



## **CARRON DARWIN 5KW INSET STOVE INSTALLATION AND OPERATING INSTRUCTIONS**



**A qualified solid fuel engineer must carry out the installation of this stove.  
We cannot accept responsibility for products not installed in this way.  
All local regulations, including those referring to national and  
European Standards need to be complied with when installing the appliance.  
A list of qualified engineers is available from: [www.hetas.co.uk](http://www.hetas.co.uk)**

## Pre-installation Checks


Installation of a fireplace must be according to local codes and regulations in each country. All local regulations, including those which refer to national and European standards, must be observed when installing the product.

Both an installation manual with technical data and a manual on general use and maintenance are enclosed with the product. The installation can only be used after it has been inspected by a qualified inspector. A name plate of heat-resistant material is affixed to the product. This contains information about identification and documentation for the product.

### 1. Technical Data

Fuel	WOOD	SMOKELESS FUEL
Material	Cast iron	Cast iron
Log length, max.	30cm	
Operating range	2.0—4.7kW	2.0—5.0kW
Flue outlet	Rear	Rear
Flue pipe dimension	Inside: 125 mm/124 cm <sup>2</sup> cross section	Inside: 125 mm/124 cm <sup>2</sup> cross section
Approx. weight	87kgs	87kgs
CO emission (13% O <sub>2</sub> )	0.28%	0.18%
Efficiency	78.5% at 4.7kW	75.7% at 5kW
Flue gas temperature	295°C	306°C
Flue gas mass flow	5.0 g/sec	5.0 g/sec
Flue draught	12 Pa	12 Pa

Operational mode: Intermittent with a refuel time of 45 minutes wood and 60 minutes coal.


JIG UK Ltd Hurlingham Business Park Fulbeck Heath Grantham Lincolnshire NG32 3HL
<b>EN13229:2001 + A1:2003 + A2:2004</b>
<b>THE CARRON DARWIN 5KW INSET STOVE</b> Minimum distance to combustible materials: Behind the stove: 270mm To the side of the stove: 350mm
CO at 13% O <sub>2</sub> : 0.28% Flue gas temperature: 295°C Efficiency: 78.5% (at 4.7kW) Nominal Output: 4.7kW Fuel Type: Wood
CO at 13% O <sub>2</sub> : 0.18% Flue gas temperature: 306°C Efficiency: 75.7% (at 5kW) Nominal Output: 5kW Fuel Type: Smokeless fuel

### **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).

In England appliances are exempted by publication on a list by the Secretary of State in accordance with changes made to sections 20 and 21 of the Clean Air Act 1993 by section 15 of the Deregulation Act 2015. Similarly in Scotland appliances are exempted by publication on a list by Scottish Ministers under section 50 of the Regulatory Reform (Scotland) Act 2014.

In Wales and Northern Ireland these are authorised by regulations made by Welsh Ministers and by the Department of the Environment respectively.

Further information on the requirements of the Clean Air Act can be found here:  
<https://www.gov.uk/smoke-control-area-rules>

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"

The Carron Darwin SE 5KW Inset Stove has been recommended as suitable for use in smoke control areas when burning wood.

An air control has been supplied to provide a mechanical stop to prevent closure beyond 5mm open.

## **2. Installation**

**We recommend that two people perform the assembly and installation procedure.**

### **2.1 Unpacking the Stove**

After removing the outer packaging, unbolt the combustion chamber from the wooden pallet and place it gently on its back. The cardboard packaging can be placed underneath to prevent marking. Remove the leg pack from the stove and bolt each leg securely to the underside of the base on the combustion chamber, using the bolts provided (found inside the stove).

### **2.2 Installing this Stove**

The stove and chimney installations **MUST** comply with all current National and Local Building Regulations; your approved dealer or your local building control officer can advise regarding this. Ultimately, it is you and your installer who is responsible that the installation complies.

### **2.3 Pre-installation**

After removing the stove from the packaging, open the fire door and remove the loose packing. Prior to installation ensure all the internal components of the stove are removed to gain access to fixings and to make it lighter for installation.

Remove the refractory fire bricks, these bricks are loose and just need to be lifted clear of the grate support plate before they can be removed.

To remove the loose baffle, lift the front edge until it hits the top and then slide it forward. Then drop the rear edge and the baffle will slide down. To remove the fixed baffle, loosen the two screws and slide it forwards, it will then drop down.

