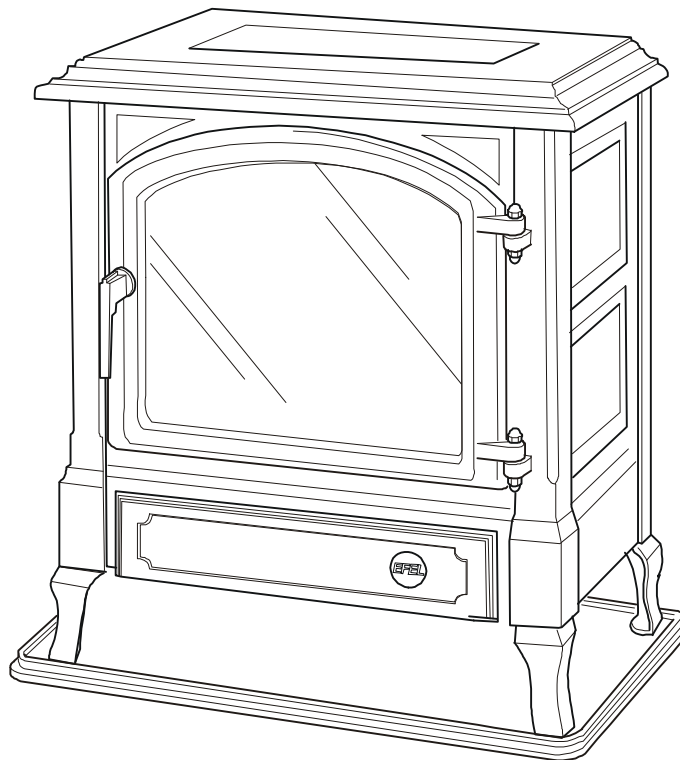


Installation Instructions for Harmony 5 Wood and Coal Stove



Technical Help Line
For Installation and Service Advice
Telephone 01885 491117
8.30-12.30 and 1.30-5.30 Week days
Fax 01885 491105 Anytime.
Sales 01885 491111

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Part No.
Serial Number

INTRODUCTION

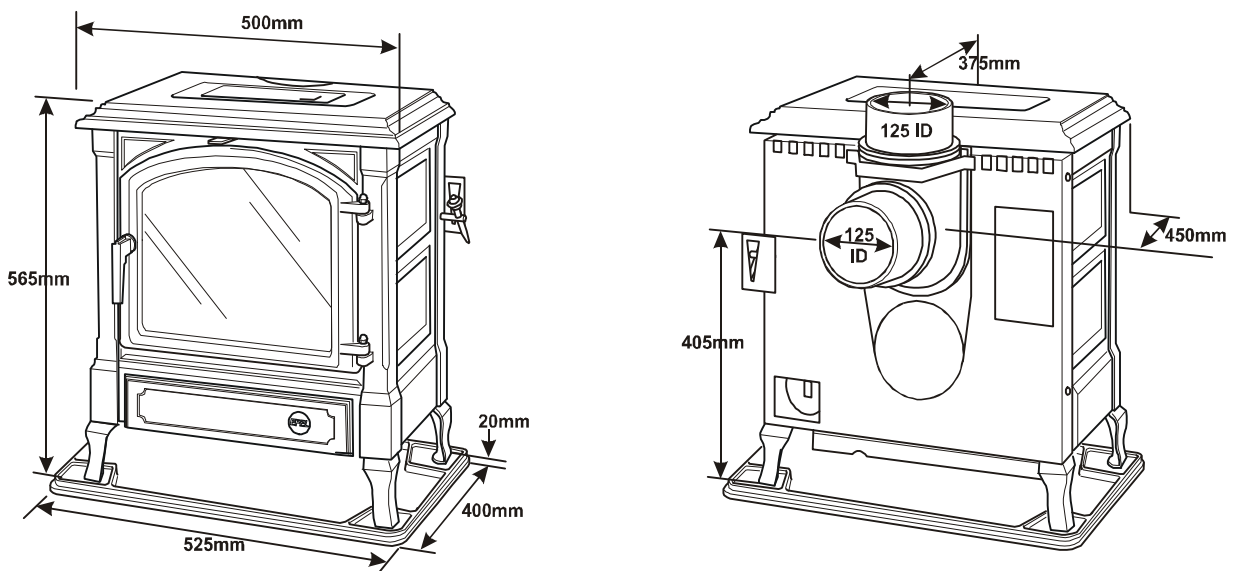
The purpose of this technical document is to present, on the basis of the laws of physics involved, the importance of the drawing power of chimneys and other factors on which the satisfactory functioning of wood & coal heating equipment depends.

Modern building trends: small-sized rooms, sealed windows and door frames, high thermal output equipment, the observance of health regulations and clean air fuel products require the whole problem to be reconsidered in its entirety.

