

Building control guidance for
installation of

SOLID FUEL STOVES, FLUES, FIREPLACES AND CHIMNEYS



The Building Regulations 2010 (with 2013 amendments)
For use in England

Anthony Gwynne (2017 Edition)

Introduction & general information

This guide is aimed at any person who intends to install a wood burning stove, flue or chimney in an existing building. It is assumed the person carrying out the installation will have sufficient skills to undertake the work. If you are not a member of a Competent Persons Scheme and authorised by your scheme operators to undertake this work then you will have to submit a building regulation application.

This guide is intended to assist the person carrying out the work in the installation process, outlining key issues that may affect the safe installation of the appliance. It guides you through the regulatory requirements and stages of commissioning of an appliance.

Making a Building Regulations Application

Application forms and fee tables can be down loaded from the building control section of the following web site: www.fdean.gov.uk.

Please complete the building regulations application forms (ticking 'Building Notice' box on the front of the form. Please send the completed application form to us as follows:

1. By hand or post to: Building Control, **Forest of Dean District Council, Council Offices, High Street, Coleford Glos. GL16 8HG. Or**
2. By email to: building.control@fdean.gov.uk

How to pay

On line	Not yet available
By telephone	Call 01594 810000 Mon-Thurs 9am-4.45pm, Fri 9am- 4.30pm to pay by credit or debit card. Please note there will be a charge for payments made by credit card
By post	Send payment by cheque or postal order with your application to: Forest of Dean District Council, Council Offices, High Street, Coleford, Glos. GL16 8HG. Payment should be made to: Forest of Dean District Council , please ensure to quote reference: <i>Building Control and Address of property</i> on the back of the cheque. <i>Post dated cheques are not accepted- Please do not send cash through the post.</i>
In person	Payments by cheque, credit or debit card (a charge will be made for payments made by credit card) can be made at: Council Office, High Street Coleford.
bacs	Account No: 61073335 Sort Code: 08-90-41 Account Name: Forest of Dean District Council. Please quote reference: <i>Building Control and Address of property</i>
Note: A receipt will be sent with acknowledgement of the building regulations application	

For further information or assistance in completing your application please telephone: (01594) 812352, 812351, 812315 or Minicom 812500

Email: building.control@fdean.gov.uk website: www.fdean.gov.uk

Disclaimer

Forest of Dean District Council (the Council) has made every effort to ensure that the information contained in this Building Control Guidance Document is accurate at the time of publication. However, the Guidance is advisory and has been developed by Council officers to assist home owners/occupiers, students, builders, designers England. This Guidance is not a substitute for the advice of a suitably qualified professional. The Council does not guarantee and accepts no legal liability of whatever nature arising from or connected to, the accuracy, reliability, currency or completeness of the content of this Guidance. Users of the Guidance must be aware that alterations after the date of publication may not be incorporated into the content of the Guidance. References to organisations or websites in this Guidance does not constitute an endorsement thereof on the part of the Council.

Solid fuel stoves, flues, fireplaces and chimneys

Please refer fully to Approved Document J: Combustion appliances and fuel storage systems (2010 edition with further 2010 amendments);

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Guidance notes copyright

Solid fuel appliances up to 50kW rated output

Solid fuel stoves, flues, open fires and chimneys etc, must be installed by a suitably skilled person (or installer registered with an appropriate competent persons scheme- for example HETAS) in strict accordance with the manufacturer's written instructions and Approved Document J of the Building Regulations 2010, commissioned and tested before the installation is used.

