COMBUSTION APPLIANCE INSTALLATIONS AND STORAGE OF LIQUID AND GASEOUS FUELS
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ASTERISKS
Throughout the Technical Standards an asterisk against a standard denotes that a provision deemed to satisfy the standard or some aspect of the standard is specified at the end of the relevant Part.

ITALICS
Throughout the Technical Standards a term in italics is a defined term. The definition is listed in Part A. General.
Introduction

1. The intention of this Part is to ensure that combustion appliance installations, liquefied petroleum gas tanks and fuel oil storage tanks are properly constructed and safely installed.

2. The requirements do not apply to liquefied petroleum gas storage tanks with a capacity not more than 150 litres water equivalent as these have to satisfy the Health and Safety Executive requirements. Nor do they apply to oil storage containers less than 90 litres.

3. Measures must be taken to ensure that -
   
a. combustion appliance installations are safe and are of an acceptable standard;
   
b. the installation does not create a fire risk;
   
c. sufficient air for combustion and appliance cooling where necessary, is available;
   
d. the products of combustion are conveyed safely to the outside air; and
   
e. chimneys, flue-pipes and hearths are constructed of materials suitable for their purpose.

4. For large combustion appliance installations generalised standards are given. Such installations will be dealt with by specialists, usually with reference to British Standards or other recognised codes, to meet Regulation 14.

5. For small combustion appliance installations the standards cover in detail all the areas of concern listed in paragraph 3. However, the requirements are intended to reduce risk and do not attempt to cover such matters as the efficient functioning of flues, which may depend on pressure zones peculiar to a location and building. The appropriate British Standard or other recognised code may have to be consulted.

6. The measures included in this Part are intended to address concerns about the risk from flue gases, that may contain carbon monoxide, escaping into the building. As buildings become more airtight and there is less fortuitous or adventitious ventilation, care should be taken to ensure there is sufficient air for combustion, the flue is functioning properly and there is no conflict with the operation of any air extract fan(s).

7. The Gas Safety (Installation and Use) Regulations, enforced by the Health and Safety Executive, apply to all gas installations covered by this Part. Part F includes requirements with regard to such installations, but avoids duplication of information contained in the HSE regulations.

8. There are other requirements that will have to be taken into account in certain cases. Part D (Structural Fire Precautions) for example, has requirements for large combustion appliance installations, other than kitchen appliances, to be located in a place of special fire risk. Part K (Ventilation of buildings) has requirements relating to the provision of air for human occupation. These requirements are in addition to, and must be kept separate from, any air supply required by this Part. Part K also has requirements relating to a flue in an open-flued combustion appliance being used as a passive stack ventilation system.

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Regulations 14 & 15

Combustion appliance installations

14. Every fixed combustion appliance installation incorporating an appliance designed to burn solid fuel (namely, fuel in solid form including wood and peat) or gaseous or liquid fuel shall be so constructed and installed that -

(a) it operates safely;

(b) its operation does not cause damage by heat or fire to the building in which it is installed;

(c) the products of combustion do not cause a risk to health; and

(d) it receives sufficient air for its safe operation.

Storage of liquid and gaseous fuels

15. (1.) Every oil storage installation with a tank capacity more than 90 litres, for the storage of fuel oil used principally to serve a combustion appliance providing space or water heating, or cooking facilities, shall be so constructed and installed as to minimise the risk of -

(a) fire spreading to the tank; and

(b) the contents of the tank contaminating any water supply, watercourse, drain or sewer.

(2.) Every liquefied petroleum gas storage installation with a container capacity more than 150 litres (water equivalent), for the storage of liquified petroleum gas used principally to serve a combustion appliance providing space or water heating, or cooking facilities, shall be so constructed and installed as to minimise the risk of -

(a) fire spreading to the container; and

(b) the contents of the container forming explosive gas pockets in the vicinity of any liquefied petroleum gas storage container.

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The standards

F1 Application of Part F

F1.1 This Part sets out the required standards for Regulations 14 and 15.

F1.2 The standards apply to all buildings in respect of their -

a. combustion appliance installations; and

b. oil storage systems where the tank capacity is more than 90 litres; and

c. liquefied petroleum gas storage installations where the tank or cylinder capacity is more than 150 litres water equivalent.

F2 Large combustion appliance installations

F2.1 A large combustion appliance installation (solid fuel with an output rating more than 50 kW and oil-fired and gas-fired, with a net input rating more than 70 kW) must be suitably constructed and installed so that -

a. it operates safely; and

b. its operation does not cause damage by heat or fire to the building in which it is installed; and

c. the products of combustion do not cause a risk to health; and

d. it receives sufficient air for its safe operation; and

e. any associated chimney or flue-pipe will prevent, as far as is reasonably practicable, the escape of smoke, grit, dust or gases into any building.

F3 General standards for small combustion appliance installations

INSTALLATIONS

F3.1 A small combustion appliance installation (solid fuel with an output rating not more than 50 kW and oil-fired and gas-fired, with a net input rating not more than 70 kW) must be suitably constructed and installed so that it operates safely.

F3.2 Where a combustion appliance installation is intended to operate with more than one type of fuel, each component must be constructed and installed to meet the most onerous requirement for the relevant fuels.
F3.3 – F3.9

REMOVAL OF PRODUCTS OF COMBUSTION

F3.3 A combustion appliance must be connected to a chimney or flue-pipe that discharges to the external air, except -

where the combustion appliance is designed to operate without discharging the products of combustion to the outside air.