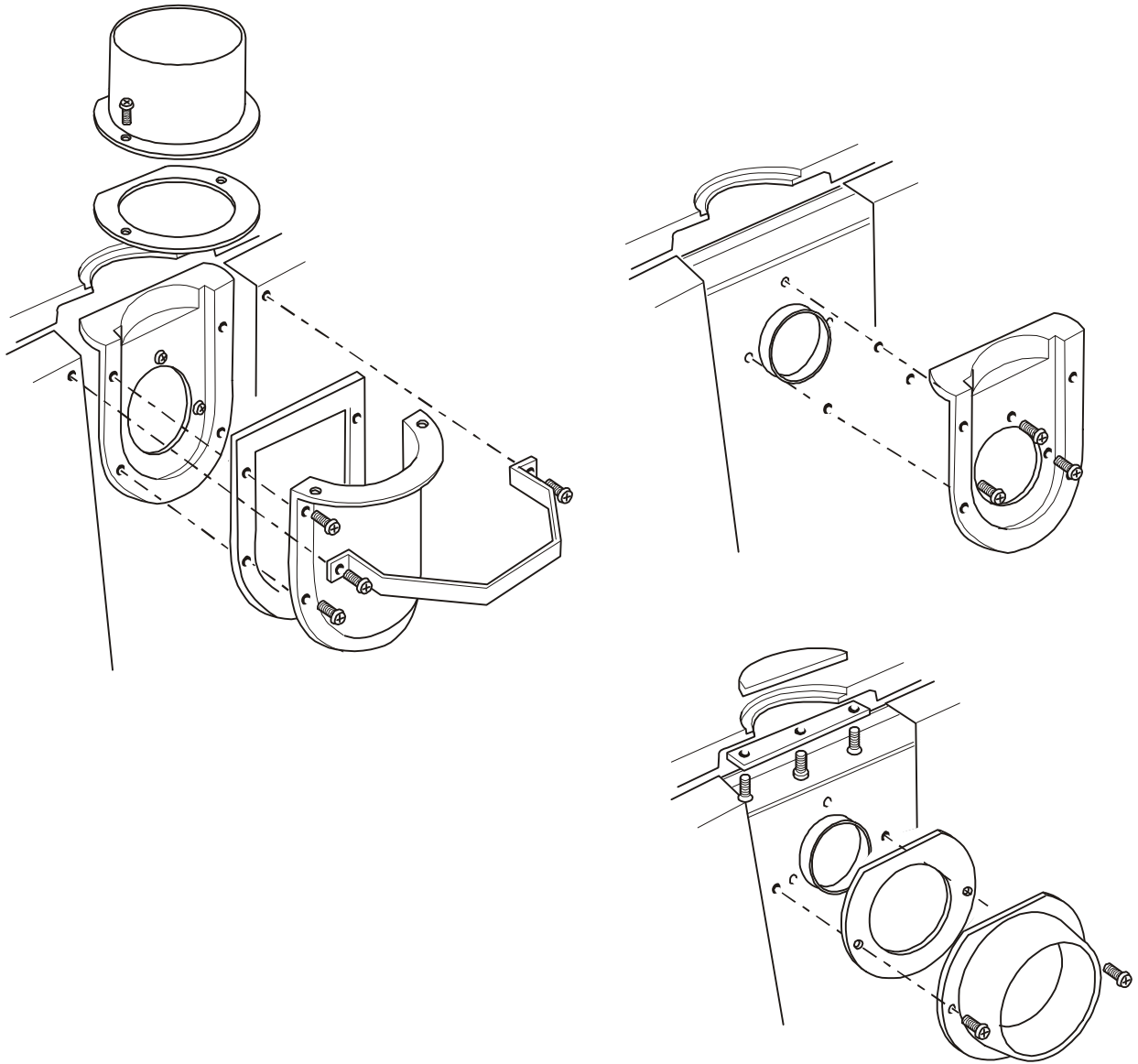
We manufacture a complete heating appliance which has to be connected to a chimney for normal operation. That chimney when being hot must be capable of providing the air necessary for combustion and fully evacuating the combustion products.

The installer is responsible under the Health and Safety at Work Act 1974 vi the caustic nature of fire cement and the possibility of disturbing asbestos in existing installations and to suggest appropriate protection to be given to the person(s) carrying out the installation.

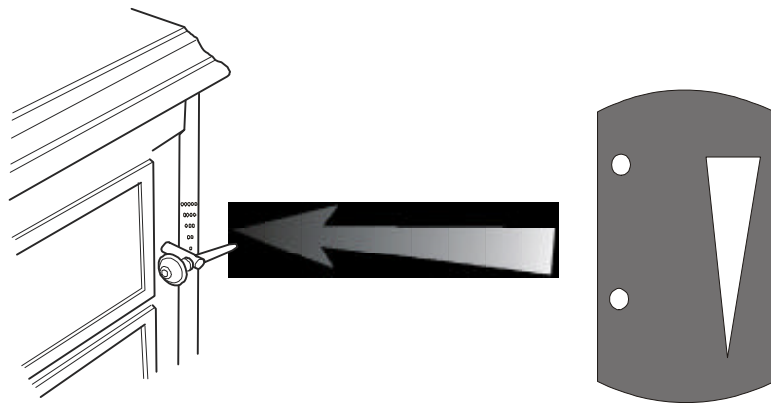
- 1) This appliance must be installed by a fully qualified heating engineer. He is responsible to ensure that the installation is in accordance with all currently accepted British Standards and Codes of Practice, particularly BS6461, CP403 and BS5449, relating to the installation of solid fuel appliances.
- 2) The stove must be placed at least 40cm away from any combustible materials. If necessary, any adjoining walls should be protected from the effects of heat.



Flue Outlet Options



Optional Front Facing Thermostat Indicator



1. THE CHIMNEY

If the chimney is cold, the water in the flue gases will condense. If it is porous the condensate will appear in the form of unsightly brown patches on the external walls of the chimney.

In the event of poor combustion an understanding of the paragraphs which follow will enable you to solve all the problems.

A. In naturally aspirated wood/coal stoves the air necessary for combustion is drawn into the combustion chamber by the negative pressure of the chimney. The negative pressure is uniquely due to the fact that the combustion gases present in the chimney are hot and lighter than the air outside it. If the chimney is cold, either because it has not been used for a long time or because it has no heat insulation or is too short (minimum 4 m), the slow air movement will prevent the flame burning cleanly. It is always necessary to wait for a while when there is difficulty in operating until the chimney has warmed, before deciding that it is the chimney which is at fault.

B. If inside the house, the stove chimney which is the natural moving force of the combustion, is competing with another stronger moving force (the entry of secondary air into the chimney, another higher or better insulated chimney, an extractor hood in the kitchen, a water-heater or a clothes dryer,...) combustion will be difficult and in the most serious cases smoke and fumes will even be drawn back into the house. If the house is too well sealed and the air necessary for combustion cannot reach the stove, the same malfunction will occur.

In this case, it is not the chimney which is at fault, but the fact that the room is too well sealed. This is easily observed by the following symptoms: the flame is weak, flickers or produces excess smoke. (responds slowly) The remedy consists of ensuring normal ventilation of the room in which the appliance is fitted.

This problem can be resolved, in particular, by bringing in the air necessary for combustion through a pipe of adequate dimensions leading from outside the premises close to the stove. Like humans a stove has to breathe.

C. Any obstacle to the easy passage of the combustion gases through the chimney will be prejudicial to good drawing and therefore to satisfactory operation. Bends, turbulence, foreign bodies, dirt, nests, cold walls, etc.- see the cases shown in the appended diagrams.

D. Wind eddies or down-draughts around the top of the chimney, sometimes due to remote obstacles (hills, trees, houses, particular architectural arrangements, roof ridge, etc.) may cause drawing problems.

E. Permanent or temporary excess drawing, also prejudicial to good combustion (buzzing noise), can be controlled by a draught regulating flap when excess draught is experienced at high flow settings. **A draught stabilizer is highly recommended as part of a standard installation.**

F. In all cases the draught of the chimney must be measured with a draught indicator (gauge) connected to the flue which runs from the stove to the chimney. The negative pressure indicated must ideally lie within the shaded zone on the requirement graph when the stove is operating smoothly.

