

Instruction Manual



Hi-Flame Brogan Ecodesign Multi Fuel Stove Model WF905

Please note that this appliance has been independently CE and DIN+ tested by an EU Notified Laboratory and is approved for burning fully seasoned wood with less than 20% moisture content. It must be operated at all times in accordance with these instructions to minimise the amount of smoke produced. *Published July 2023*



Brogan High Leg WF905-HL



Brogan Log Store
WF905-LS



Brogan WF905



Serial
Number

Date of
Purchase

Important You will need to refer to the model and serial number of your stove should you ever need to make a claim under the Hi-Flame Warranty or if you wish to purchase any replacement parts. You will find the serial number, beginning with WF, on the CE plate at the rear of the stove as well as on the lid of the outer packaging the stove was delivered in. We suggest that for convenience you write this on the cover of this booklet

IMPORTANT: USER WARNING NOTES

Properly installed, operated and maintained this stove should NOT emit smoke or fumes into the dwelling.

Occasionally fumes from refuelling may occur. However, persistent smoke or fume emission is potentially dangerous and must not be tolerated. If this persists, then the following immediate action should be taken:

- Quickly open the doors and windows to ventilate the room.
- Make sure that the stove door is closed and that the combustion air controls are fully open. It may be that the open door or a fully closed control have contributed to the problem. The above actions should then ensure that any remaining fuel will combust as normal and will not smoulder to create more unwanted smoke or fumes.

However, if smoke and fumes persists then leave the premises and let the fire go out.

- Wait until the room clears and the stove is cold.
- Check for a flueway, connecting flue pipe or chimney blockage and clean out if required.
- Check that the wood logs you have used are fully seasoned with a moisture content of less than 20%. Wet wood will always produce excessive smoke as well as create an acrid smell.
- Do not attempt to relight the fire until the cause of the smoke or fume emission has been identified and corrected. If necessary seek expert advice, preferably from a Hetas, OFTEC or INFO installer.

The most common cause of smoke or fume emission is flueway or chimney blockage. For your own safety these should be inspected regularly and must be kept clean at all times. See page 39.

If the CO alarm (which should be fitted at the time of installation) sounds, please follow the advice above.

A WORD ABOUT TODAY'S HIGHLY SENSITIVE SMOKE DETECTORS AND CARBON MONOXIDE (CO) ALARMS

It's good to know that we can all depend upon today's highly efficient smoke alarms and carbon monoxide detectors to ensure our safety. However, it is worth pointing out that when you light your stove for the first five or six times the fumes from the new paintwork, as it cures, may cause the smoke alarm to sound. This can usually be prevented by greatly increasing the ventilation to the room during the paint curing process.

In new build properties smoke alarms and CO detectors are often interlinked and will sound throughout the home when either one of them detects an issue, such as fumes from paintwork curing. Again, when using the stove greatly increase the ventilation in the room to help prevent this.

Should the alarm soundings continue beyond the first five or six fires and / or not respond to increasing the ventilation then, in the first instance, please consult your stove installer or property developer.



Please note: A CO alarm is now a mandatory requirement for all stove installations in the United Kingdom and Republic of Ireland.

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HI-FLAME BROGAN PRODUCT VERIFICATIONS

The 905 stove models have been tested to **CE EN13240** standards and have passed the latest **EU Ecodesign 2022** emissions criteria for CO, NOx, PM and OGC emissions, heat output and efficiency. This product is registered on the **HARP Database** which can be accessed for **BER** and **SAP** calculations.



This instruction manual is also used for a number of other free-standing stove models in the Hi-Flame product range and therefore some of the stove photographs, which are used for guidance purposes only, may differ slightly from your new stove. However, the principles illustrated remain the same.

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INTRODUCTION

Thank-you for purchasing this new Hi-Flame Brogan Ecodesign wood burning stove. We are confident that with its state-of-the-art combustion technology and ultra-low emissions it will not only provide you with highly efficient carbon neutral heat but also give you very many years of pleasure as it takes centre stage in your home.

However, before you install or operate your new stove please carefully read this handbook which contains important safety advice as well as instructions which will help you make the most of your new stove.

All users of this stove should be aware of the contents of this handbook and in particular how to operate the stove efficiently to help minimise smoke and emissions. If other people are going to operate the stove then please keep this booklet handy so that it can always be quickly referred to. Never let anyone use the stove who is unfamiliar with its correct operation.

INSTALLER SAFETY FIRST

BS 8303 Code of Practice

Please refer to the current issue of British Standard BS8303, Code of Practice for installation of domestic heating appliances burning solid mineral fuel (this has recently been revised). Make reference to Building Regulations, Local Authority byelaws and other specifications / regulations as they affect the installation of this appliance. See page 16.

Health and Safety

During the installation of this stove and any related building works you must comply with any current Health & Safety at Work regulations. When the stove is fired up always

wear protective gloves and use the tool supplied with the stove when adjusting the stove's air controls.

Asbestos

This stove does not contain Asbestos. However, check that there is no possibility of disturbing any asbestos-based materials during its installation. You may intend removing an older appliance prior to installing your new stove, and you should be aware that the old appliance or installation could incorporate heat protective asbestos sheet. Use appropriate protective equipment and seek specialist guidance at www.hse.gov.uk/asbestos – do not underestimate the serious risk to health that Asbestos can pose.

Fire Cement

Some types of fire cement are caustic and should not be allowed to come into contact with the skin. Protective gloves and glasses should be worn when applying fire cement. In case of contact wash immediately with plenty of water. Always read and follow the fire cement manufacturer's instructions. Care should also be taken to avoid unnecessary contact between the stove's surfaces and the fire cement as this could damage the paintwork. Any excess fire cement should be quickly removed before it hardens.

Handling

This stove is extremely heavy and therefore adequate facilities must be available for its safe loading, unloading and site handling. This will normally require two people.


Metal Parts

When installing or servicing this stove care should be taken to avoid the possibility of personal injury from the stove's metal parts. Particular care should be taken to avoid sharp edges when handling or attaching the flue liner.

PRODUCT FICHE AND ERP LABEL

EU Commission Delegated
Regulation 65 / 2014

HI-FLAME BROGAN WOOD STOVE

Trademark	Hi-Flame
Product Name & Model Number	Brogan / WF905
Product Description	Solid Fuel Roomheater (Wood)
CE EN Standard Type Test	EN 13240:2001 + Amd 2:2004
EU Notified Test Body / Number	Kiwa Gastec / UKAS No 0692
Nominal Heat Output	5.0 kW
Nominal Net Efficiency	76.2%
Nominal Gross Efficiency	69.3%
Seasonal Efficiency / EEI <small>Under average climate</small>	68.0% / 100
Energy Efficiency Class	



ENERG

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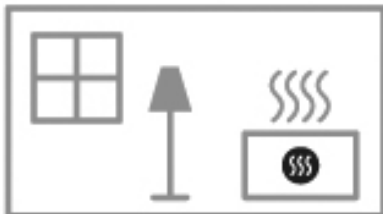
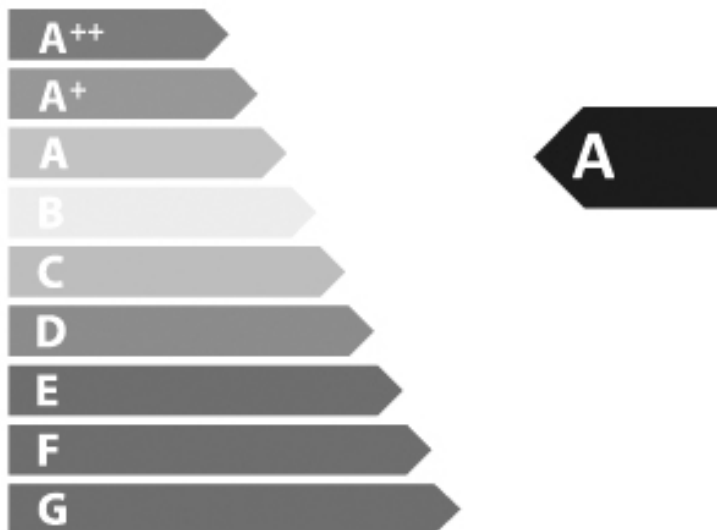


hi-flame

OUTSTANDING ECODESIGN STOVES

Hi-Flame Brogan

WF905, WF905-HL & WF905-LS



5,0
kW

ENERGIA · ЕНЕРГИЯ · ΕΝΕΡΓΕΙΑ · ENERGIJA · ENERGY · ENERGIE · ENERGI

2015/1186

TECHNICAL DATA / CPR DECLARATION OF PERFORMANCE

Hi-Flame declare that the test stove submitted to the Notified Laboratory for type testing of the 905 model represented the full production model specifications in all critical technical parameters needed to fulfil the requirements of the testing standard BS EN 13240:2001 + Amd 2:2004. No modifications were required to the items tested in order to meet the requirements of the standard. All applicable criteria on the type test have been passed in respect of the materials, design and construction as well as the instructions and marking. Data below has been derived from 905 Ecodesign Emissions tests during April 2017.

General Specification

Model Name and Number	
Hi-Flame Brogan	WF905
Net Weight Standard 91kg HL 92.5kg LS 99kg	

Performance data from Kiwa Tests Burning Preferred Fuel (Wood Logs)

Nominal Heat Output	5.0 kW
Refuelling Interval	0.75 hours
Efficiency (net)	76.2%
Mean CO Emission (at 13%)	0.10
Mean C _n H _m Emissions (at 13%) Nmg/m ³	76
Mean NO _x (at 13%) Nmg/m ³	82
DIN Plus Particulates (at 13%) Nmg/m ³	15
Mean Flue Gas Temperature	307°C
Flue Gas Mass Flow	4.6g/s

Minimum Distance to Combustibles Materials from EN13240 Tests

Rear	900 mm
Sides	700 mm

At a nominal output of 5.0kW and when operated in accordance with these instructions this stove is suitable for use with a 12mm

non-combustible hearth – subject to current Building Regulations.

EN13240 tested hearth temp 63.2°C

Preferred Fuel Requirements

Wood Logs:

Seasoned wood logs with a moisture content of less than 20%. For more information about wood burning and buying seasoned wood please visit the Ready to Burn scheme (supported by Defra) www.readytoburn.org.

Maximum Log Length	250mm
Maximum Fuel Load (wood or coal)	1.5 kg

Flue Requirements

Flue configuration	top or rear
Flue pipe diameter	125 mm
Height to centre of rear flue:	433 mm
From centre of top flue to back	142 mm
Minimum flue height from stove top	4.5 m
Minimum flue pressure	12Pa
Recommended flue pressure range	12 – 18Pa

See pages 20 –22 regarding the appropriate flue pressure and spillage tests required during commissioning for installations with DEAS.

Air Supply

In pre-2008 dwellings a dedicated air vent' is not usually required for this stove (subject to Building Regulations). In dwellings built after 2008 then a dedicated air supply is required to ensure the safe operation of the stove. This air can either be supplied via a vent' to the room or via a direct external air supply (DEAS) using the stove's air inlet and appropriate non-combustible ducting. See pages 20 –22. DEAS inlet external diameter 75 mm

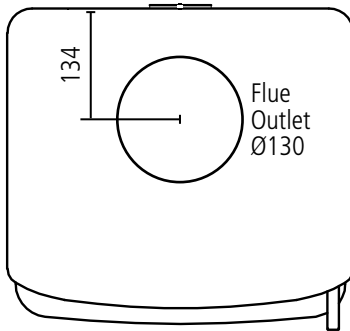
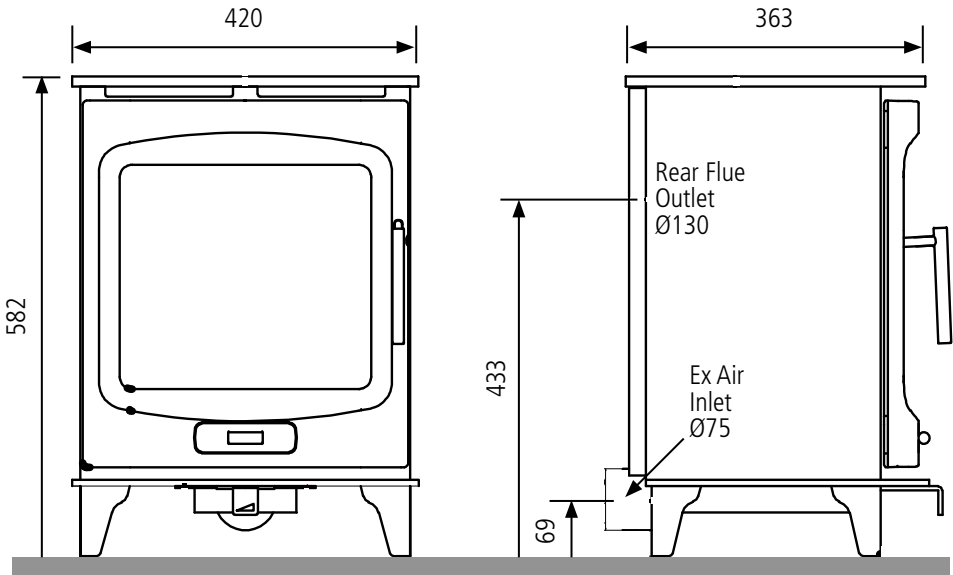
Modifications

This stove must not be modified in any way – modifications could affect its safe performance and will invalidate your Hi-Flame Warranty.