F3.4* A flue terminal not more than 2m above ground level, or where people are likely to come into contact with it, must be -

a. designed so as to resist the entry of any matter that may restrict the flue; and

b. protected by a suitable terminal guard.

PROTECTION FROM PRODUCTS OF COMBUSTION

F3.5* A chimney must be -

a. suitably constructed of a masonry material with a flue liner; or

b. suitably constructed of prefabricated block components; or

c. a factory-made chimney.

F3.6* A factory-made chimney must be suitable for its purpose.

F3.7* A factory-made chimney must be suitably installed and must not -

a. pass through a compartment wall, compartment floor, separating wall or separating floor, except -

where the chimney, or a non-combustible casing totally enclosing the chimney, is constructed in such a way that, in the event of fire the level of fire safety performance required of the compartment wall, compartment floor, separating wall or separating floor is maintained (see D1.3);

b. pass through any storage space, cupboard or roof space, except -

where the chimney is suitably shielded by a removable casing;

c. incorporate joints within any wall, floor, ceiling or roof.

F3.8* A flue system must be essentially uniform, suitably gas-tight, free from obstructions and resistant to corrosion from combustion products.

RELATIONSHIP TO COMBUSTIBLE MATERIALS

F3.9* A factory-made chimney must be placed at a safe distance from any combustible material.
EXTRACT FANS

**F3.10** An extract fan must not be fitted in the same *room* as an open-*flued* solid fuel appliance.

**F3.11** Where an open-*flued* combustion appliance draws air for combustion or cooling from a *room* or space in which a fan is fitted, the appliance and associated *flue* must be able to operate safely.

IDENTIFICATION OF COMBUSTION APPLIANCE INSTALLATIONS

**F3.12** Every combustion appliance installation must have a suitably positioned label of durable material, indelibly marked to indicate its limitations of use.

INCINERATORS

**F3.13** An incinerator, together with any associated *chimney*, *flue-pipe* and hearth must be *constructed* and installed, irrespective of the type of fuel used, in accordance with the requirements of F4.2 to F4.20 (solid fuel).

**F4** Solid fuel combustion appliance installations with an output rating not more than 50 kW

INSTALLATIONS

**F4.1** A solid fuel (namely, fuel in solid form including wood and peat) appliance with an output rating not more than 50 kW, and any associated *chimney*, *flue-pipe* and hearth, must be *constructed* and installed in accordance with the requirements of F3.1 to F3.12 (general) and F4.2 to F4.21.

APPLIANCES

**F4.2** A solid fuel appliance must be suitable for its purpose and for the type of fuel that it will burn.

SUPPLY OF AIR FOR COMBUSTION

**F4.3** A solid fuel appliance installed in a *room* or space must have an adequate supply of air for combustion by way of permanent ventilation either direct to the open air or to an adjoining space (including a sub-floor space) that is itself permanently ventilated direct to the open air. (See also F3.10 and F3.11)

REMOVAL OF PRODUCTS OF COMBUSTION

**F4.4** Each solid fuel appliance must be connected to a separate *flue*.

**F4.5** The area of a *flue* must be suitable for the type of solid fuel appliance served.

**F4.6** The angle of any change of direction in a *flue* must not be more than 45° from the vertical, except -

where a back-entry appliance discharges into a flue, the horizontal length of *flue-pipe* at the point of discharge must not exceed 150mm.
Diagram to F4.6: *Flue-pipe* connection to back-entry solid fuel appliance

**F4.6 – F4.12**

**Amdt: December 1999**

**F4.7** A *flue* must have no intermediate openings, except:

- a. a draught stabiliser or draught diverter that is in the same *room* or space as the solid fuel appliance being served;

- b. an explosion door;

- c. an opening for inspection or cleaning that is fitted with a *non-combustible*, rigid, gas-tight cover.

**F4.8** Suitable access must be provided for inspection and cleaning of a *flue* and appliance.

**F4.9** A *flue-pipe* must not be fixed externally to a *building*.

**F4.10** The outlet from a *flue* must be positioned at a safe distance from any obstructions or flammable or vulnerable materials.

**PROTECTION FROM PRODUCTS OF COMBUSTION**

**F4.11** A *flue* in a *chimney* must -

- a. be separated from every other *flue*; and

- b. extend from the solid fuel appliance to the top of the *chimney*; and

- c. be surrounded by *non-combustible* material that is capable of withstanding the effects of a *chimney* fire, without any structural change that would impair the stability or performance of the *chimney*, except -

  - the *chimney* may include damp proof course(s) of combustible material.

**F4.12** A *flue-pipe* must be *non-combustible* and of suitable materials and *construction* capable of withstanding the effects of a *chimney* fire, without any structural change that would impair the stability or performance of the *flue-pipe*. 
**F4.13** A *flue-pipe* may only be used to connect a solid fuel appliance to a *chimney* and must not pass through -

a. a *roof space*;

b. an internal wall, except -

where the *flue-pipe* discharges into a *flue* in a *chimney* formed wholly or partly by a *non-combustible* wall;

c. a ceiling or floor, except -

where the ceiling or floor is *non-combustible* and the *flue-pipe* discharges into a *chimney* immediately above.

