet or flooring close to the appliance.
- Items near to the appliance, which could fall onto it and ignite, should the boat suffer a slight impact.

### 5. Burns - Protection From.

**During normal use many parts of this appliance and appliance chimney can become too hot to touch. We recommend that you provide and secure suitable fireguards.**

**ALWAYS USE heatproof gloves.**

**The glass door panel on this appliance conforms to the requirements of BS 1945: 1971 and satisfies the heating appliance (Fireguards**

Safety) regulations 1991 but it does get very hot and must not be touched whilst the stove is running.

The door-opening handle is designed to stay cool and can be used whilst the stove is running.

## 5. FUELS.

### 1. About Wood Burning.

The first thing to learn about burning wood is that the fuel has to be dried or seasoned and technically this means moisture content of less than 20%. To achieve this the wood needs to be stored for about 12 months after cutting, before burning. This is a general guide and dependent upon the type of wood to be used, Pine will dry out faster than Elm, and some woods such as Willow will take forever to dry.

Cut logs sizes to suit the size of the stove you are going to burn them on.

We recommend log length of about 200mm x 150 dia, if you are going to quarter a log, then any size up to about 250mm dia will be adequate.

Quartered logs are ideal as they are roughly triangular in shape and will fit nicely into the firebox.

When loading with a fresh charge of fuel rake the charcoal forward and put the logs to the back of the firebox, this way the airwash will fall down the glass into the charcoal and then onto the fresh fuel.

Don't be tempted to put too much fuel on in one go, a little and often is always better. We have more to say on wood burning and refuelling in the cooking section later on.

You will not be able to burn wood properly until you have built up at least 30mm of wood ash on top of the wood grate, this can take two to three days of burning to build up, when it has, riddle with care as you can soon riddle it away.

You will find that when you are wood burning you will only have to empty the ash pan once a week, if that.

Take great care with very dry fuel such as compressed wood waste, peat briquettes or kiln dried timber, if the stove is excessively loaded with these fuels it can race away and over fire, it is better to mix these fuels with other fuels or use them sparingly.

Burning green or wet wood is a complete waste of time, it will be totally unsatisfactory and result in increased fuel consumption, reduced heat output and excessive tarring of the chimney.

### 2. About Coal Burning.

Coal burns in different phases of combustion.

#### Phase One Burn

Is long flame combustion where air has to be supplied from under the fire bed and up through a grate, into the burn zone.

During this phase, tar and volatiles are burned or vaporised off from the coal, because the coal has a very high calorific value, masses and masses of air is required to allow proper combustion to occur.

If air in sufficient volume is not allowed to enter the firebox then the incomplete burning process will generate a high volume of unburned hydrocarbons in the form of dense, heavy smoke and soot particles, most unpleasant.

#### Phase Two Burn

In its next phase of combustion, the remaining fuel burns like coke with what we call "short flame incandescence."

If you burn house coal on your Bubble stove, it must be 50mm doubles in size and it must be placed onto an established hot fire, throw the shovel away and use tongs to load the fuel on to the fire.

**Do not put more than two x 50mm single pieces on at any one time otherwise the door glass will soot up and the chimney will smoke.**

Load the fresh fuel to the back of the stove and give the stove plenty of air through the over fire and under fire controls.

If you don't allow adequate air into the fire, the door glass will soot up and smoke will be exhausted through the chimney, annoying your neighbours and sooting up the stove and chimney.

### 3. About Hard Coke.

It is possible to burn coke on a Corner Bubble on a boat but you have to experiment with the air controls and building up the fire during the evening.

You will have to use the long chimney extension, as you will not be able to maintain enough chimney vacuum without it.

#### 4. About Fuels Generally.

Do not use Petro Coke on Bubble Stoves, if you do it will invalidate the warranty and cause damage to the grate, grate frame, stove glass and could damage the stove beyond repair.

Petro Coke is the waste products from oil refining, kilo for kilo, it is three to four times more powerful than ordinary house coal.

It is supplied by coal merchants and mixed with hard coke to form a pretty powerful combustible cocktail. If the cocktail is mixed correctly it can be a good fuel, but we have found that the mixing process is not reliable and sometimes a bag of fuel can be almost all petro coke.

Obviously manufacturers and coal merchants will deny this fact.

There is a large variety of solid fuel available for use on solid fuel stoves however because the stove is designed for use on boats we recommend the use of large type solid fuel such as -:

- Anthracite nuts 50mm. (Stovesse Nuts)

Anthracite is a hard fuel and difficult to get going. It burns with very little ash and gives off lovely wispy blue flames.