Next, remove the grate by pushing it from underneath, the riddling bar is not fixed to the grate. This will allow access to four M6 fixings which will attach the stove to the outer casing. Remove the 4 fixings, allowing the insert stove to be removed from the external casing.

### **2.4 Chimney**

**THIS PRODUCT IS SUITABLE FOR CHIMNEY INSTALLATION ONLY.**

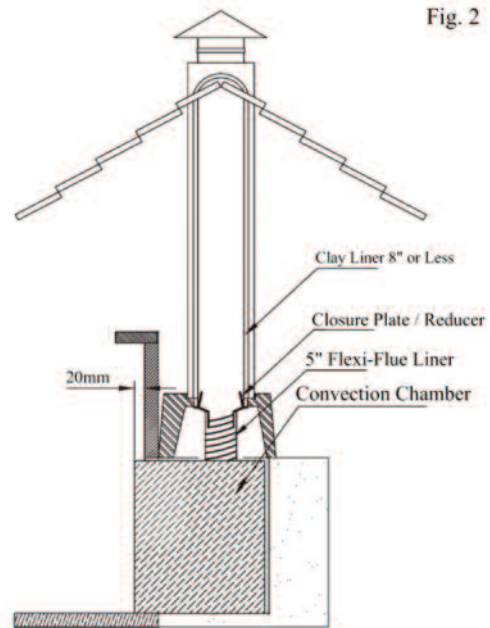
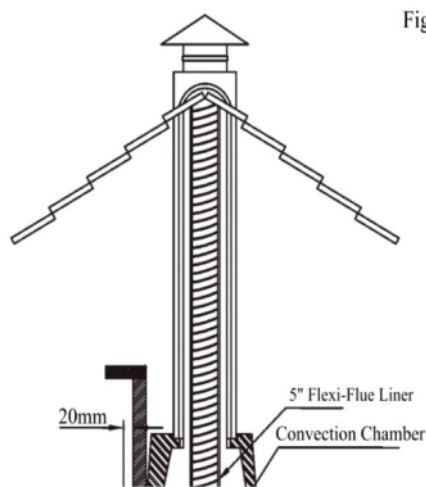
The stove is a radiant room heater and must be connected to a chimney of the proper size and type. The chimney must have a cross sectional area of at least 124cm<sup>2</sup> or a diameter of at least 125mm. Never connect to a smaller size chimney. Do not connect to a chimney serving another appliance. Minimum chimney height 4.5 meters from floor on which stove is installed.

It is recommended that a flue liner of diameter 125mm be used to line the chimney, the liner should be approved for use with solid fuel. (See Fig. 1).

It is permitted to connect using a closure plate and a connection piece from the stove to the closure plate (See Fig. 2), provided that the chimney is of sound construction with no leaks or cracks, a clay flue liner has been used that can withstand up to 1000°C, the clay liner has a diameter no greater than 200mm.

## ALL FLUE INSTALLATIONS ARE THE RESPONSIBILITY OF THE CUSTOMER.

The stove must be connected to a chimney with a minimum continuous draught of 12 Pascal's (.05" WG). Poor draught conditions will result in poor performance.



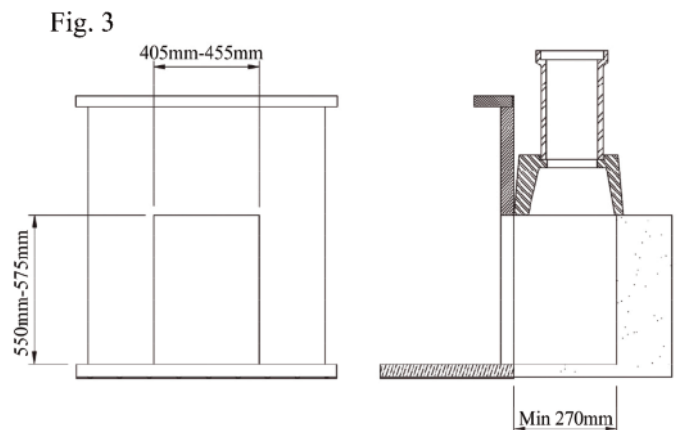
## FITTING INSTRUCTIONS

Step 1: Prepare the fireplace area with fireback or milner brick removal. Ensure the opening is suitable for fitting of the insert stove opening required, i.e. remove fire surround trim if fitted. See Fig 3

Step 2: Ensure the floor area is level with the hearth, this area needs to be level as the insert fire is screw fixed to the floor.