**RELATIONSHIP TO COMBUSTIBLE MATERIALS**

**F4.14** A *flue-pipe* must be separated from combustible material by a distance equivalent to at least 3 times the diameter of the *flue-pipe*, except -

a. the distance may be reduced to 1.5 times the diameter of the *flue-pipe* where there is, between the *flue-pipe* and the combustible material, a *non-combustible* shield that -

i. extends a distance equivalent to at least 1.5 times the diameter of the *flue-pipe* from any part of the *flue-pipe*, and

ii. is separated by an air space of at least 12mm from the combustible material; or

b. the distance may be reduced to 0.75 times the diameter of the *flue-pipe* where the *flue-pipe* is totally enclosed in *non-combustible* material at least 12mm thick and having a thermal conductivity of not more than 0.065 W/mK.

**Diagrams to F4.14a: Flue-pipe separation from combustible material**

- **Section without shield**

- **Section with shield**

- **Plan without shield**

- **Plan with shield**

*Amdt: December 1999*
F4.15 All combustible materials must be at least 200mm from the surface surrounding a flue in a chimney or the inside surface of a fireplace recess, except -

- damp proof course(s) firmly bedded in mortar;
- small combustible fixings located at least 150mm from the surface surrounding the flue or the inside surface of the fireplace recess;
- combustible structural material, that may be located at least 40mm from the outer face of a masonry chimney;
- flooring, strapping, sarking or similar non-structural combustible material located on the outer face of a masonry chimney;
- under a constructional hearth as described in F4.20;
- where the flue is in a factory-made chimney.

F4.16 Any metal fastening in contact with combustible material must be at least 50mm from the surface surrounding a flue or the inside surface of a fireplace recess.

Diagram to F4.15 and F4.16: Minimum separation distances for combustible material relative to a masonry chimney

F4.17* A solid fuel appliance must be provided with a solid, non-combustible hearth of suitable dimensions.

F4.18* A solid fuel appliance must be positioned on a hearth in such a way as to minimise the risk of ignition of any part of a floor by direct radiation, conduction or falling embers.

F4.19* Any part of a building, other than a floor, that abuts or is adjacent to a hearth, must be constructed in such a way as to minimise the risk of ignition by direct radiation or conduction from a solid fuel appliance located upon the hearth.
**F4.20** All combustible material under a constructional hearth must be separated from the hearth by an air space of at least 50mm, except:

a. where the combustible material is separated from the top surface of the hearth by solid, *non-combustible* material of at least 250mm; or

b. where the combustible material supports the front and side edges of the hearth.

**Diagram to F4.20: Combustible materials under a hearth**

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**F4.21** A fireplace recess must be suitably *constructed* of solid, *non-combustible* material.

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**F5.1** An oil-fired appliance with a *net input rating* not more than 70 kW, and any associated chimney, flue-pipe and hearth, must be *constructed* and installed in accordance with the requirements of F3.1 to F3.12 (general) and F5.2 to F5.13.

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**APPLIANCES**

**F5.2** An oil-fired appliance must be suitable for its purpose and the class of oil that it will burn.

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**SUPPLY OF AIR FOR COMBUSTION**

**F5.3** An oil-fired appliance installed in a *room* or space must have an adequate supply of air for combustion by way of permanent ventilation either direct to the open air or to an adjoining space (including a sub-floor space) which is itself permanently ventilated direct to the open air, (see also F3.11) except:

where the appliance is a *room-sealed appliance.*
### SUPPLY OF AIR FOR COOLING

**F5.4** An oil-fired appliance installed in an *appliance compartment* must have an adequate supply of air for cooling by way of permanent ventilation, in addition to air for combustion, either direct to the open air or to an adjoining space (including a sub-floor space).

### REMOVAL OF PRODUCTS OF COMBUSTION

**F5.5** Each oil-fired appliance must be connected to a separate *flue*, except -

where the appliance has a pressure jet burner and is connected into a suitable shared *flue*.

**F5.6** An oil-fired appliance installed in a bathroom, shower-room or *room* intended for use as sleeping accommodation must be a *room-sealed appliance*.

**F5.7** A *chimney* or *flue-pipe* serving an oil-fired appliance must be suitable for use with the type of appliance served.

**F5.8** A *chimney* or *flue-pipe* serving an oil-fired appliance must be *constructed* and installed in accordance with the requirements of F4.7 to F4.9, and F4.11 to F4.16 (solid fuel), except -

a. where the *flue* gas temperature will be not more than 250º C under normal working conditions (as determined by an appropriate test procedure), the *chimney* or *flue-pipe* may be in accordance with the requirements of F6.8, F6.9 and F6.11 to F6.15 (gas); and

b. where the oil-fired appliance burns Class D fuel, the inner surfaces of the *chimney* or *flue-pipe* must not be manufactured from aluminium.

**F5.9** The angle of any change of direction in a *flue* must not be more than 45º from the vertical, except -

where the *flue* serves an appliance employing a pressure jet burner.

**F5.10** The outlet from a *flue* must be situated externally at a safe distance from any opening, obstruction or combustible material.