- Furnacite.

Furnacite is good and stays in well.

Established fires will run on air wash only.

- Coalite.

Coalite burns with plenty of clean flames and is very easy to light. It is designed specifically to be run on open fires in smoke control zones.

Established fires will run on air wash only.

- House coal.

See our earlier comments in sec 2 on what to buy and how to use it.



#### 6. FUEL LOGISTICS

One of the major complaints about using solid fuel stoves on boats is dirt and dust.

This is brought about because the chimney on a boat cannot generate the vacuum required to suck dust up the chimney as it would in a house or normal long chimney.

In a boat space is at a premium and any dust soon shows itself.

We have found that there are several ways we can improve this situation as follows.

- Because we have a short chimney we have to keep it hot to make it work, therefore before opening the stove door, give the stove a few minutes of full bottom air to increase the temperature in the firebox and so increase the flue vacuum.
- Riddle the stove with a hot fire and always keep the door closed whilst riddling.
- Use a tippy ash pan holder to dispose of the ash. Some boaters have an extra tippy to store hot ashes in until they have cooled down.
- We like to use anthracite doubles because it is so clean and dust free. Store the fuel in a suitable bucket and use tongues or a small shovel to refuel.
- Always carry firelighters and or pre prepared bundles of kindling sticks to make lighting quick and easy.

- Keep your fuel carefully stored and keep a good mix say Anthracite, Sticks and well-dried logs.
- Keep logs in a suitable basket to avoid mess.
- Use a good quality hearth tidy.
- **Use the Harworth high performance above deck chimney system which is specially designed to keep the flue gasses hotter and help to maintain a good chimney vacuum.**

Do not store fuel within a combustible distance from the appliance.

Do not use chemicals or fluids to start the fire.

## 7. CHIMNEY

This is the one of the most interesting problems a boat owner wanting to use solid fuel has to deal with and as the chimney affects all aspects of running the stove, we take time here to list the following information for your consideration.

The power, suck or vacuum the chimney can develop depends upon the following-:

- **ITS HEIGHT.**
- **ITS DIAMETER.**
- **THE TEMPERATURE OF THE GASSES IN IT.**
- **THE RESISTANCE OF THE INNER SURFACE OF THE FLUE PIPE OR PIPES.**
- **LOCATION OF MOORING**

The boat is moored in a position near to high buildings, high trees or higher surrounding land.

If there are any of the above in the immediate location (within 100 -200 yards) of the boat, **under changing and fluctuating wind conditions, downdraghting will occur.**

If you have to moor in situations where the above-mentioned criteria exist, and the stove is running, you must **let it go out.**

**Don't leave the appliance running and unattended.**

**Don't leave the appliance running overnight.**

It is obvious that on a boat the first and second requirements are in short supply, we normally have

low flues which are small in diameter and generally not very well insulated, coupled with all these problems we have the other one which is the boat moves across constantly changing surroundings and through locks, into headwinds and crosswinds and also moors up in constantly changing locations which create major possibility's for downdraughting to occur.

Any bend in any part of the chimney roughness on the internal chimney wall will slow down the velocity of rising gasses and reduce the effectiveness of the chimney.

Any slight reduction in the flue gas temperature will reduce the chimney vacuum or pull, hence when the stove is slowed down for all night burning, as the flue gas cools down the chimney vacuum reduces and the chimney could develop so little pull that the stove may well go out. This problem is highlighted even more during very cold weather when the chimney can cool down even faster.

On a boat this is obviously not possible, therefore we have to take great care to make sure that we get the chimney to work as well as possible given all the limitations that Narrow Boats impose upon us.

**Here are the rules.**

1. Always use top outlet for flue pipe take off.
2. Never put any bends in the flue. (To maintain a concentric fit, we will allow a slight kick off the stove and a similar kick into the deck flange).
3. Always try to get the stove as low as possible in the boat as this will allow installation of maximum length flue pipe.
4. **Use the Harworth high performance above deck chimney system which is specially designed to keep the flue gasses hotter and help to maintain a good chimney vacuum.**
5. If you have to moor in a position near to high buildings, high trees or higher surrounding land.

**Don't leave the appliance running and unattended.**

**Don't leave the appliance running overnight.**





5. Fit a rotary swinging cowl to each extension or make one interchangeable.
6. Clean or have the chimney cleaned regularly. (Frequency depends upon type of fuel and length of time used).
7. All rules are there to be broken, but you have been warned.