Conclusion

Whilst it is obvious that a chimney with adequate drawing power alone will ensure the satisfactory functioning of the stove, it should never be forgotten that a large percentage of problems are caused by faulty drawing power of chimneys.

CHIMNEY DRAUGHT

For a wood/coal stove to operate normally, it is essential that the suction of the chimney, which determines the provision of air to the stove, is continuous and that the evacuation of the fumes is ensured during combustion. That is why it is recommended, above all, to check the state of the chimney to which the stove must be connected. Once connected it is of the utmost importance to balance the flue draught to conform the graph showing draught requirements.



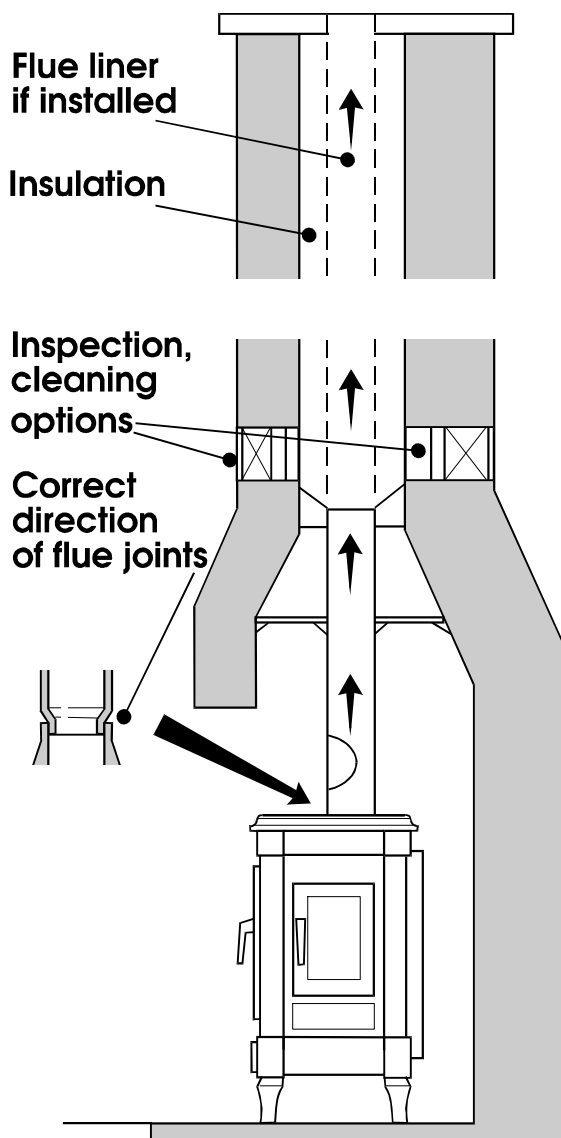
A stable chimney draught within the required parameters is always required.

2. The chimney and connection

Planning the chimney

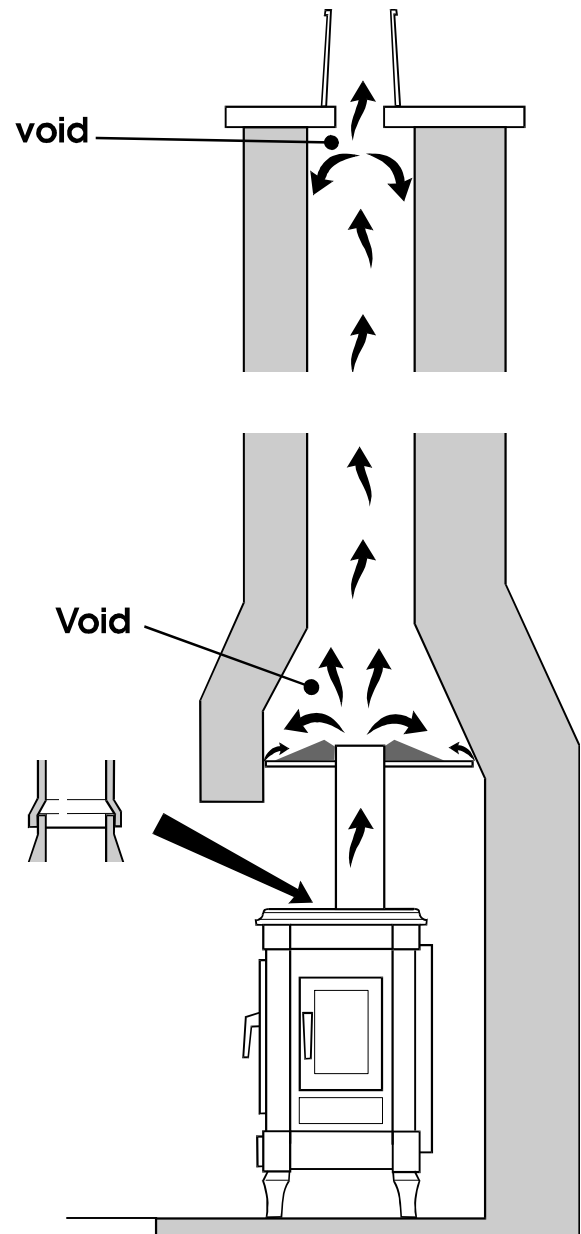
A. The ideal chimney should be vertical, smooth, free of cracks or foreign bodies. The chimney must be swept before lining or connection.

Good

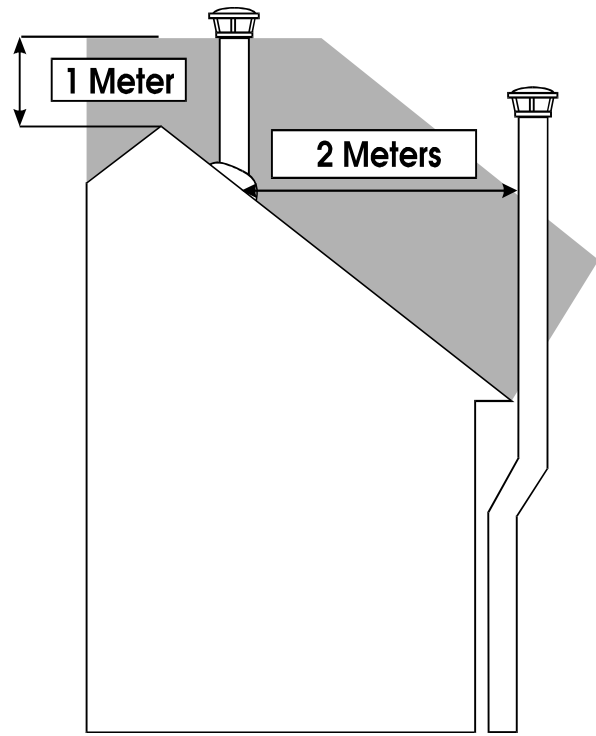
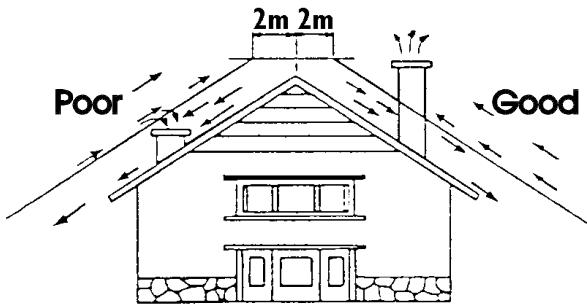