BROGAN WF905 – STANDARD MODEL

GENERAL DIMENSIONS

All dimensions in mm

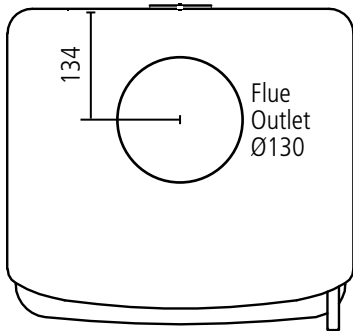
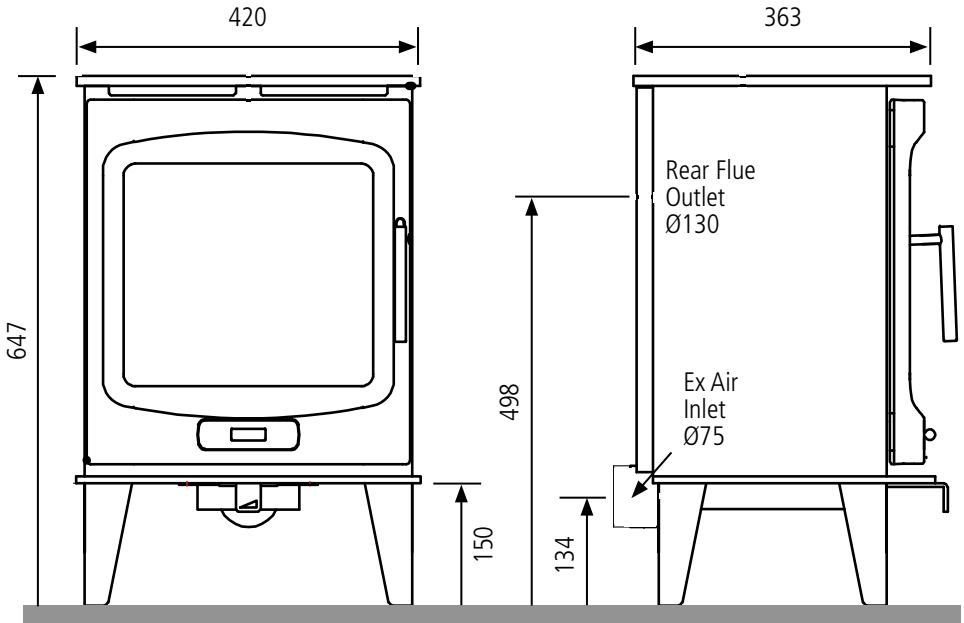


Height	582mm
Width	420mm
Depth	363mm
Connecting flue pipe outlet diameter	125
Centre of rear flue outlet from hearth	433
Centre of top flue outlet to rear	134
External Air Inlet Diameter	75
Centre of external air inlet from hearth	69

WARNING When not using External Air you must ensure there is a minimum air gap of 35mm between the end of the inlet pipe and the back wall of the fireplace. If necessary, it is acceptable to trim the air inlet to provide the 35mm gap that will ensure an ample air supply.

BROGAN WF905-HL WITH HIGH LEGS GENERAL DIMENSIONS

All dimensions in mm



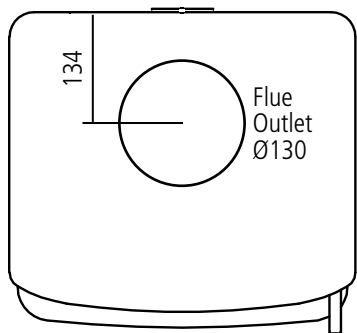
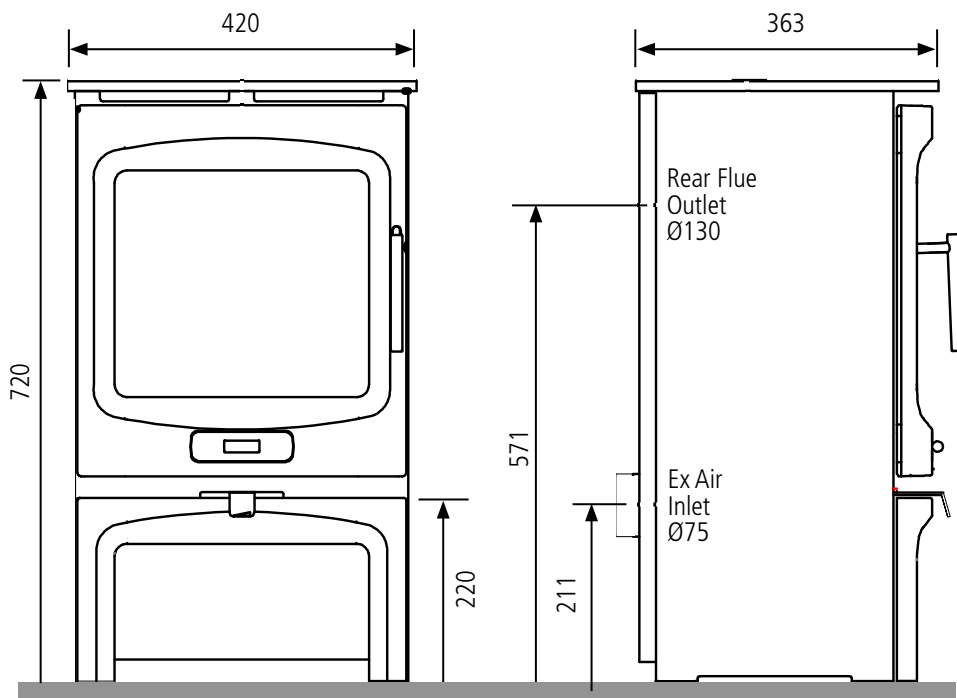
Height	647mm
Width	420mm
Depth	363mm
Connecting flue pipe outlet diameter	125
Centre of rear flue outlet from hearth	498
Centre of top flue outlet to rear	134
External Air Inlet Diameter	75
Centre of external air inlet from hearth	134

WARNING When not using External Air you must ensure there is a minimum air gap of 35mm between the end of the inlet pipe and the back wall of the fireplace. If necessary, it is acceptable to trim the air inlet to provide the 35mm gap that will ensure an ample air supply.

BROGAN WF905-LS WITH LOG STORE

GENERAL DIMENSIONS

All dimensions in mm



Height	720mm
Width	420mm
Depth	363mm
Connecting flue pipe outlet diameter	125
Centre of rear flue outlet from hearth	571
Centre of top flue outlet to rear	134
External Air Inlet Diameter	75
Centre of external air inlet from hearth	211

WARNING When not using External Air you must ensure there is a minimum air gap of 35mm between the end of the inlet pipe and the back wall of the fireplace. If necessary, it is acceptable to trim the air inlet to provide the 35mm gap that will ensure an ample air supply.

CRITICAL SAFE DISTANCES

Fireplace Openings

When this stove is installed within a fireplace opening the appropriate air space must be provided to ensure the free movement of the radiated heat and hot air. If this is restricted it could affect the stove's safe and efficient operation as well as shorten the lifespan of the stove components and, in particular, the vermiculite insulating panels and baffle plate. Reducing these distances could also create 'hot spots' which could potentially damage the fabric of the fireplace or chimney breast.

Recommended Minimum Air Space inside a Fireplace

A Sides	125 mm (5")
B Rear	50 mm (3")*
C Top	200 mm (8")

*To ensure the stove's safe operation when not using the direct external air supply (DEAS) you must allow sufficient space (35mm) for the free movement of air around the ex-air rear air inlet at the base of the stove (this supplies all of the combustion air to the stove).

Under no circumstances should the air inlet butt up against the fireplace wall. When using DEAS you must provide sufficient clearance space for any non-combustible ducting.

Always Allow Space for Maintenance

You must leave sufficient space around the stove to allow easy access for regular maintenance. This is particularly important if you intend to use the rear fitting flue option with a T-piece flue pipe as you will need to be able to access the T-piece trap and be able to easily and



securely refit the cap after cleaning.

Minimum Distances to Combustible Materials

These distances have been derived from the official EN13240 CE tests.

Rear	900 mm (36")
Sides	700 mm (28")

Hearth requirements

CE tested maximum surface temperatures:	
Floor below the stove	63.2°C

Please Note

The temperatures above are from the 905 model tests. Temperatures for the WF905 with log store (-LS) and high leg (-HL) options with its firechamber placed much further away from the floor surface, will be less. All three WF905 model variations are therefore suitable to be placed on a 12mm non-combustible hearth – subject to Building Regulations. Please refer to current Building Regulations for all specific fireplace and hearth safety requirements.

BROGAN STANDARD FEATURES

1 Primary Air Boost This supplies air which enters from under the grate. Open this to aid combustion at the start of a wood fire (thereafter keep closed). It can also be used to supply virtually all of the combustion air for smokeless coal fires as well as to control them.

2 Pre-heated Secondary Air and Tertiary Air Control This manages both the Secondary and Tertiary Air supply. Secondary Air, which forms part of the Airwash system, is directed along the top of the stove and pre-heated to supply vital combustion air from above the wood fire and at the same time wash it down the inside of the glass.

3 Pre-heated Tertiary Air System

Pre-heated air enters the stove through jets at the top of the special cast iron heat sink in the rear of the firechamber. This ensures a much longer, cleaner emissions-friendly burn from the stove even in the latter stages of the burn cycle and is managed by the slider control at 2 above.

4 Airwash System

This is part of the Secondary Air system which diverts pre-heated air down along the front of the glass to burn off unwanted dry sooty particulates and help keep it clean.

5 Top or Rear Flue

Option Simple to switch depending on the type of installation you require.

6 Direct External Air Supply (DEAS) inlet

A supply of combustion air enters here from outside the building when connected to the appropriate non-combustible ducting and weatherproof grille (not supplied).

IMPORTANT

In the interests of safety please read these instructions carefully before installing or operating your new stove. Even if you have installed or operated stoves before, manufacturers' requirements can vary and can also change with updates to building regulations.

Model shown:
Brogan with standard
leg WF905



PACKING LIST

Check that you have a full set of components shown in the list below. Some components may be contained inside the firechamber. In the unlikely event of a shortage, please report this immediately to your stove dealer. Never attempt to operate the stove with missing or damaged components.

1 This instruction Booklet

1 Stove with Flue Collar

1 Log Retaining Bar(s)

1 Ash Pan

1 Air Control Operating Tool

ASSEMBLING THE STOVE

Your new Brogan stove is extremely heavy. Always handle it with care and make sure that you have additional strong help when you move it. The door and door handle, should not be used to grip the stove as they could be damaged from supporting the stove's weight. If necessary, the fuel retaining bar can be removed to help reduce the weight. Under no circumstances should the door be removed as this will invalidate your Hi-Flame Warranty.

Unpacking the stove

Remove your new stove from its recyclable packaging. Retain this until the stove is installed and is fully operational. Unfasten retaining wires and remove any components from inside the stove.

Inspecting the stove

Please inspect the stove to check that it has not been damaged in transit – never attempt to install a stove which has been damaged. If damage is suspected then report this immediately to your stove dealer.

Baffle Plate

The baffle plate is situated at an angle inside the top of the firechamber. Check its position

to ensure that it has not moved during transport. It should sit on top the side firebricks (without gaps) with its back edge secured on the ledge above the cast iron panel at the back of the firechamber. For more detailed information about fitting and removing the baffle plate see page 39. Fully familiarise yourself with the correct location of the baffle by practising removing and re-fitting it prior to the stove's installation as you will need to regularly check this area to avoid potential soot build up and blockages.

Moving the stove

Do not drag the stove. Always lift it to finally position it and use strong help. Alternatively it may be possible to place the stove on heavy-duty plastic sheeting or thick floor covering to slide the stove into position, being careful not to damage any finished hearth or floor surfaces with trapped grit or debris.

Flue outlet options

This stove is already configured for the preferred top flue outlet to receive the appropriate 125mm diameter connecting pipe, however it can easily be switched to the rear fitting flue option. See pages 14 and 15 overleaf for detailed instructions.

OPTIONAL HIGH LEGS

The Hi-Flame Brogan WF905 comes with standard legs already fitted. If you have purchased the optional High Leg set it is very easy to swap these over. Remove any loose components from inside the stove and gently lay the stove on its back on an old piece of carpet or similar. Using the correct spanner or socket remove each of the leg bolts and legs and replace with the High Legs. Do not overtighten the bolts. Ensure that all four legs are lined up with the stove bodwork. Carefully pivot the stove into its upright position. Two people should undertake this to ensure that no unnecessary strain is placed on the rear legs.

TOP OR REAR FLUE OPTIONS

The stove can be configured for a 125mm (5") top or rear flue outlet. Under no circumstances should the flue pipe diameter be reduced from 125mm (5") as this could be extremely dangerous.

Remember a top flue outlet will always be the most efficient choice if it can be undertaken safely.