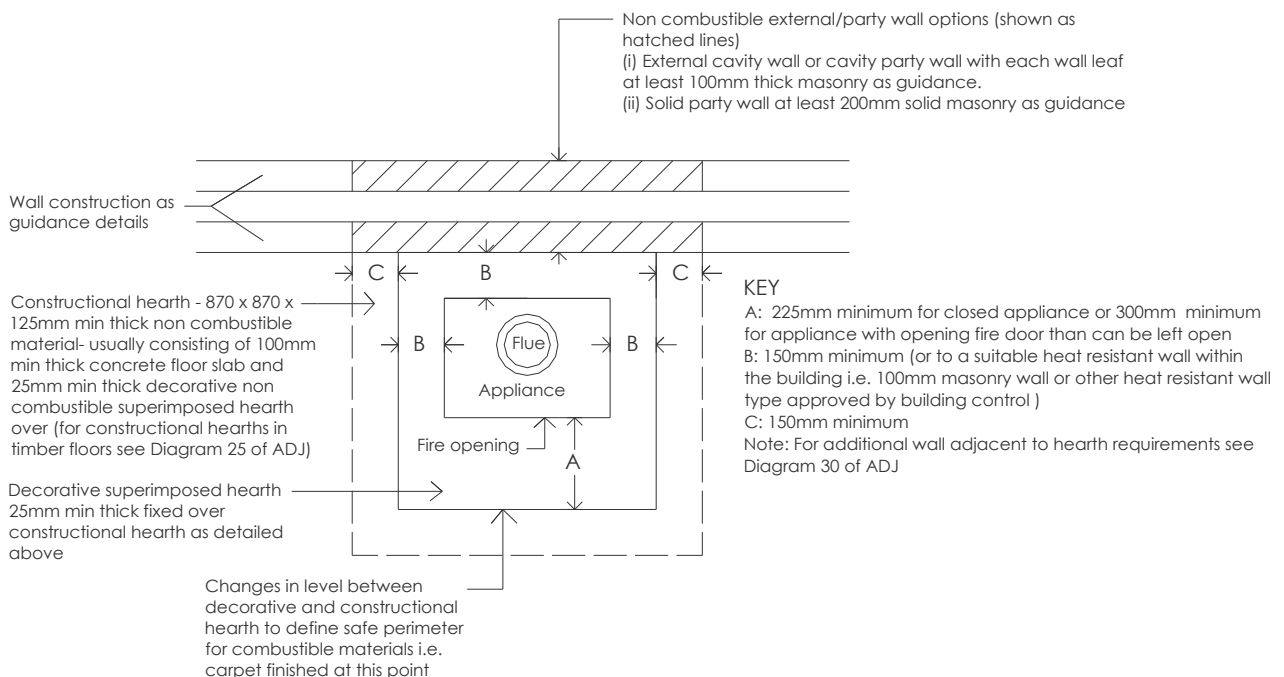
Typical details, tables, and illustrations have been provided in the guidance documents for the more common construction methods used in dwellings and have been adapted from the technical details contained within the Approved Documents of the Building Regulations. The diagrams and details produced in these guidance documents are for guidance only and are only interpretation of how the requirements of the building regulations can be met, the actual diagrams and details must be agreed and approved by building control at an early stage and before works commence. You must comply with the requirements of the Building Regulations and you are advised to fully refer to Approved Document J 2010 Edition and contact a suitably qualified and experienced specialist for details and specifications for the most suitable form and method of construction for your project.

Approved Document J 2010 Edition is available to view on the Department for Communities and Local Government web site: www.communities.gov.uk, or to purchase from The Stationary Office (TSO) on line at www.tsoshop.co.uk or telephone: 0870 600 5522. TRADA Technology span tables are available from: www.trada.co.uk/bookshop

1.0 Free standing stoves and flues

Free standing solid fuel stoves to be installed in accordance with manufacturer's details, fixed to a non combustible hearth, sizes at least 840 x 840mm, positioned 150mm minimum away from enclosing non combustible walls (walls at least 100mm thick). The constructional hearth to be at least 125mm thickness (or can be a decorative non combustible superimposed hearth 25mm minimum thickness fixed over 100mm minimum concrete floor slab with changes in levels to mark a safe perimeter). Hearth should project at least 150mm to the sides and rear of the appliance and 300mm in front of the operable appliance door as detailed in the guidance diagram below.

Guidance Diagram 1: Non combustible hearth detail under free standing solid fuel stove (plan detail - not to scale) See Diagrams 26, 27 and 30 of ADJ for full details



1.2 Flue pipe connections to free standing stove and chimneys

Single flue pipes connecting the appliance to a chimney should not extend beyond the room in which the appliance is located, and should not pass through any roof space, partition, internal wall or floor (unless it connects to the chimney at that point). The maximum recommended length is 1-1.5m to prevent heat transfer and improve flue efficiency. Minimum flue length 0.6m.

Single flue pipes should be guarded if they could be at risk of damage, or if the burn hazard is not immediately apparent to people. Single flue pipes must be located to avoid igniting combustible materials and must be at least 3 times its internal diameter from any combustible materials (3 x 150mm = 450mm); **or**

The combustible material can be heat shielded, the flue must be at least or 1.5 times its diameter from the heat shield. The heat shield (typically 12mm thick proprietary fire resistant board) must extend at least 1.5 times the flues internal diameter to each side of the flue and there must be an air gap of at least 12mm (formed with strips of fire board) between the shield material and the combustible material; **or**

The connecting flue pipe is factory made in compliance with T 400 N2 D3 G according to BS EN 1856-2:2004, and installed to BS EN 15827-1

1.3 Construction of factory made insulated twin walled metal chimneys

Construction of factory made metal chimneys are to be carried out in compliance with BS EN 1856-1:2009 and paragraphs 1.42 – 1.46 of ADJ, and appliance manufacturer's details. The separation of combustible materials from a factory- made twin walled metal chimney is to be carried out in compliance with Diagram 13 of ADJ. Where a metal chimney passes through a cupboard, storage space or roof space it must be fully separated with at least 50mm from combustible materials with a non combustible steel mesh guard. Factory made metal chimneys concealed in the building are to be accessible for inspection in compliance with paragraph 1.47 and diagrams 13 and 14 of ADJ. Chimneys passing through combustible floors and roofs should be fitted with proprietary fire stop shields. Chimneys passing through fire compartment walls or floors-contact building control for further advice.