**Don't phone in and ask for dispensations.**

## 5. OPERATING PRINCIPLES.

The output generated from a solid fuel stove depends upon several factors.

1. The ability of the chimney to pull air through the stove.
2. The size and capacity of the firebox.
3. The grate design.
4. The control and direction of combustion air allowed to go into and through the stove.
5. The type of fuel.
6. The calorific value (c.v.) of the fuel.
7. The ability of the stove to dispose of the heat (radiate or convect) generated from the burning fire.

In the design of the corner stove we have attempted to build in items 2,3,4&7.

Item 5 is down to you making the correct choice but we have plenty to say about the subject and you should read, practice and understand all about different fuels, it's worth it!

## 6. OPERATING PROCEDURES

### 1. Lighting the stove.

Make sure that the long above deck extension is fitted.

The stove comes without the wood-burning insert fitted but if you are going to wood burn only fit the wood-burning insert.

Otherwise proceed as follows.

Open the door and build a fire in the normal way using newspaper or firelighters first, then place plenty of small chopped pieces of dry sticks onto the paper or firelighter.

Open

1. The ash pit door air valve in the ash pit door.
2. The over fire air valve in the refuelling door.
3. The air wash air valve slider on the upper front face of the stove.

Light the fire at the base and let it get going before closing the door.

Because the chimney is cold it will take a little while for the fire to get going, when it does you will find it draws well and you will be able to partially close the air valve in the ash pit door.

Keep an eye on the fire through the lighting process and once the sticks are well alight put some larger wood on and get that well alight before putting any solid fuel onto the fire.

When your fire is well alight you can start to control the burn rate and heat output.

### 2. Controlling the Stove.

There are **three** air control valves on the stove.

- Under fire air for solid fuel.
- Over fire air for wood burning.
- Air wash air to help keep the door glass clean.

You will find your own way to run the stove but to start with we give guidance on the use of the air control valves.

**The under fire air control valve** in the ash pit door will be used mainly for burning solid fuels.

It controls the volume of air allowed to go through the grate and into the burning fuel.

**The over fire air valve** in the bottom of the fuel door is used for wood burning and additional air wash for keeping the door glass clean,

**The air wash air** is used for keeping the glass clean and burning wood or coal.

When the fire is well established control can be achieved by using one or more or all of the controls.

### 3. Refuelling and de-ashing the Stove.

Correct refuelling is the key to keeping.

- A nice looking fire.
- A clean door glass.
- A clean chimney.
- Happy neighbours.

If you put a small amount of fuel onto a good fire it will soon recover and rapidly get back up to temperature.

Depending upon the fuel being used, smoke will only come from the fire immediately after it has been re fuelled or during the lighting stage, if the fire recovers or is allowed to burst into flame quickly, smoke emission is kept to a minimum and will only occur for a short period of time.

To help you make this happen the stove has the potential to allow massive amounts of air into the combustion zone from a variety of different directions.

Even with all this available air it is sometimes advisable just to open the door slightly if the fire is particularly smokey during lighting or immediately after re-fuelling.

#### ON THE OTHER HAND

If you let the fire burn low and then put a huge load of fuel on, you will kill the fire and it will go out or take some considerable time to recover, during this time it will smoke and soot the chimney up.

#### RECOVERING THE FIRE

If the fire is allowed to get low, refuel with small amounts of wood and give the stove plenty of air

until the firebox temperature recovers. Slowly build the fire up by adding fuel little and often.

When the fire is established control the burning rate by reducing the airflow. Use the air valves but keep plenty of air wash going to keep the glass clean.

**Excessive smoke emission is a sure sign that you are not running the stove correctly.**

When the stove is running correctly there will be no or very little smoke coming from the chimney.

After a fresh charge of fuel it may be necessary to open all three air controls, when the fire has settled down, use the over fire air and the air wash.

Once the stove is up to temperature you will see how the fuel gasses off to produce lovely light wispy flames rolling around the firebox. These flames are very controllable and by building on your experience you will be able to get the stove to respond to most of your requirements.

De Ashing the stove is important, if the ash is allowed to build up it will touch the grate and stop cooling air reaching it, this will in turn cause the grate to overheat and become damaged and unserviceable.

This sort of damage will not be allowed as fair wear and tear and will not be covered by the warranty.

