



# **Saltfire ST4 – INSTALLATION AND OPERATING INSTRUCTIONS.**

## **INTRODUCTION**

### **SAFETY**

Safety is the most important consideration when using and installing your stove. If not installed and used correctly, a house fire could result. Installation must comply with relevant national and local Building Regulations and fire safety standards.

IN THE EVENT OF CHIMNEY FIRE, EVACUATE THE PROPERTY AND CALL THE EMERGENCY SERVICES.

Your stove will be heavy and care needs to be taken when lifting - 2 people will normally be required to lift.

### **UNPACKING**

Your stove will have several of its components stored inside the stove itself for transportation.

Do NOT drag the stove on its legs – it must be carefully lifted into place.

Inside the stove will also be an ash-pan which sits underneath the grate, and will require regular emptying. You will also find a detachable tool for removal of the ash-pan.

You will also find a glove which must be used when opening the door or when adjusting air vents when the fire is hot.

### **INSTALLATION**

Installation of your stove must comply with relevant local and national Building Regulations and fire safety standards.

### **TECHNICAL**

Model; “**Saltfire ST 4**”

Nominal heat output – 7.5 kW

Gross Weight of Stove (inclusive of packaging) - 70 kg.

Net Weight of Stove - 69 kg.

Max Height - 542 mm

Max Width - 495 mm

Max Depth - 360 mm

Flue Diameter - 125mm (5")

Mean flue gas temperature directly downstream of the flue spigot - 332 degrees C. (with closed doors).

Flue gas mass flow – 4.2g/s

Mean CO emission (at 13% Oxygen) – 0.70%

Net Energy Efficiency 77.7%

The stove must not be installed within the specified minimum distances to combustible materials: A gap of at least 500mm needs to left between the stove and any combustible materials at the sides and 500mm to the rear. Adjacent walls should be of non-combustible materials and construction, preferably masonry or brickwork.

Your stove will require a constant air supply, and should not be used at the same time and in the same room/space as extractor fans or any device which may draw air supply away from the stove.

The stove should be installed on a level floor with adequate load bearing capacity.

The stove needs to stand on a CONSTRUCTIONAL HEARTH of non-combustible materials not less than 125mm (5") thick conforming to Building Regulations.

At least one permanent external air vent should be installed in the same room as the stove, to ensure a constant air supply for combustion. It should consist of a total free area of at least 1210mm<sup>2</sup>. – ie an opening of 35mm x 35mm would be the minimum requirement. The vent should be positioned such that it is not liable to blockage.

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NOT suitable for installation in a shared flue system.

If installed in a standard type chimney, a register plate needs to be fitted inside the chimney.

When purchasing flue pipe, 5" diameter is required. The flue pipe must be fitted INSIDE the flue spigot, and sealed with a generous amount of Fire Cement.

Access should be provided for cleaning the flue gas connector and chimney flue to ensure that the passageways for exhaust gases remain free from obstruction.

We recommend that you have a qualified fitter install your stove. The British recognised standard for solid fuel installations is HETAS. You can find a HETAS qualified installer in your area by going to the HETAS website – [www.hetas.co.uk](http://www.hetas.co.uk).

## **OPERATING INSTRUCTIONS**

### **The Clean Air Act 1993 and Smoke Control Areas**

Under the Clean Air Act local authorities may declare the whole or part of the district of the authority to be a smoke control area. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an "unauthorised fuel" for use within a smoke control area unless it is used in an "exempt" appliance ("exempted" from the controls which generally apply in the smoke control area).

The Secretary of State for Environment, Food and Rural Affairs has powers under the Act to authorise smokeless fuels or exempt appliances for use in smoke control areas in England. In Scotland and Wales this power rests with Ministers in the devolved administrations for those countries. Separate legislation, the Clean Air (Northern Ireland) Order 1981, applies in Northern Ireland. Therefore it is a requirement that fuels burnt or obtained for use in smoke control areas have been "authorised" in Regulations and that appliances used to burn solid fuel in those areas (other than "authorised" fuels) have been exempted by an Order made and signed by the Secretary of State or Minister in the devolved administrations.