Step 3: Lay the external casing into the opening and position so that the front edge protrudes 20mm past the front edge of the opening.

Step 4: Mark the drill location and drill the holes using a 4.5mm drill bit. Fix the casing to the floor using the self tapping screws provided.



Step 5: Lift the stove into the external casing. Remove all internal parts as per pre-assembly instructions prior to lifting it. The stove can be lifted into the casing approximately 125mm first and then it can be pushed into the final position while taking care to lift the front edge to preserve the hearth.

Step 6: Drop the flexi flue liner down through the chimney and into the stove.

Step 7: Lay the sealing gasket on to the flue spigot, and then fit the flue spigot to the end of the flexi flue liner using the 2 grub screws provided.

Step 8: Then using the M6 screws secure the stove to the convection chamber. Push the insert stove against the fireplace before fully tightening these bolts.

Step 9: Push the flexi liner back up through the flue outlet and fix the flue spigot into position using the M6 nuts provided.

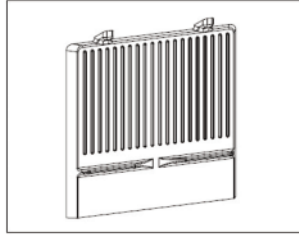
Step 10: Complete the installation of the flexi line at the top of the chimney in accordance with the manufacturers instructions.

Step 11: Fit the individual components in the following order (See Fig. 4):

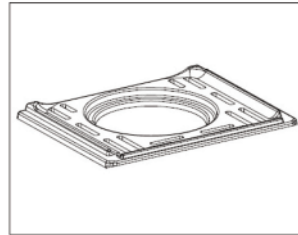
1. Back Bricks
2. Grate Support
3. Grate
4. Loose Baffle
5. Side Bricks
6. Fire Front Bar

Fig. 4

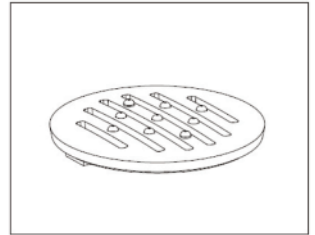
1. Back Bricks



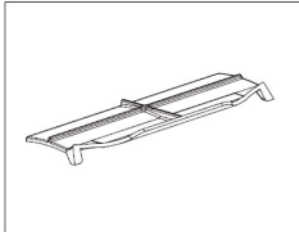
2. Grate Support



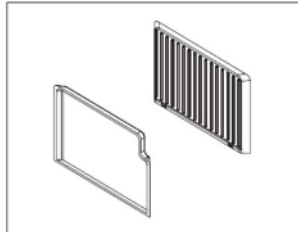
3. Grate



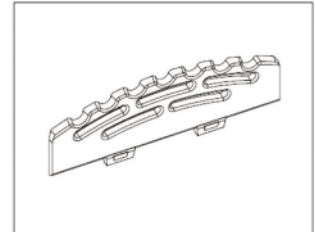
4. Loose Baffle



5. Side Bricks



6. Fire Front Bar



**1. Back Bricks:** Fit the back bricks in as shown.

**2. Grate Support:** Tilt the grate support up on one side and pass it carefully through the door opening, it should then rest on three supports approx. 100mm from the floor of the stove.

**3. Grate:** The grate simply lays into the grate support but care needs to be taken that the riddling bar will rest in the middle of the fork.

**4. Loose Baffle:** Hold the baffle by the 'L' shaped end with the fold turned up. Manoeuvre it diagonally through the door opening and then drop the rear edge to the rear of the stove. Lift the 'L' shaped edge up over the 'L' shape on the side castings. Move the baffle as far as possible to the front and top. Then lift the back edge up and allow the baffle to rest on the top rib on the back and in the 'L' shape on the side castings. Note: The secondary air holes must be visible underneath the baffle.

**5. Side Bricks:** Fit the side and back bricks in as shown.

**6. Fire Front Bar:** Fit the fire front bar into the slots provided ensuring that they slope from front to back so that no embers can fall out through the fire front bar.



