



Commissioning of Heat Producing Appliances Burning Solid Fuel



A guide to ensuring the safe installation of solid fuel fired heating appliances. Appendices A and B comprise a certificate and a checklist for submission to the Building Control Authority in accordance with Approved Document J 2010 of the Building Regulations

Responsibilities

Approved Document J of the Building Regulations places a responsibility on a person who carries out work related to solid fuel combustion installations. The “person” may be a specialist firm directly engaged by a client or a developer or main contractor who has engaged a sub contractor to do the work. In the case of DIY work, the client himself takes on this responsibility

Such a person is responsible for ensuring that they use materials and components which are appropriate for the intended application and to ensure compliance with the Clean Air Act and any local requirements. As part of the commissioning procedure, it is necessary to carry out appropriate inspections and tests to ensure the safe operation of the appliance. Appendix C contains further guidance on such testing.

Carbon Monoxide Alarms

It is now mandatory to install a carbon monoxide alarm complying with BS EN 50291:2001 in rooms containing solid fuel combustion appliances. These devices are usually battery powered and have an alarm to alert users when the working life of the detector is due to pass.

Alarms should be in the same room and within 1 to 3 metres of the appliance and either;-

On the ceiling at least 300mm from any wall or;

On a wall as high up as possible (above doors and windows) but at least 150 mm from the ceiling

Commissioning Checklist

It is the policy of Building Control Authorities in Hertfordshire to require that installers provide them with a commissioning checklist for works including the installation or modification of a combustion appliance or its associated flue. Appendix A to this guide provides a form for this purpose with Appendix B giving examples of how to complete it.

Testing

The main test procedures that are necessary when checking an existing flue or commissioning a new flue or appliance are described in appendix C.

Installing Wood Burning Stoves

Herts Technical Forum’s Technical Guidance Note 16 gives comprehensive guidance on Building Regulations issues relating to this type of installation. This is available from your local Building Control office

Notice Plates

When a new or replacement hearth, flue or chimney is constructed or extended or a flue is re lined, the regulations require that a notice plate is fitted giving information essential to the correct application and use of these facilities. This must permanently posted in the building in a location such as:

- a. by the electricity consumer meter
- b. by the water stop-cock
- c. by the hearth or flue that it describes

The notice plate shows the position of the hearth and/or flue and gives essential information about the materials used such as the manufacturer and flue diameter.

An example of a notice plate is illustrated in Appendix D

Other Information

For further information you can contact your local Building Control office

APPENDIX A
Commissioning form

I/We the undersigned confirm that the details overleaf are correct. In my opinion, these works comply with the relevant requirements in Part J of Schedule 1 to the Building Regulations.

Print name and title Position

Company Tel no.....

Address Postcode.....

Signed Date

Registered membership of
(e.g.HETAS,NACE,NACS)..... (if applicable)
Membership Number

APPENDIX B
Examples of completed commissioning certificate

	<i>Example 1</i>	<i>Example 2</i>
2.	<i>Lounge fireplace</i>	<i>Dining room Wood burning stove</i>
3.	<i>All</i>	<i>Wood only</i>
4.	<i>Open fire 480mm wide x 560mm high</i>	<i>Jotul 3TD Nom 6kw Max 9 kw wood burning stove</i>
5.	<i>2No through wall vents each of 10,000mm².</i>	<i>Through wall vent behind stove to 215 x 140mm terra cotta air brick</i>
6.	<p><i>a) New – brick with clay liners</i></p> <p><i>b) 225mm dia</i></p> <p><i>c) Sockets uppermost – fire cement joints</i></p> <p><i>d) Not applicable.</i></p> <p><i>e) Redsons Ltd louvred pot 200mm dia. As diagram 17 AD J</i></p> <p><i>f) 2 x 45°</i></p> <p><i>g) sweep annually via fireplace opening</i></p>	<p><i>a) Existing masonry chimney with new liner</i></p> <p><i>b) 200mm dia</i></p> <p><i>c) Not Applicable</i></p> <p><i>d) Rectiflue double skinned stainless steel liner with Perlite backfill</i></p> <p><i>e) 200mm dia clay DFE type pot</i></p> <p><i>f) 2 x 45°</i></p> <p><i>g) Annual service and sweep via removable access in stove</i></p>
7.	<i>New – tiles on concrete floor 125mm thick as diagram 25 AD J</i>	<i>Existing hearth for solid fuel fire.</i>
8.	<p><i>Inspected and tested by A.Penn of Penn Construction .</i></p> <p><i>Not possible – bends</i></p> <p><i>OK</i></p> <p><i>OK</i></p> <p><i>OK</i></p> <p><i>O.K</i></p>	<p><i>Tested by A.Pearson Stovemaster Ltd</i></p> <p><i>Not possible – bends</i></p> <p><i>N.A</i></p> <p><i>N.A</i></p> <p><i>O.K</i></p> <p><i>O.K</i></p>
9.	<i>Yes – lounge ceiling</i>	<i>Yes – Dining room ceiling</i>
10	<i>By consumer unit</i>	<i>By mains water stop cock</i>

APPENDIX C

Method of checking that products of combustion discharge safely

- C1 This Appendix describes ways of checking that existing, relined or new flues discharge safely to external air. It applies only to natural draught flues intended for open-flued appliances. The procedures described are used to assess whether the flue in the chimney, the connecting fluepipe (and flue gas passages in the appliance) are free of obstruction and acceptably gas-tight. In addition, flue spillage tests check that the safe discharge of flue gases is not affected by extractor fans in the dwelling.
- C2 Tests on flues should be carried out at the most appropriate time during the building work. Where possible, for example, smoke tests should be performed when the structure of a chimney is visible and before the application of finishes such as plaster or dry lining that could obscure sight of smoke leakage during testing.