Chimneys to be constructed in accordance with BS EN 1443: 2003

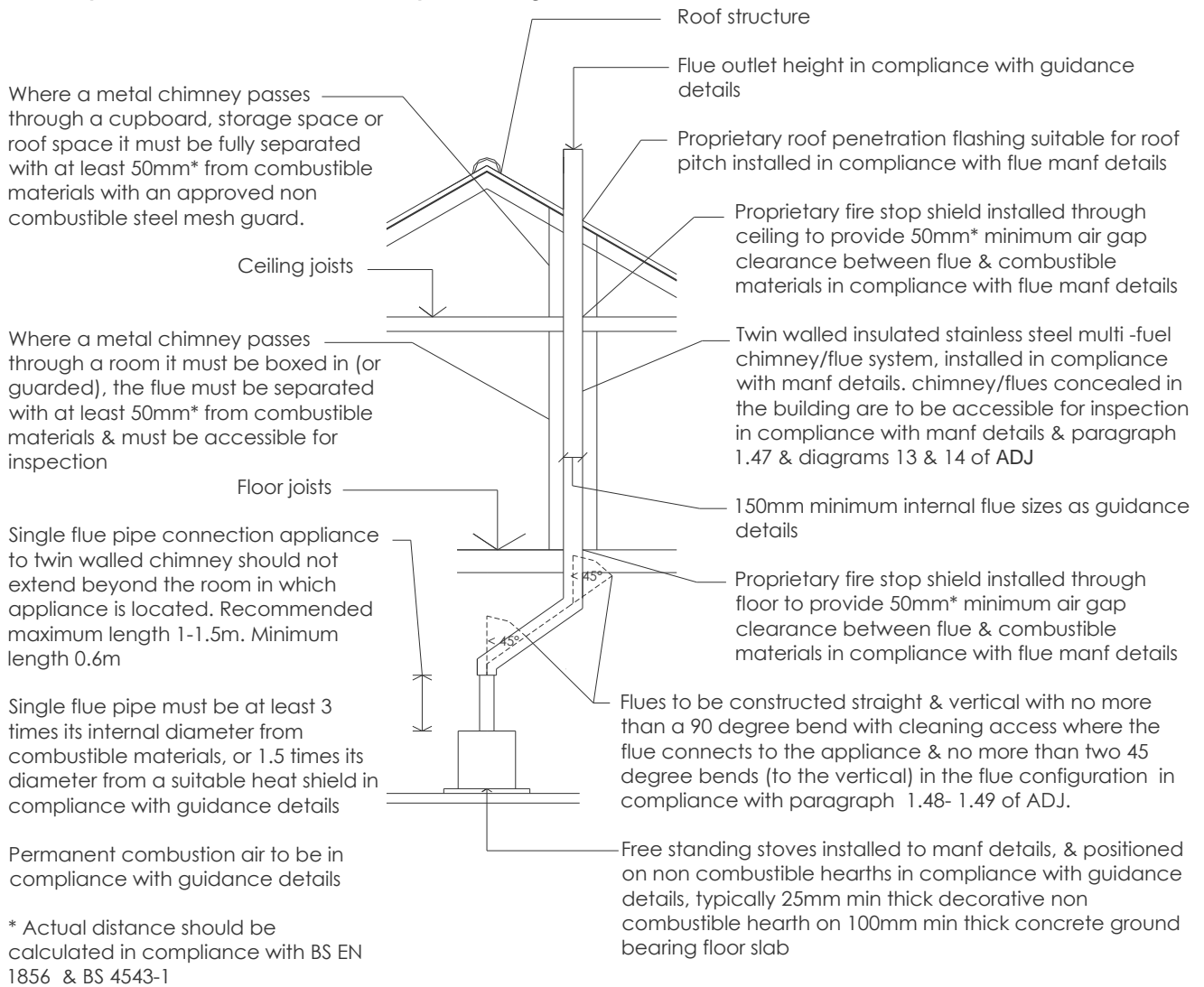
1.4 Reuse of existing flues

See guidance below

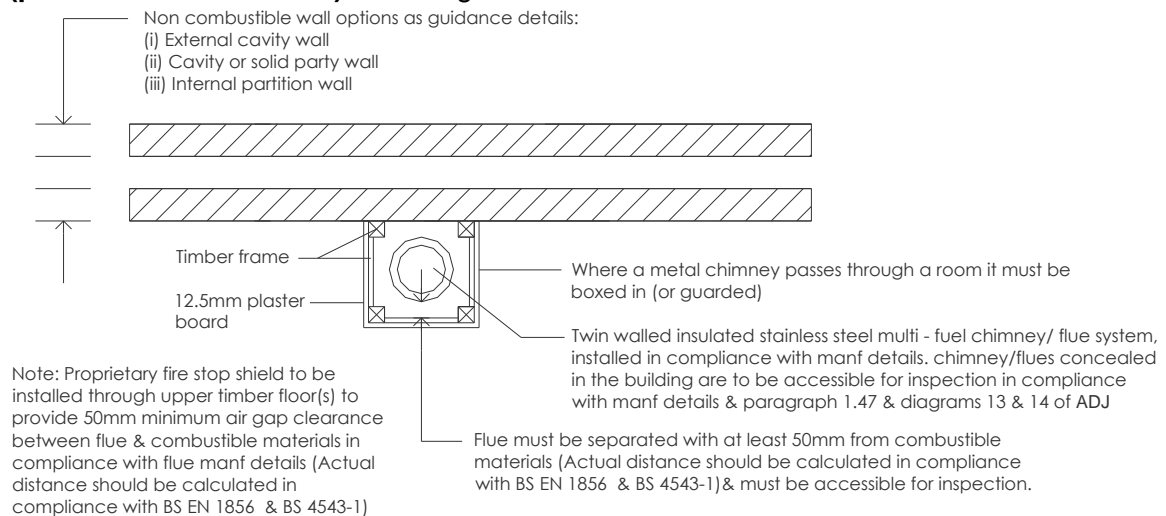
1.5 Built in fires

Built in solid fuel fire are out of the scope of this guidance and must be installed by a suitably skilled person (or installer registered with an appropriate competent persons scheme- for example HETAS) in strict accordance with the manufacturer's written instructions and Approved Document J of the building regulations, commissioned and tested before the installation is used.

Guidance Diagram 2: Free standing stove and metal chimney detail through a building (section detail not to scale) See Diagrams 14,15,16, 17, 18 and 19 of ADJ for full details



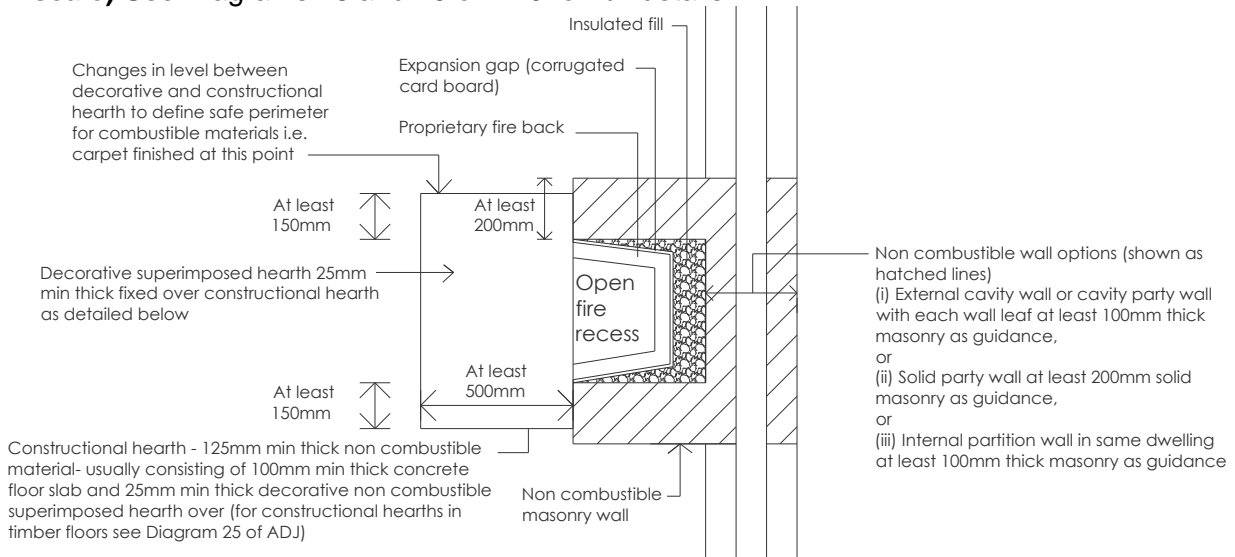
Guidance Diagram 3: Separation of twin walled insulated flue from combustible materials (plan detail not to scale) See Diagram 13 of ADJ for full details



2.0 Construction of recessed open fire and chimneys

Fire place walls to consist of non combustible material of at least 200mm in thickness to the side and at least 100mm thick in the back wall recess, lined with suitable fire bricks or proprietary fire back. The constructional hearth to be at least 125mm thickness (or 25mm minimum thickness decorative non combustible superimposed hearth with changes in levels to mark safe perimeter, fixed over 100mm minimum concrete floor slab). Hearth to project at least 150mm from the sides jambs and 500mm in front of the jambs as detailed in the guidance diagram below

Guidance Diagram 4: Non combustible hearth details for recessed open fire (plan not to scale) See Diagrams 28 and 29 of ADJ for full details