B. To prevent throttling, suction cowls (chimney pots), or anti-down draught devices must not have a smaller connecting section than the chimney.

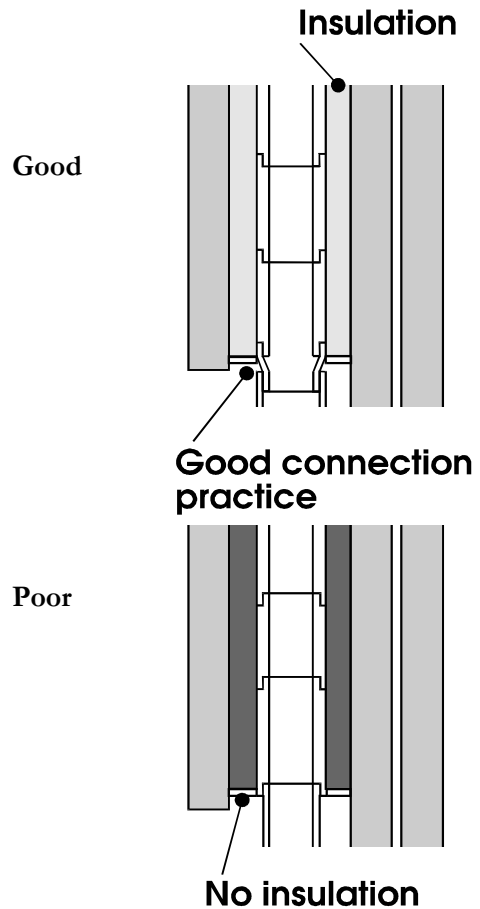
Poor



C. The chimney outlets should be at least 1 m higher than the roof ridge or the neighbour's wall. That is to say that the chimney must not open into a pressure zone, i.e. between two buildings or under higher trees.



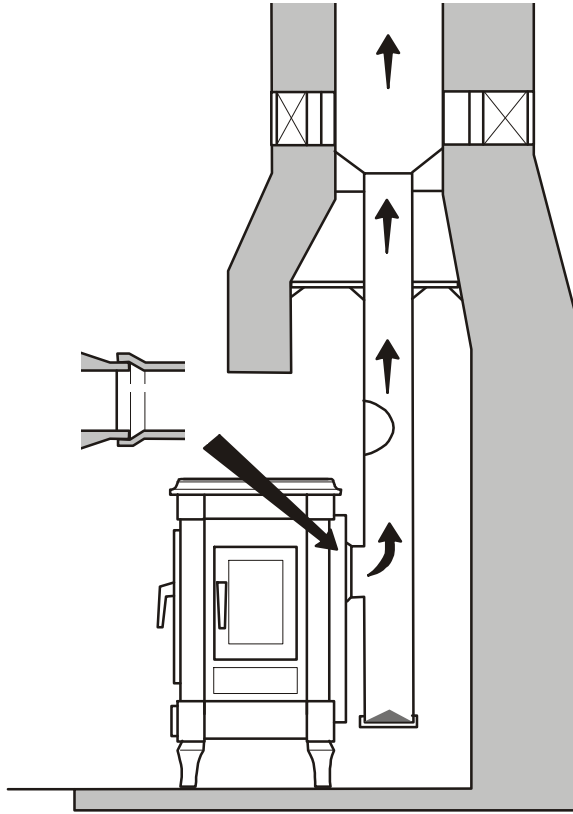
D. Ceramic or pumice flue liners must be installed with surrounding insulation. Ideally connecting flue pipe should fit to the outside of the flue liner. All flue connections must have the female socket facing upwards, male connection downwards.



E. It is unfortunately quite common to find that ceramic (clay) lined flues are installed with no insulation. This can result in slow, poor operating chimneys which are inclined to cause condensation and other related problems. In many cases the solution is to install a flexible liner.

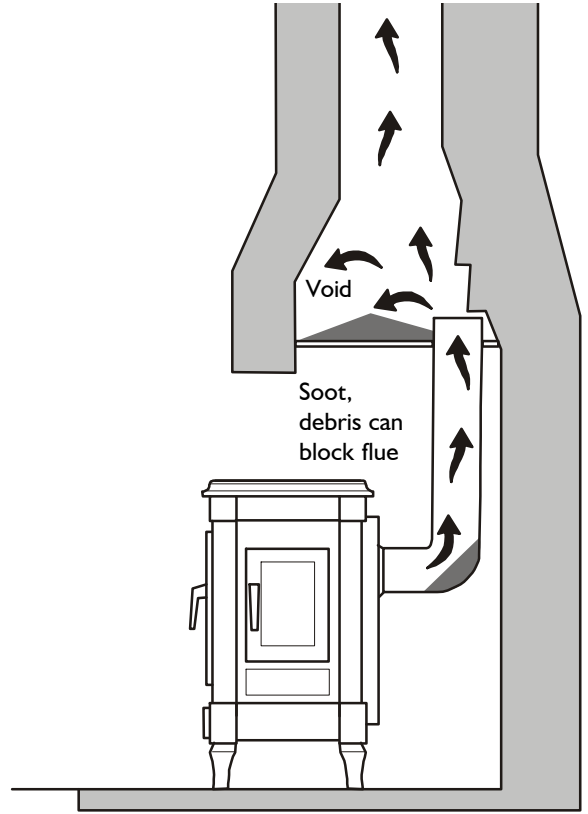
F. Connecting flue pipe must be joined to the chimney system above the point where the chimney narrows. Flue gases passing into void areas, turbulise, lose temperature and so chimney draught.