### RELATIONSHIP TO COMBUSTIBLE MATERIALS

**F5.11** An oil-fired appliance must stand on a hearth *constructed* and installed in accordance with the requirements of F4.17 and F4.20 (solid fuel), except -

a. where the appliance will not cause the temperature of the floor to be more than 100º C under normal working conditions (as determined by an appropriate test procedure), the appliance may stand on, or incorporate, a rigid, *non-combustible*, non-absorbent, imperforate base, of at least the plan dimensions of the appliance; or

b. where the appliance is designed not to stand on a hearth it must incorporate a rigid, non-combustible, non-absorbent, imperforate base of at least the plan dimensions of the appliance.

**F5.12** Where an oil-fired appliance is installed on a hearth it must be positioned on the hearth in such a way as to minimise the risk of ignition of any part of the floor by direct radiation or conduction.

*Ammd: December 1999*
F5.13* An oil-fired appliance must be separated from any combustible material, where the temperature of the back, sides or top of the appliance will be more than 100° C under normal working conditions (as determined by an appropriate test procedure) by -

a. a shield of non-combustible material at least 25mm thick; or

b. an air space of at least 75mm.

Diagram to F5.13: Appliance separation from combustible material

F6 Gas-fired combustion appliance installations with a net input rating not more than 70 kW

INSTALLATIONS

F6.1 A gas-fired appliance with a net input rating not more than 70 kW, and any associated chimney, flue-pipe and hearth, must be constructed and installed in accordance with the requirements of F3.1 to F3.12 (general) and F6.2 to F6.17.

APPLIANCES

F6.2* A gas-fired appliance must be suitable for its intended purpose.

SUPPLY OF AIR FOR COMBUSTION

F6.3* A gas-fired appliance installed in a room or space must have an adequate supply of air for combustion. (See also F3.11)

SUPPLY OF AIR FOR COOLING

F6.4* A gas-fired appliance installed in an appliance compartment must have an adequate supply of air for cooling.
REMOVAL OF PRODUCTS OF COMBUSTION

F6.5* Each gas-fired appliance that requires a flue, must connect into a separate flue, except:

where it connects into a suitable shared flue.

F6.6* A chimney or flue-pipe serving a gas-fired appliance must be suitable for use with the type of appliance served.

F6.7* The area of a flue must be suitable for the type of gas-fired appliance(s) served.

F6.8 A flue must have no intermediate openings, except:

a. a draught stabiliser, draught diverter or relief air opening, that is in the same room or space as the gas-fired appliance being served;

b. an opening for inspection or cleaning, that is fitted with a non-combustible, rigid, gas-tight cover.

F6.9* A flue-pipe must not be fixed externally to a building, except:

where the flue-pipe is a double-walled flue-pipe suitable for external use.

F6.10* The outlet from a flue must be situated externally at a safe distance from any opening, obstruction or combustible material.

PROTECTION FROM PRODUCTS OF COMBUSTION

F6.11* A flue-pipe must be of suitable material.

F6.12 A flue-pipe must not pass through a compartment wall, compartment floor, separating wall or separating floor, except:

where the chimney is totally enclosed within a non-combustible casing in such a way that, in the event of fire, the level of fire safety performance required of the compartment wall, compartment floor, separating wall or separating floor is maintained. (see D1.3)

F6.13* A flue-pipe must be adequately protected, to prevent damage to the pipe or danger to people, where it passes through a room or accessible space other than that containing the gas-fired appliance that it serves.

RELATIONSHIP TO COMBUSTIBLE MATERIALS

F6.14 A flue-pipe must not pass through a wall, floor, roof, ceiling or partition constructed of combustible material, except:

a. where the temperature of the flue gases in the flue-pipe will be not more than 100° C; or

b. where the flue-pipe is enclosed in a sleeve of non-combustible material and separated from the sleeve by an air space of at least 25mm; or

c. where flue-pipe is a double-walled flue-pipe.

Amdt: September 2001
Diagrams to F6.14b and c: *Flue-pipes* passing through combustible material

![Diagram showing single-walled and double-walled flue-pipes with sections through them, indicating at least 25 mm clearance from combustible material]

**F6.15** A *flue-pipe* must be placed -

- **a.** where it is a single-walled *flue-pipe*, with its outer surface at least 25mm from any combustible material;

- **b.** where it is a double-walled *flue-pipe*, with the inner surface of its inner wall at least 25mm from any combustible material,

  **except** -

  where the temperature of the *flue* gases will be not more than 100° C.

**Diagram to F6.15: Flue-pipes in relationship to combustible material**

![Diagram showing single-walled and double-walled flue-pipes with sections through them, indicating at least 25 mm clearance from combustible material]

**F6.16** A gas-fired appliance must be provided with a suitable hearth, **except** -

- **a.** where every part of any flame or incandescent material in the appliance is at least 225mm above the floor;

- **b.** where the appliance is designed not to stand on a hearth.

**F6.17** A gas-fired appliance and any associated draught diverter must be placed at a safe distance from any combustible material.
OIL STORAGE

F7.1+ An oil storage tank with a capacity more than 90 litres, including any pipework connecting the tank to a combustion appliance providing space or water heating, or cooking facilities must be suitably constructed and installed.

F7.2+ An oil storage tank with a capacity more than 90 litres must be -
   a. adequately separated from any building or part of a building in the same occupation; and
   b. adequately separated from any boundary; and
   c. provided, where necessary, with an adequate catchpit to retain its contents in the event of leakage.