The Top Flue Outlet

For a top flue outlet the aperture should already be open on the top of the firechamber bodywork and the flue collar fitted at the factory.

On some models the flue collar may be contained in the ash pan, in which case, remove the loose fitting lid by pulling it forward and lifting it upwards. Attach the collar using the two bolts supplied.

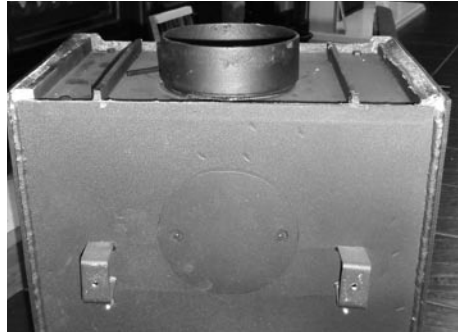
Ensure that a good seal is made between the firechamber surface and the gasket on the flue collar – use fire cement if necessary.

Re-attach the lid, ensuring it is pushed towards the back of the stove and 'locks' securely against its locating lugs. When the lid is properly located the flue collar should be perfectly central in the lid aperture. The flue pipe can then be fitted through the lid into the collar. Again, neatly apply a seal of fire cement and / or fire rope to ensure an air-tight connection.

Avoid getting fire cement on the paintwork by masking the immediate working area. Any excess fire cement should be removed immediately.



Your stove should already be factory configured to take a top flue outlet with the flue collar fixed in position as shown above



If using the rear flue option then the rear Heat Shield / Convection Scoop on WF905 should be removed to expose the rear flue outlet blanking plate



The flue and blanking plate are then swapped over. Be careful to ensure good gas-tight seals are maintained on the new attachments – use fire cement if necessary

The Rear Flue Outlet

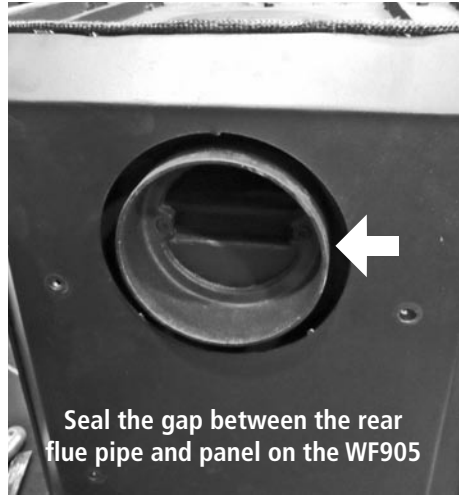
For a rear fitted flue, remove the heat shield / convection scoop to gain access to the rear flue outlet and remove the rear outlet sealing plate.

Use the correct sized allen key or 'hex-head' screwdriver to avoid damaging the bolts which will be re-used. Once the two bolts are undone on the blanking plate you may have to prise this away very gently to avoid damaging the gasket.

Remove the loose-fitting stove lid by pulling it forward slightly and lifting it upwards to clear the top-fitted flue collar. Undo the two bolts on the flue collar and re-attach this to the rear flue outlet ensuring that there is a good airtight seal between the flue collar gasket and the bodywork. Use fire cement if necessary. Now re-fit the rear blanking plate to seal off the top flue outlet. Do not use the decorative lid blanking plate for this. Make sure you maintain a good air-tight seal.

The decorative lid blanking plate supplied with your new Brogan stove will be contained in the ash pan. This should be attached to the lid using the bolts supplied. This makes a discreet flush fitting closure of the lid aperture and does not need sealing with fire cement. Re-attach the lid, ensuring it is pushed towards the back of the stove and 'locks' securely against its locating lugs. When the lid is properly located it should sit squarely on top of the stove and only be able to be moved forward.

Next remove the pre-cut flue outlet shape on the rear heat shield / convection scoop. The cut out can be easily removed by using a junior hacksaw blade to cut through the 4 small retaining links. Re-attach this to the rear of the stove ensuring the rope gaskets maintain a good seal. For effective convection ensure that a good seal is also made between the rear fitted flue pipe and rear heat shield /



To maintain good convection it is essential that the gap between the flue pipe and the cut-out on the heat shield is sealed by using fire rope.

convection scoop, either by using a rope seal gasket (not supplied) or fire cement (or both).

Important – The loose-fitting lid

When using the rear flue option never light or operate the stove without its loose-fitting lid being securely located in the correct position.

Your stove is now ready for installation.

INSTALLATION REGULATIONS

This stove must be installed by a recognised competent person who is appropriately qualified to ensure that the installation complies with all local, national and European Building Regulations. Failure to comply with this may invalidate the Hi-Flame Warranty. We therefore strongly recommend using a Hetas, OFTEC or INFO Registered Installer. Your authorised Hi-Flame dealer will also be able to help and advise you on choosing an installer.

Current Building Regulations

England & Wales

Building Regulations Document J (revised October 2010) – Combustion Appliances and Fuel Storage Systems. Download this at www.planningportal.gov.uk

Scotland

Building Standards (2001) Domestic
Download this at www.sbsa.gov.uk

Northern Ireland

The Building Regulations (Northern Ireland) 2000 / Amendment No 2 2006. Download this at www.buildingcontrol-ni.com

Isle of Man

Building Regulations (2007) – Isle of Man
Download this at www.gov.im

Republic of Ireland

Approved Document J – Heat Producing Appliances (Revised September 2014)
Download this at www.environ.ie

FURTHER INFORMATION POINTS

The Stove Industry Association (SIA)

The SIA promotes and explains the benefits and environmental advantages of stoves and is a great source of well-researched information. www.the-stove-industry-alliance.co.uk

Hetas

One of the competent persons schemes for approved stove installers. www.hetas.co.uk

OFTEC

One of the competent persons schemes for approved stove installers. www.oftec.org

The Solid Fuel Technology Institute

For additional useful information visit the SOLIFTEC website. www.soliftec.com

Solid Fuel Association (SFA)

The SFA website is also a very good source of practical information www.solidfuel.co.uk

BFCMA

The British Flue and Chimney Manufacturers Association (BFCMA) website, www.bfcma.co.uk produces an authoritative and informative download guide to solid fuel flues and chimneys.

Health & Safety at Work Act

During the installation of this stove and any related building works in your property you have certain responsibilities and must comply with all current Health & Safety at Work regulations.

Approved Chimney Sweeps

Look for a sweep with the appropriate NVQ. There are number of approved chimney sweep organisations in the UK and Ireland, for example:

National Association of Chimney Sweeps:
www.nacs.org

Guild of Master Chimney Sweeps:
www.guildofmasterchimneysweeps.co.uk

BUILDINGS INSURANCE

Some building insurance companies require you to inform them of the installation of any new fixed heating appliance and to produce a certificate of compliance.

SELLING YOUR HOME

It is now common practice for purchasers' solicitors to request evidence of compliance (Hetas, OFTEC or Building Control) for stove installations. **Please note** compliance will not usually be provided retrospectively by Hetas or OFTEC Registered Installers.

BASIC INSTALLATION CHECK-LIST

This information is intended to outline the general principles of installing your stove. However, as each installation will vary it is unfortunately not possible for these guidelines to be comprehensive.

- Not only is it a legal requirement to ensure that your stove installation complies with all applicable Building Regulations, it is also a requirement of your Hi-Flame Warranty that the stove is installed by a competent person such as a Hetas, OFTEC or INFO registered installer. They will be fully aware of any building and safety regulations which apply to stove installations in your location.
- The existing constructional hearth and back hearth upon which the stove will sit must be suitably constructed and made from non-combustible materials of the correct thickness so that it conforms to the applicable Building Regulations. The superimposed hearth (the thinner, usually decorative surface, which sits on the constructional part of the hearth) must be suitably constructed and conform to the applicable Building Regulations.
- The fireplace recess or opening must be suitably constructed and any new lintel must conform to the applicable Building Regulations. The recess should be able to accommodate the stove along with the safe minimum operating distances required (see page 11). Any fireplace lining should have the appropriate fire rating. **NB** Standard plasterboard is not a suitable lining.
- Any adjacent walls, next to which a free-standing stove is installed, should be of a suitable thickness, made of an appropriate non-combustible material and conform to the applicable Building Regulations.
- The chimney must be of sufficient height and be in good condition and conform to the applicable Building Regulations for a stove

installation. Please refer to the to current issues of BS EN 15287-1:2007 Design, installation and commissioning of chimneys.

NB The minimum flue height required for this stove is 4.5 metres (15'). For shorter flues, the calculation procedure outlined within BS EN13384:1 may be used to determine whether a proposed flue design and height is capable of providing sufficient flue draught.

- Sweep and test the chimney prior to installation.
- The proximity of all combustible materials to the intended stove installation must conform to the minimum requirements outlined within this handbook (see page 11) as well as local, national and European Building Regulations, whichever is the greater. A combustible material is anything which can burn once it gets hot enough and includes plasterboard, skirting boards, wooden fire surrounds, wooden mantles, wallpaper, fabrics and floor coverings. Remember these materials could be concealed behind other materials which on the surface may appear to be non-combustible, for example, plasterboard and stud partitioned walls.
- You must ensure that this stove receives an adequate air supply for its safe performance. In a post-2008 home this must be from either a permanently open air vent' or via the stove's direct external air supply. See panel below for houses with MVHR systems. Additional information on air supply requirements is also available on page 7 and pages 20 – 22.

ENSURING A SAFE AIR SUPPLY WHEN THERE'S MECHANICAL EXTRACTION

Potential depressurisation caused by extractor fans etc must be assessed for any risks and the appropriate 'worst case scenario' spillage tests and flue draught measurements must be undertaken by an appropriately qualified installer during the commissioning process. See the section on Commissioning on pages 20 – 22 and 45.

GENERAL INSTALLATION GUIDELINES

Due to the wide variety of installation locations and types this information should only be considered as general guidance – you must refer specifically to current Building Regulations which apply to your country or region.

The Hearth

This stove can be installed on a 12mm thick non-combustible decorative hearth subject to Building Regulations. The hearth must be capable of supporting the weight of the stove (when loaded) along with any flue components which may bear down on the stove.

In England and Wales when this stove is used in a fireplace there is a requirement for the hearth to project a minimum of 225mm (9") in front of the opening or jam and not less than 150mm (6") at each side of the recess.

When using as a free-standing stove please refer to current Building Regulations for hearth dimensions. In addition any hearth must provide protective coverage for the minimum clearance distances for this stove outlined on page 11 and should also extend by a minimum distance of 225mm (9") from the front edge of the stove. The wall behind the stove should be non-combustible or alternatively be adequately protected from heat from both the stove and flue pipe.

The 'Fireplace'

The stove can be sited within a brick or stone fireplace recess or used free-standing. The fireplace side and rear walls should be at least 75mm thick and made of non-combustible brick or stone. Adequate air space around the stove must be provided to allow the stove to radiate its heat and also prevent any structural damage to the fireplace walls as well as to help avoid potentially over-heating the stove and damaging components. For recommended safe distances when this stove is located inside a fireplace – see page 11.

Please note if the fireplace interior needs to be lined you must not use standard plasterboard as this is combustible. Any sheet materials, the supports used behind it and fitting components should have the maximum possible fire rating of A1.

Installing inside a Mock Chimney Breast

If you propose to install this stove within a mock chimney breast and fireplace then extreme care must be taken in all instances to provide the safe minimum distances. Particular attention should be paid to ventilating the structure in order to prevent any potentially dangerous build up of heat inside the structure or to any of its metal fixings. Ideally, the use of combustible materials should be avoided and any sheet materials used should have the maximum possible fire rating of A1. **Please note** standard plasterboard is a combustible material and should never be used.

The Chimney, Flue and Flexible Liners

Other appliances should not share or be connected to the same flue system or chimney.

If you are using an existing chimney check its condition and suitability (see below) and, in the interests of safety, ensure that it is swept, even if the chimney has never been used, before or you install the flexible liner.

The minimum flue draught requirement for this stove is 12Pa and the minimum flue height required for this stove is 4.5 metres (15') from the top of the stove to the top of chimney terminal.

Alternatively, the calculation procedure outlined within BS EN13384:1 may be used to determine whether any proposed flue design and height is capable of delivering the minimum 12Pa updraught required for the safe performance of this stove. A copy of the installer's flue calculation will be needed as part of the Hi-Flame Warranty registration for an installation where the finished flue height

would be less than 4.5 metres. Failure to satisfy this requirement could result in the installation failing the commissioning and spillage tests outlined elsewhere in this handbook (see pages 20–22) as well as invalidate your extended Hi-Flame Warranty.

This stove features optional top or rear 125mm (5") diameter flue outlets and as a Defra Smoke Exempted Appliance (pending) the connecting flue pipe and stainless steel flue liner can also be of 125mm diameter (subject to Building Regulations).

Under no circumstances should the stove's 125mm diameter flue be reduced in any part of the flue system as this could cause a build up of dangerous carbon monoxide (CO) gas.

Although it is possible to sweep the flue system through this stove once the baffle plates have been removed (see page 39) it is recommended that there should be at least one additional cleaning access point within either the connecting flue pipe, twin wall chimney system or where there are bends.