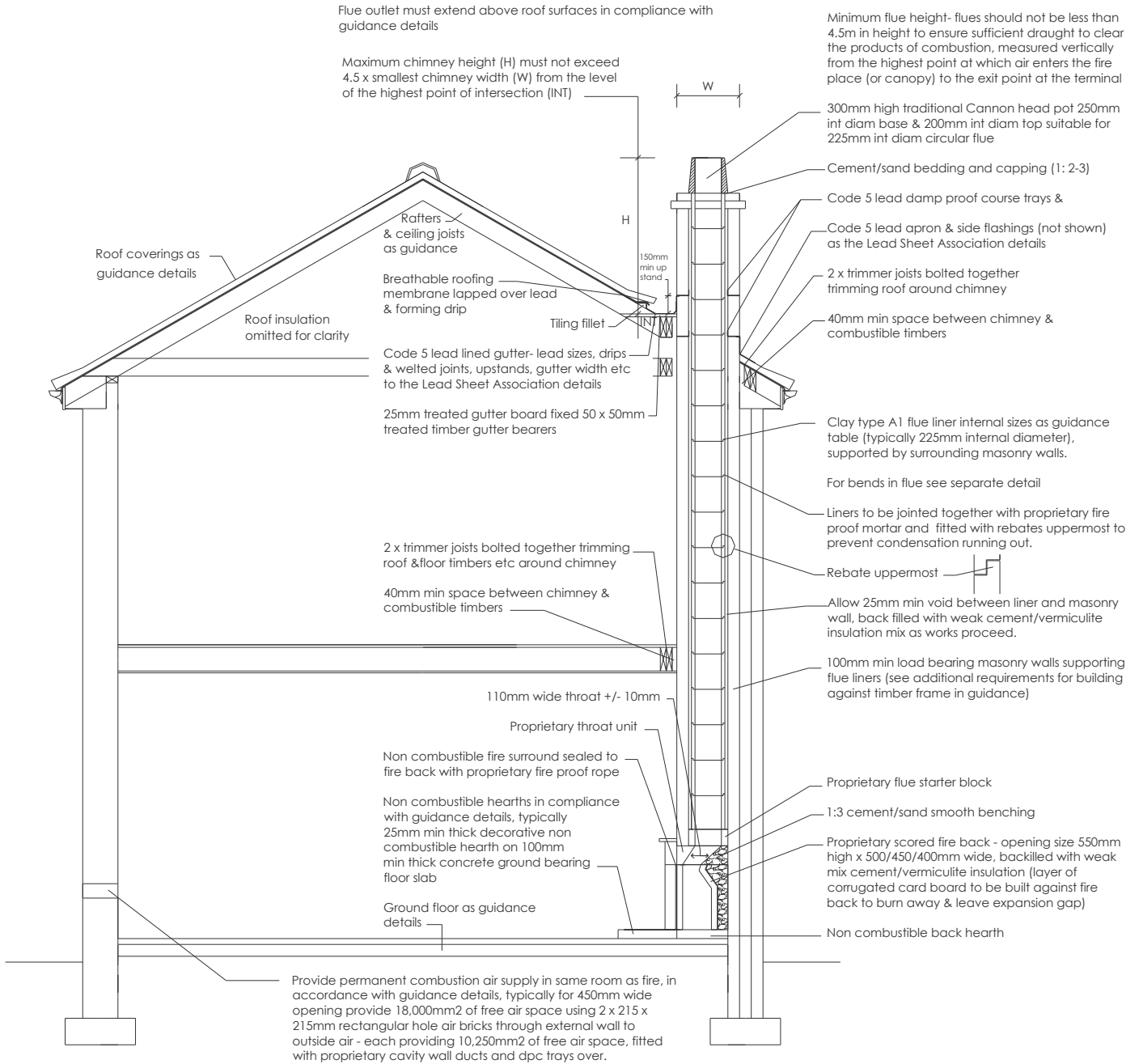


2.1 Construction of solid fuel masonry chimneys

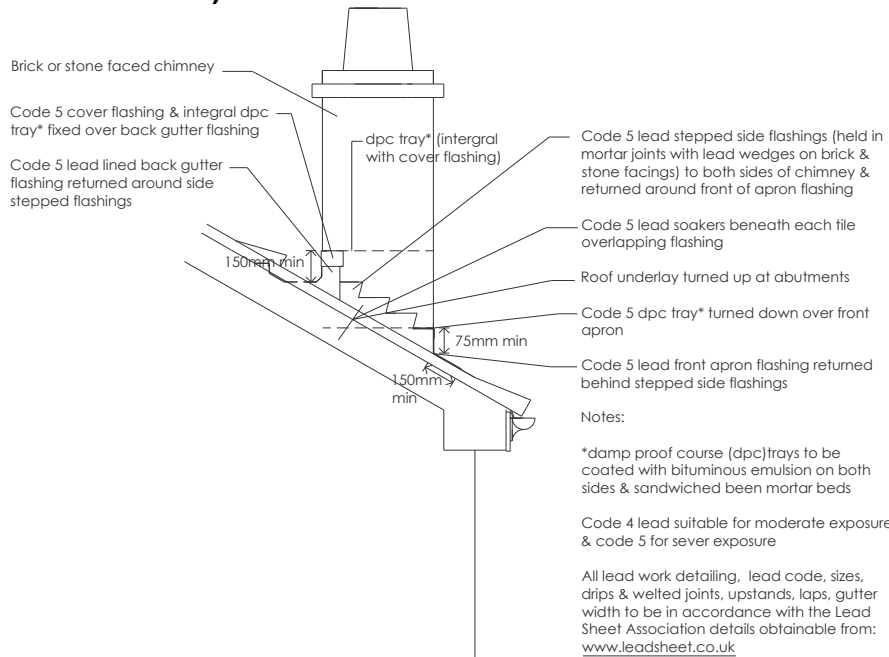
Chimneys to be constructed in accordance with BS EN 1443: 2003 and as detailed in guidance diagram below, in external quality frost resistant materials 100mm minimum thickness (increased to 200mm where separates another fire compartment or another dwelling), using brick, dense blocks or reconstituted/natural stone to match the existing, with suitable mortar joints for the masonry as the masonry manufacturer's details with any combustible material kept at least 200mm away from the flue and 40mm away from the walls containing flues in compliance with diagram 21 of ADJ. Line chimney with manufactured flue liners installed in compliance with manufacturer's details as follows:

- (i) Clay flue liners to BS EN 1457:2009: Class A1 N1 or Class A1 N2, to be laid vertically and continuously with socket up (jointed with fire proof mortar) from appliance with a minimum diameter in compliance with the guidance table below.
- (ii) Concrete flue liners to BS EN 1857:2003: Type A1, A2, B1 or B2 to be laid vertically and continuously socket up (jointed with fire proof mortar) from appliance with a minimum diameter in compliance with guidance table below.
- (iii) Liners whose performance complies to BS EN 1443:2003: designation: T400 N2 D 3 G with a minimum diameter in compliance with guidance table below.

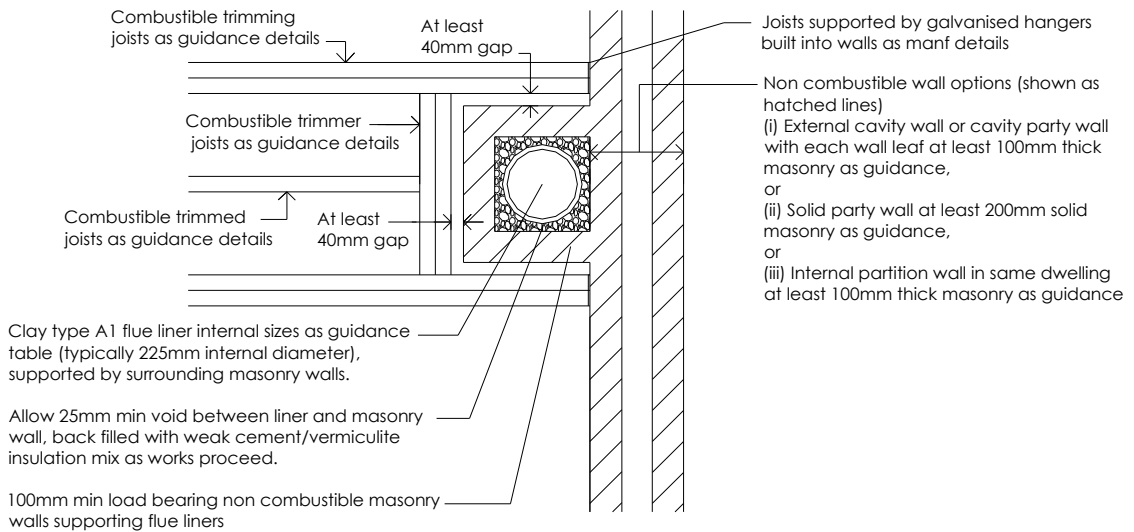
Guidance Diagram 5: Solid fuel masonry chimney construction (not to scale)



Guidance Diagram 6: Lead flashing detail to solid fuel masonry chimney (elevation detail not to scale)



Guidance Diagram 7: Minimum separation distances from combustible material in or near to a solid fuel chimney (plan detail not to scale) See Diagram 21 of ADJ for full details



Additional space separation requirements:

- (i) Combustible material i.e. floor joists, etc built into or fixed to chimney wall must be at least 200mm from the flue liner
- (ii) Timber frame construction built against a chimney wall must be at least 200mm from the flue liner
- (iii) Combustible material supported by metal fastening or support bracket built into chimneys must be at least 50mm from the flue liner

Note: Decorative trims i.e. skirting board, picture rail, architrave etc can be fixed directly to 100mm min thick chimney wall with no additional space separation requirements

3.0 Additional provisions for solid fuel appliances

3.1 Reuse of existing flues in chimneys

If existing flues are to be reused they should be swept, inspected, and certified by a suitably qualified and experienced specialist prior to use and confirmed as suitable for use with the proposed solid fuel appliance.

Existing flues can be relined using flexible metal flue liners as detailed in 3.2 below

Testing of the existing flue should be carried out as detailed in 4.0 below .

3.2 Relining of existing flues in chimneys

Use of flexible metal flue liners for the relining of chimneys should be carried out in compliance with BS EN 1856-2:2009. The flue should be sized in compliance with guidance table below and lining system installed should be suitable for the proposed solid fuel appliance and installed in accordance with the manufacturer's written instructions.