Good

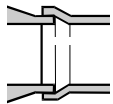


G. Rear flue connections should be fitted with a tee pipe, this allows a catchment area for falling soot and debris.

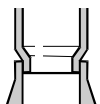
Poor



Cleaning access options



Rear flue connection internal or external

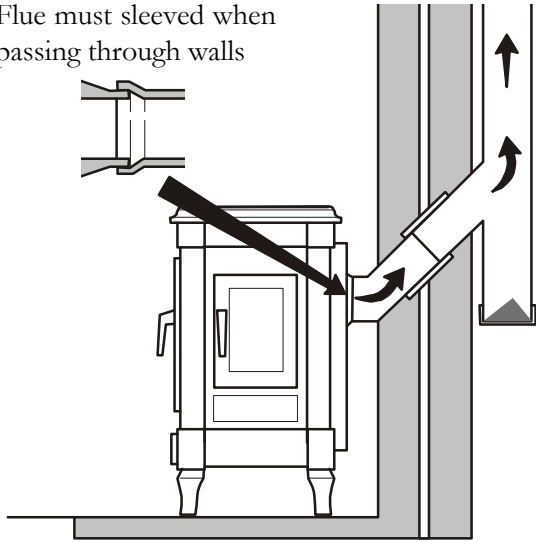


Top flue connections internal only

H. Rear flue connections must not be more than 153mm horizontal. Flue pipe passing through cavity walls should be sleeved.

Good

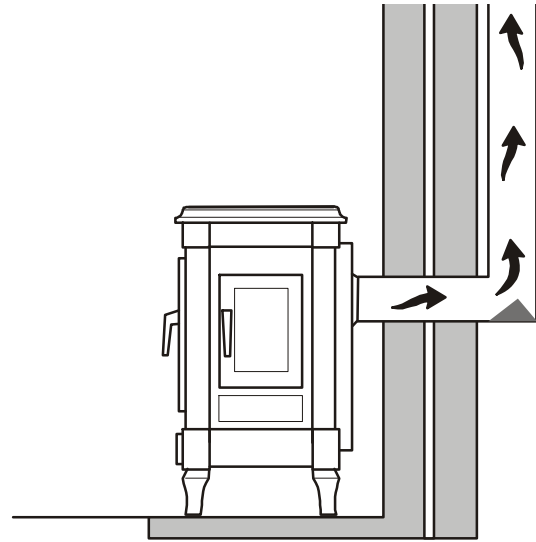
Flue must be sleeved when passing through walls



External flues must be insulated

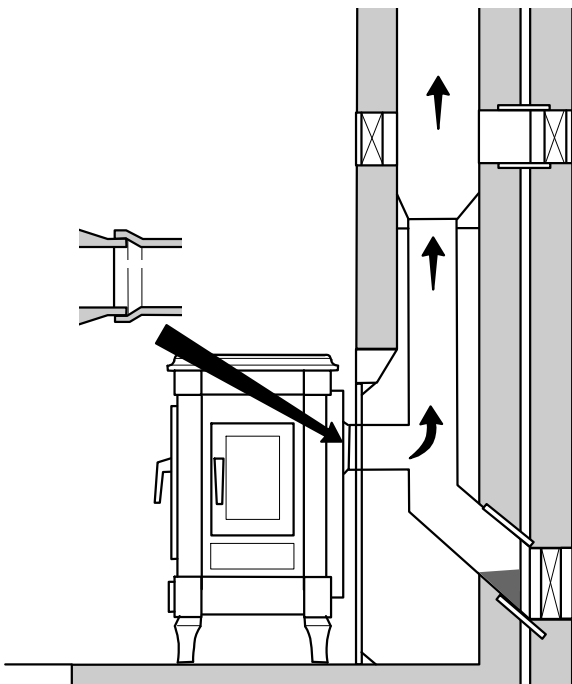
I. External flues must be insulated to prevent heat loss.

Poor



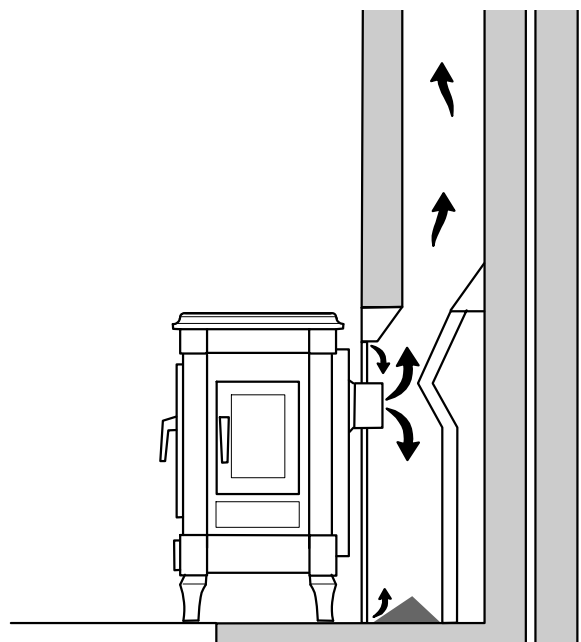
J. Large empty spaces should be avoided. Flue connections must be carefully planned to prevent problems with voids.