Flexible Flue Liner

Hi-Flame strongly recommend fitting a flue liner when installing this stove within an existing chimney for the following reasons:

- A flue liner is a major 'quantifiable' component which provides a consistent flue diameter and regular inner surface and as such will minimise interference to the updraught and help improve it. When back-filled with vermiculite insulation a liner will keep flue gases as hot as possible which will help improve the stove's operation and minimise the amount of smoke produced.
- An existing chimney could leak smoke, fumes and potentially dangerous 'invisible' carbon monoxide (CO) into other parts of the building. Condensation or creosote tar, associated with burning wood, could eventually seep through the chimney walls, particularly if they are made of old or porous

brick and / or are jointed with lime mortar, eventually causing unsightly stains on decorative coverings.

- Stoves work best with the correct draught. Pre-1965 chimneys which have been built for open fires have larger (and often irregular shaped) voids than those best suited for a modern stove and this could reduce the effectiveness of the flue draught by making the flue too cold and difficult to warm. This is a particular problem if the chimney breast is on an outside wall and / or is subject to a strong prevailing wind.
- Many houses built since 1965 with clay or concrete chimney liners suffer from these being poorly installed, either through being fitted the wrong way up or not receiving an appropriate application of mortar to make a complete seal on each of the many joints. Even though the chimney may not be particularly old, this could still potentially allow smoke and fumes or unsightly condensation stains to leak through.

Chimney Terminal

The existing chimney pot or terminal must be suitable for stove installation and should not restrict the smoke and fumes from the stove. It must provide at least the same outlet area as the flue pipe. It may be that your existing chimney terminal has been replaced with a ventilating terminal if the fireplace has been closed off at some point. Your installer will be able to advise you about the appropriate specification of any new cowl or terminal.

A cowl has the additional advantage of limiting rain entering the flue system which could cause the inside of the stove to rust when it is not being used, particularly during the long periods outside the heating season. It will also help to reduce odours from moisture build-up in the chimney system, through infrequent burning, as this dries out.

THE DIRECT EXTERNAL AIR SUPPLY (DEAS) Ref BS8303 (2018)

IMPORTANT It may be, that despite installing with the DEAS, in order to avoid depressurisation and to ensure the safe operation of the stove, a dedicated air vent, as prescribed in Building Regulations Document J (or its equivalent) is the only solution to ensuring the necessary additional air for the correct operation of the stove where there is mechanical extraction. It is strongly recommended therefore that the installer makes the householder aware of this before any of the installation work proceeds.

Installer responsibilities

- All external air ducting as well as the inlet grille must be fitted strictly in accordance with these instructions which are intended to give clear guidance to the installer on the safe installation of the stove and its DEAS.
- The person installing the appliance takes full responsibility for a safe installation (refer to Approved Document J, BS8303 (2018) and the relevant Hetas Technical Bulletins) and must ensure that the installation complies with all relevant Building Regulations.
- The installer must fully commission the appliance, including undertaking appropriate spillage tests and flue draught measurements, to demonstrate and confirm the stove's safe operation with the room in its normal state and also with doors and windows closed and any mechanical extraction in the room and the rest set of the dwelling set at maximum operation i.e. worst case scenario depressurisation conditions.
- As already required by Building Regulations the CO detector(s) must be correctly fitted and the householder made aware of the

importance of regularly testing it.

- The householder should also be made aware that the stove should never be operated with the door open except when refuelling and this should always be kept to a minimum.

Direct air supply ducting requirements

- The external diameter of the DEAS inlet on this stove is 75mm (internal dia approx 71mm).
- Ensure that the internal diameter of the direct air ducting is at least the same size as the internal diameter of the DEAS inlet pipe.
- Do not reduce the diameter of the ducting as this will affect the safe operation of the stove. For fire safety reasons only use the appropriate metal or non-combustible ducting. Never use plastic ducting.
- The maximum recommended ducting length for the air supply to this stove is 1 metre. Longer straight lengths may be considered provided that the appropriate flue draught measurements and spillage tests are undertaken by the installer to ensure that this will not adversely affect the safe operation of the stove.
- Keep bends in the ducting to a minimum and avoid using bends greater than 60° if possible. Ensure that there is a good air-tight seal between the ducting and the stove's inlet pipe. Use an appropriate weather-proof, non-closable, external vent' grille.
- When selecting the location of the external vent' grille you must ensure that it can be easily accessed so that it can be regularly checked for potential obstruction (eg foliage growth, dead leaves or snow drifts etc). Never use the stove if these conditions exist. Ensure that the external grille will not be subject to the adverse affects of prevailing wind which will affect the stove's performance.

SPILLAGE AND FLUE INTERFERENCE TESTS Ref BS8303 (2018)

Flue pressure requirements

The minimum recommended flue pressure for this stove is 12Pa. Provided the flue pressure reading is within the 12Pa to 18Pa range then the stove should operate satisfactorily – subject to any spillage test outcomes. Where the flue pressure is less than 12Pa appropriate steps should be taken to improve this.

TEST 1 Cold Conditions Spillage Test

This test is used to determine that a suitable flue draught has been established which will ensure that during the start-up operation, as well as refuelling, spillage does not occur.

1 Close all external doors and windows, as well as the internal door(s) to the room the stove is located in and ensure all closable ventilators (eg window trickle vents) are closed and all devices that extract air from the dwelling are turned off (eg bathroom, tumble drier etc).

2 Preheat the flue to establish a sufficient updraught by either lighting a small fire burning kindling or using a blow torch or electric fan heater.

3 Ensure that the stove's air-control is set to the maximum open position (slide right). Light a smoke pellet (preferably 5m3/30 sec) and place inside the stove firechamber and shut the stove door.

4 Check that all of the smoke enters the flue and none of it enters the room through any part of the stove, its connecting flue pipe or the external air supply duct joint.

5 Note: If smoke does enter the room then repeat stage 2 above. However, this time build a much greater kindling fire, or significantly increase the time the blow torch or electric fan heater is used to warm the flue so that an

improvement in the flue draught is generated. Again, light a smoke pellet and place inside the stove firechamber and close the stove door.

6 If the second spillage test still fails, then progressively open a window in the room where the stove is installed. If the flue starts to draw the smoke, then this will indicate that the stove has not previously been provided with sufficient air for the flue to function correctly and therefore a permanently open air vent, as specified in Document J (or equivalent), may be necessary to correct the problem. When the air supply has been corrected then repeat the previous tests.

7 If smoke continues to spill after opening a window, this would indicate a more serious problem (for example a flue blockage or insufficient flue height) which must be rectified and then the commissioning process repeated.

TEST 2 Hot Conditions Spillage Test (Refuelling)

This test requires a smoke match / pen and is used to determine that the flue draught is consistent between cold and hot operation.

1 Once the initial flue draught has been verified as sufficient, light a good sized fire in the stove according to the instructions in this handbook, using the recommended fuel load and air control position(s). Allow the stove to reach normal operating temperature before refuelling.

2 Close all external doors and windows, as well as the internal door(s) to the room the stove is located in and ensure all closable ventilators (eg window trickle vents) are closed and any devices that extract air from the dwelling are turned off (eg bathroom vent', tumble drier etc).

3 Open the stove door, and with a smoke match / pen (15 second burn time),

pass over the top and sides of the firechamber opening and observe and record if the smoke / combustion products are drawn into the chimney or spill back into the room. Once the smoke match / pen is extinguished, close the appliance door.

4 Next, open all internal doors which interconnect the room in which the stove is installed to rooms where any extraction fans are present and turn these on to the maximum setting and allow to run for ten minutes. Repeat the smoke match / pen test above and observe and record if the smoke / combustion products are drawn into the chimney or spill back into the room.

5 If this spillage test fails, then progressively open a window in the room where the stove is installed. Again using a smoke match / pen observe and report. If the flue starts to draw the smoke, then this will indicate that the stove has not previously been provided with sufficient air for the flue to function correctly and therefore a permanently open air vent', as specified in Document J or equivalent regulations, may be necessary to correct the problem. When the air supply has been corrected then undertake the same test.

6 Fit an appropriate flue draught testing device to the connecting flue pipe and re-light the fire as previously. Repeat the test(s) in points 1 – 4 above. Check that the flue pressure meets the 12Pa minimum.

TEST 3 Extraction Test

This test requires a flue draught / temperature gauge(s). This test is to ensure that Hi-Flame's recommended operational 12Pa flue draught pressure for this stove is met. In some cases spillage can still occur, so it is important to carry out other essential smoke spillage tests.

1 Fit a flue pressure and flue gas temperature testing device(s) to the flue of the appliance.

2 Close all external doors and windows, as well as the internal doors to the room the stove is located in and ensure all closable ventilators (eg window trickle vents') are closed and any devices that extract air from the dwelling are turned off.

3 Light the appliance and ensure the optimum operating temperature is reached (approx 300°C).

4 Record the flue draught and the flue gas temperature and confirm that these are within Hi-Flame's recommended parameters.

5 Next, open all internal doors which interconnect the room in which the stove is installed to rooms where any extraction fans are present and turn all of these on to the maximum setting.

6 Run the extract system(s) for ten minutes, and then record the flue draught and the flue gas temperature. These should not be lower than the previous readings obtained without the extract system(s) running and should not fall below Hi-Flame's safe minimum 12Pa recommendations.

7 Once the tests confirm the satisfactory operation, remove the test device(s) and if required seal any test point aperture in the flue pipe.

Please note if at any stage during commissioning the flue draught reading taken differs from the recommended minimum 12Pa, then action should be taken to improve the updraught before proceeding with further testing.

Test results should be recorded on the Commissioning Report on page 45 as well as for any Hetas conformance.

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 (DEFRA) 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.

Further information on the requirements of the Clean Air Act can be found at the following website:
www.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.

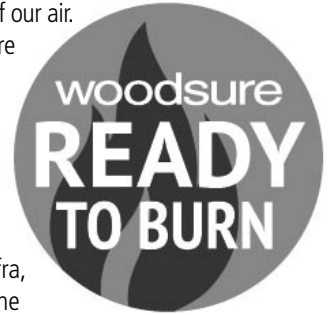
The Hi-Flame Brogan WF905 stove has a factory-fitted combustion air control

damper designed to ensure the correct quantity of combustion air is always delivered to keep smoke to a minimum and therefore this model is suitable for use in Smoke Control Areas when burning seasoned wood logs or Approved Smokeless Coal.

Never Burn Wet Wood

The recent media coverage of air quality has increased awareness of this important issue. Wood fuel marked with the 'Ready to Burn' label shows consumers that logs are dry and ready for use as wood fuel, and will burn more efficiently than unseasoned, green wood and will consequently reduce their impact on the quality of our air.

The Woodsure 'Ready to Burn' scheme is supported by The Mayor of London, Defra, Hetas and the Stove Industry Association, as well as Hi-Flame.



To find out more about the Ready to Burn scheme and the environmental benefits and potential cost savings of burning fully seasoned wood please go to:
www.woodsure.co.uk/firewood-ready-to-burn/

Operating this stove in a UK Smoke Control Area

To meet your legal obligations when operating this stove in a UK Smoke Control Area it must always be operated correctly to minimise the amount of smoke it produces.

- Burn only dry fully seasoned wood with a moisture content of less than 20%
- Alternatively burn Approved Smokeless Coal
- This instruction book should be left with the end-user to ensure to ensure cleaner burning.

PREFERRED FUEL

CE Standard and other Approvals

Please note that Hi-Flame 905-series stoves have been CE and Ecodesign tested for wood. The heat output, emissions and efficiency data, as well these operating instructions and the Hi-Flame Warranty covers the burning of wood in this appliance. They do not cover the use of unauthorised fuels.

Defra Smoke Exemption

Hi-Flame 905-series stoves have been officially approved by Defra* as exempted appliances to allow the burning of wood in designated UK Smoke Control Areas. It must, at all times, be operated strictly in accordance with the instructions to minimise the amount of smoke produced.

*WF905 Defra smoke exemption pending

General Guidelines

Only use dried, fully seasoned hardwood logs with a moisture content of less than 20%. Well seasoned wood makes a distinctive 'clack' rather than a dull 'thud' when knocked together. It will also feel much lighter than an unseasoned log. Other indicators include bark peeling away and cracking and the log splitting around the outside edge.

Ideally wood should be seasoned outdoors for between 18 to 24 months – the harder the wood then the longer the seasoning. It should be stacked off the ground with plenty of space between the logs to allow air movement and with the top covered to keep rain and snow out. Fully seasoned wood will give you approximately 50% more heat output than the equivalent unseasoned log.

Most types of hardwood, for instance Ash (generally regarded as the best), Birch, Beech, Oak and Elm can be used. However, avoid woods with a high resin content. As a rule of thumb, the heavier the wood, then the

greater the heat output and the longer burn time – the time between refills. All of this is providing it is fully seasoned wood.

Never use wet or unseasoned (green) wood as this will cause nuisance smoke and a very disappointing fire. Most importantly, it could quickly result in the build up of soot and creosote which the high temperatures of the stove flue gases could easily ignite to cause a flue or chimney fire. In addition, burning wet wood damages local air quality, produces a less efficient fuel economy and can eventually clog your flue system and cowl. It will also reduce the effectiveness of the stove's Airwash system thus causing blackening of the glass.