## 2.6 Down Draughts

However well designed constructed and positioned, the satisfactory performance of the flue can be adversely affected by down draught caused by nearby hills, adjacent tall buildings or trees. These can deflect wind to blow directly down the flue or create a zone of low pressure over the terminal. A suitable anti-down draught terminal or cowl will usually effectively combat direct down blow but no cowl is likely to prevent down draught due to a low pressure zone. (See Fig.5)

## 2.7 Ventilation and Combustion Air Requirements

This appliance is rated less than 5kW, therefore there is no mandatory requirements for an additional air vent unless a flue draught stabiliser is fitted then the air vent requirement is 15cm<sup>2</sup>. However, we suggest that it is beneficial to provide an air supply into the room.

When calculating combustion air requirements for this appliance use the following equation: 550mm<sup>2</sup> per each kW of rated output above 5 kW should be provided, where a flue draught stabiliser is used the total free area shall be increased by 300mm<sup>2</sup> for each kW of rated output.

If there is another appliance using air fitted in the same or adjacent room, it will be necessary to provide an additional air supply.

Air vents in internal walls should not communicate with bedrooms, bedsits, toilets, bathrooms or rooms containing a shower.

Air vents traversing cavity walls should include a continuous duct across the cavity. The duct should be installed in such a manner as not to impair the weather resistance of the cavity.

Joints between air vents and outside walls should be sealed to prevent the ingress of moisture. Existing air vents should be of the correct size and unobstructed for the appliance in use. If there is an extraction fan fitted in adjacent rooms where this appliance is fitted, additional air vents may be required to alleviate the possibility of spillage of products of combustion from the appliance/flue while the fan is in operation.

Where such an installation exists, a test for spillage should be made with the fan or fans and other appliances using air in operation at full rate, (i.e. extraction fans, tumble dryers) with all external doors and windows closed. If spillage occurs following the above operation, an additional air vent of sufficient size to prevent this occurrence should be installed.

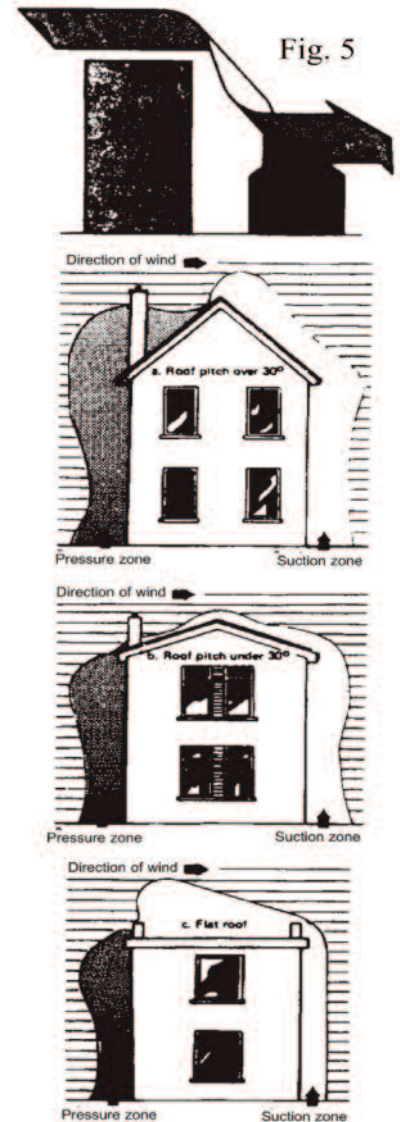
## 2.8 Permanent Air Vent Extractor Fan

### Permanent Air Vent

The stove requires an adequate air supply in order for it to operate safely and efficiently. The installer may have fitted a permanent air supply vent into the room in which the stove is installed to provide combustion and/or ventilation air. This air vent should not under any circumstances be shut off or sealed.

### Extractor Fan

There must not be an extractor fan fitted in the same room as the stove as this can cause the stove to emit smoke and fumes into the room.



## 2.9 Commissioning & Handover

On completion of the installation allow a suitable period of time for any fire cement and mortar to dry out, when a small fire may be lit and checked to ensure the smoke and fumes are taken from the stove up the chimney and emitted safely to the atmosphere. Do not run at full output for at least 24 hours.

On completion of the installation and commissioning ensure that the operating instructions for the stove are left with the customer. Ensure to advise the customer on the correct use of the appliance with the fuels likely to be used in the stove and warn them to use only the recommended fuels for the stove.

Advise the user what to do should smoke or fumes be emitted from the stove. The customer should be warned to use a fire guard to BS 6539 in the presence of children, aged and/or infirm persons.

## 2.10 Location

There are several conditions to be considered in selecting a location for your stove:

- A. This product is designed to be installed into a fire place.
- B. Allowances for proper clearances to combustibles.