Good

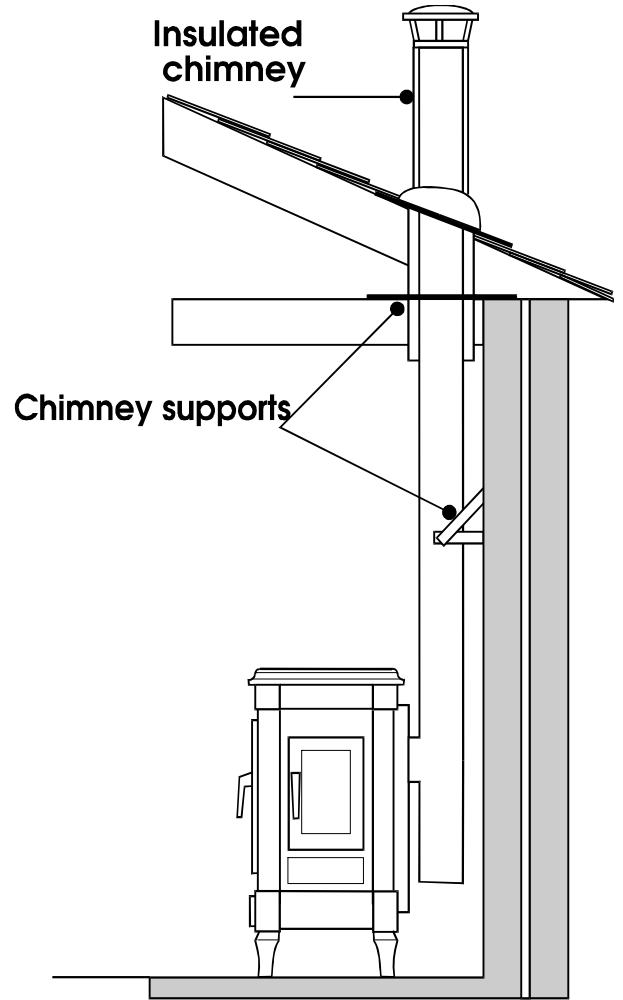
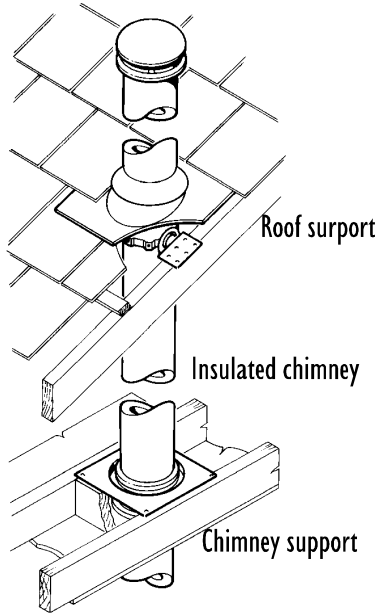


K. Access to the chimney system for inspection or cleaning should be provided

Poor



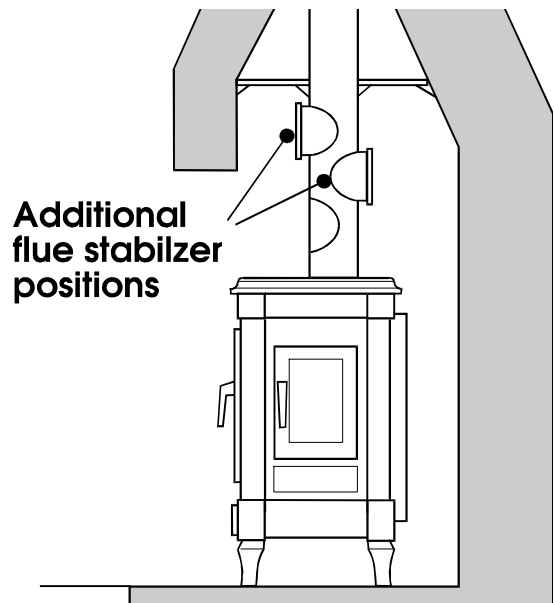
L. Prefabricated flues should be constructed so that the weight of the chimney is not supported on the stove.



M. In severe excess chimney draught conditions a draught stabilizer may be required.

Fitting Requirements

1. Stabilizer the same size as flue should be fitted.
2. The stabilizer should be at the end of a horizontal branch of approximately 100mm.
3. The stabilizer should be fitted no closer than 700mm to the flue outlet of the appliance.
4. The flue stabilizer should be fitted in the same room as the stove installation.



3. Chimney Cows

Chimney terminations have four basic areas of use.

1. Rain Ingress.

To prevent rain penetration into the chimney system and stove. Damp chimney conditions result in poor and slow draught. Water can also damage the stove especially during periods of none use.

2. Bird Prevention.

Birds have the habit of building nests in chimney terminations. These endeavours often cause partial or complete blockage of the chimney system.

3. Down Draught Prevention.

Down draughts are normally caused by poorly positioned flue terminations. It is a far better policy to change the chimney termination location by extension or redesign as severe down draughts will not be prevented by supposed down draught cowls. In fact many assumptions of down draught are due to serious changes in the flue draught caused by wind variations on the termination position. (See stabilizer cowls). However, there are cases where the house position, i.e., in a valley where down draughts cannot be prevented.

4. Flue Stabilization Cowls.

The area of flue stabilization is one of the least understood. Wind movement across a chimney terminal can either decrease the chimney upward movement “down draught” or more likely with a well designed chimney increase the upward pull by causing a venturi effect. The symptoms of change are as follows:-

A. The flame becomes fierce and uncontrollable, reduced burning times, sooty glass in windy conditions.

B. A roar or buzzing noise can be heard.

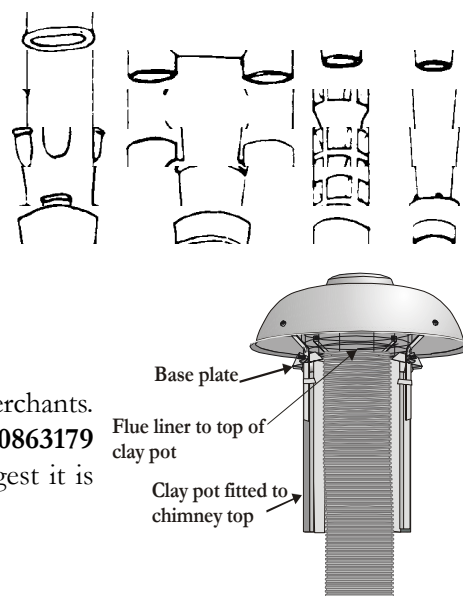
To confirm this condition a flue draught reading should be taken.

There are only a limited number of chimney cowls dedicated to flue stabilization. When sourcing a stabilizing cowl take great care. Many down draught cowls will increase flue draught in windy conditions.

Euroheat currently recommend 2 cowls.

1. Colt top cowl. Available from most local stove centres and builders merchants.

2. Euro-cowl. Available from most local stove centres and direct on **002 80863179** (cowl pictured is the Euro-cowl). When ordering a Euro-cowl we suggest it is ordered with a bird guard, base plate and additional retaining strap.



Air Supply

If inside the house, the stove chimney which is the natural moving force of the combustion, is competing with another stronger moving force (the entry of secondary air into the chimney, another higher or better insulated chimney, an extractor hood in the kitchen, a water-heater or a clothes dryer,...) combustion will be difficult and in the most serious cases smoke and fumes will even be drawn back into the house. If the house is too well sealed and the air necessary for combustion cannot reach the stove, the same malfunction will occur.