Testing applications

Tests for existing flues

- C3 Flues in existing chimneys can be obstructed by nests, debris resulting from deterioration of the structure (e.g. brickwork, flue lining material or pieces of chimney pot) and by soot and tar. Flues in existing chimneys may also leak as a result of holes or cracks appearing in the structure and linings, particularly at joints. The top, exposed part of a chimney is particularly prone to decay. A way of checking the state of a flue prior to bringing it back into use would be to do the following:
- a) Sweep the flue. This is intended to clean the flue to demonstrate that it is essentially free from obstructions and to enable better visual inspection and testing of the flue. Tar deposits caused by burning wood may be especially hard to dislodge and should be removed. The debris that comes down the chimney when sweeping should be examined for excessive quantities of lining or brick that are signs that further repairs are necessary.
 - b) Carry out a visual inspection of the accessible parts to identify:
 - i. Deterioration in the structure, connections or linings which could affect the flue's gas-tightness and safe performance with the proposed combustion appliance. Examine the interior of the flue and the exterior of the chimney including in the roof-space. The presence of smoke or tar stains on the exterior of a chimney /breast is a sign of leaks that possibly indicate damage.
 - ii. Modifications made whilst the flue was out of service, such as the fitting of a ventilator terminal, which would be incompatible with using the flue with the intended appliance;
 - iii. Correct lining and lining sizes for the proposed new application.
 - c) Perform checks where necessary to demonstrate that the flue is free from restriction: a visual check may be sufficient where the full length of the flue can be seen. In cases of doubt, a way of checking this would be to carry out a coring ball test.
 - d) Check the gas-tightness of the flue by carrying out a smoke test and (if appropriate) carry out a flue spillage test as described below .

New masonry and flueblock chimneys

- C4 Check during construction that liners are installed the right way up, with sockets facing upwards and joints are sealed so that moisture and condensation will be contained in the chimney.
- C5 Flues in new masonry chimneys can be obstructed, particularly at bends, by debris left during construction or by excess mortar falling into the flue or by joining material extruded from between liners and flueblocks. The flues should be checked to demonstrate that they have been correctly constructed and are free of restrictions and acceptably gas-tight.

A way of checking the condition of a new flue prior to bringing it into use would be to do the following:

- a) Carry out a visual inspection of the accessible parts to check that the lining, liners or flueblocks are of the correct materials and of suitable size for the proposed application.
- b) Perform checks where necessary to demonstrate that the flue is free from restriction: a visual check may be sufficient where the full length of the flue can be seen. In cases of doubt, a way of checking this would be to carry out a coring ball test or to sweep the flue, which may be more effective at removing flexible debris that might not be dislodged by a coring ball.
- c) Check the operation and gas tightness of the flue by carrying out a smoke test and if appropriate a flue spillage test as described below.

New factory-made metal chimneys

- C6 A checklist for the visual inspection of a newly completed factory-made metal chimney is given in BS EN 15287-1:2007 and additional checks or particular variants are usually included in manufacturers' installation instructions. Following inspection, the chimney should be subjected to a smoke test and if appropriate a flue spillage test.

Relined flues

- C7 A flue which has been relined may be checked to show that it is free from restrictions such as from surplus material (where that can occur) and that it is acceptably gas-tight by using the same tests as would be applied in the case of newly built flue.

Appliances

- C8 Where a combustion appliance is provided and connected to the flue system as part of the work, the complete system of appliance and flue should be tested for gas-tightness in addition to testing the flue separately as above

Flue test procedures

Coring ball test

- C9 This test may be appropriate for proving the minimum diameter of circular flues. It may also be used to check for obstructions in square flues but will not detect obstructions in the corners. (A purpose-made coring ball or plate may need to be used if the flue is rectangular.) It is not applicable to fluepipes and should not be used with flexible metal flue liners. It should be carried out before smoke testing.
- C10 A heavy ball, with a diameter about 25mm less than that of the flue, is lowered on a rope from flue outlet to the bottom of the flue. If an obstruction is encountered, the blockage should be removed and the test repeated.

