

# Guide to commissioning a solid fuel appliance



## Introduction

This advice note has been compiled to assist surveyors on the key aspects of the installation of a solid fuel appliance. The guide assumes that relevant foundations, damp course etc have been inspected and is intended for use on new installations only. Where references are made to diagrams these are all taken from Approved Document J 2010.

## Key Issues to consider on installation

**Site inspection:** the following list can be used as an aide memoire for a completion inspection:

- **Hearth Construction:** is a 125mm structural hearth required? Or is this an appliance where the hearth temperature is less than 100° and a 12mm non-combustible material will comply?
- **Hearth dimensions:** Projection to the side of appliances 150mm, 225mm to the front of the appliance. If the installation is an open fire or an appliance that can be used with its door open, the front projection is increased to 300mm. (See dia. 24)
- **Fireplace recesses:** For an open fire, a prefabricated chamber or a masonry recess should be used (See dia.28).
- **Wall adjacent to hearth:** Solid noncombustible material is required in accordance with diagram 30, but takes particular care on timber frame buildings. Where uninsulated fluepipes are used (for example 'connecting flues') they should be in accordance with diagram 19, and may require a shield.
- **Ventilation:** To be in accordance with table 1 below, and ensure account is taken for air permeability of the building.
- **Mechanical extraction:** Mechanical extraction is not allowed in the same room.
- **Separation of combustible material:** For a BS1856 compliant factory made metal chimney refer to manufacturers' information on separation. In the case of a masonry chimney maintain a minimum 40mm from the outer surface of the chimney (unless nonstructural timber). Structural timber may be built into the chimney, as long as it remains 200mm from the inside face of the flue.
- **Flue size:** To be in accordance with Table 2 below. Note: oversized flues can be unsafe.
- **Notice Plate:** ensure notice plate is completed and in a suitable position e.g. adjacent to chimney, hearth, electrical consumer unit, water stop cock (See dia. 16).
- **Flue outlet position:** Should be in accordance with diagram 17; in general the minimum total height of a flue should be 4.5m minimum. Special precautions must be taken where roof surfaces are readily ignitable (thatch, shingles).
- **Access:** Can the flue be cleaned through the appliance? If not, are access points and a debris collection space provided? A maximum of 4 bends up to 45° are allowed. Concealed flues are to have a suitable inspection hatch with additional hatches within 1.5m of any joint.
- **Carbon Monoxide Detection:** To be provided in the room containing the appliance, within 1 and 3m from the appliance, and 300mm from any wall (ceiling mounted) or 150mm from any ceiling (wall mounted).

### Testing

The following tests should be undertaken by a suitable operative. This may be a HETAS registered installer or an appropriately trained chimney sweep who is a member of a trade association such as NACS or APICS:

- i) A visual test of the flue, or if not visible a coring ball or sweeping test.
- ii) For any appliance other than an open fire, a spillage test.

- iii) A smoke test of the flue (smoke test I in approved document J).

### Checklist

Appendix A below provides a checklist that is to be completed by the person constructing the flue. The document suggests a 'specialist' firm provide this report, in reality this may not be possible if constructed by a builder. The Building Control Surveyor should ensure the completed checklist indicates compliance.

**Table 1 Air supply to solid fuel appliances**

Type of appliance	Type and amount of ventilation (1)
Open appliance, such as an open fire with no throat, e.g. a fire under a canopy as in diagram 23.	Permanently open air vent(s) with a total equivalent area of at least 50% of the cross sectional area of the flue.
Open appliance, such as an open fire with a throat, as in diagrams 22 and 29.	Permanently open air vent(s) with a total equivalent area of at least 50% of the throat opening area (2).
Other appliance, such as a stove, cooker or boiler, with a flue draught stabiliser.	Permanently open vents as below: •If design air permeability >5.0m <sup>2</sup> /(h.m <sup>2</sup> ) then 300mm <sup>2</sup> /kW for first 5kW of appliance rated output 850mm <sup>2</sup> /kW for balance of appliance rated output •If design air permeability . 5.0m <sup>2</sup> /(h.m <sup>2</sup> ) then 850mm <sup>2</sup> /kW of appliance rated output (4)
Other appliance, such as a stove, cooker or boiler, with no flue draught stabiliser.	Permanently open vents as below: •If design air permeability >5.0m <sup>2</sup> /(h.m <sup>2</sup> ) then 550mm <sup>2</sup> /kW of appliance rated output above 5kW •If design air permeability . 5.0m <sup>2</sup> /(h.m <sup>2</sup> ) then 550mm <sup>2</sup> /kW of appliance rated output (4)

**Notes:**

1. Equivalent area is as measured according to the method in BS EN 13141-1:2004 or estimated according to paragraph 1.14. Divide the area given in mm<sup>2</sup> by 100 to find the corresponding area in cm<sup>2</sup>.
2. For simple open fires as depicted in diagram 29, the requirement can be met with room ventilation areas as follows:

Nominal fire size (fireplace opening size)	500mm	450mm	400mm	350mm
Total equivalent area of permanently open air vents	20,500mm <sup>2</sup>	18,500mm <sup>2</sup>	16,500mm <sup>2</sup>	14,500mm <sup>2</sup>

3. Example: an appliance with a flue draught stabiliser and a rated output of 7kW would require an equivalent area of: [5 x 300] + [2 x 850] - 3200mm<sup>2</sup>.
4. It is unlikely that a dwelling constructed prior to 2008 will have an air permeability of less than 5.0m<sup>2</sup>/(h.m<sup>2</sup>) at 50 Pa unless extensive measures have been taken to improve air-tightness. See Appendix F.