The "Saltfire ST4" has been recommended as suitable for use in smoke control areas when burning seasoned wood.

Further information on the requirements of the Clean Air Act can be found here : <http://smokecontrol.defra.gov.uk/>  
Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements

## **FUEL**

Wood- All types of wood are suitable provided they are well seasoned, UNTREATED, and have a moisture level between 12% and 20%. For soft woods, typically they will need to have been left in suitable storage for 9+ months in order for the moisture to evaporate. For hardwoods, this will usually be 18 months+. It is recommended that logs should be no more than 5" or 125mm in diameter. Logs should be no more than 260mm in length. If you are unsure of the moisture content of your fuel, then you can buy a moisture meter which will indicate the moisture levels in your fuel.

**WARNING:** Wet timber should not be used as this will create excess tar deposits in the chimney and stove and could increase the risk of chimney fire. Timber which is not of a suitable moisture content will also create more smoke and harmful emissions.

Liquid fuels must NEVER be used. **WARNING:** Wet timber should not be used as this will create excess tar deposits in the chimney and stove and could increase the risk of chimney fire.

Manufactured smokeless coals and anthracite can be used and will all have different qualities and effects. – Do NOT use Petro-Coke based fuels or any petroleum based fuels as this will invalidate the warranty. Do NOT use coal that is designed only for open fires. Never use your stove as incinerator to burn waste or rubbish.

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## **AIR INLET CONTROLS**

Your stove has three air inlet areas-

The upper vent controlled by sliding knob on top of stove provides air supply for the air-wash system and allow air into the higher areas of the fire box – this is called the Secondary air – when this vent is open, the door glass is kept clean by high speed air rushing downwards across the inside of the glass. By moving the Secondary vent knob to the right, airflow into the stove is increased.

At the bottom of the door tucked under the door you will find a second sliding knob – this is the control for the Primary air supply. The Primary air supply allows air in and under the grate area. Keeping this vent open on start up and when refuelling will allow the fire to get up to temperature quickly.

The third air inlet (Tertiary) is located underneath the door and controlled by a ring which pulls forward to open and pushes back to close. The air is then channelled through a chamber under the stove and to the rear of the firebox, and enters the firebox via a series of small holes in the throat plate.

## **TOOLS**

The glove is provided for adjusting the air inlets and for opening the door when the stove is hot, as these knobs will heat up when in use.

NOTE – all parts of the stove will become hot during use and care needs to be taken to avoid injury through burning.

The tool handle provided is for removing the ash-pan.

## **LIGHTING THE FIRE**

- Prior to lighting the fire for the first time, ensure that-
- Installation and building work is complete.
- The chimney is suitable and sound and has been swept and free from obstruction.
- Adequate ventilation and provision for combustion air has been made.
- That the stove installation has been carried out in accordance with Building Regulations and any applicable local regulations as well as these installation instructions.
- That chimney draw has been checked and within specification. (The stove has been tested at nominal output with a flue draught of 12 Pa)

**ENSURE THAT YOU HAVE READ AND UNDERSTOOD THESE INSTRUCTIONS BEFORE LIGHTING THE FIRE, AND THAT YOU ARE CONFIDENT THE STOVE HAS BEEN INSTALLED CORRECTLY.**

**ALWAYS WEAR A PROTECTIVE GLOVE WHEN REFUELLING YOUR STOVE.**

### **Ignition**

- Ensure the ash-pan is in place.
- Ensure all air inlets are fully open

- Construct a pile of kindling in the middle of the grate using approximately 1kg of kindling wood
- Light with a single chemical firelighter
- Partially shut the door but leaving it cracked open slightly
- After about 5 minutes or when the fire is well established, shut the door
- After a further 3-5 minutes as the fire starts to die, add a further three larger pieces of wood weighing approx 1kg.
- Once these logs are alight, and after about 7 minutes or so, a normal load of 3 logs weighing approximately 2.2kgs in total can be added
- Once this load is burning well, the Primary air vents can be closed, with the Secondary and Tertiary vents left open.