Never use wet or unseasoned wood as it is uneconomic and produces the following poor performance

- Burning wet wood harms the environment by unnecessarily producing excessive particulate matter (PM) which damages our air quality
- Hard to light fires and fires that are also very difficult to keep burning
- Smoky fires with fewer flames which are also of a dull or dirty orange colour
- Increased dense grey or blue smoke from the chimney
- Much shorter burn times with some wood left unburned at the end
- Low heat output despite the poor flames
- Dirty brown glass and black firebricks
- Excessive and rapid creosote build-up inside the flue system and chimney
- Unpleasant acrid smoky smells inside and sometimes outside the house

Manufactured or finished wood products, such as plywood and chipboard, must also be strictly avoided because of the high chemical adhesive content used in their production which could also leave harmful residue inside the stove and flue system.

FUELS YOU MUST ALWAYS AVOID

This stove has been emissions tested so that when correctly operated it will have a minimum impact on local air quality when only burning wood logs with a moisture content of less than 20%. Burning other fuels, apart from logs, and Approved Smokeless Coal is an offence in a Smoke Control Area.

Burning the following materials could also damage your stove and flue system, and will render your Hi-Flame Warranty void.

- **Never use your stove as an incinerator**

Do not burn any household waste such as magazines, newspapers, cardboard, milk cartons, vegetable peelings, plastic and rubber etc.

- **Never burn other types of wood**

During combustion lacquered, painted or tanalised wood, MDF, plywood, chipboard and other manufactured wood could develop substances which may be hazardous to your health and also damage your stove and flue.

- **Never burn petroleum coke**

Never burn petroleum coke (aka pet coke) as this burns at a very high temperature and its continued use will almost certainly cause irreparable damage to the stove components such as the baffle plate and fire fence.

- **Never burn bituminous house coal**

This has a harmful effect on local air quality. When burned it produces excessive smoke and soot with the soot quickly building up inside the stove's flueway and flue which increases the risk of dangerous blockages and chimney fires. Smoky coal has now been banned altogether in the Republic of Ireland.

- **Never burn flammable liquids**

Methylated spirits, petrol or other flammable liquids should not be used to light the stove as these could cause an explosion in the confined spaces of the firechamber.

WHEN YOU FIRST LIGHT YOUR STOVE

Use smaller and shorter 'gentle' fires the first five or six times, making these progressively larger. This will help temper the steel and cast iron components and avoid any potential thermal shock which could damage them.

This process will also allow the paintwork to cure. In fact, you may notice some wisps of smoke or smell a hint of paint fumes coming from the stove's painted surfaces during these early fires, however this is perfectly normal. Your smoke alarm or CO detector may also react to these. Simply ensure that the room is well ventilated until this settles down. See pages 2 and 26 regarding this potential issue.

The hotter you burn the stove the more intense these fumes may be. Every time the stove reaches a new higher temperature it could still be possible to detect fumes or smoke until the paintwork is finally fully cured. If these fumes persist or gets any worse beyond the first few fires – this could be up to 5 or 6 fires depending on heat – then do not use the stove and immediately consult your stove installer or stove dealer as this may indicate a potential problem with the installation. Again, see pages 2 and 26.

Always allow the stove to fully cool down between these first fires.

WHEN YOU LIGHT YOUR STOVE AFTER STANDING IT DOWN

If the stove was correctly prepared for standing down (see page 41) then simply confirm that none of the components have deteriorated, paying particular attention to the vermiculite panels as these can be prone to absorbing condensation. On Initial fires (say three or four) you may again smell fumes which will most likely be this condensation (or possibly condensation within the chimney) simply drying off. Unless it persists it is not usually anything to be concerned about.

ESSENTIAL SAFETY ADVICE

- Ensure that an approved carbon monoxide (CO) detector (BS EN50291:2001) is fitted in the same room as the stove and is regularly tested. The CO alarm must be installed strictly in accordance with the manufacturer's instructions and permanently fixed so that it is best placed to monitor the earliest signs of CO escape. It should be powered by a battery designed for the working life of the alarm (usually five years). Hi-Flame recommend Honeywell or Fire Angel models. Do not be tempted to buy a cheap alarm as recent research by the UK consumer organisation Which? has shown that many of the cheapest models simply do not work effectively.
- Never operate this stove with the door open except as directed in these instructions and when this should be kept to a minimum and the stove not left unattended.
- External surfaces including the firechamber door and handle, window, air control, flue pipes and stove bodywork will become extremely hot. Always avoid touching these parts of the stove without proper protection, such as heat resistant gloves.
- Potentially combustible material or objects such as soft furnishings should never be left on or near any of the stove's hot surfaces. Ensure that wood supplies and log baskets are kept at a safe distance from the stove. Never dry clothes on the stove.
- Never leave children unattended in the room where your stove is being operated. Ensure that children are aware of the potential danger and make sure that they keep clear of the stove when it is in operation. Where children, the elderly or the infirm are present, to prevent accidental contact with the stove, always use a safety fireguard manufactured in accordance with BS8423:2002, Fireguards for use with solid fuel appliances.

- For your safety make sure that your stove's installation complies with all local Building Regulations' ventilation requirements. Low energy houses have particular requirements and these should be strictly adhered to.
- Do not use flammable liquids to ignite the fire. In the confined space of the firechamber there is a real potential to cause a life threatening flash flame or explosion.
- Never over-fire the stove. If any external parts of your stove glow red during operation then immediate action should be taken to reduce the supply of air to the firechamber through the air controls which should quickly limit the intensity of the fire. Do not open the firechamber door as this will only make the fire worse. See pages 33 and 34.
- This stove is CE approved and tested to EU EN13240 standards in the United Kingdom by Kiwa. Alterations to its construction could be potentially dangerous and will render your Hi-Flame Warranty void.
- Do not use aerosol products in the vicinity of the stove when it is in use.
- Check and clean the stove's flueway and the top of baffle plate regularly to help avoid potential blockages (see page 39).
- Check the direct external air system's outside vent' grille to ensure there are no blockages arising from new foliage growth, wind-blown debris and leaves or snow drifts.
- Sweep your chimney or flue system regularly. Always use an approved sweep who has experience of sweeping stove installations.



THE BETTER WAY TO BURN WOOD

Wood, the preferred fuel, takes its combustion air from above the firebed and will always burn best on a bed of embers (approx 25mm deep). For this reason you don't need to clean out the ash bed, except perhaps if it overflows (and then you only need to remove some of the ash) or if you are standing down the stove at the end of the heating season (see page 41). You do not need to riddle the embers either. When lighting or refuelling gently tamp down the embers with one of the pieces of wood you are about to burn, to make a level bed – but even this may not usually be necessary.

Your new stove can burn very well, or very poorly, depending on how you light the fire, how you refuel the fire, and, of course, the type and quality of the fuel that you are burning. A flue temperature gauge and log moisture meter are both cost-effective investments and both are highly recommended if you want to maximise the efficiency of your stove and minimise the amount of logs that you use.

Always wear protective gloves when loading a burning stove and place logs and other fuels precisely where you want them by using heat-resistant tongs. Never throw them in.

When refuelling always open the stove door gently to avoid unnecessary air turbulence which could cause ash or small lighted embers

It is unsafe to operate this stove with the door open. The only exceptions to this are at the lighting phase when it can be left slightly ajar for the first few minutes to provide a boost of combustion air for a quicker start and only ever when the stove is attended or when refuelling, when this should be kept to a minimum.

to be drawn from the firechamber and beyond the protective hearth. Never operate the stove without the fire fence being in place.

When burning logs the end grain of a log will allow any remaining moisture and gases to escape, therefore always point log ends away from the glass to prevent the glass staining.

Ensure your logs are ready to burn

Always use fully seasoned or kiln dried logs with a moisture content of less than 20%. Unseasoned logs (aka wet or green logs) do not provide the same fuel efficiency, will burn poorly, produce less heat and will also produce creosote tars which will quickly stain the glass, clog the flueway and chimney system, potentially making the stove unsafe to use. Burning wet wood produces an excessive amount of dirty smoke which will be extremely damaging to your local air quality.

The ideal Log

We recommend that hardwood logs should be approximately 250mm (10") long. This size will provide sufficient air space at either end of the log to allow any remaining moisture and combustion gases to escape freely. This size will also limit potential damage to the vermiculite panels from any over-sized logs knocking into them and damaging the surfaces.

Do not be tempted to use over-sized logs as they could be very slow to light and could also create excessive smoke. When they eventually catch fire they could very easily over-fire the stove.

Ideally you will need three different thicknesses of wood log as you start the fire and then build it up through each lighting phase. A detailed description of these sizes and how important they are to getting an effective fire quickly established is discussed overleaf (see pages 28 – 30).

OPERATING YOUR STOVE – WOOD

When lighting your stove you will need to get the temperature in the firechamber as high as possible as quickly as possible. This is critical for creating a good updraught or 'draw' within the flue system, especially when it is particularly cold outside. It is also important to maintain the operating temperature of the firechamber above 120°C, below which combustion is incomplete and creosote tars are formed within the combustion gases. Burning the stove like this will create dull orange flames loaded with soot and will not actually generate much heat.

Use firelighters specifically designed for stoves and avoid lighting the fire with paper as the ash it leaves behind can 'smother' and reduce the effectiveness of the ash bed. If you have good dry kindling then paper should not be needed.

The best sizes for the logs

The recommended log length for this stove is 250mm long, however the thickness or diameter of the logs used at each phase of lighting and refuelling is just as important. For example, logs that are too heavy and big when added at the wrong time may be problematic as they can 'kill' the fire. Below is our rough guide for the various thickness of logs needed for ease of use during a complete burn cycle. See photograph right.

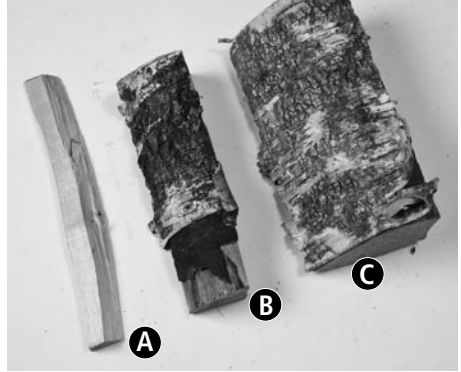
Kindling (A) This is generally finely chopped wood, approximately 5 to 10mm thick from your supply of logs. Alternatively use softwood, or dried twigs and small branches which have also been fully seasoned.

Lighting Logs (B) These are slightly thicker logs, approximately 25 to 50mm across.

Refuelling Logs (C) These should be approx 75 to 100mm across. Thicker logs should ideally be split to this size.

Basic Lighting Methods

We've outlined two tried and tested methods for



lighting your new stove. These may be different from how you have been used to lighting your open fire or old stove. Always remember...

- Never overload the stove or place fuel against the Tertiary Air jets on the rear
- Never leave the stove unattended if its door is ajar
- Never throw logs into the stove as this could damage the vermiculite panels or glass
- Always refuel logs on to a bed of hot embers
- A single dense log will not burn as well as 2 or 3 smaller logs of equivalent mass
- 2 or 3 logs tightly packed beside each other will burn for longer but at a lower temperature than loosely criss-crossed logs
- Avoid setting the ends of the logs pointing towards the glass as this can cause staining which the Airwash may not remove
- Load the fuel as quickly as possible to avoid letting the firechamber cool
- Using a flue pipe thermometer. This will indicate inefficient burning, which creates smoke and creosote, as well as over-firing

'TOP DOWN' FIRE LIGHTING METHOD

In order to minimise the amount of smoke produced when you first light your stove we recommend the following Scandinavian 'top-down' method. This may seem counter-intuitive if you're used to lighting an open fire, but you'll soon find this actually works really well and, of course, it's so much better for our air quality. This method also reduces the

number of times that you will need to check and refuel the stove during a typical burn cycle.

1 Loading

Fuel Load: Kindling (A) & Logs (B & C)

Place 2 of the larger logs (C) at the base of the firechamber. Add 2 or 3 of the smaller logs (B) on top of these. Leave some air space between them. Next add a good-sized handful of kindling (A) criss-crossed on top (see below). Position 1 or 2 fire-lighters amongst this and quickly light them. Ensure both air controls are fully open. You may need to leave the stove door slightly ajar to improve the combustion air supply. Close the door whenever the kindling has burned away and the lighting logs (B) are fully alight. If the flames are diminished by closing the door then leave it open for a little longer. When all of the logs are burning and have turned an ash grey then you can begin to moderate the flame and heat by closing the Primary Air Boost and adjusting the Secondary Air control. You should not need to return to the stove until it needs refuelling.

2. Refuelling

Fuel Load: Approx 0.5kg of Logs (B & C)

Approximately 0.5kg of logs (2 or 3) can be added when refuelling. The best time to refuel is while the stove is still giving out heat and there are sufficient remaining burning embers. Fully re-open the Secondary Air control. Embers should be spread evenly before the new logs are added. Always use a heat resistant gauntlet or tongs to precisely position any new logs. Be careful not to add too many logs



as they may 'smother' the fire. There should be no need to leave the door ajar. Again, wait until all of the logs are fully burning and their surfaces are grey before the combustion air is reduced. This ensures that the firechamber is operating at full temperature and will help keep smoke and emissions to a minimum. Reducing the air supply allow you to control fuel economy.