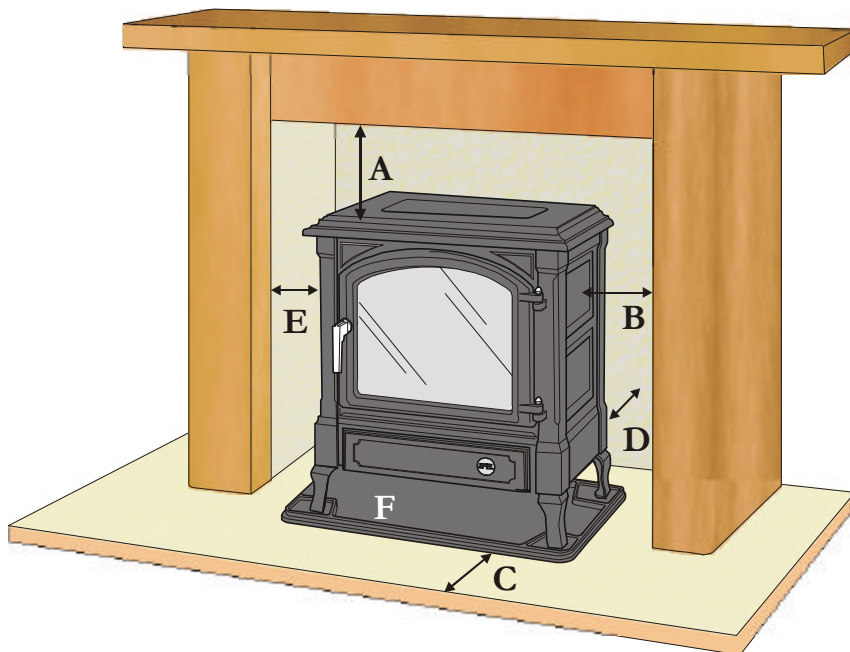
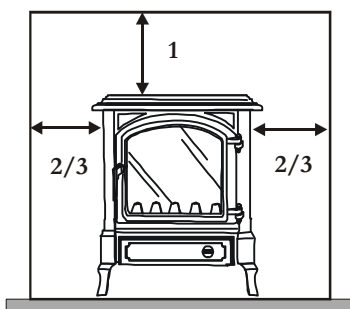
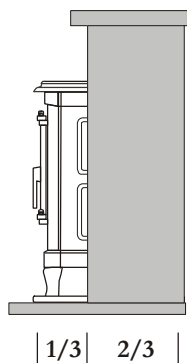
Building Regulations require the provision for air supply.

An air entry opening or openings with a total free area of at least 550mm² per kW/hr of rated output above 5kW/hr.

Where a flue draught stabiliser is used the total free area should be increased by 300mm for each kW/hr of rated output.

Installation

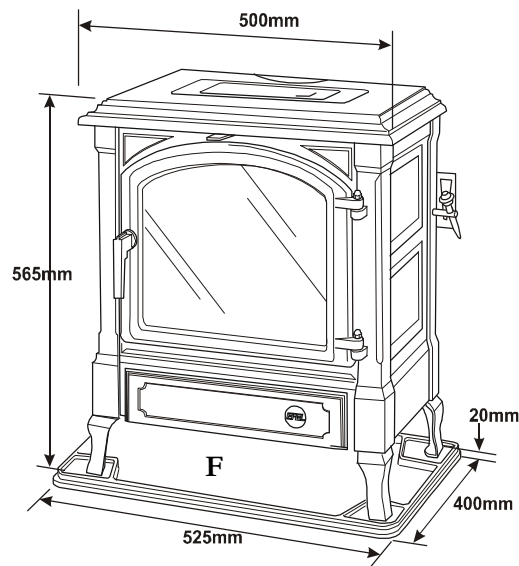
Do not be tempted to fit the stove into an unsuitable fireplace. Beyond the requirements of the building regulations and access to facilitate servicing the stove, providing a setting which will compliment the Harmony is not a luxury, it is the practicality of making the most of an investment. A good builder will be able to transform even the most utilitarian of fireplaces, whether altering its proportions to those of the “Golden Mean” ideal, exposing a wooden lintel, stone or simply removing superfluous detailing for comparatively small costs, and the result will be a pleasure for many years.



Decorative plinth for Harmony 5

Minimum installation clearances

Minimum Clearance from Inflammable Materials		Minimum Required Clearance for Operation
A	18" 450mm	12" 300mm
B	16" 400mm	12" 300mm
C	12" 300mm	N/A
D	16" 400mm	2" 50mm
E	16" 400mm	6" 150mm



F = Decorative Hearth Plate
Supplied as standard with Harmony 5

The measurements are for advice only. In all installations surrounding inflammable materials must not exceed 80°C. The stove must always stand perfectly level and have sufficient space allowed for service work.

5. Some Advice and Instructions

1) Question:

What happens if the chimney flue descends to a lower floor (the cellar, for example)?

Answer:

The combustion gases involve some DEAD WEIGHT when mixed with a pocket of cold air. This will have a considerable detrimental effect on the drawing power of the chimney.

Remedy:

It is necessary to block the chimney with a metal sheet or concrete, etc. a few centimetres below the joint of the connecting pipe. Sufficient depth for a debris trap should be provided.

2) Question:

What happens if you wish to connect an appliance to a chimney flue, to which another stove is already connected?

Answer:

This is prohibited under the U.K. building regulations and should not be allowed.

3) Question:

What happens when a chimney flue is excessively large?

Answer:

The combustion gases leaving the stove through a given section expand suddenly, cool down and lose all ascending force. The drawing power is, therefore, very weak or non-existent.

Remedy:

The chimney must be lined to give it a more suitable size.

4) Question:

What happens if the flue draught is too low?

Answer:

The stove will be difficult to light, responding only slowly to the demands of increased output and unable to reach its full heating output.

Remedy:

- Ensure there is enough free air to the stove.
- The flue is of a suitable size and is not obstructed.
- Consult installation instructions.

5) Question:

What happens if there is too much flue draught?

Answer:

This can seriously damage the stove. An environment can be created akin to a Blacksmith's forge within the body of the stove. Early signs of this is an uncontrollable fire, the glass crazing on the inside. Later signs are burnt, bent and buckled cast iron internal stove parts.

Remedy:

Ensure the stove is installed and commissioned as per the installation instructions so that a flue draught test is carried out prior to use. A flue draught stabiliser can be fitted to the flue and a flue draught reading again taken.

6) Question:

What do you do when a customer insists that the appliance be fitted in poor conditions?