F7.3+ A fire valve must be suitably installed in any pipework connecting an oil storage tank to the combustion appliance that it serves.

LIQUEFIED PETROLEUM GAS STORAGE MORE THAN 9000 LITRES CAPACITY

F7.4+ A liquefied petroleum gas storage tank with a capacity more than 9000 litres (or tanks of a total capacity more than 27 500 litres) (water equivalent) and any associated pipework connecting the system to a combustion appliance providing space or water heating, or cooking facilities, must be suitably constructed and installed as to minimise the risk of fire spreading to the tank and the contents of the tank forming explosive gas pockets in the vicinity of any liquefied petroleum gas storage container.

LIQUEFIED PETROLEUM GAS STORAGE NOT MORE THAN 9000 LITRES CAPACITY

F7.5+ A liquefied petroleum gas storage container, or containers, with a capacity more than 150 litres but not more than 27 500 litres (water equivalent) and any associated pipework connecting the system to a combustion appliance providing space or water heating, or cooking facilities, must be -
   a. suitably constructed and installed; and
   b. where the container is a tank, adequately separated from -
      i. a building, boundary, or fixed source of ignition, and
      ii. any other such tank; and
   c. where a group of tanks are sited together, limited in the number of such tanks.
Provisions deemed to satisfy the standards

LARGE COMBUSTION APPLIANCE INSTALLATIONS

(F2.1) The requirements of F2.1 will be met where the large combustion appliance installation is constructed and installed in accordance with the guidance contained in the Chartered Institution of Building Service Engineers (CIBSE) Design Guide and the Practice Standards produced by the British Standards Institution (BSI) and the Institution of Gas Engineers (IGE).

GENERAL REQUIREMENTS FOR SMALL COMBUSTION APPLIANCE INSTALLATIONS

INSTALLATIONS

(F3.1) The requirements of F3.1 will be met where -

a. the solid fuel appliance installation is in accordance with BS8303: Parts 1 to 3: 1994;

b. the oil-fired appliance installation is in accordance with BS5410: Part 1: 1997 or BS5410: Part 2: 1978 as appropriate;

c. the gas-fired appliance installation is in accordance with -

i. the requirements of the Gas Appliances (Safety) Regulations 1995, and

ii. the Gas Safety (Installations & Use) Regulations 1998.

REMOVAL OF PRODUCTS OF COMBUSTION

(F3.4) The requirements of F3.4b will be met by a terminal guard that will prevent a sphere more than 16mm from passing through and has no sharp edges.

PROTECTION FROM PRODUCTS OF COMBUSTION

(F3.5) The requirements of F3.5a will be met where the chimney is constructed and installed in accordance with BS6461: Part 1: 1984.

The requirements of F3.5b will be met where the chimney is constructed and installed in accordance with -

a. for a precast concrete flue-block chimney, Clause 5.6 of BS6461: Part 1: 1984;

b. for a precast concrete flue-block chimney serving a gas-fired appliance, BS1289: Part 1: 1986;

**F3.6 – F3.9**

**F3.6** The requirements of F3.6 will be met where the factory-made chimney is manufactured in accordance with -

a. BS4543: Part 2: 1990;

b. where it serves a decorative *fuel-effect gas appliance*, BS4543: Parts 2 or 3: 1990;

c. where it serves an oil-fired appliance producing a *flue* gas temperature not more than 450° C or any other gas-fired appliance, BS4543: Part 3: 1990.

**F3.7** The requirements of F3.7 will be met where the factory-made chimney is installed in accordance with BS7566: Parts 1 to 4: 1992.

The requirements of F3.7b will be met where the casing is located at a distance Xmm (as declared by the chimney manufacturer when testing to the procedures specified in Section 3 of BS4543: Part 1: 1990) from any part of a factory-made chimney; and

a. where the chimney passes through the storage space or cupboard, by an imperforate casing;

b. where the chimney passes through the roof space, by a casing of rigid mesh that will prevent a sphere more than 8mm diameter from passing through.

**F3.8** The requirements of F3.8 will be met where the *flue* system is installed in accordance with -

a. for masonry and *flue* block chimneys, BS6461: Part 1: 1984;

b. for factory-made chimneys, BS7566: Part 4: 1992;

c. where serving an oil-fired appliance, BS5410 Part 1: 1997;


**RELATIONSHIP TO COMBUSTIBLE MATERIAL**

**F3.9** The requirements of F3.9 will be met by maintaining a distance Xmm (as declared by the chimney manufacturer when testing to the procedures specified in Section 3 of BS4543: Part 1: 1990) between the outer face of a factory-made chimney and combustible material.

**Diagram to (F3.9): Relationship of a factory-made chimney to combustible materials**

![Diagram of factory-made chimney relationship to combustible material](attachment:image.png)
EXTRACT FANS

(F3.11) The requirements of F3.11 will be met, in a building containing an open-flued combustion appliance and a mechanical extract fan(s), by testing to the procedures set out in -

a. for a solid fuel appliance, BRE Information Paper IP 7/94;

b. for an oil-fired appliance, Clause 4.4.7 of BS5410: Part 1: 1997 and OFTEC Technical Information Note TI/112;

c. for a gas-fired appliance, Clause 4.3.2.3 of BS5440: Part 1: 2000.