## 2.11 Clearance to Combustibles

This appliance must be installed in a recess, the recess should not contain any combustible materials. Wooden battens and plaster board should not be used within the clearance to combustibles.

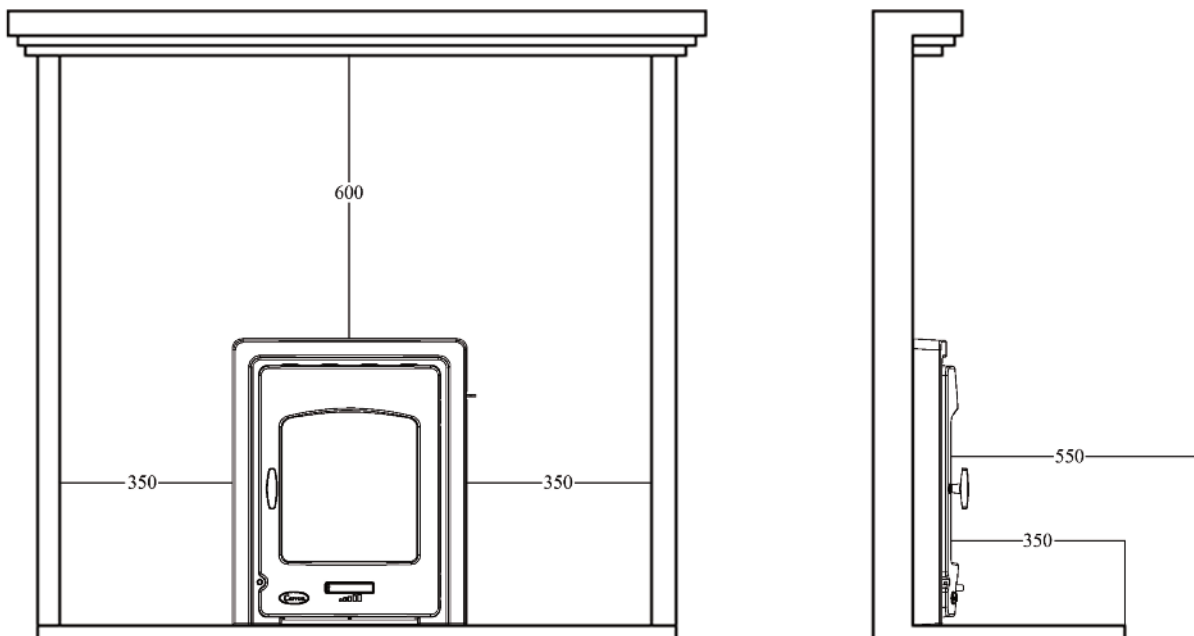
The minimum clearance to combustibles required is 600mm to the top, 350mm to the sides, 550mm directly to the front and 350mm to any combustible flooring.

If the mantelpiece protrudes further than 100mm from the fireplace, then it will be necessary to have further clearance to the top of the stove.

The distance the mantle protrudes past the 100mm should be added to the clearance.

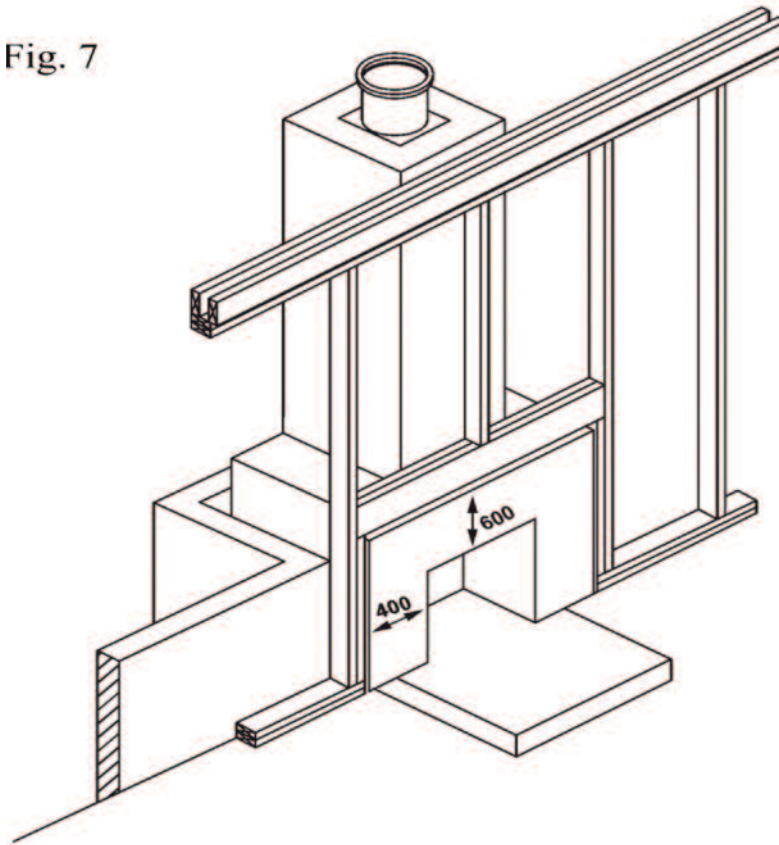
For example, if the mantle protrudes 200mm, the clearance to the mantle should be 700mm.