Answer:

Poor conditions can only arise mainly due to the chimney. In this case the customer must be convinced that modifications are necessary. It is always preferable to abstain from taking action which will result in poor installation and so poor stove operation.

7) Question:

Why must connecting flue pipes be inclined upwards?

Answer:

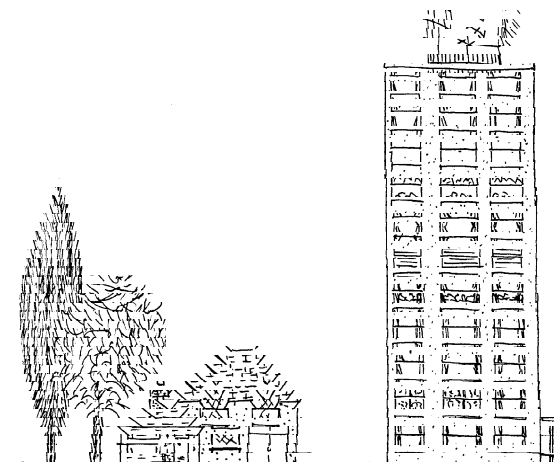
- to prevent the gas from stagnating in the flue pipe;
- to prevent condensation by cooling off the gas;
- to prevent the sooting up of the pipes and the stove itself.

8) Question:

What should the degree of incline be?

Answer:

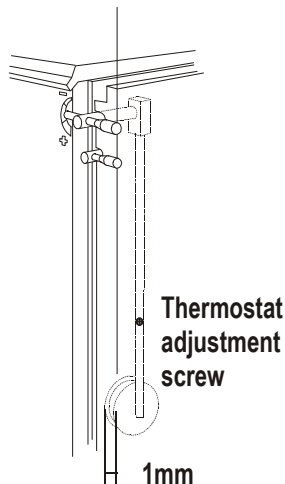
Given that the ideal chimney is vertical, angles should be avoided as far as possible and the incline should be as close to vertical as is practicable. The further away from the chimney the stove is placed, i.e., the more flue pipe required, the greater their incline should be.



Commissioning

To correctly commission the fully installed stove a flue draught measurement gauge will be required. This should be sufficiently accurate to measure the negative pressure produced in the chimney system. If a flue stabilizer is fitted it should then be set in accordance with the graphic below, with the stove at maximum setting.

1. Adjusting thermostat setting

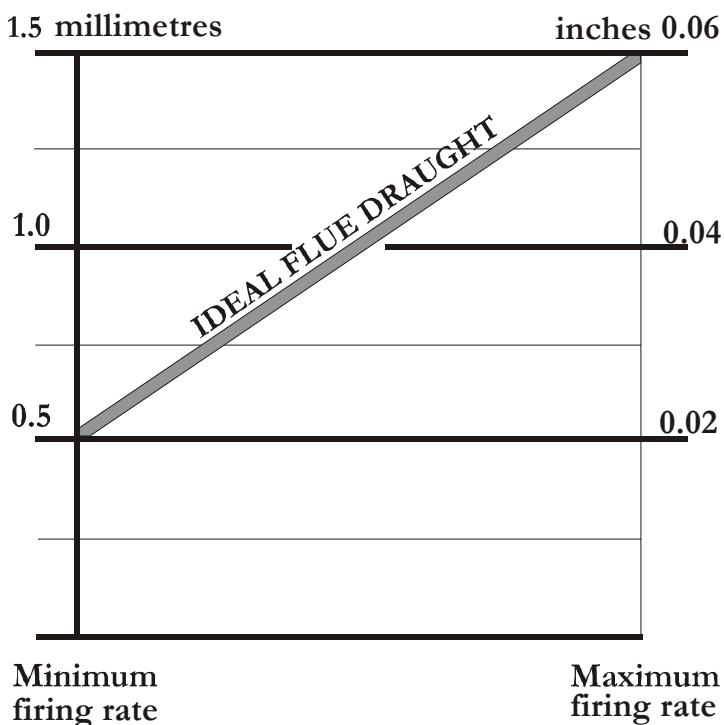


The cold setting of the thermostat must be checked before the stove is operated for the first time.

With the stove cold the gap between the inside left of the thermostat disc and the cast iron body of the stove should be 1mm. at normal room temperature.

Note the thermostat disc is designed to close at a predetermined angle.

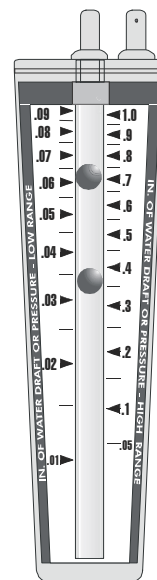
2. Flue draught measurement



Flue draught measured with the air wash vent fully open and all other air supplies to the fire closed.

Euroheat can supply flue measurement gauges order number MS026.

Note this is not a water gauge used to measure gas pressure.



Flue Draught Measurement. cont

The negative pressure created within the combustion chamber of the stove must be measured using a test hole drilled into the flue, as close to the stove as possible and before any draught stabilizer that may be fitted to the flue. To ensure a constant air inlet size the readings should be taken with both the grate and the thermostatically controlled air inlet to the stove shut, and the secondary air-wash inlet fully open.

A reading should be taken before the stove is lit to identify any possible problems which may be caused by air being drawn down the flue by other heating appliances fitted with a flue, extraction fans, etc.. These should be dealt with before lighting the stove.

Once lit, the stove and flue should be allowed to warm thoroughly before letting the fire burn at a low setting. While taking the flue draught reading, all air entries to the combustion chamber of the stove should be closed except the secondary air-wash shutter, which should be fully open. The draught measurement should read approximately 0.5mm gg.

The stove should now be made to burn at its maximum output and another draught measurement taken, again closing all air supplies to the stove other than the secondary air-wash shutter. The draught reading when the burner is operating at its maximum setting should be approximately 1.5mm. gg.

A flue draught which is too low will result in the stove being difficult to light, responding only slowly to demands for increased output and unable to reach its full heating output.

Flue draught which is too high will make control of the fire difficult, and makes it possible to over fire the stove, which can seriously damage it. In this instance a flue draught stabiliser may need to be fitted.

The installation manual should be consulted if the flue draught pressure readings are incorrect.

3. Operation and Lighting

The customer is to be advised about the operation and lighting procedures, use of the tools and general maintenance of the stove.

4. Warranty

The warranty registration form should be completed and the user advised to return it fully completed to Euroheat for registration.

5. Instructions

All instructions are to be left with the user.