### 4. Overnight Burning

- **Do not top the fire off with house coal.**
- **It is completely unsuitable and will lead to a sooty glass, sooty stove and a rapidly blocked chimney.**

There is a skill and knowledge to acquire if you want to get the stove to burn for long periods.

**Here are the critical factors**

- What type of fuel to use.
- How and when to re-fuel.
- Where to set the air controls.
- How to set the chimney up.
- What happens to the chimney when the stove is slowed down.

### 5. TIPS.

Maximum length of burn will be achieved using a smokeless fuel.

Build the fire up slowly by adding fuel during the evening, try to get the firebox full of red-hot fuel, before retiring to bed, give the stove a slight riddle and then top it up with a final load of fuel. Leave the over fire air and the air wash just cracked.

If you admit too much air it will burn all the fuel away.

If you don't admit enough air the stove will go out without burning all the fuel and the glass will become dirty.

You will have to experiment to find out the best way to keep the fire in.

## 6. Riddling the Stove

To riddle the stove simply insert one end of the tee bar tool into the brass eye at the end of the riddling rod and pull / push until the ash has been riddled away.

## 7. MAINTAINANCE.

To keep your stove working well, you must make sure that it is kept in good condition.

As you can see we have linked cleaning with maintenance, if you pay attention to keeping the stove clean and tidy, maintenance will be much reduced and the stove will work to its maximum potential.

ASH and clinker are the major problems with solid fuel stoves.

To try and minimise them we have designed this stove with a large ash pan and an externally operated riddling grate allowing you to riddle the stove with the door closed.

In addition to the large ash pan we have also fitted ash pan guides in either side of the ash pit base. These guides make sure that the ash pan is forced to go where we want it: under the grate.

### 1. Day to day attention.

Make sure that the fuel-loading door and ash pit doors close correctly and that there is no ash or dirt trapped behind them.

Make sure that the base of the ash pit is clean, any dirt or pieces of coke could trap behind the ash pan stopping it from going fully up to the back of the stove.

This could cause the ash pan to catch the back of the ashpit air inlet valve and hold it open.

For the stove to work correctly, it is important that all the air coming into the stove goes through the air valves only, if the upper and lower door are not properly closed this will not happen as well as it should.

### 2. Front Fret.

**The front fret** is deliberately spaced away from the front of the stove.

This has a double function:-

- It stops high temperature build up on the front plate of the stove.
- It acts as a passage for the over fire air to come through the air valve, through the front plate of the stove, through the gap, through the front fret and finally into to the fire.

If any debris drops down into this space, clean it out.

### 3. Baffle Plate.

**The baffle plate** is designed to stop the flames or heat from the fire going straight up the chimney.

As the flames rise in the stove they hit the baffle plate and are pushed forward to hit the front and top plate of the stove. This slows them down and makes them lose more heat to the stove and less up the chimney.

It is a triangular plate, which fits into the top of the stove and is supported by three small brackets.

The baffle plate is only fitted to the non water-heating stove.

It should be inspected occasionally to make sure that it is still in good condition.

The baffle plate is a consumable item and may need replacing from time to time.

### 4. Riddling Grate.

**The riddling grate** fits in the circular hole in the bottom of the grate carrier plate.

It can be riddled by pulling and pushing the riddling rod, always use the tool for this job as the brass end of the riddling rod gets hot when the stove is running.

To remove the grate the riddle rod must be detached from it.

To do this proceed as follows:-

Let the stove go out.

Clean all the ashes out of the grate.

Open the de ashing door and remove the ash pan.

Remove the 8mm nut on the end of the riddle rod under the grate. You will have to stop the riddle rod rotating by inserting the tee bar into the brass eye.

Note the 8mm nut is punched on one end to allow it to lightly lock on to the riddle rod.

When replacing this nut put it back with the punched end outermost.

If you over tighten this nut it will cause the riddling action to lock up.

When the nut is removed, pull the rod out of the grate lever and it should then be possible to remove the grate by lifting it out.

Re build in reverse order.

#### **5. Riddling Grate Carrier.**

The **riddling grate carrier** supports the riddling grate.

To remove it first remove the riddling grate.

Remove all the firebricks.

Then lift out the riddling grate frame.

Note.

It is important that the frame is flat and sitting snugly down on to the fixed hearth plate.

#### **6. The Firebricks.**

The firebricks comprise of -:

One centre rear.

One right side and one left side.

Ditto-small fillet bricks at either side front which can be secured with firecement.

They are self supporting and are fitted:-

Rear centre first.

Sides next.