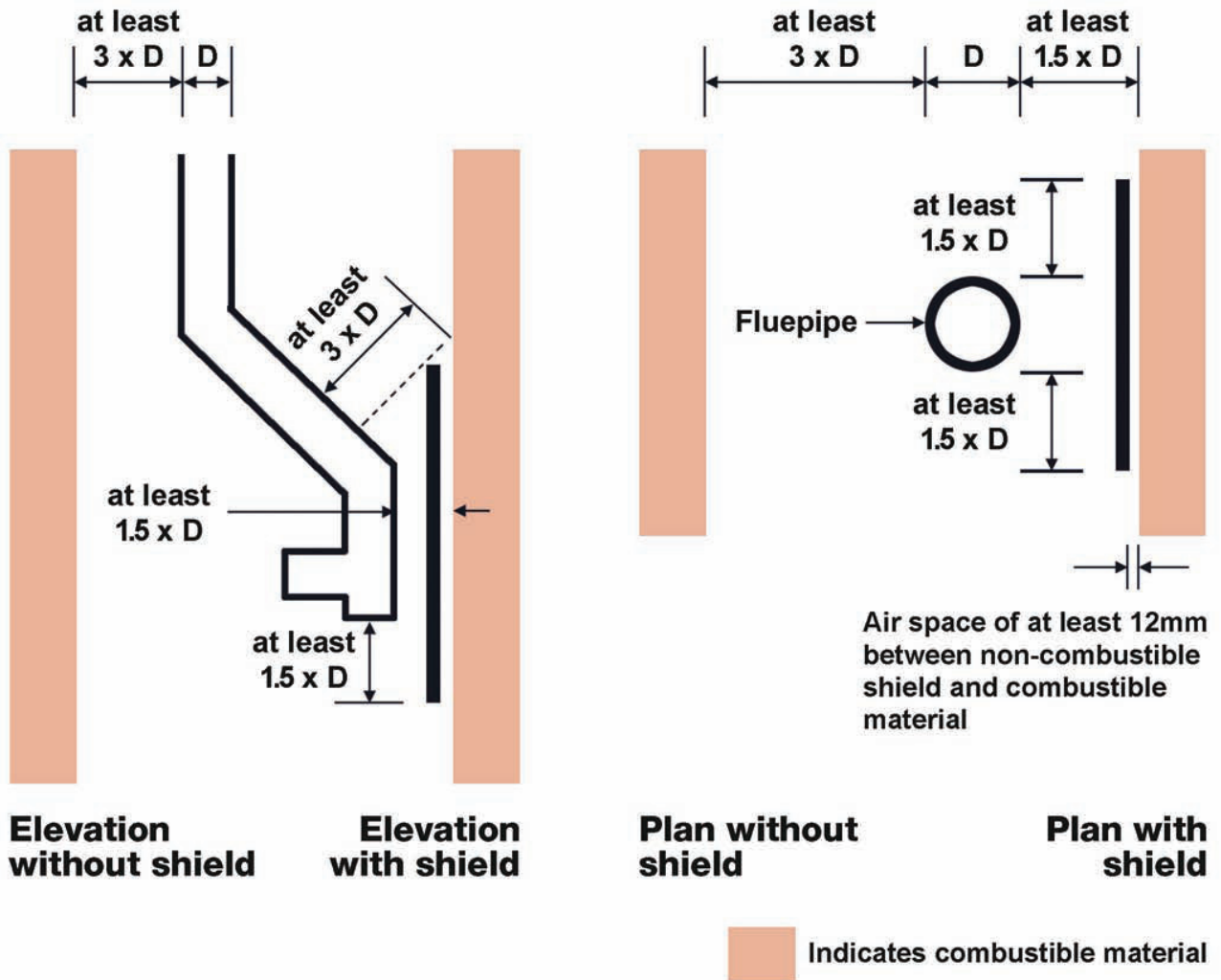
**Table 2 Size of flues in chimneys**

Installation (1)	Minimum flue size
Fireplace with an opening of up to 500mm x 550mm	200mm diameter or rectangular/square flues having the same cross-sectional area and a minimum dimension not less than 175mm
Fireplace with an opening in excess of 500mm x 550mm or a fireplace exposed on two or more sides	See paragraph 2.7. If rectangular/square flues are used, the minimum dimension should be not less than 200mm
Closed appliance of up to 20kW rated output which: a) burns smokeless or low-volatiles fuel (2) or b) is an appliance which meets the requirements of the Clean Air Act when burning an appropriate bituminous coal (3) or c) is an appliance which meets the requirements of the Clean Air Act when burning wood (3)	125mm diameter or rectangular/square flues having the same cross-sectional area and a minimum dimension not less than 100mm for straight flues or 125mm for flues with bends or offsets
Pellet burner or pellet boiler which meets the requirements of the Clean Air Act (3)	125mm diameter This may be reduced to no less than 100mm when permitted by the appliance manufacturer and supported by calculation according to BS EN 13384-1:2002. This calculation can be applied to an individual installation or manufacturers can provide precalculated designs.
Other closed appliance of up to 30kW rated output burning any fuel	150mm diameter or rectangular/square flues having the same cross-sectional area and a minimum dimension not less than 125mm