Commissioning and testing of flues prior to use to be carried out as detailed in 4.0 below

3.3 Sizes of flues

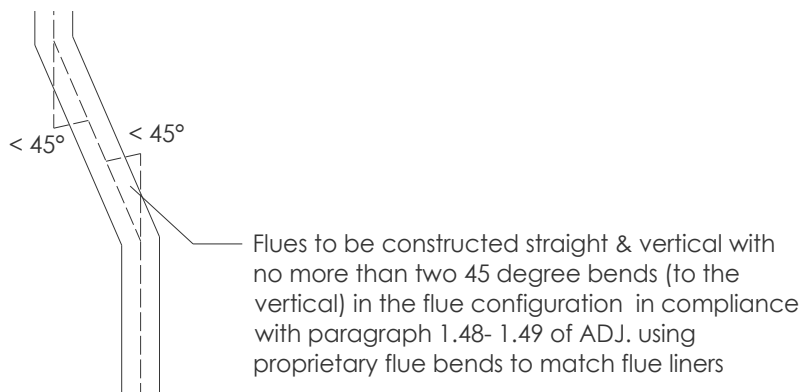
(see Table 2 of ADJ for full details)

Installation	Minimum internal flue sizes
Closed appliances (stove, cooker, room heater and boiler) up to: 30kW rated output 30- 50kW rated output	(diameter, rectangular or square) 150mm 175mm
Closed appliances up to 20kW rated output which-burns smokeless/low-volatile fuel, or complies to the Clean Air Act	See table 2 of Approved Document J
Fire place with opening up to 500 x 500mm	200mm (diameter, rectangular or square)
Fire place with opening more than 500 x 500mm or exposed on both sides	Area equal to 15% of the total face area of the fireplace opening. (note: total face areas more than 15% or 0.12m ² to be designed by heating specialist)
Pellet burner which complies to the Clean Air Act	See table 2 of Approved Document J

3.4 Configuration of flues serving open flue appliances

Flues to be constructed straight and vertical with no more than a 90 degree bend with cleaning access where the flue connects to the appliance and no more than two 45 degree bends (to the vertical) in the flue configuration in compliance with paragraph 1.48- 1.49 of ADJ.

Guidance Diagram 8: Solid fuel chimney/flue construction with bends (section detail not to scale) See Diagram 15 of ADJ for full details



3.5 Carbon monoxide alarms

A mains operated carbon monoxide alarm is required at ceiling level in the same room as the solid fuel appliance, which must be either battery operated in compliance with BS EN 5029: 2001: or mains operated with sensor failure warning device in compliance with BS EN 5029: Type A. Carbon monoxide alarm to be positioned on the ceiling at least 300mm from walls, or if located on the wall as high up as possible (above any doors or windows) but not within 150mm of the ceiling, and between 1m and 3m horizontally from the appliance

3.6 Combustion air supply requirements (permanent ventilation) for solid fuel appliances

Permanently open combustion air vents ducted to outside are to be provided in the same room as the solid fuel appliance with a total free area in compliance with the guidance table below

Combustion air supply requirements- See Table 1 of ADJ for full details

Type of appliance	Minimum amount of ventilation ¹
Open fire place with no throat (i.e. under a Canopy)	50% of the cross section area of the flue
Open fire place with throat (this is most common)	50% of the cross section area of the Throat opening area
or for fire openings sizes: 500mm wide	20,500mm ²
450mm wide	18,500mm ²
400mm wide	16,500mm ²
350mm wide	14,500mm ²
Enclosed stove with no flue draught stabilizer: (Note: is the most common)	
(i) In new building/extension (good air tightness)	550mm ² /kW of appliance rated out put
(ii) In existing building (if air tightness improved- use figure for new extension)	550mm ² /kW for appliance rated out put above 5kW
Enclosed stove with flue draught stabilizer²:	
(i) In new building/extension (good air tightness)	850mm ² /kW of appliance rated out put
(ii) In existing older building (if air tightness improved- use figure for new extension)	300mm ² /kW for first 5kW and 850mm ² / kW of balance of appliance rated out put
1. The stove manufacturer's written installation instructions should confirm minimum amount of permanent ventilation required for a particular stove. 2. Draught stabilizer is a factory made counter-balance flap devise admitting air to the flue, from the same space as the combustion air, to prevent excessive variations in the draught. It is usual for these to be in the flue pipe or chimney, but they may be located in the appliance. (see diagram 3 of ADJ)	

3.7 Construction of factory made flue block chimneys

Construction of factory made flue block chimneys are to be carried out in compliance with paragraphs 1.29 – 1.30 of ADJ, and appliance manufacturer's details.

3.8 Inspection and cleaning openings in chimneys and flues

Where a chimney/flue cannot be cleaned through the appliance, an air tight accessible inspection and cleaning opening should be fitted using proprietary factory made components compatible with the flue system, fitted and located to allow sweeping of the flue in compliance with appliance manufacturer's details.

3.9 Interaction of mechanical extract vents and opened flue combustion appliances

Where a kitchen etc contains an opened flue solid fuel appliance and a mechanical extract vent, the appliance should be tested and certificated by a suitable qualified and registered HETAS engineer that the combustion appliance operates safely whether or not the fans are running. Alternatively, the ventilation from the passive stack effect of an open flue appliance may negate the need for a mechanical extract fan to be fitted in the same room subject to approval by building control.