Small fillets to lock the assembly in place.

The firebricks are consumable items and will need to be replaced from time to time.

If the stove is left to run with damaged fire bricks the outer steel panels could burn through.

#### **7. Keeping the stove clean.**

To clean the stove externally allow it to go out and simply give it a slight dusting with a very soft small brush

#### **8. To clean the chimney.**

Let the stove go out and remove the baffle plate.

*Not required to be done on water heating stoves.*

Close the door and all the air valves.

Remove the chimney extension and slowly push a 4" brush down the chimney.

All the debris should fall into the stove ready to be cleaned out.

When you are happy that the chimney is clean.

Use a vacuum cleaner to vac all the debris from the stove.

Note it will be useful if you could enlist an assistant to stand near to the stove with a vacuum cleaner running to vac any dust, which may leak from the stove.

#### **9. To remove the front fret.**

Let the stove go out, open the front door, clean the ashes out and simply lift the front fret up vertically, twist and remove.

Before replacing it make sure that all the ash is removed from the base of the two retaining brackets.

#### **10. Cleaning the door glass.**

If you are running the stove correctly and using the specified fuel the door glass will remain clean, there may be slight sooting after lighting or re fuelling but this can be easily removed using a damp cloth.

If you use house coal and do not refuel as per our specific instructions on how to refuel, the door glass will soot up!

Warning

**Do not attempt to clean the glass door with a damp cloth whilst the stove is running or the door is hot.**

If the door glass does become tarred up you will have to use a glass cleaner available from Bubble Stoves.

When using these cleaners you should carefully follow the detailed instructions on the product packaging.

Avoid contact with skin, eyes and items other than the glass.

Before closing the stove door always make sure that there are no obstacles likely to break the glass upon closing.

Do not use the door glass to push awkward shaped logs into the firebox as this can break the glass.

### **11. To Replace Door Sealing Rope and Glass**

The door sealing rope should be replaced before the start of the heating season.

The door glass should be replaced if it becomes etched or discoloured.

Remove the door and lay it down on some bubble pack.

Support it around its periphery taking great care not to break the door glass.

Use an old flat bladed screwdriver to scrape the old rope and cement from the cast socket.

Apply adhesive to the socket and then re fit the new rope.

#### **To Replace the Door Glass**

If you need to replace the door glass make sure that you order the door glass sealing rope.

Remove the door and lay it down on some bubble pack.

Support it around its periphery.

Undo the 4 screws and clamping plates then lift the glass out.

Remove the sealing rope under the glass and replace it with new rope.

Replace the glass and the plates and screws.

Make sure that the rope forms a good airtight seal, make sure that the ends of the rope but up together.

## **8. WATER HEATING.**

### **1. Frost protection.**

Make sure that the water in your heating system circuitry has a suitable anti freeze added, your builder or installer will advise you on this.

The Corner Bubble stove can be supplied with a fully integrated boiler.

In most other types of stoves the boiler is a secondary consideration and supplied as an additional item to be fitted inside the stove.

This is not the case with the corner bubble stove; the boiler forms the whole upper outer part of the stove.

This has several advantages over bolt in boilers:-

- It does not reduce the inner volume of the firebox.
- It reduces the amount of radiated heat to the surrounding fireplace as the whole of the back panel of the combustion chamber is water cooled, this reduces the risk of heat damage and helps make the stove much safer.
- It has the largest water heating capacity of any small stove.
- The output of the stove is perfectly balanced between heat to space and heat to water.

If you have a water heating stove there are certain extra items you will have to take care of.

You must know which type of plumbing system is installed on your boat, as there are two distinct types, which are

### **2. Gravity or Fully Pumped Systems**

In each case learn how the plumbing is laid out and where the feed and expansion tank is situated.

In each case go through the checking procedure detailed below, before lighting the stove.

The feed and expansion tank on land based systems is automatically topped up should any overheating or evaporation occur, generally on boats this is not the case and topping up has to be done by hand, because of this it is important to carry out regular checks on the water level in the feed and expansion

tank and you installer or builder should instruct you on this procedure.

### 3. Gravity Systems.

If the plumbing system has been designed as a gravity system you should be able to run the stove without a water-circulating pump.

Before you light the stove go through this checking procedure.

- **The feed and expansion tank is topped up to the specific level.**

The system installer must advise you how to do this.

- **The system is free from entrapped air.**

The installer will tell you where the air vents are located but remember if you bleed air off top up the feed and expansion again.