### **Refuelling**

- Open the Primary air vents
- Add up to 2.2kg of wood
- After about 2 minutes or when flames from the fresh fuel fully established, close the Primary vents
- At high power output, your stove will require refuelling approximately every hour.
- It is important to follow these instructions in order to achieve clean burning and to maximise the efficiency of the stove
- Do not leave the fire unattended until flames are well established on the newly charged logs
- Always refuel onto hot embers.
- If the fire has died out at the point of refuelling, use kindling to re-establish the fire and follow the “Ignition” procedure above.
- It is important that the stove is not overloaded with fuel.
- Reduced burn rates can be achieved by reducing the openings of the Secondary and Tertiary air vents.
- Operation with the door open can cause excessive smoke. The appliance must not be operated with the door left open except as directed in the instructions above.

**IMPORTANT** – For the first 20 hours burning only use gentle small controlled wood fires (NO COAL) – during which the first 3 x 1 hour fires must be small kindling wood fires only (this will temper the paintwork). After these small fires, gently increase fires over the course of a week or so. Starting a large fire too soon is likely to damage the stove in which case will not be covered by the warranty.

**IMPORTANT** – During the tempering-in period DO NOT TOUCH THE SURFACE OF THE STOVE – the paint will be relatively soft, and could easily be marked.

### **UK Clean Air Act 1993 - Smoke Control Areas**

The Saltfire ST4 wood-burning stoves are suitable for use in smoke control areas when used in accordance with these instructions.

*WARNING- The high temperature paint covering the stove will give off some fumes during the initial few uses of the stove. The fumes are non-toxic, but some people may find them unpleasant – Ensure the area is well ventilated during this period.*

The output ratings of this stove are based on around 2.2kg of seasoned logs which would require refuelling every hour.

This stove is suitable for intermittent burning, and should not be used constantly for extended periods. Not suitable for overnight burning.

Under certain abnormal weather conditions, e.g. down draughts, it may be difficult to get sufficient draw through the appliance to achieve good combustion. When this happens, the stove should not be used.

## **CLEANING/MAINTENANCE**

Regular cleaning of the stove is essential for safety and efficiency. The ash-pan should be emptied at least after every use, and during use if burning for longer periods.

When cold, the inside of the stove should be given a regular sweep out.

The flue and flue pipe will require cleaning with a suitable chimney brush, to minimise build up of soot and tar.

Your chimney will also require periodic sweeping.

The Baffle plate inside the stove can be lifted out to allow access to the flue for sweeping.

If the glass becomes stained from the inside, the air-wash vent may need opening more during use. The glass can be cleaned with a cloth and chemical stove glass cleaner, or the glass cleaning pad made by Schott.

The high temperature paint which your stove is finished in should last many years with normal use, but when it does eventually require re-finishing, black heat resistant paint in spray cans can be purchased from most hardware stores. – Do not use regular paint which is not high temperature resistant.

After prolonged periods of not using the fire, the stove and flue system should be checked for blockages prior to re-lighting. We recommend regular servicing and safety checks are carried out by a qualified engineer.

There must be no unauthorised modification of the appliance. Use only replacement parts recommended by the manufacturer.