The smoke test

- C11 Where an existing flue is to be checked with a smoke test, it should first be swept. All doors and windows in the room served by the flue should be closed. The flue should first be warmed for about 10 minutes to establish a draught, e.g. with a blow lamp or electric heater. A suitable number of flue testing smoke pellets are placed at the base of the flue, such as in the fireplace recess or the appliance if it is fitted, and ignited. When smoke starts to form, the base of the flue or fireplace opening should be sealed or the appliance should be closed, so that the smoke can only enter the flue. (for example, the recess opening should be closed off with a board or plate, sealed at the edges or, if the pellets are in the appliance, its doors, ashpit covers and vents should be closed.)
- C12 Smoke should be seen to issue freely from the flue outlet or terminal. When this is established, the top of the flue is partly sealed leaving only a 50mm diameter opening to the atmosphere. The full length of the flue should then be checked, bearing in mind Paragraph C16 and there should be no significant leakage. The test should be allowed to continue for at least 5 minutes. The closures at the top and bottom of the flue should then be removed.

Notes in relation to smoke testing

- C13 Where warming of the flue is specified, this is intended to establish a draught, but this may take more than 10 minutes in the case of large or cold flues.
- C14 Appliances, where fitted, should not be under fire at the time of carrying out the test. During a smoke test, smoke should not emerge from the outlet of any other flue, as this indicates leakage between flues. When checking for smoke leakage from a flue, it should be borne in mind that smoke from a faulty flue can emerge some distance away from the original fault. In such cases, the smoke could emerge from such places as barge overhangs in the end of terrace dwellings or from window reveals in cavity walls.
- C15 The purpose of carrying out smoke testing is to check that flue gases will rise freely through the flue and to identify whether there are any faults, such as incorrectly sealed joints or damage that would cause the flue gasses to escape into the dwelling.
- C16 It should be noted that smoke pellets create a pressure significantly higher than the pressure required in the product standards for natural draught chimneys. Some smoke leakage may therefore be seen during smoke tests and it can be a matter of expert judgement of whether leakage indicates failure.
- C17 Wisps of smoke visible on the outside of the chimney or near joints between chimney sections do not necessarily indicate a fault. If forceful plumes or large volumes of smoke are seen, this could indicate a major fault such as an incorrectly made connection or joint, or a damaged section of chimney that requires investigation and remedial action followed by a repeat of the test.

The flue spillage test

- C18 Air extract fans in houses can potentially have an adverse effect on the functioning of a flue or chimney and can potentially cause products of combustion to be drawn into the room containing the appliance. Fans should not be installed in the same room as solid-fuel appliances but can still have an effect even if the extract is in a different room. It is therefore necessary to carry out a spillage test if you are doing either of the following.
- Installing an extract fan in a dwelling which contains a soli-fuel combustion appliance.
 - Installing a solid-fuel appliance in a dwelling which already has an extract fan, whether it is a new installation or a replacement for an existing appliance.

Spillage Test Procedure

- C19 Spillage is most likely to occur on calm days so the spillage test should be conducted on a day when the wind speed is 4m/s or less, so that the effect of the wind causing extra draught up the flue is not too great. (4 m/s is 3 on the Beaufort Scale of wind speed, classed as a gentle breeze. It extends a light flag and keeps leaves and small twigs in constant motion). With the appliance burning in a stable, low output condition, close all windows and doors except internal doors between the extract fan and the appliance. First check the performance of the flue with the extract fan turned off. Place a smoke-producing device, e.g. smoke match, puffer or joss stick, next to a likely point of spillage. Spillage is signified by smoke being blown away from this area. This suggests a fault with the flue, which should be rectified before completing the test. If the spillage is not shown, repeat the test with the fan turned on. For open fires pay particular attention to the area at the top of the fire opening where spillage is most likely to occur. For closed stoves spillage can occur around the main door and air inlet ports. If spillage occurs now, disconnect the extract fan and rectify the fault. Confirm that the correct ventilation has been provided for combustion air as recommended by the appliance manufacturer and in accordance with Building Regulations Approved Document J (and detailed in HTF Guide 22) whichever is larger. If the ventilation to the room containing the appliance is satisfactory, consider one or both of the following.
- Increasing ventilation openings to the room with the extract fan
 - Replacing the extract fan with one which has a lower flow rate

As an indication, a fan with an extract rate of less than 25 l/s is unlikely to cause spillage from a solid-fuel appliance which is situated in a neighbouring room fitted with the required ventilation opening.

Some solid-fuel appliances have sensors which switch the combustion fan off if the chimney is blocked. It is important to note that these sensors are not designed to safeguard against spillage of flue gases caused by extract fans.

APPENDIX D

Example of a notice plate for hearths and flues

Diagram 1.9: Example notice plate for hearths and flues

Essential information	IMPORTANT SAFETY INFORMATION	
	This label must not be removed or covered	
Optional additional information	Property address.....	20 Main Street New Town
	The hearth and chimney installed in the	lounge
	are suitable for	decorative fuel effect gas fire
	Chimney liner	double skin stainless steel flexible, 200mm diameter
	Suitable for condensing appliance.....	no
	Installed on	date
	Other information (optional).....	Designation of stainless steel liner stated by manufacturer to be T450 N2 S D 3
	e.g. installer's name; product trade names, installation and maintenance advice, European chimney product designations, warnings on performance limitations of imitation elements e.g. false hearths.	