IDENTIFICATION OF COMBUSTION APPLIANCE INSTALLATIONS

(F3.12) The requirements of F3.12 will be met where the label is provided in accordance with the diagram to this specification -

Diagram to (F3.12): Identification of combustion appliance installation

<table>
<thead>
<tr>
<th>IMPORTANT SAFETY INFORMATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>This label must not be removed or covered</td>
<td></td>
</tr>
</tbody>
</table>

| Property address | 20 Main Street New Town |
| The hearth and chimney liner installed in the... | name of room |
| are suitable for... | dfc gas fire |
| Suitable for condensing mode | yes/no |
| Chimney liner | xx mm diameter |
| Installed on | date |

The label should be fixed in a secure position, such as adjacent to the gas or electricity consumer unit, the water supply stopcock or next to the chimney or hearth described.

SOLID FUEL COMBUSTION APPLIANCE INSTALLATIONS

APPLIANCES

(F4.2) The requirements of F4.2 will be met where the solid fuel appliance is included in ‘The official guide to approved solid fuel products and services’, published by HETAS Ltd. (Heating Equipment Testing and Approval Scheme).

SUPPLY OF AIR FOR COMBUSTION

(F4.3) The requirements of F4.3 will be met where air is provided in accordance with the table to this specification -

Amdt: September 2001
### Table to (F4.3): Supply of air for combustion

<table>
<thead>
<tr>
<th>Type of appliance</th>
<th>Minimum ventilation opening sizes [Note 2]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open appliance without a throat [Note 1]</td>
<td>A permanent air entry opening or openings with a total free area of 50% of the cross-sectional area of the flue.</td>
</tr>
<tr>
<td>Open appliance with a throat [Note 1]</td>
<td>a permanent air entry opening or openings with a total free area of 50% of the throat opening area.</td>
</tr>
<tr>
<td>Any other solid fuel appliance</td>
<td>a permanent air entry opening or openings with a total free area of 550mm² for each kW of combustion appliance rated output more than 5 kW. (A combustion appliance with an output rating of not more than 5 kW has no minimum requirement, unless stated by the appliance manufacturer)</td>
</tr>
</tbody>
</table>

Notes:

1. In the table -
   THROAT means the contracted part of the *chimney flue* lying between the fireplace opening and the main *chimney flue*.
2. Where a draught stabiliser is fitted to a solid fuel appliance, or to a *chimney* or *flue-pipe* in the same room as a solid fuel appliance, additional ventilation opening must be provided with a free area of at least 300mm²/kW of solid fuel appliance rated output.
3. Nominal fire size is related to the free opening width at the front of the fireplace opening.

### REMOVAL OF PRODUCTS OF COMBUSTION

**F4.5** The requirements of F4.5 will be met where the minimum area of the *flue* is the greater of either -

- a. the outlet to the solid fuel appliance; or
- b. that set out in the table and diagram to this specification -
### Table to (F4.5): Minimum area of flues

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Position</th>
<th>Minimum area [Note 2]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open fire</td>
<td>a. within a fireplace recess capable of accepting an open fire more than 500mm x 550mm; or b. free standing</td>
<td>a. 15% of the total face area of the fireplace opening(s); or b. in accordance with the Diagram to (F4.5). [Note 3]</td>
</tr>
<tr>
<td>Open fire</td>
<td>within a fireplace recess capable of accepting an open fire of not more than 500mm x 550mm</td>
<td>200mm diameter or square section of equivalent area.</td>
</tr>
<tr>
<td>Closed appliance with output capacity more than 30 kW but not more than 50 kW</td>
<td>free standing</td>
<td>175mm diameter or square section of equivalent area.</td>
</tr>
<tr>
<td>Closed appliance with output capacity not more than 30 kW</td>
<td>free standing</td>
<td>150mm diameter or square section of equivalent area.</td>
</tr>
<tr>
<td>Closed appliance burning smokeless fuel with output capacity not more than 20 kW</td>
<td>free standing</td>
<td>125mm diameter or square section of equivalent area.</td>
</tr>
</tbody>
</table>

### Notes:
1. In the table -
   SMOKLESS FUEL means solid mineral fuel that produces combustion products containing particulate matter that does not exceed a specified low amount.
2. Any chimney pot or terminal must maintain the same cross-sectional area as the flue.
3. Diagram 1 must only be used for the range of sizes shown within the shaded area.
4. Fire size is related to the free opening area at the front of the fireplace opening.
Diagram 1 to (F4.5): **Flue** sizing for larger solid fuel open fires

**Chimney height** in metres (measured from the highest point of fireplace opening)

![Diagram](image)

**Flue area in square metres**

**Recommended flue diameter in mm**

Diagram 2 to (F4.5): **Fireplace opening areas**

Fireplace opening area = height (H) x total length (L)

![Diagram](image)
(F4.8) The requirements of F4.8 will be met by providing access for cleaning in accordance with Clauses 5.4, 9.5 and 10 of BS8303: Part 1: 1994.