- **Check that the chimney is free from obstruction and the long extension is fitted.**
- **Check that the inners of the stove are correctly fitted in place.**

*(Baffle, grate assembly and firebricks.)*

Check that there are no closed valves likely to stop the flow of water around the heating circuit.

**(It is illegal to place any un-shielded valves on a solid fuel heating circuit we give advice in 5 as a precautionary exercise.)**

After you have checked as above proceed as follows:-

Light a small fire and build it up slowly.

Keep an eye on the progress of the heat out of the appliance through the system.

Heat will build up in the water and force the water to expand and push itself around the system.

Getting heat into the system is a slow and steady job, you must be patient and let it push through the system slowly.

Once heat is back returning into the appliance the system will gather momentum and circulation will proceed faster.

At this stage it will then be possible to build the fire up a little as the heating circuit will be able to

dissipate the increasing volume of heat production from the stove.

If the stove is brought up to temperature too quickly there could well be some water lost through the feed and expansion tank.

### 4. NOTE WELL.

When you are lighting a stove from cold there will be a build up of condensates on the boiler surfaces and this can build up to be quite a lot of moisture.

As soon as the return water gets warm this condensation will stop, if the return water does not get hot condensation may well stream from the appliance.

### 5. Pumped Systems.

If the system is designed as a pumped system you will have to keep the circulating pump running whilst the stove is alight.

**You must go through this checking procedure before lighting the stove.**

- **The feed and expansion tank is topped up to the specific level.**

*The system installer must advise you on this point*

- **The system is free from entrapped air.**

*The installer will tell you where the air vents are located.*

- **Turn the water-circulating pump on and make sure that it is running.**

*The installer will tell you where the pump switch is located.*

- **When you have turned the pump on make sure that you have enough power in your batteries or electrical system to keep the pump running all the time that the stove is under fire.**
- **Check that the chimney is free from obstruction and the long extension is fitted.**
- **Check that the inners of the stove are correctly fitted in place.**

*(Baffle, grate assembly and firebricks.)*

Light a small fire and build it up slowly.

Heat will build up in the water and the system will slowly come up to temperature.

At this stage it will then be possible to build the fire up a little more.

If the stove is brought up to temperature too quickly there could well be some water lost through the feed and expansion tank or safety valve, replace this water when the system has settled down.

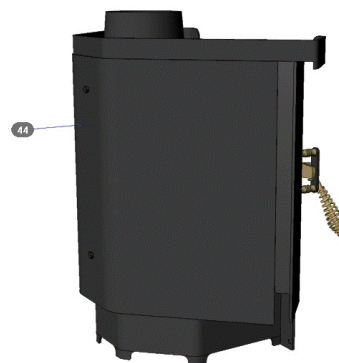
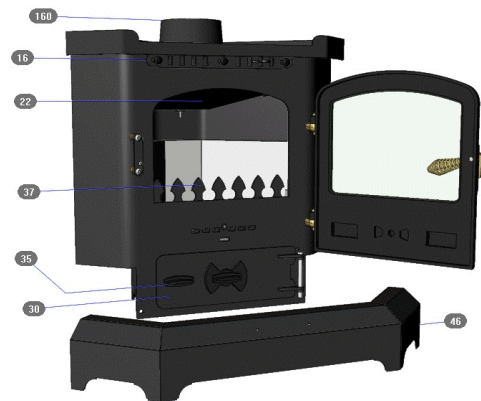
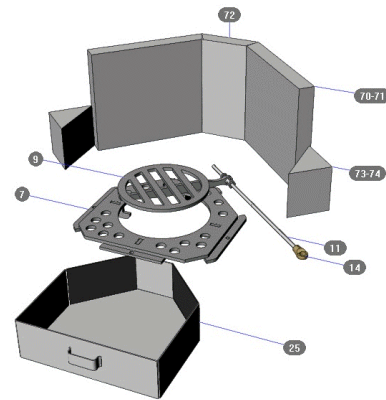
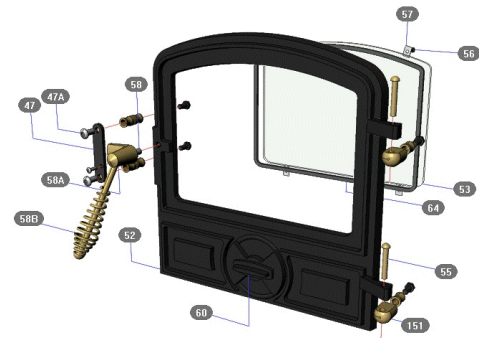
When the fire has settled down, adjust the air control as desired to give the temperature required.