## **GUARANTEE**

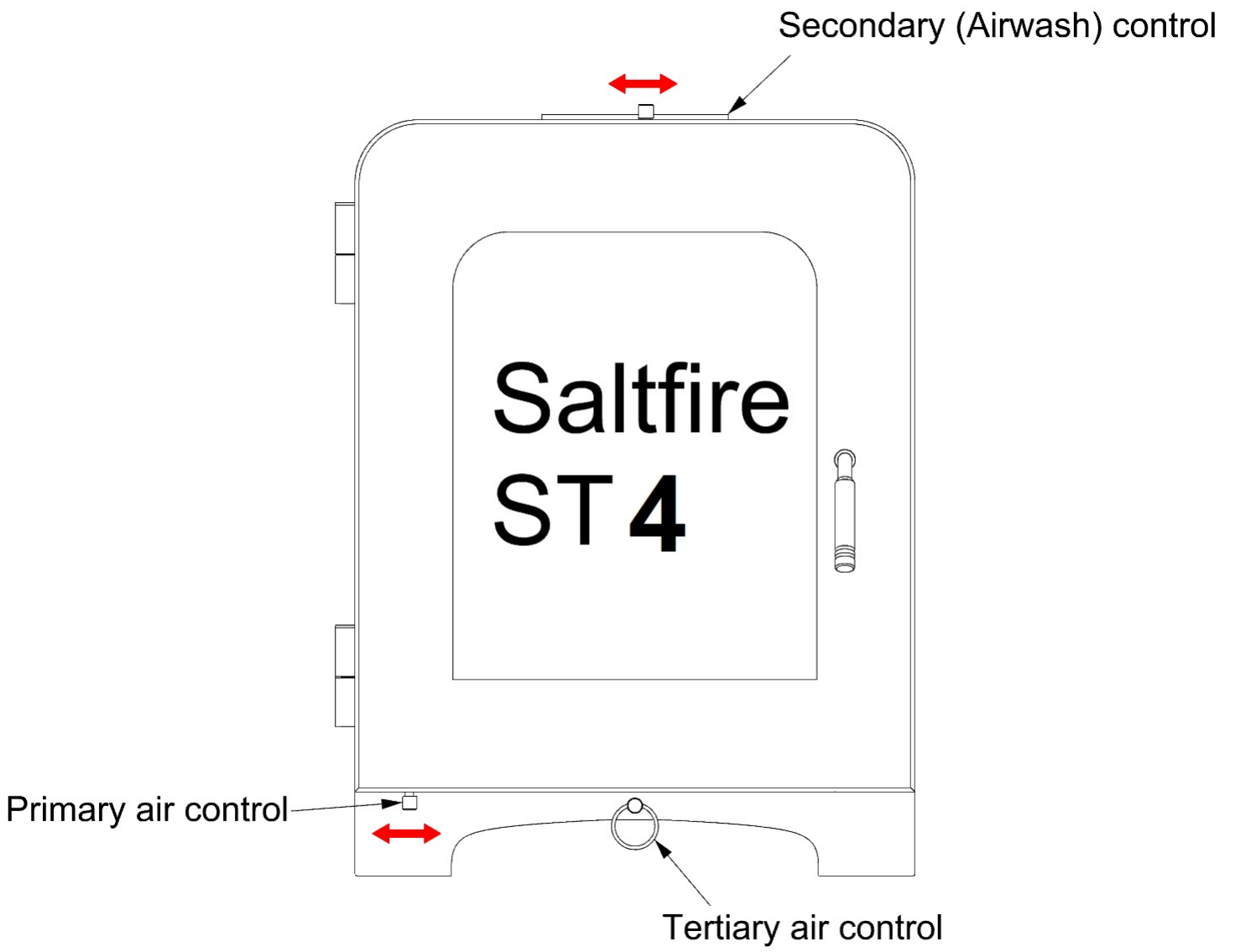
The main body of your stove is guaranteed for 3 years. This does not include glass, grates, door seals, fire-bricks, inner linings, baffle, paint, over-firing incorrect use or installation not carried out by a competent person or in accordance with building regulations. – You should have zero problems with your stove unless it is abused and if treated well your stove will last and last.