(F4.10) The requirements of F4.10 will be met where the outlet is positioned in accordance with the diagrams and table to this specification -

**Diagram 1 to (F4.10): Flue terminal positions**

![Diagram 1 to (F4.10)](image)

**Table to diagrams (F4.10): Minimum dimension to flue outlets**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2 300mm horizontally clear of the weather skin.</td>
</tr>
<tr>
<td>B</td>
<td>1000mm provided A is satisfied; or 600mm where above the ridge, except -</td>
</tr>
<tr>
<td>where the roof is thatch or shingles, as Diagram 2 to (F4.10).</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1000mm above the top of any flat roof; and 1000mm above any openable rooflight, dormer or ventilator, etc. within 2 300mm.</td>
</tr>
<tr>
<td>D/E</td>
<td>where D is not more than 2 300mm, E must be at least 600mm.</td>
</tr>
</tbody>
</table>

**Notes:**
1. Horizontal dimensions are to the surface surrounding the flue.
2. Vertical dimensions are to the top of the chimney-stack.
(F4.10) – (4.12)

Diagram 2 to (F4.10): *Flue* terminal outlets relative to easily ignited roof coverings

<table>
<thead>
<tr>
<th>Location of <em>flue</em> terminal outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Flue</em> outlets must terminate outwith zones A &amp; B</td>
</tr>
<tr>
<td>Zone A at least 1800 mm vertically above the weather skin; and at least 600 mm above the ridge.</td>
</tr>
<tr>
<td>Zone B at least 1800 mm vertically above the weather skin; and at least 2300 mm horizontally from the weather skin.</td>
</tr>
</tbody>
</table>

PROTECTION FROM PRODUCTS OF COMBUSTION

(F4.11) The requirements of F4.11c will be met where the *chimney* -

a. is *constructed* of concrete *chimney* blocks capable of withstanding a temperature of at least 1000º C and made of, or having inside walls made of, kiln burnt aggregate and high alumina cement jointed and pointed in cement mortar so that no joints, other than bedding joints, directly adjoin the *flue*; or

b. has purpose made *flue* linings in accordance with Clause 5.1.5 of BS6461: Part 1: 1984 and any space between the lining and the *chimney* wall filled with weak mortar; or

c. is a factory-made *chimney* meeting the requirements of BS4543: Part 2: 1990 and installed in accordance with BS7566: Parts 1 to 4: 1992; or

d. has a lining accepted for the purpose after testing of the *chimney* under the relevant conditions by a notified body.

(F4.12) The requirements of F4.12 will be met by a *flue-pipe* that is -

a. manufactured from -

i. cast-iron pipe to BS41: 1973 (1981), or

ii. mild steel at least 3mm thick to Section 1.1 of BS1449: Part 1: 1991, or

iii. vitreous enamelled steel to BS6999: 1989, or

iv. stainless steel numbers 1.4401, 1.4404 or 1.4406 at least 1mm thick to BS EN 10088-1: 1995; and

RELATIONSHIP TO COMBUSTIBLE MATERIALS

(F4.17) The requirements of F4.17 will be met by -

a. a constructional hearth at least 125mm thick and with plan dimensions in accordance with the diagrams to this specification; or

b. where the appliance will not cause the temperature of the top surface of the hearth on which it stands to be more than 100° C, a free-standing, solid, non-combustible hearth at least 12mm thick.

Diagrams to (F4.17a): Constructional hearth sizes

(F4.18) The requirements of F4.18 will be met where the appliance is positioned on a hearth in accordance with the diagrams to this specification -

Diagram 1 to (F4.18): Locating a solid fuel appliance on a hearth

Notes:
1. The 150mm does not apply where the appliance is located in a fireplace recess, nor does it apply where the back or sides of the hearth either abut or are carried into a solid, non-combustible wall complying with (F4.19b).
2. A solid fuel appliance may be located on a superimposed hearth provided the superimposed hearth is positioned partly or wholly on a constructional hearth in accordance with Diagram 2 to (F4.18).
Notes:
1. In this specification - SUPERIMPOSED HEARTH means a finish of solid, non-combustible material, usually decorative, at least 50mm thick and positioned on a constructional hearth.
2. The 150mm does not apply where the appliance is located in a fireplace recess, nor does it apply where the back or sides of the hearth either abut or are carried into a solid, non-combustible wall complying with (F4.19b).
3. At least 225mm for a closed appliance.
4. At least 300mm for an open appliance and for a closed appliance that may properly be used with its front open.
5. No part of the appliance shall project over any edge of the constructional hearth.
6. At least 150mm to combustible material measured horizontally.

(F4.19) The requirements of F4.19 will be met where -

a. the hearth is located in a fireplace recess in accordance with BS8303: Part 1: 1994; or

b. any part of the building, other than the floor, not more than 150mm from the hearth, is constructed of solid, non-combustible material in accordance with the diagram and table to this specification -

Diagram to (F4.19b): Solid fuel appliance or hearth adjacent to any part of a building

Amdt: December 1999
Table to diagram (F4.19b): Hearth and appliance adjacent to any part of a building

<table>
<thead>
<tr>
<th>Location of hearth or appliance</th>
<th>Thickness (T) of solid, non-combustible material</th>
<th>Height (H) of solid non-combustible material</th>
</tr>
</thead>
<tbody>
<tr>
<td>where the hearth abuts a wall and the appliance is not more than 50mm from the wall</td>
<td>200mm</td>
<td>at least 300mm above the appliance or 1.2 m above the hearth whichever is the greater.</td>
</tr>
<tr>
<td>where the hearth abuts a wall and the appliance is more than 50mm but not more than 300mm from the wall</td>
<td>75mm</td>
<td>at least 300mm above the appliance or 1.2 m above the hearth whichever is the greater.</td>
</tr>
<tr>
<td>where the hearth does not abut a wall and is not more than 150mm from the wall [Note 1]</td>
<td>75mm</td>
<td>at least 1.2 m above the hearth.</td>
</tr>
</tbody>
</table>