**Fig. 6**



If there is a studded wall surrounding the fireplace as in Fig.6, ensure the clearances in this Fig 7 are adhered to.

Fig. 7



## 2.12 Floor Protection

It is recommended that this appliance is installed on a solid, level, concrete base, a non combustible hearth conforming to current Building Regulations must extend to the front of the appliance.

## 3.0 User Manual

### 3.1 Choice of Fuel

Recommended fuel: **Wood**

- Use hard wood logs.

Although you can fire this product with almost all kinds of wood, you should not fire with wet wood, or unseasoned wood. Wood ought to be stored under cover for at least 1 year, and preferably 2 years, with good air circulation. The wood can be used once the moisture content is less than 20%. During the EN test, all stoves are tested with wood with a moisture content of  $(16 \pm 4)\%$ .

- Hardwood has a higher calorific value as the same volume (oak, ash, maple, birch, elm, beech, etc).

- Pieces of wood with a diameter greater than 10 cm should always be chopped. The pieces of wood should be short enough to be able to lie flat over the layer of embers, with air at both ends. The maximum length of fuel in the stove is no more than 30cm.

Recommended fuel: **Coal**

Smokeless fuels, including coalite nuggets, phurnacite, ancit and extracite.



## Not recommended as fuel:

- “green wood”. Green or damp wood reduces stove efficiency and soils the glass, the internal walls and the flue (soot, tar, etc.).

- “used timbers”. Burning treated wood (railway sleepers, telegraph poles, offcuts of plywood or chip board, pallets, etc.) quickly clogs the flue ways (soot, tar, etc.), pollutes the environment (pollution and smell, etc.) and cause the fire to burn too quickly and overheat.

“Green wood” and “recovered wood” can eventually cause a chimney fire.

**Prohibited fuel:** household waste and any form of bituminous coal or petroleum based coke. **This may damage the product and cause pollution.**

## 3.2 Use

### Odours when using the stove for the first time

**Fuel Overloading:** The maximum amount of fuel specified in this manual should not be exceeded, overloading can cause excess smoke.

**Painted products:** the stove may emit a smell when used for the first time. This is not toxic, but the room should be thoroughly ventilated. Let the fire burn with a high draught until all traces of the smell have disappeared.

**Enamelled products:** Condensation may form on the surface of the fireplace the first few times it is used. This must be wiped off to prevent permanent stains forming when the surface heats up.

### Air Control: Figure 8

The amount of heat emitted by the stove is regulated using two air controls. The primary air supply, where air passes up through the riddling grate, is controlled using the lower air control and the secondary air (airwash system), which is supplied to the combustion over the glass, is controlled using the upper air control.

Operation with the door open can cause excess smoke. The appliance must not be operated with the appliance door left open.

Operation with the air controls or dampers open can cause excess smoke. The appliance must not be operated with the air controls or dampers left open except as directed in the instructions.

### 3.2.1 Use with Wood

#### Lighting: See Figure 8

- Slide the top air control to open. Open the lower control.
- Lay firelighters and rolled up newspapers on the grate with a small quantity of dry kindling. Place 2 or 3 small logs on top.
- Light the newspaper or firelighters and close the door.
- Once the fire is established, add further logs of a diameter up to 10 cms.
- When the stove body is very hot, close the lower control.
- The burning rate can now be lowered by moving the top air control to smaller air inlet.