Note: the **firebricks inside the stove can crack with normal use – this is not a fault**. This will be the case with most makes and models of stove. The purpose of the firebricks is to help to keep heat in the firebox – cracks will not adversely affect this function as long as the bricks are still in place. If a large crack does develop it can easily be repaired with a small amount of fire cement.

### **What to do in the event of a chimney fire:-**

- cut off the air supply to the stove, i.e. close the primary and secondary air supplies
- move any combustible materials well-away from the stove
- get everyone out safely
- make sure that the fire brigade has clear access
- call 999

If you have any questions or concerns regarding the safe use of your stove, please contact us.



## KEEP SAFE – DO NOT THROW AWAY

### Troubleshooting Solutions For Stove Problems

Installed and used correctly your stove will provide years of warmth with little effort, but used incorrectly will be difficult to achieve the results you expect and can be damaged.

Combustion is a complex chemical process with many variables, all of which need to be correct for your stove to burn correctly. Taking the time to understand these variables and the combustion process will make your life with your new stove a happy one.

#### 1. Stove is difficult to light / keep lit

Common causes:

- a. **Damp fuel** – Wood should be maximum 20% moisture and ideally 12-15%. We strongly advise purchasing a digital moisture meter to test your logs. Always split logs in half and test the centre of the log.
- b. **Poor draught and chimney strength** – Your chimney needs to pull through adequate air for combustion. Flue draught should be between 12Pa and 18Pa – if in doubt consult a local expert.
- c. **Logs too big** – Always start fires small and gradually build them up. Begin with paper or solid firelighters, building a small fire with kindling (small sticks of wood) until the kindling is well alight and hot. Then gradually build the fire with your wood logs (not too thick). (Splitting the logs will increase the surface area allowing more thorough burning). Once the firebox is up to temperature, people choosing to burn coal can then gradually build a coal fire, or those just using wood can add some slightly larger logs.
- d. **Chimney/flue blocked** – Excessive soot should not be allowed to build up in the flue – flues should be professionally cleaned when required and in any case at least once per year, or more if your chimney / fuel type is causing excessive soot build up.

#### 2. Fuel burns too quickly

The rated output on your stove is based on burning dry seasoned hardwood and re-fuelling every hour. By turning down the vent controls the fuel will burn slower and last longer.

Common causes:

- a. **Excessively strong chimney draught** – If by turning down the vents the fire still burns too quickly, this is normally due to excessively strong draught on the chimney. This will lead to over-firing of the stove which is inefficient, losing excessive heat into the chimney and pulling too much cold air through the house. A flue damper fitted into the first section of flue pipe can help to calm a chimney draught.
- b. **Fuel type/size** – try experimenting with different types of wood/fuel and different sized logs. Coal and slightly larger logs will burn slower. Softwood such as pine will burn particularly fast.

### **3. Smoke comes back into room**

A small amount of smoke entering the room when you open the stove door is normal but should stop after a few seconds.

If smoke ever leaks constantly into the room stop using the fire immediately, shut down all vents on the stove, open windows and exit the room. Do not use the stove until a local expert has established the problem.

Common causes:

- a. **Insufficient air supply into the room** – do you have an air brick of sufficient size to feed the stove with air?
- b. **Blocked chimney** – have the chimney swept and checked by a registered chimney sweep.
- c. **Insufficient chimney draught** – can be due to a variety of reasons – please refer to previous text under “Poor draught and chimney strength”
- d. **Rapid condensation of the gases** - causing them to slow down and back up in the chimney – this can be due to too broad a chimney/flue, relative to the size of the appliance or the flue not being adequately insulated. You may need a flue liner and/or insulation in the chimney.