'TRADITIONAL' FIRE LIGHTING

This method may be more familiar to you and will provide you with an equally good fire at the end of it. However, it may take a little more work than the 'top-down' method.

1 Loading & Lighting

Fuel Load: Kindling (A)

Both air controls should be fully open. Use 2 handfuls of kindling (A), at least equivalent to the weight of a typical log. Layer this criss-cross or 'wig-wam' style over 1 or 2 firelighters which should then be set alight.

If the kindling fire is slow to get started then you may need to leave the door slightly ajar, but do not leave the stove unattended. On particularly cold days add significantly more kindling to quickly warm the flue to create a stronger updraught. When the kindling is burning well close the door. Next close the Primary Air Boost. However, if these slow the fire continue until closing them does not affect the fire. After about 6 or 7 minutes you can then add some logs.

2 The Firing Phase

Fuel Load: 3 or 4 logs (B)

Once the kindling flames starts to calm down the first refuel can take place. For this use three or four slightly thicker pieces of wood (B). These should be thicker than the kindling, but smaller than the main logs (C). Large pieces of wood placed on the embers at this stage may be slow to ignite causing the firechamber to loose heat and the wood to smoke. Doing this will take the fire much longer to get going. After

about 7 to 10 minutes, and only when all of the logs are fully burning and their surfaces have turned ash grey, should you add the main logs (C). The Secondary Air should be fully open.

3 The Main Firing Phase

Fuel Load: 2 or 3 larger logs (C)

Once the embers of the first refuel phase are glowing then these can be evenly spread with a poker and approximately 1.0kg (2 or 3) of larger logs (C) can be quickly loaded. Use a heat resistant gauntlet or tongs to precisely position the logs. Be careful not to add too many logs as they may 'smother' the fire. After the logs are fully alight and their surfaces are ash grey, you can then adjust the flame height and heat output to suit – but not before. This will allow you to control fuel economy.

4 Refuelling

Fuel Load: 2 or 3 main logs (C)

Fully open the Secondary Air control again. This will make any remaining embers glow red which can then be spread. If the ember bed is weak it may be quicker to add some kindling to re-establish the fire before 2 or 3 of the larger logs (C) are then gently added, ensuring that the logs are not tightly packed. Again, only when the new fuel is burning well and the logs have turned ash grey, adjust the Secondary Air control to your requirements. Never overfill the firechamber and avoid oversized pieces of wood which will 'slow' the fire at the start but could lead to over-firing later.

ENSURING THE AIRWASH WORKS

Getting the balance right between a gently burning stove and one that is burning too low, creating smoke and causing the Airwash to fail is very much a matter of trial and error. If you are burning fully-seasoned wood then a quick 'blast' of the stove with the air fully open, should quickly burn off any sooty deposits left from slumber burning.

SMOKE CONTROL AREAS

To meet your legal obligations when operating this stove in a Smoke Control Area this stove must be operated correctly to minimise the amount of smoke it produces.

- Burn only dry fully seasoned wood with a moisture content of less than 20%. Never burn wet or green wood.
- Do not overfill the stove so that you have to turn it down for long periods as this will create smoke.

Refuelling on to a low firebed

You must ensure that there is a sufficient quantity of glowing embers so that the new fuel charge will quickly ignite. Refuelling on an inadequate bed of embers will create excess smoke and will take much longer. It is very much easier and quicker to 'start' again by adding a suitable quantity of kindling to the remaining embers ensuring that there are sufficient brightly burning flames before medium sized logs are added.

Never overload this stove

The maximum amount of fuel specified in this manual is 1.5kg (wood logs) and should not be exceeded – see page 7. Overloading can cause excess smoke and is also dangerous.

Never operate with the stove door open

This stove is not designed to be operated with the door left open, except as directed in these instructions. This can cause excess smoke and can also be dangerous.

Avoid operating this stove with the air controls left fully open

Using this stove with the air control left fully open can cause excess smoke. This stove must not be operated with the air control or door left open, except as specifically directed in these instructions. See pages 28 – 31.

APPROVED SMOKELESS COAL

Only use Approved Smokeless Coal (see www.smokecontrol.defra.gov.uk).

Approved smokeless coals require much more air from below the fire grate for combustion than wood. This means (depending on your chimney / flue draught) that Primary Air is generally needed throughout all of the burning phases. The Primary Air Boost should therefore be fully open at the start of the lighting phase.

Smokeless coal also requires the firegrate to be riddled to clear ash so an adequate supply of Primary Air can flow through it to the fuel load. How often you need to riddle is very much a matter of trial and error depending on the fuel type and burn rate.

Always use a heat resistant tool such as a poker from a companion set to riddle and do this as quickly as possible to help maintain the temperature inside the firechamber. At the beginning of the lighting stage the grate should always be completely clear.

Lighting smokeless coal fire

Light your fire in the traditional way with a small wood kindling fire and small amounts of your choice of mineral fuel placed lightly on top making sure to leave plenty of air space. Once the mineral fuel is burning well add more fuel until there is a good bed of burning fuel. Avoid stacking too much fuel against the back and sides of the stove as this could potentially overheat the metal components and cause permanent damage. Ideally, when fully burning the fire should look like a shallow dome.

When burning good quality mineral fuels the Airwash system (Secondary air) should not be needed to keep the glass clean, therefore this can be reduced. The Primary Air Boost should then be used to adjust the flame pattern.

You may find that a combination of subtle adjustments to both Primary and Secondary air controls could best suit your individual requirements.

Refuelling a smokeless coal fire

When refuelling it is better to use smaller fuel loads more often which will provide you with a cleaner, more efficient burn. Just before refuelling, riddle the embers to help clear the ash build-up and re-establish the air passage underneath the mineral fuel. Spread the embers evenly with a poker. Again, open the Primary Air Boost to maximise the heat in the remaining fuel so that when the new fuel is added it can get quickly established without 'damping' the fire.

Re-adjust the air settings once all the fuel is burning normally.

Remove the multi fuel ash by emptying the ash pan regularly – at least once a day. Do not let the ash build up under the grate as this will create a strong hot spot which could eventually warp or burn-out your grate.



The recommended maximum fuel load for Approved Smokeless Coal is approximately 1.5kg (just over 3lbs)

SOME SIMPLE TIPS

1 When refuelling use small regular loads as this will produce a more efficient and cleaner burning performance.

2 If you have inadvertently let the fire burn down so that there are just a few burning embers then avoid reloading with large 'cold' logs or coal load as the fire will be very slow to re-establish itself, possibly even going out as the new fuel load reduces the existing fire's access to a sufficient supply of combustion air.

3 Avoid burning large amounts of wood with the Secondary Air supply turned down as this will reduce the effectiveness of the Airwash system and will result in dirty glass, as well as excessive smoke and a potential build-up of creosote tars. Secondary Air is not normally needed when burning smokeless coal.

4 Never use big, heavy logs as these will introduce a large cold spot inside the hot fire-chamber. They will be very slow to light and consequently will create unnecessary smoke over a much longer period. They could possibly even cause the stove to over-fire when they eventually catch alight. It's always safer to split these down.

5 Burn on a high output for approximately 30 minutes each day to 'burn off' any potential soot and creosote build-up – but be careful not to over-fire the stove. This is particularly important if you regularly burn low for long periods such as overnight burning.

6 Bright vibrant flames and a clean firechamber indicate that your stove is operating well. Lacklustre dirty orange flames indicate a poor performing stove or fuel which produces excessive smoke and very little heat – see the Troubleshooting section on pages 33 – 38.

7 Never overload the stove. It will be smoky and inefficient as well as slow to establish a good burn and could possibly eventually over-fire.

REMOVING ASH

Remember, you do not need to riddle wood ash during firing. Wood ash will eventually burn most of itself away so that it is slow to build up. You may only have to empty the ash pan possibly once a week depending on how often you burn wood. Smokeless coal is different. You will need to riddle regularly and monitor the ash pan until you begin to understand how quickly the ash builds up. Do not let the ash pan fill to the point that ash touches the underside of the firegrate as this will limit combustion air circulation and can also cause hot spots which could eventually reduce the lifespan of your firegrate.

Remember, wood ash can be composted and recycled in the garden.

How to use the ash pan handle

Locate the operating tool in the slot at the front of the ash pan to make a handle and lift the pan from the stove. For safety reasons ash should be removed when the stove is cold. If this is not always possible then extra care should be taken and decorative and combustible surfaces, such as laminate floors or carpets, should be protected against accidental spillage.

Remember, even if the stove appears to be cold the ash could still be hot with the possibility of hidden live embers. Protective gloves should always be worn and the refuse ash placed in a non-combustible container. As you remove the ash from your home ensure that it is covered to protect it from any draught or wind which could blow the ash out of your container.



TROUBLE-SHOOTING

These pages should be your first reference point if you experience any problems with the operation of your stove. Only contact your stove installer or dealer after you've read the advice here and if you still cannot resolve your particular issue.

If your stove has been installed and operated correctly, and you have also carried out the recommended routine checks and annual servicing, as well as sweeping the chimney, then it is unlikely that you will ever experience most of the problems outlined below:

- 1 Chimney fire
- 2 Stove, flue or other components glow red
- 3 Smoke and fumes escaping into the room
- 4 Overheating or excessive fuel consumption
- 5 Stove not providing enough heat
- 6 Glass staining or blackening
- 7 Cloudy or crazed glass

1 Chimney Fire

Chimney fires can be detected by an unusual roaring sound or vibrations coming from the chimney breast, the stove or the connecting flue pipe. The sound is not to be confused with the gentle 'rushing' sound you may normally hear when a stove has a well-performing updraught. You may also see sparks or flames exiting from the chimney terminal.

• What you need to do in the case of a chimney fire

If you suspect a chimney fire then immediately close off the air controls to starve the flames of combustion air. DO NOT open the controls or the stove door as this will only make the chimney fire worse by providing additional combustion air. Next, evacuate the building and call the Fire Brigade. Do not re-enter the building until you have been advised by the Fire Brigade that it is safe.

Do not re-light the stove again until the flue system has been thoroughly inspected by an approved installer or chimney sweep and any necessary repairs have been carried out.

• Likely causes of chimney fires and how you can help to prevent them

Chimney fires occur when soot and creosote have built up to such a level in the flue system that they eventually ignite. It is important therefore that your installation features as many cleaning access points as practicable to enable comprehensive removal of soot, creosote and other debris from every point in the system. This will also minimise the amount of time it takes for a qualified sweep to clean the system making the system safer and its cleaning more cost-effective in the long run. The Fire Service recommend that wood burning stoves ideally should be swept twice in a heating season depending on usage.

• Avoid continuous low burning

To discourage the potential for such soot and creosote build-up, long periods of consistent slow or overnight burning should be avoided or at least be compensated for by regular burning on full output for short periods afterwards (eg 30 minutes per day) to help burn off any likely deposits before they become problematic.

A good flue temperature thermostat will indicate the flue gas temperature and help you avoid operating your stove at a temperature which promotes the conditions to create creosote deposits (basically operating your stove at anything less than 120°C).

• Never burn unseasoned or wet wood

Unseasoned or damp wood should be avoided as this produces excessive soot and creosote and could create the conditions for a chimney fire and may also quickly 'fur up' your flue, potentially causing spillage of carbon monoxide (CO) into your living space.

2 The stove or flue pipe glow red with excessive heat

This situation could potentially cause a house fire and / or damage the stove.

• What you need to do

The air controls should be immediately closed to let the fire die down to an acceptable level and to reduce the heat output which will in turn eliminate the glow from the over-heated components. Over-firing is dangerous and could permanently damage or warp your stove and its components as well as invalidate your Hi-Flame Warranty.

Check the stove and the flue system for any signs of permanent damage before you re-use the stove.

• Likely causes and how to avoid them

Over heating (aka over-firing) your stove components is simply caused by over-filling the firebox with fuel so that your stove operates at a much higher output than it was ever designed for. See page 7 for information about the correct fuel load. The excessive heat in the flue system caused by over-firing could also increase the chances of a chimney fire (see Chimney Fires above).

Alternatively, it may be that the stove door has been left open after refuelling so that there has been an over-supply of combustion air and the fuel has been burning out of control. This stove is not designed to be operated with the stove door open except as directed when lighting the fire and refuelling (pages 28 – 32).

3 Smoke and fumes escaping into the living space

Assuming your stove has been properly installed (flue height is critical) and operated your stove should not normally emit fumes or smoke into the room. When first using the stove it is normal to experience paint fumes or see light smoke rising from some of the stove's painted

surfaces, but these should eventually pass as the paint cures after four or five fires.

Occasional minor smoke escape may also occur during lighting and refuelling depending on particular weather conditions. When a stove has not been used for some time fumes may also occur due to any condensation build-up within the chimney drying off.

• What you need to do

Persistent smoke or fumes could be dangerous and in this situation you should take immediate avoiding action by evacuating the building. See page 2 for more information. Open doors and windows to ventilate the room and let the fire go out to allow the stove to cool. Never pour water onto the fire as this could damage the components.