#### Re-fuelling: See Figure 8

• If there is insufficient burning material in the firebed to light a new fuel charge, excessive smoke emission can occur. Refuelling must be carried out onto a sufficient quantity of glowing embers and ash that the new fuel charge will ignite in a reasonable period. If there are too few embers in the fire bed, add suitable kindling to prevent excessive smoke.

- Slide the top air control to open. Open the lower control.
- Open the glass door and add logs. (To load fuel, the door should be opened slowly, avoiding a sudden rush of intake air, so that smoke does not escape into the room.)
- Leave the secondary control open for two minutes to allow the initial volatiles in the wood to burn.
- Return to normal operation.

Very Important: Wood is a material that contains a great deal of gas (approximately 75 %). The gases are released when the wood is lit and heated up. For this reason, it is important that the gases are ignited quickly after refuelling. If the wood just lies smouldering, especially after refuelling, a lot of smoke is created, which, in the worst case, may cause an explosive ignition of the gasses, resulting in damage to the stove.

In order to ignite the gases that are released from the wood, and to keep clear, lasting flames during the combustion process, it is important to let in the required quantity of oxygen (air supply) at all times. The setting of the air supply, the method of ignition and the lighting intervals depend on the draught in the chimney, the wind and weather, the amount of heat required along with the type of fuel used. This means that it may take some time before you get to know the correct functioning of the stove under any given circumstances.

### 3.2.2 Use with Solid Fuel

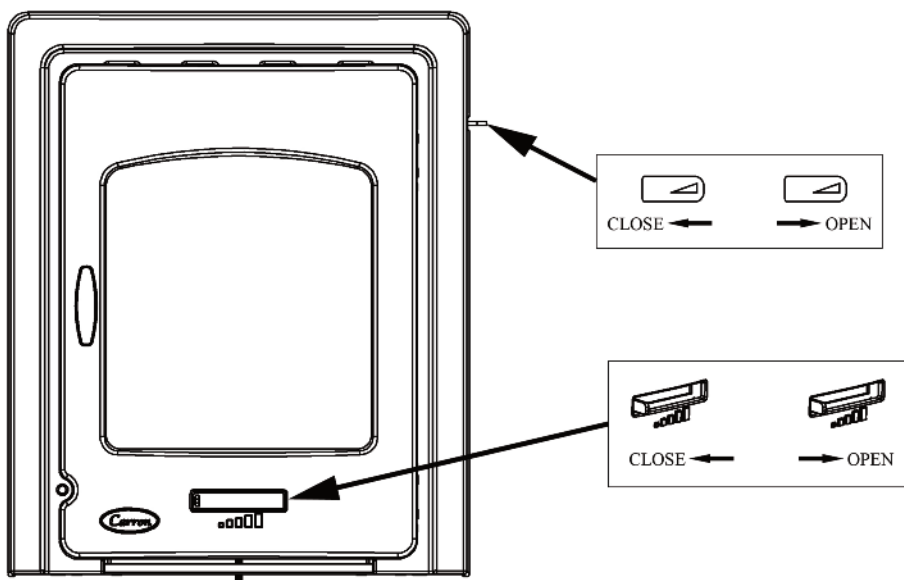
#### Lighting: See Figure 8

- Slide the top air control to open. Open the lower control.
- Lay firelighters and rolled up newspapers on the grate with a reasonable quantity of dry kindling. Place a small quantity of solid fuel on top.
- Light the newspaper or firelighters and close the door.
- Once the fire is established, add further fuel.
- When the stove body is hot, close the top air control.
- The burning rate can now be adjusted by the lower control.

#### Re-fuelling: See Figure 8

- If there is insufficient burning material in the firebed to light a new fuel charge, excessive smoke emission can occur. Refuelling must be carried out onto a sufficient quantity of glowing embers and ash that the new fuel charge will ignite in a reasonable period. If there are too few embers in the fire bed, add suitable kindling to prevent excessive smoke.
- Open the lower control.
- Open the glass door and add fuel. (To load fuel, the door should be opened slowly, avoiding a sudden rush of intake air, so that smoke does not escape into the room.).)
- Leave the secondary control open for two minutes to allow the initial volatiles in the fuel to burn.
- Return to normal operation.