3.10 Chimney /flue heights

Chimney height not to exceed 4.5 times its narrowest thickness above highest point of intersection (density of masonry to be greater than 1500kg/m³). Chimney/terminal to discharge at a minimum height in compliance with Diagram 17 of ADJ as follows:

- 1.0m above flat roofs
- 1.0m above opening windows or roof lights in the roof surface
- 0.6m above the ridge
- Outside of a zone measured 2.3m horizontally from the roof slope
- 0.6m above an adjoining or adjacent building that is within 2.3m measured horizontally (whether or not beyond the boundary)

Please refer to Diagram 18 of ADJ for flue positions on easily ignited roofs (i.e. thatch)

3.11 Notice plates for flues

Notice plates for flues must be permanently displayed next to the flue (or electricity consumer unit or water stop tap) detailing the property address; location of installation (room); type of installation the flue is suitable for; size and construction of flue, if suitable for condensing appliance, installation date, and any other information (optional).

4.0 Commissioning (physical checks and testing)

Before starting the heating appliance two type of checks should be carried out as follows;

4.1 Physical checks

The following physical checks should be carried out to ensure:

- Installation is according to the design and manufacturer's written installation instructions have been followed
- Flue route is in accordance with the design
- Designation of the flue/chimney matches the performance of the heating appliance
- Components have not been damaged during installation
- Connecting flue pipe and adapters between heating appliance and chimney are fitted correctly
- Distance between the connecting flue pipe and combustible materials is in accordance with Approved Document J (ADJ)
- Correct distances of the chimney from combustible materials is in accordance with ADJ
- Any fire stop/shields, spacer and ceiling supports are correctly installed
- Openings for testing, cleaning and maintenance are installed correctly and are accessible
- All accessories are installed correctly
- All components, joints, connections, locking bands etc, are securely installed
- Components for weatherproofing are installed correctly
- Sizes of flues are in accordance with ADJ
- Carbon monoxide alarm is installed in accordance with ADJ
- Permanent combustion air supply (ventilation) for solid fuel appliances is provided in accordance with ADJ
- Interaction of mechanical extract vents and opened flue combustion appliances (where applicable) has been checked by a suitably qualified heating specialist in accordance with ADJ
- Chimney /flue height is in accordance with ADJ
- Notice plates for the flue is in accordance with ADJ

4.2 Testing of flues

Constructed or assembled flue/chimney systems should be checked for blockage and soundness. Flues should be tested before they are used using one of the following test methods:

Smoke test for metal chimneys (draw test)

The appliance, if fitted, should not be alight at the time of the test. Before commencing, the chimney flue should be warmed by a gas blow lamp or similar heating device for about 10 minutes. The ashpit door of the appliance and thermostat (if fitted) should be in the closed position. Any soot doors or flue pipe access doors should be closed.

Two smoke pellets should be placed in the appliance firebox or the bottom of the chimney or the appliance recess and ignited. Open the combustion air controls. When smoke starts to form, the smoke should be allowed to drift upwards. The test is satisfactory if, while the smoke pellet is burning, there is no spillage of smoke at the heating appliance, no seepage of smoke over the length of the flue and there is discharge of smoke from the terminal.

However, if there is smoke spillage at the heating appliance position, or seepage from the chimney then the test has failed. Some smoke leakage may be seen during the draw test and it is a matter of expert judgement as to whether any leakage indicates failure.

Smoke test for masonry chimneys

The appliance, if fitted, should not be alight at the time of test. Before commencing, the chimney flue should be warmed by a gas blow lamp or similar heating device for about 10 minutes. The ashpit door of the appliance and thermostat (if fitted) should be in the closed position. Any soot doors or flue pipe access doors should be closed.

Two smoke pellets should be placed in the appliance firebox or the bottom of the chimney or the appliance recess and ignited. When smoke starts to form, the heating appliance or appliance recess or the bottom of the chimney should be closed and the smoke should be allowed to drift upwards. When smoke is observed rising from the chimney, the terminal should be sealed. An inflatable rugby ball bladder is ideal for this as it will accommodate any variations in dimensions. Alternatively, a polyethylene bag can be placed over the terminal and sealed around the edges.

The chimney breast and surrounding walls should then be observed at ground level, first floor level, roof space level and terminal level to check for major smoke leakage. As this may occur some distance from the original fault, particular attention should be taken at barge overhangs to end of terrace dwellings and at eaves for leakage from cavities. The smoke test should be allowed to continue for at least 5 minutes.

If there is no sealed heating appliance but an open-type fire or appliance recess, a piece of board should be placed over the fire opening and sealed around the edges after igniting the smoke pellets. Some smoke leakage may be seen during the smoke test and it is a matter of expert judgement to whether leakage indicates failure.

NOTE 1: If the chimney being tested forms part of a multi-flued construction as in a back-to-back situation, the fire(s) connected to the other flues should not be alight.

NOTE 2: The smoke test should be carried out using suitable smoke pellets. The minimum performance of a pellet should be one, which the pellet manufacturer claims generates 5 m³ of smoke in 30 seconds burn time.

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