Note if the circulating pump fails, hot water may expand out of the feed and expansion tank and also out of the safety valve.

Take great care if this happens as the water will be up to boiling temperature and if there is a big fire in the stove, may soon turn to steam.

Open the front door of the stove and allow it to cool down as quickly as possible.

## 9. STOVE SPARE PARTS



## 10. COOKING SECTION

Now that you are an expert on all things stove the fun can start.

### 10-1 Cooking Introduction.

The cooking side of the appliance can-:

#### Bake Boil and Roast - Fry Simmer and Toast ☺

To start with we describe how the oven will provide each of its features and how it interrelates with its heat source; the fire.

Obviously if you have a big fire you will get a hot oven unless you leave the oven door open, which is what you have to do to boil or fry as this is achieved on the oven bottom.

If you have a low fire then the oven will be proportionally cooler or maintain a higher temperature, which you have just achieved from a previous high fire.

### 10-2 How The Oven Works

1. The flames from the fire rise and hit the bottom or base of the oven.
2. When they hit the bottom of the oven they proceed to either side of the stove and rise on both vertical sides of the oven where they then hit the top plate of the stove.
3. When they hit the top plate of the stove they change direction and travel under the top plate of the stove to the flue outlet. And out of the stove up the chimney.
4. We call this type of oven a **flame impingement oven** and obviously it relies on the temperature of the flames hitting it, to create a rapid increase in its internal temperature.

### 10-3 How to set the fuel up for cooking.

Make sure that you have pre prepared the fuel, if you intend to fry or boil and want the fire to respond quickly; you will need small kindling as this will ignite and flame quickly.

If you intend to bake you will need to have the oven at a steady temperature which can be achieved using a two or three quartered logs, the key is don't let the fire get too low before refuelling, if you do use a few pieces of kindling and then a larger log, if

the logs are too large they will just kill the fire and the oven will lose temperature.

Think about cooking on gas a small flame to maintain the temperature and a large flame to rapidly increase the temperature, on the wood fire, if you kill the fire by putting too much fuel on a low fire then you have effectively turned off the gas.

So decide what you want to cook and always have the fuel easily to hand.

### 10-4 Cooking From Cold

From cold lay the fire with half a newspaper lightly crunched up into single or half page balls.

Use one or two quartered logs to chop up into kindling sticks.

**The two quartered logs here weigh 1.5 kilos or 6.6lbs**



These will burn on a brisk burning fire for about three quarters of an hour.

Two to Four of these will cook an average meal and bake a couple of loaves.



Here are the kindling sticks from the two 1.5 kilo logs



Lay a layer of kindling on to the paper and light the paper in two or three places.

Open all the air inlet vents fully:-

AIR WASH SLIDE

OVER FIRE AIR

UNDER FIRE AIR

Put your half full kettle on the top plate of the appliance.

Let the kindling get going.

When the kindling is well alight the firebox will be full of flames, which you can see through the front door of the appliance.

If you wanted to use the oven base for frying or boiling and get the oven up to 200C, just slow it down by closing the bottom air valve and half closing the front air valve.

The kindling will flame off in about 20 minutes, thereafter it will turn into charcoal in the bottom of the firebox, during this time the oven will come up to 200C and the bottom of the oven will be hot enough to fry on.

If you put a couple more logs on and leave the air wash half open the fire will burn at half rate and the oven temperature will carry on increasing steadily.

Remember that the oven will **overrun** by quite a way and so you need to be slowing the fire down well in advance of your target temperature.

#### 10-4 Cooking From an Existing Fire

If the fire is established decide what type of cooking you intend to do and prepare the fuel as described in 10-4.

If the oven is at the desired temperature just make sure that you have the fire in a condition to stay healthy for the duration of the cook, if it is not, add fuel, or turn the fire down according to your needs, then the same regime will apply where you try to keep control of the temperatures by control of the fire.

#### 10-5 How To Use The Oven

The oven has two racks and a base tray.

Two thirds up the oven is a thermometer which will indicate the oven temperature at that point.

The trays are supported by two side plates which are spaced off the oven side plates to stop food burning and create thermal convection currents within the oven.

The movement of air in the oven is created to try and maintain a more uniform temperature throughout the oven.

The oven is vented into the flue of the appliance and cooking smells will be kept to a minimum.