Closed appliance of above 30kW and up to 50kW rated output burning any fuel	175mm diameter or rectangular/square flues having the same cross-sectional area and a minimum dimension not less than 150mm

**Notes:**

1. Closed appliances include cookers, stoves, room heaters and boilers.
2. Fuels such as bituminous coal, untreated wood or compressed paper are not smokeless or low-volatiles fuels.
3. These appliances are known as 'exempted fireplaces'.

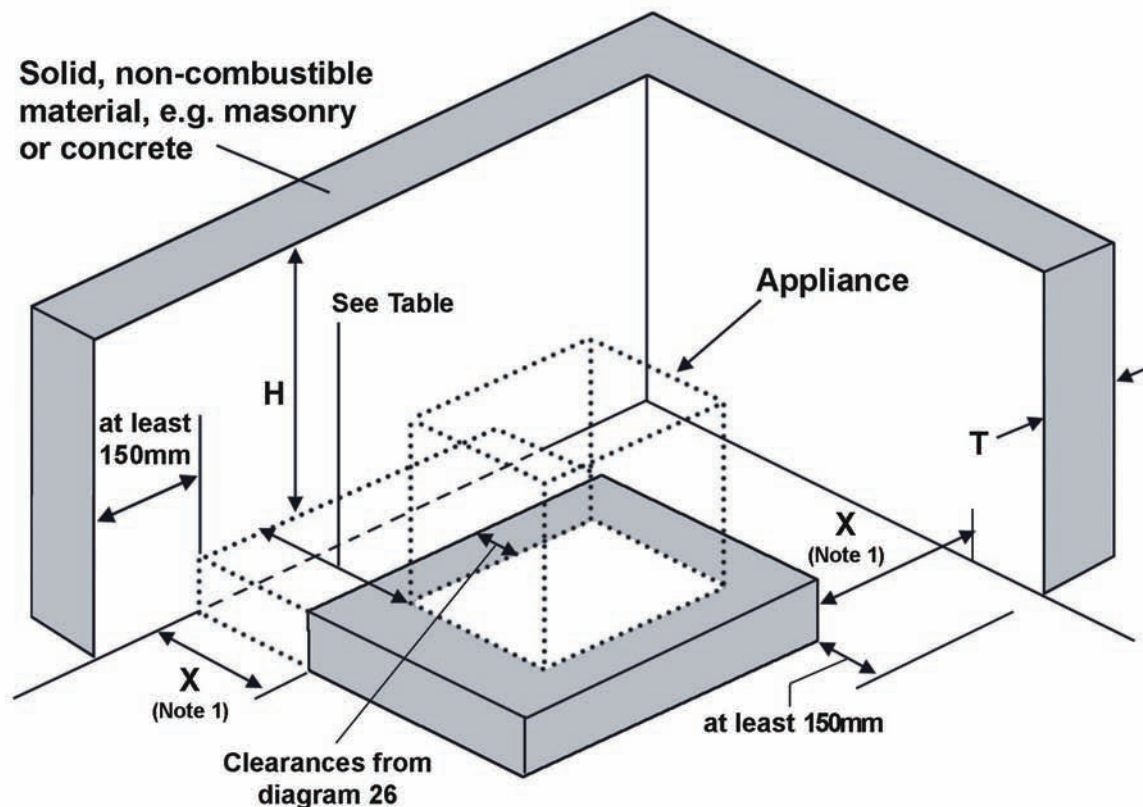
Diagram 19 Protecting combustible material from uninsulated fluepipes for solid fuel appliances



Shields should either:

- a) extend beyond the fluepipe by at least  $1.5 \times D$ ; or
- b) make any path between fluepipes and combustible material at

Diagram 30 Wall adjacent to hearths



Location of hearth or appliance	Solid, non-combustible material	
	Thickness (T)	Height (H)
Where the hearth abuts a wall and the appliance is not more than 50mm from the wall	200mm	At least 300mm above the appliance and 1.2m above the hearth
Where the hearth abuts a wall and the appliance is more than 50mm but not more than 300mm from the wall	75mm	At least 300mm above the appliance and 1.2m above the hearth
Where the hearth does not abut a wall and is no more than 150mm from the wall (see <b>Note 1</b> )	75mm	At least 1.2m above the hearth

**Note 1:** There is no requirement for protection of the wall where X is more than 150mm.