Fig. 8



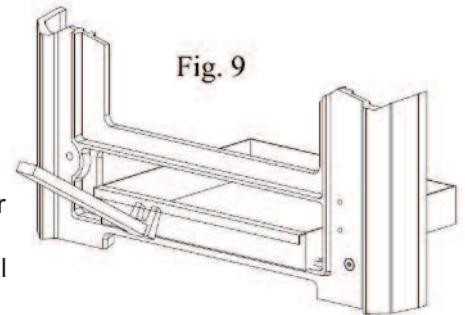
**Very Important:** The stove door should never be opened when the stove is being fired vigorously. We would strongly recommend that you do not leave your stove burning over night. As the gases in the wood do not ignite at the low temperature, but settle as soot (unburned gases) in the chimney and stove. Extreme conditions, such as poor draught in the chimney, large quantities of wood or wet wood, may, in the worst-case scenario, cause an explosive ignition.

### 3.2.3 Ash removal

#### Fig. 9 (How to remove ashpan)

It is essential to keep the grate free from a heavy build up of ashes. This product is equipped with a grate riddling device which is used to “shake” ashes off the grate into the ash pan. Whenever the stove is burning without life when the lower control is open, use the riddling lever to clear the grate of surplus ashes.

If burning solid fuel, always empty the ash pan at least once a day or whenever it is full of ashes. Never allow the ashpan to overflow allowing ash to be in contact with the underside of the grate. If this condition is allowed, the grate will wear out pre-maturely.



### 3.3 Maintenance

#### 3.3.1 Cleaning Glass

This product is equipped with an air wash for the glass. Air is sucked in through the air vent above the fireplace and down along the inside of the glass.

However, some soot will always stick to the glass, but the quantity will depend on the local draught conditions and adjustment of the air wash vent. Most of the soot layer will normally be burned off when the air wash vent is opened all the way and a fire is burning briskly in the fireplace.

TIP! For normal cleaning, moisten a paper towel with warm water and add some ash from the ashpan. Rub it over the glass and then rinse the glass with clean water. Dry well. If it is necessary to clean the glass more thoroughly we recommend using a glass cleaner (follow the instructions on the bottle).

#### 3.3.2 External Surface Cleaning

The cast surface of the stove is painted with heat-resistant paint or enamel finish. It is best maintained by simply vacuuming it with a soft brush attachment or wiping it down with a dry, dust-free cloth. When the appliance is cold.

#### 3.3.3 Gaskets

The rope seal in the door will wear out over time, and should be replaced as required in order to maintain controllable combustion.

### 3.4 Operational Problems – Troubleshooting

<u>Problem</u>	<u>Probable causes</u>	<u>Action</u>
Fire difficult to start Fire goes out	Wood green, too damp or poor quality.  Logs are too big.  Air starvation.  Insufficient draught.	– Use the recommended fuel.  – To light the fire, use small, very dry twigs. To maintain the fire, use split logs.  – Open lower and top air control levers.  – Check that the flue is not obstructed, sweep it if necessary <b>Seek advice from a chimney specialist.</b>
Fire burns too quickly.	Too much draught.  Excessive draw.  Poor quality wood.	– Ensure that the lower lever is closed Partially close the top air control lever.  – Install a draught stabiliser. Consult your Dealer.  – Do not continuously burn small wood, sticks, bundles, carpentry offcuts (plywood, pallets), etc.
Smokes when lighting up.	Flue duct is cold.  Room is in decompression.	– Burn paper and kindling wood to increase heat.  – Open a window until the fire is well established.
Smokes while burning.	Draught is insufficient  Down draught.  Room is in decompression.	– Consult a chimney specialist. Check that the flue is not obstructed, sweep if necessary.  – Install an anti-down draught cowl. Consult your Dealer.  – In houses equipped with Mechanical Ventilation, an outside air intake must be installed for the chimney.
Low heat output.	Incorrect Fuels.	– Use the recommended fuel.

#### **Warranty**

Carron Stoves are supplied with a 3 year stove body and 1 year inner components warranty.

This warranty does not cover items considered consumables. These items include door glass, fire bricks, fire rope and grates. The use of incorrect fuels would invalidate this warranty.

This appliance must be installed by a HETAS engineer. Proof of purchase and certificate of installation would be required in the case of a warranty claim.

Occasionally the enamel finish can show a crazing/cracking effect on the surface of the stove during use. This effect will normally lessen as the stove cools and should not be considered a defect. This crazing effect can be made worse by incorrect fuel or over-fuelling.



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**Carron stoves are imported and distributed in the UK by:  
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**[www.carron.uk.net](http://www.carron.uk.net)**