The oven is self cleaning, and spillages will be incinerated when the oven reaches a temperature of app 250 Deg C.

The oven can be used for:-

**Frying** is carried out on the bottom of the oven.

**Baking** is carried out on the shelves provided with the oven.

**Boiling** can be carried out on the base of the oven or the top plate of the stove depending upon what state the fire is in. Bring to boil on the base of the oven and transfer to the top plate to simmer.

Some cookware can be stacked in the oven for boiling.

A kettle kept on top of the stove should rapidly boil when placed on the base of the oven.

**Roasting** can be achieved in a roasting tray placed either on the bottom of the oven or on an oven tray depending upon how much space is required and the temperature required.

**Slow Cooking** can be achieved in a casserole dish placed either on the top plate of the appliance or in the oven when the temperature has been correctly adjusted.

**Barbecue** can be achieved in the firebox over the charcoal in the base of the appliance, this is best carried out when the stove has built up a good charcoal base.

**Toasting** can be carried out directly on the base of the oven, it generally takes less than a minute per side assuming the base of the oven is up to toasting temperature.

## 11. GLOSSARY OF TERMS STOVE

### Downdraught

A wind effect creating a situation where air is being blown down the flue pipe.

### Vortexing

A wind effect creating a situation where air is being sucked down the flue pipe by negative pressure inside the boat.

### Chimney vacuum

The negative pressure, which the chimney system is able to generate which draws the products of combustion from the appliance.

### Combustible materials.

Any materials in close proximity to the appliance which can easily ignite with the application of enough heat.

### Thermostat

A device for controlling air or water temperature.

### Multi fuel stove

A stove, which can accommodate all the combustion and other technical requirements of wood, coal and smokeless fuel burning.

### Volatiles

Combustible entrapped hydrocarbons.

## 12. GLOSSARY OF TERMS OVEN -

### COOKING.

#### 1. Target Temperature.

This is the oven temperature, which the cook tries to maintain in order to cook the food correctly.

On wood fired ovens there is a degree of skill required in maintaining the target temperature.

#### 2. Kindling.

Small sticks of wood used to start the fire or used as fuel to rapidly increase the oven temperature.

#### 3. Flame Off.

Wood fuel burns in two phases, phase one is what we call long flame combustion and in phase two, the remnants of phase one burn as charcoal.

#### 4. Oven Overrun.

This is a phenomena, which occurs with solid or wood fuelled ovens.

If the fire is slowed down when the oven temperature gauge shows the desired temperature the oven temperature will carry on increasing because it is not possible to turn the heat off instantly. The degree of overrun can be as much as 20 - 30 deg C and obviously this can cause the food to overcook or burn.

The user has to learn how much overrun occurs and adjust the fire well in advance of the target temperature being achieved.

## 13. WARRANTY.

Fill in the warranty form and returned it to us, the information recorded on the warranty form helps us to deal with any problems you may encounter. Where we do not hold returned warranty forms replacement parts would only be issued when we are sure that the stove has not been damaged by improper use or installation.

The warranty covers PARTS ONLY for a period of ONE YEAR and is conditional upon all the requirements of our installation instructions being fully adhered to.

### 13A. THE WARRANTY DOES NOT COVER.

1. DOOR GLASS.
2. BAFFLE PLATES.
3. THE RIDLING GRATE
4. THE RIDLING GRATE FRAME
5. LABOUR COSTS.
6. TRAVELING COSTS.

- 7. CONSEQUENTIAL LOSS.
- 8. CONSEQUENTIAL DAMAGE.
- 9. DAMAGE RESULTING FROM IMPROPER USE.
- 9A. DAMAGE RESULTING FROM THE USE OF PETRO COKE BASED FUEL.
- 10. TRANSPORT COSTS IN CONNECTION WITH REPAIRS CARRIED OUT UNDER GUARANTEE.
- 11. LABOUR COSTS INVOLVED WITH FITTING PARTS SUPPLIED UNDER GUARANTEE.

**14. RECIPES**

- White Bread.
- White Bread Cakes.
- Jam Rolly Polly.
- Treacle Tart.
- Sponge Cake.
- Yorkshire Pudding.
- Savory Yorkshire Pudding.
- Meat and Potato Pie.
- Rabbit and Dumpling Stew.
- Braised Steak.
- Trout in Bacon Wraps.
- Beef Hash.
- Sponge Cake.

**15. BIBLIOGRAPHY**

Bread for Life

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terry hibbard

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***Bubble Products***

***Design and manufacture in the U.K.***