Most importantly, never re-light the stove until the problem has been identified and solved. If the issue cannot be resolved by following the advice below then, in the first instance, seek the expert advice of either your approved chimney sweep, registered stove installer or authorised Hi-Flame dealer.

• Likely causes and how to prevent them

There are a number of factors, either alone or combined, which could cause such problems:

• Check for blocked flueway or flue

When safe to do so, examine the flueway above the baffle plate for potential blockages as well inside the flue pipe and chimney system via the appropriate inspection hatches.

Clear away any soot. Excessive deposits could also indicate that the chimney or flue itself needs a full sweep (see page 39). Such soot deposits may have been caused by slumber or low burning for long periods without the required periods of burning on full power which will usually prevent this happening.

• Never burn unseasoned or wet wood

This is one of the worst things that you can

do regarding the safe operation of your stove. Burning wet wood causes the incomplete combustion of the fuel and lowers the fire-chamber temperature and flue pressure so that creosote residue and heavy soot deposits are left inside the flueway and chimney. These will eventually, and usually very quickly, cause a blockage making it harder for the smoke (and CO) to take its normal safe route through the flue system so that it escapes from the stove and consequently enters the room.

- **Check there's enough room air**

Check that any permanent air vent' fitted to supply the extra combustion air required for the stove has not been accidentally blocked. Alternatively, if the stove has a direct external air supply check that the outside grille has not been blocked by leaves, new plant growth or snow.

The addition of any new mechanical extraction in a nearby room could also adversely affect the flue draught pressure so that it is no longer sufficient at the start or end of the burn cycle to safely remove the combustion gases from the firechamber and consequently this will allow them to escape into the room.

A simple way of checking whether or not the stove is receiving enough combustion air is to open a window in the same room as the stove whilst the stove is operating. If this improves the problem with smoke then this would certainly indicate that the stove is being starved of combustion air and the advice of the original installer should be sought.

- **Consider extreme weather conditions**

High winds or freezing temperatures can also temporarily affect the performance of the chimney draught and consequently its effectiveness in removing smoke and fumes from the stove's firechamber. In the case of freezing temperatures it is important to build a much larger pre-fire than normal to quickly

provide the additional heat needed to warm the flue system and to counteract the much lower temperatures at the exit point of the chimney. Please see the section on lighting your stove on pages 28 – 32.

- **Consider high winds / Prevailing winds**

If the problem is associated with high winds and it becomes a regular occurrence, then you will need to fit a specialist chimney cowl. These are designed to help provide a stable draught and prevent specific types of problems. Specifying the correct cowl should always be left to an experienced installer. If your installation features a direct external air supply then check that the outside inlet grille is not subject to the adverse effect of high or prevailing winds and either take steps to relocate it or safely shield it from the wind.

- **Check if the chimney terminal has become restricted**

Check that any summer tree growth or new building work (especially at the beginning of the heating season) has not interfered with the free passage of smoke and flue gases from the flue system or chimney top. New tree growth should be cut back (ensure you comply with any local authority regulations). Where there is new building work always seek the advice of your installer as the height of your flue may need to be increased to compensate for this.

4 Excessive fuel consumption

This can be caused by a number of factors.

Check for faulty Door Seals

The rope seals around the firechamber door could have become worn and may no longer provide an air-tight seal. This will allow a supply of uncontrolled combustion air which will limit the effectiveness of the actual air control, especially when you try to close it down. When the stove is cold, you can easily check this seal by placing strips of paper at various

points on all four sides between the door and firechamber front and checking that when the door is closed the paper is gripped. Any paper which can be removed easily would indicate a weakness of the door seal in that particular spot, in which case a completely new rope seal should be fitted. See the section on fitting a rope seal on page 40.

- **Consider your choice of fuel**

The fuel itself may be of poor quality. For example pine and other softwoods will burn much quicker than a good hardwood log, such as Oak or Ash and although this will produce bright vigorous flames it will not produce nearly enough long-lasting heat. See pages 27 – 31.

- **Consider excessive chimney draught**

This may limit the effectiveness of the air controls so that the fire burns with very strong bright yellow flames and with very little difference when the air controls are operated. In such circumstances an adjustable damper or draught stabiliser may need to be fitted to ensure that the stove will always operate under a stable draught which will allow the stove's controls to function correctly. These devices limit the free flow of combustion gases from the stove and so, in the interests of safety, they should only ever be specified, fitted and subsequently tested by an approved installer.

5 Stove not providing enough heat

This problem is also usually indicated by dull orange lifeless flames and wood that remains black when burning instead of light grey. You may even find that some of the wood remains unburned when you return to the stove the next day. A flue temperature gauge will provide you with the best indication of whether or not your stove is operating effectively.

- **Likely causes and how to avoid them**

Poor heat output is more than likely caused by

poor fuel, such as 'green', unseasoned or wet wood. We cannot over-estimate how critical it is to use fully seasoned dry wood with a moisture content of less than 20%.

- **Never burn unseasoned or wet wood**

The easiest way to check whether your wood is fully seasoned is to invest in a moisture meter. These are relatively inexpensive and can be purchased from your stove dealer. Seasoned wood with a moisture content of less than 20% will give you approximately 50% more heat than an unseasoned wood log, a moisture meter is a modest investment which will more than pay for itself.

Unseasoned wood, not only produces very little heat, it also introduces unwanted moisture into the firechamber, reducing the stove's operating temperature and thus the effectiveness of the Airwash system which will cause the glass to stain. In addition increased soot and harmful creosote deposits within the flue system are also created which could potentially lead to a chimney fire.

- **Always use the correct fuel load**

This might sound a bit obvious but for the stove to work effectively it needs to be filled with the correct amount of wood logs or smokeless coal. Check that you're actually adding enough fuel – see pages 7 and 28 – 32 for the recommended fuel load. The maximum fuel load for this stove is 1.5kg.

- **Avoid burning too much softwood**

Softwoods such as Pine produce significantly less heat output. They will often burn away much more quickly than hardwoods, without delivering a great deal of heat, and should really only be used as kindling to quickly start the fire during the lighting phase or occasionally when refuelling to a low bed of embers. Never use all softwood for a full fuel load because, although you will quickly achieve a bright vigorous flame, it is then hard to control the

flame and extend the life of the logs because there are simply not enough calories of heat left within the remaining fuel to extend the burn cycle as well as deliver sufficient heat.

- **Check the air controls are used correctly**

Ensure that you fully understand how to correctly use the air controls. See the section on operating your stove (pages 28 – 32).

A stove with the air control turned down too soon in the burn cycle will cause the wood to smoke and smoulder so that it will provide limited heat output. Ensure that flames cover all of the wood and that all of the wood surfaces are ash grey before you begin to turn the stove down. Never allow the fuel to smoke as this indicates poor and incomplete combustion as well as it delivering an inefficient and ineffective heat supply.

- **Consider the combustion air supply**

Check that any permanent air vent[†] fitted to specifically supply the combustion air required for the stove (including any external air inlet) has not been accidentally blocked and that this is consequently starving the stove of a sufficient supply of combustion air.

A simple way of confirming whether or not the stove is receiving enough combustion air is to open a window in the same room as the stove. If this improves the problem then this would certainly indicate that the stove does not have an adequate air supply and therefore the advice of the original installer should be immediately sought.

- **Check for blockages in the flueway**

When safe to do so, examine the flueway above the baffle plate as well as the flue pipe and chimney system via the appropriate inspection hatches and clear any soot blockages. Excessive deposits could also indicate that the complete chimney or flue itself also needs cleaning. If this soot produces an acrid odour then this indicates the use of

unseasoned or wet wood (see page 39).

6 Glass staining or blackening

Please note that it can be perfectly normal to see some small sooty deposits along the base of the glass after the fire has died down, simply because the Airwash system is no longer hot enough to work. This should be very easy to wipe off the next time you use the stove. However, if this staining is brown or sticky and difficult to remove without the aid of stove glass cleaner, then this could indicate the use of unseasoned or wet wood. Glass can be cleaned easily if it is undertaken regularly and if the deposits are not allowed to build up. A proprietary stove glass spray or gel is strongly recommended.

- **Check the Airwash is used correctly**

Ensure that you fully understand how the Secondary Airwash system works – the lower you turn down the Secondary Air then the less effective the Airwash becomes as this relies on the pre-heated air being as hot as possible to keep the glass clean.

As you begin to use your stove you will be able to determine, through some trial and error, the minimum air setting to ensure that the glass always stays clean.

Never turn the stove down until all of the logs are fully alight and their surfaces are a light ash grey colour. Turning down the stove too soon will create sooty smoke and a cooler Airwash both of which will promote smoky glass.

- **Never use unseasoned or wet wood**

Burning damp or unseasoned wood will cause the glass to stain as the moisture from the fuel considerably reduces the firechamber temperature in turn reducing the effectiveness of the Airwash system. Burning 'green' wood will also encourage sticky deposits on the glass which will prove difficult for the impaired Airwash system to remove.

• **Avoid continuous low burning**

Continuously burning your stove with a very low flame, such as slow overnight burning will also cause the glass to get dirty because the Airwash does not get hot enough and therefore some blackening of the glass should be considered a 'trade-off'. In this instance, if you're sure that the logs are fully seasoned and dry, then burning the stove at a high temperature for a short period (say 30 minutes) after a long slow burn will usually burn off any sooty deposits, especially inside the flue where they could prove more problematic in the long run (see the section on Chimney Fires)

It is worth investing in a magnetic flue pipe thermometer which when placed on the connecting flue pipe will allow you to keep the flue gas temperature from dropping below 120°C (the point at which creosote and soot are produced by the incomplete combustion of the logs) and to operate your stove more effectively when you wish to turn it down.

7 Cloudy or crazed glass

Cloudy glass is only cosmetic and the glass's performance is not affected. It is definitely not faulty glass and it is much easier to replace the glass than to try to polish it clean.

• **Likely causes and how to avoid them**

The clouding is caused by unburned acidic condensates etching the ceramic glass. The cloudiness will usually start with a series of white deposits which if left on the glass will damage its surface. Although this problem is normally associated with burning coal it can also be caused by the incomplete combustion of wood, usually when the wood is wet and it has a high moisture content. Therefore, never burn wet wood and avoid long periods of slumber burning, even if the wood has less than 20% moisture. Always try to maintain an effective Airwash flow and clean and dry the glass after every time the stove is used.

ROUTINE CHECKS

During routine checks if you notice anything wrong with your stove then it should be rectified immediately. Never use a stove that you know is not fully functioning – this includes flue components.

- Until you get to know your stove check your flue system at least once a month using one of the recommended inspection hatches in the flue pipe or chimney system. After a few checks you will notice a pattern of soot build-up to enable you to determine the inspection and cleaning period best suited to your stove's operation. In any event your flue should be swept at least once a year, preferably prior to a new heating season.
- Check and clear the stove's baffle plate and flueway at least once a month until you can determine a pattern of soot build-up (if any). See page 39 on how to remove the baffle plate.
- Regularly visually inspect any flue pipe joints where fire cement has been used and replace any missing or damaged cement seals using the appropriate heat-resistant fire cement.
- Make sure that the door maintains a good air-tight fit and visually inspect the door rope seals for fraying or other signs of wear. Test the seal if you suspect that it is no longer air-tight and is affecting control – see page 40.
- Check that the glass is not chipped or cracked and that the glass gasket seal is still in good condition. Replace if necessary – see page 40.
- Check the condition of the vermiculite fire-bricks, firegrate and baffle plate. Replace all damaged components. Replace any vermiculite panels eroded by 20% (approx 6mm) or that show any damage that exposes the stove's bodywork. Cracked bricks can still be used providing they still cover the bodywork.

STOVE MAINTENANCE

Baffle Plate and Flueway

During the heating season check the flueway and baffle plate at least once a month to start with and remove any soot deposits. Should these be excessive then have your chimney and flue cleaned. At the same time review your choice of fuel and the way that you operate the stove. Regular long periods of slow or overnight burning can create excessive soot as well as creosote. Since the stove is operating at a low temperature, not only is it creating these deposits, it cannot burn them off either and the deposits quickly build up inside the chimney. Burning damp or unseasoned wood will exacerbate this situation.

Check the position of the baffle plate (sometimes known as the throat plate) inside the 'roof' of the stove to ensure that it has not moved during transit. This is a heavy metal plate which directs flames and helps retain heat inside the stove. The base of this plate should sit securely on a small ledge at the back of the firechamber, towards the top. The rest of the plate rests on top of the side firebricks to maintain it at the correct angle and in line with the top of these side firebricks.

It is best to fully familiarise yourself with the baffle plate's correct location by practising removing it and re-fitting it prior to the stove's installation as you will need to regularly check the top of this plate and the access to the flueway to avoid potential soot build up and blockages. Once you know how to do this it is a very easy operation and the more often you clean the flueway then the less messy it becomes. Be sure to protect the hearth and floor coverings from soot spillage.

Ensure the stove is cold before you attempt to remove the baffle. It is best to remove the fire fence at the front of the firechamber for easier access – this lifts upwards.