### **4. Glass gets dirty quickly**

Common causes:

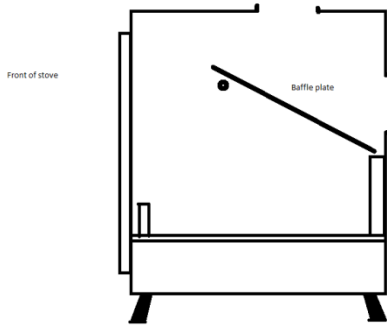
- a. **Top vents not open** – if your stove had top vents these control the airwash system – the top vent needs to be constantly open adequately to ensure enough air is coming into the stove. No airwash will work when the stove is burning very slowly (slumbering).
- b. **Poor fuel** – wet wood or softwood (e.g. pine) will produce a lot of tar, creosote and soot, dirtying the glass and eventually blocking the flue.
- c. **Insufficient chimney draught** – see previous note under “Poor draught and chimney strength”.
- d. **Baffle plate incorrectly fitted** – see diagram. The plate should rest on the back wall of the stove and tilt up towards the front, where it rests on the protruding lugs on either side of the stove. The below diagram shows a typical stove and the positioning of the baffle plate – your stove may be slightly different. Some stoves have the baffle permanently fixed in position, but often they are easily removable.

### **5. Not enough heat being produced**

Common causes:

- a. **Poor quality fuel** – logs should be dry well seasoned hardwood.
- b. **Poor draught and chimney strength** – see previous notes.
- c. **Excessive draught** – too much heat being lost up the chimney – try a damper in the flue.
- d. **Insufficient air supply** - Check air supply is sufficient / vents on stove are clear. Does the room have a vent?
- e. **Not enough fuel being burned** – the rated output of your stove is based on burning beech wood (typical of most hardwoods), refuelling once per hour. One kg of this wood has approximately 4-5 kw hours of energy.

f. Larger stove / stove with higher output required for room size.



## **6. Too much heat in room**

Common causes:

- a. **Excessive chimney draw** – try fitting a damper unit in flue
- b. **Too much air supply** – close down primary vent, then if still too hot reduce secondary vent.
- c. Stove may be too large for room size.

## **7. Grate deformed / Baffle plate deformed**

Your stove will have been designed to operate correctly for many years with a relevant quantity of fuel and re-loading times. The grate and baffle plate can over time start to bow/deform – this can only be caused by very high temperatures.

Common causes:

- a. **Excessive chimney draw** – try a damper in the flue.
- b. **Excessive primary air supply** – close down primary vents.
- c. **Incorrect fuel**
- d. **Stove overloaded** – excessive burning of too much fuel.

The baffle plate and the inner linings of the stove, and the grate all designed to be replaceable parts – call us if you need to order new ones.

## **Additional troubleshooting for boiler stoves**

Boiler stoves work slightly differently to non-boiler stoves and need certain extra considerations.

Boiler stoves generally burn with a cooler firebox temperature due to the water jacket constantly taking away heat. For the stove to work effectively and for a thorough combustion you need to be able to maintain a good temperature in the firebox.

It is crucial to use good quality dry well seasoned fuel, with logs not too large.

Central heating pumps should not circulate until the water reaches 50°C, and should not circulate at too fast a rate.

The BTU value of radiators and pipework should not exceed the water cylinder output at which you intend to run the stove and in any case should never have a combined BTU value higher than the maximum output of the stove.

If you are experiencing problems including insufficient heat being provided – in order to help establish the cause and solution we will need to know specifically what fuel you are burning and the rate (kg per hour) at which you are burning the fuel, and in the case of wood, the average moisture content of the centre of the logs (we suggest using a moisture meter to check moisture levels in logs).

Only by monitoring this burning rate over the course of several burn cycles can we quantify the outputs being produced and begin to establish a cause of the problem.

If you are experiencing these problems please email us at [enquiries@saltfirestoves.com](mailto:enquiries@saltfirestoves.com) with your invoice number, name and purchase date, detailing as much information as possible considering all of the above information (and the general troubleshooting advice we give for all stoves). The more accurate and detailed the information the quicker we will be able to help you to establish improvements you can make to your system.