Next lift the baffle upwards at one side and drop the other side down to clear the side firebrick and then swing the baffle outwards to remove it from the firechamber. It will be heavy so you will probably need to use two hands. Once the flueway has been cleaned you can then reverse this operation to replace the baffle. Sweep your chimney regularly.

Stove and Chimney Cleaning

This Hi-Flame stove can be swept through the stove by simply removing the baffle plate – see above. Sweep your chimney before installation and then at the end of each heating season when you stand down your stove. Burning seasoned dry wood means that you will probably also need to sweep every three months during the heating season. The amount of soot deposits removed each time is a good indication of how often you should sweep and as you begin to understand your stove and the fuels you burn you can adjust the cleaning intervals accordingly. If in doubt seek the advice of a registered chimney sweep who has experience of stoves.

To find a local registered sweep experienced with the safe cleaning of stoves visit:

The National Association of Chimney Sweeps at www.nacs.org.uk

The Guild of Master Chimney Sweeps at www.guildofmasterchimneysweeps.co.uk

Vermiculite Firebricks and Panels

Regularly inspect the condition of the vermiculite panels used for the firebricks. Please note that some minor wear is perfectly normal due to the high temperatures created inside the stove. You only need to replace any of these if the surface has been eroded by more than 20% (approximately 6mm) or if any damage exposes the stove's bodywork. Cracked bricks can still be used providing they still cover the bodywork.

To replace a firebrick, first remove the lower

baffle plate by pushing this up and then dropping it down to manoeuvre it out of the firechamber. There are two loosely fitted side firebricks, which once the upper baffle has been removed, should be easy to remove. They should be returned in the correct reverse order.

Please note vermiculite heat reflecting panels are deemed as 'consumable' and are therefore not covered under your Hi-Flame Warranty.

Heat Resistant Glass Maintenance

Using unseasoned or wet wood, small fuel loads or operating the stove at low temperatures (slumber burning) is not recommended and will reduce the effectiveness of the Airwash system causing the glass to stain. Do not allow such staining to build up as it may become more difficult to remove after each firing. When used regularly, a proprietary scratch-resistant stove glass cleaning gel or spray, which can be supplied by your stove dealer, should be sufficient to keep the glass in pristine condition. Make sure the glass is cold before you apply such cleaners, as applying a cold solution to hot glass could create a thermal shock within the glass causing the glass to crack. Always use a soft cloth to apply any cleaner. Make sure that all traces of the cleaning fluid have been removed and that the glass is thoroughly dry as any residue can be 'baked' on causing unsightly smearing.

Never use your stove if it has cracked or missing glass. Your Hi-Flame dealer can quickly supply you with a new piece of heat resistant glass should you ever need it – just let them know the stove name and model number. Only use heat-resistant ceramic glass as this is made to withstand temperatures of up to 800°C.

Remove the screws and sprung clamp washers from each corner and place them in a safe place. Always use the correct sized tool

and use releasing oil if the screws prove difficult to remove. Be careful not to dislodge the ribbon seal. If this is damaged or more than a year old then always replace it completely. The resilience of a new seal will provide a much-needed expansion gap between the cast door and the glass clamp to help prevent the glass from cracking as it expands. New ribbon seal can be held in place with rope seal glue which will be available from your dealer. Lubricate the screws and holes and reverse the process, being careful not to over-tighten the screws and clamps in case you break the glass. Once the new glass is held firm and doesn't rattle in its frame then there is no need to tighten the screws further.

Please note ceramic heat resistant glass cannot be recycled. Your Local Authority should be able to advise you on how best to safely dispose of it.

Door Rope Seal

It is important that you maintain an air-tight door seal as this prevents unwanted air leaking into the firechamber and helps make the air control more effective in adjusting the heat output.

To check the door stove seal, when the stove is cold place strips of paper between the door and 'door frame' and close the door. If you have to pull hard to remove these or they tear, then you have an effective door seal. If any of these can be easily removed, or if they slide around, you will need to replace the door seal.

Always use protective gloves and face mask when you handle both the old and new ceramic rope and prepare the rope seal channel.

To replace the door seal, carefully remove the old seal and completely clean the seal channel of debris and old glue. Any bare metal should be resprayed with an approved heat resistant paint. Use liberal amounts of proprietary heat

resistant fire rope glue (do not use any other type) to hold the rope in position and glue both ends to ensure a well-sealed joint. The joint should be positioned in the middle of the top or bottom side channel.

The diameter of the replacement ceramic rope seal is 12mm and you'll need approx 1500mm.

Paint Finish

Your stove has been finished with heat-resistant paint and is very easy to maintain. Regularly remove any ash and dust from the stove surfaces with a soft cloth or brush. Never use a damp or wet cloth. When the stove is cold, stubborn dirt can be removed by applying a very small quantity of WD40 oil or Colloidal Black, again with a soft cloth.

Repair any worn or scratched surfaces with a proprietary heat-resistant spray paint made specially for stoves and available from your stove dealer. Never use an aerosol spray on, or near, the stove when it is burning or it is hot and be sure to protect other surfaces from residue spray spots.

Replacement Parts

In the interests of your safety, only ever use genuine Hi-Flame Brogan replacement components which you can purchase from your authorised Hi-Flame dealer or directly from Hi-Flame at www.hi-flame.co.uk and for the Republic of Ireland at www.hi-flame.ie.

STANDING DOWN

At some point in the year you will not need to use your stove and taking care to clean it thoroughly then will save you much time and effort later. This is also a good time to have your chimney swept to prevent any soot deposits falling into the stove and potentially blocking the flueway.

- Remove the baffle plate and clean any deposits in the flueway above it (see page 39). Inspect the baffle for signs of wear and replace if necessary. Remember to protect the hearth and any soft furnishings and floor coverings from soot and debris during the cleaning process.
- Empty the fire bed of ash and thoroughly clean out the firechamber. Inspect all of the vermiculite panels and replace any that have become very thin or have crumbled to reveal the stove's metal bodywork. See page 39.
- Inspect the door rope seal. Replace if it no longer provides an air-tight fit. See page 40.
- Inspect the stove glass and thoroughly clean it using the appropriate stove glass cleaner being sure to remove any baked-on residue.
- Inspect the log retaining bar(s). If these are bent or warped it could be an indication of over-firing or the use of inappropriate fuels. Order genuine replacement components from your Hi-Flame dealer or directly from Hi-Flame at www.hi-flame.co.uk and for the Republic of Ireland at www.hi-flame.ie.

THE MOST IMPORTANT PART...

Ensuring there is some free movement of air through your stove and flue system will help prevent the build-up of condensation which could eventually damage the stove's components. Therefore, always leave the air controls fully open and only close down to 50% if a nuisance draught is being caused.

ANNUAL SERVICE

In the interests of safety and efficient performance it is important that your stove is serviced on an annual basis in accordance with the instructions outlined below. The service should be carried out by a suitably qualified person such as your original approved installer, a Hetas, OFTEC or INFO registered installer, approved chimney sweep (who will also supply you with a Cleaning Certificate) or your authorised Hi-Flame dealer.

Your annual service is best undertaken at the same time as your chimney or flue system is swept. Ensure that adequate protection from soot and debris is given to porous materials such as the fireplace or hearth, as well as floor coverings and soft furnishings. Wear protective gloves and a face mask.

Carefully remove, inspect and clean the following:

- The baffle plate inside the roof of the stove
See page 39 on how to remove this.
- All vermiculite panelling from the sides of the firebox.
- The firegrate and ash pan.
- Remove all ash and debris and use a soft brush to clean the internal bodywork and vermiculite panels. Handle the vermiculite panels with care as they may become fragile with continuous use. Some surface wear is normal on the panels and these only need replacing when they are very thin or have crumbled to reveal the stove bodywork.
- Pay particular attention to any debris build-up in the flueway area and ensure that this is completely clear. See page 39.
- Re-fit all the internal parts.

Stove Glass and Door Rope Seal

- Check the glass for chips or cracks and the glass seal condition and replace if necessary.

Thoroughly clean the stove glass on both sides. Check that the door seal continues to make an air-tight seal and replace if necessary. Ensure that the new rope joint is also in the middle at the base of the rope seal channel. Replacement rope should be 12mm diameter. See pages 40.

External Bodywork

- All external surfaces should be dusted with a soft cloth or light brush.
- Examine all paintwork for signs of wear and re-paint these areas only using the appropriate heat-resistant aerosol paint. Warning: do not use the aerosol if the stove is alight or hot.
- Lightly oil the hinges and door locking mechanism.

Air Controls

- Lightly oil the air control mechanisms with a light machine oil spray being careful to protect the bodywork as well as any stone or tiled hearth.
- When standing down at the end of the heating season the air control should be left on the open position to allow some movement of air through the stove which will help avoid condensation and moisture building up inside the stove and flue system. This can be closed up to approximately 50% if a nuisance draught is being caused in the room.

Flue Pipe and External Air Connections

- Check the flue collar and flue pipe for any crumbling or missing fire cement seals and where applicable check the external air ducting. Remove any failed seals and re-seal using the appropriate heat-resistant sealant.

Important: Spare Parts

- In the interests of safety only use genuine Hi-Flame replacement parts. See the back cover.

FIRST SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

SECOND SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

THIRD SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

FOURTH SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

FIFTH SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

SIXTH SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

SEVENTH SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

EIGHTH SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

NINTH SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

TENTH SERVICE

Additional work carried out:

Date
_____Next Service Due

Signed

Print
_____Dealer's Stamp or HETAS / OFTEC / INFO Reg No

COMMISSIONING

1 Confirm that all internal parts of the stove are correctly fitted, including the baffle plates and the firefence. YES

2 Confirm that the door closes correctly and that the latch mechanism and door seals work to make an air-tight seal. YES

3 Ensure that the air control is fully operational and that it moves freely. YES

4 Confirm that all appropriate smoke and spillage tests have been completed. YES

5 Confirm that the flue draught tests have been completed and that the tested flue pressure is recorded here. Pa YES

6 Confirm that the safe operation of the stove and the importance of only using seasoned logs has been explained to the user. YES

7 Installations with DEAS: Confirm that the 'worst case scenario' flue draught interference tests have been completed. YES

Indicate the action taken to remedy any problem:

8 Confirm that the legal obligations of using an approved fireguard whenever children, the elderly or the infirm are in the vicinity of the stove have been explained to the user. YES

9 Confirm that the customer will receive a copy of this Operators Handbook. YES

10 Confirm that a CO detector with a minimum five-year lifespan has been fitted in accordance with the manufacturer's instructions and that the user is aware of the importance of regularly testing it. YES

11 Confirm that the Warranty Registration has been completed for UK installations at www.hi-flame.co.uk/pages/warranty-registration, and for Republic of Ireland installations at www.hi-flame.ie/pages/warranty-registration.

Ensure the contact details and registration number of the Hetas / OFTEC / INFO installer or recognised competent person who carried out the installation is included. In Northern Ireland you will have to supply details of Building Control approval for the installation works.

Please note that without this information your Warranty will be limited to one year only.

Installer's Signature / Date

Stove Owner's Signature / Date

HI-FLAME WARRANTY

Your new Hi-Flame stove has been CE EN13240 tested in the UK to ensure that it meets UK and Irish constructional performance, emissions and safety standards. It also meets the 2022 Ecodesign emissions regulations.

IMPORTANT: PLEASE NOTE

It is not the responsibility of Hi-Flame or their distributors to ensure that the appliance is installed and operating correctly at the time of the installation. This is strictly the responsibility of the stove owner and any complaints regarding the performance of the installation should be addressed to the stove dealer or the stove installer.

Hi-Flame offers the original retail purchaser a 1 Year Warranty with a further limited 4 Year Extended Warranty (total 5 Years) subject to terms and conditions. To see these and to ensure that your stove benefits from the Hi-Flame Warranty you must register it within 28 days of receiving it at **www.hi-flame.co.uk/pages/warranty-registration** or **www.hi-flame.ie/pages/warranty-registration**.

In the unlikely event that you need to make a claim under the Hi-Flame Warranty it must always be reported in the first instance to the dealer you purchased the stove from. The claim will only be entertained by Hi-Flame or their distributors if your stove has been registered on the Hi-Flame website and you follow the claim procedure above. You must also have complied with all of the Terms and Conditions outlined on our website. Your attention is particularly drawn to the requirement that your stove is installed by a competent installer (preferably Hetas, OFTEC or INFO Registered) and that the installation applies to the current Building Regulations. Your statutory rights are unaffected.

INSTALLATION NOTES

Date of Installation

Annual Service Due (month)

Stove dealer's name, address and contact

Stove installer's name, address and contact

Chimney sweep's name and contact

Log supplier's name and contact



HI-FLAME SPARES SERVICE

In the interests of safety, only use genuine Hi-Flame Brogan replacement components. Once you have identified the component you need you can order it from your authorised Hi-Flame dealer or directly from www.hi-flame.co.uk in the UK or from www.hi-flame.ie in the Republic of Ireland.

PLEASE NOTE

Any issues with the performance of your stove that cannot be resolved through studying the Trouble-Shooting section (pages 33 – 38) should always be dealt with, in the first instance, by contacting the original installer of your stove or alternatively your stove dealer.



Hi-Flame Stoves

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