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

(F4.21) The requirements of F4.21 will be met by -

a. a fireplace recess, incorporating a constructional hearth, constructed in accordance with Clauses 7 and 8 of BS8303: Part 1: 1994, and to the minimum thickness shown in Figure 2 to BS8303: Part 3: 1994; or

b. a prefabricated appliance chamber of solid concrete components which -
   i. is connected to a chimney or flue-pipe, and
   ii. is supplied by the same manufacturer, with pre-made jointing arrangements, assembled on site using a cement specified for the purpose by the manufacturer, and
   iii. is of insulating concrete with a density of between 1 200 and 1 700 kg/m³, and
   iv. is installed on a constructional hearth, and
   v. has components of the minimum thickness shown in the table to this specification -

Table to (F4.21b): Thickness of solid fuel appliance chamber components

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>50</td>
</tr>
<tr>
<td>Sides</td>
<td>75</td>
</tr>
<tr>
<td>Back panel and top slab</td>
<td>100</td>
</tr>
<tr>
<td>Hood and bar lintels</td>
<td>100</td>
</tr>
</tbody>
</table>
APPLIANCES

(F5.2) The requirements of F5.2 will be met by an appliance that complies with the OFTEC Standard appropriate for the class of the appliance.

SUPPLY OF AIR FOR COMBUSTION

(F5.3) The requirements of F5.3 will be met where the oil-fired appliance is provided with an air supply in accordance with Section 4 of BS5410: Part 1: 1997.

SUPPLY OF AIR FOR COOLING

(F5.4) The requirements of F5.4 will be met where the oil-fired appliance, located in an appliance compartment, is provided with air for cooling in accordance with Clause 4.4.3 of BS5410: Part 1: 1997.

REMOVAL OF PRODUCTS OF COMBUSTION

(F5.7) The requirements of F5.7 will be met where the chimney or flue-pipe is constructed and installed in accordance with the requirements of BS5410: Part 1: 1997.

(F5.8) The requirements of F5.8 will be met where the flue gas temperature is measured in accordance with OFTEC Appliance Standard OFS A100 for boilers or OFS A101 for cookers.

(F5.10) The requirements of F5.10 will be met where the terminal is separated from openings, obstructions or combustible material by at least the distance shown in the diagrams and table to this specification -

Diagram 1 to (F5.10): Flue terminal positions for oil-fired appliances
### Table to diagram (F5.10): Flue terminal positions for oil-fired appliances

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum distance to terminal in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pressure Jet</td>
</tr>
<tr>
<td>A  Directly below an opening, air brick, opening window etc</td>
<td>600</td>
</tr>
<tr>
<td>B  Horizontally to an opening, air brick, opening window etc</td>
<td>600</td>
</tr>
<tr>
<td>C  Below a plastic/painted gutter, drainage pipe or eaves, with protection</td>
<td>75 [5]</td>
</tr>
<tr>
<td>D  Below a balcony or a plastic/painted gutter, drainage pipe or eaves</td>
<td>600</td>
</tr>
<tr>
<td>E  From vertical sanitary pipe work</td>
<td>300</td>
</tr>
<tr>
<td>F  From an internal or external corner</td>
<td>300</td>
</tr>
<tr>
<td>G  Above ground or balcony level</td>
<td>300</td>
</tr>
<tr>
<td>H  From a surface or boundary facing the terminal</td>
<td>600 [6]</td>
</tr>
<tr>
<td>J  From a terminal facing the terminal</td>
<td>1200</td>
</tr>
<tr>
<td>K  Vertically from a terminal on the same wall</td>
<td>1500</td>
</tr>
<tr>
<td>L  Horizontally from a terminal on the same wall</td>
<td>750</td>
</tr>
<tr>
<td>M  Above the highest point of an intersection with the roof</td>
<td>600 [1]</td>
</tr>
<tr>
<td>N  From a vertical structure to the side of the terminal</td>
<td>750 [1]</td>
</tr>
<tr>
<td>O  Above a vertical structure not more than 750mm from the side of the terminal</td>
<td>600 [1]</td>
</tr>
<tr>
<td>P  From a ridge terminal to a vertical structure on the roof</td>
<td>1500</td>
</tr>
</tbody>
</table>

**Notes:**

1. Terminating positions M, N, and O for vertical balanced *flues* should be in accordance with manufacturer’s instructions.
2. Vertical structure in N, O and P includes tank or lift *rooms*, parapets, dormers etc.
3. Terminating positions A to L are only permitted for appliances that have been approved for low level *flue* discharge when tested to OFTEC Standard OFS A100 for boilers or OFS A101 for cookers.
4. Terminating positions must be at least 1800mm from an oil storage tank unless a wall with at least 30 minutes fire resistance and more than 300mm higher and wider than the tank is provided between the tank and the terminating position.
5. Where a *flue* terminates not more than 600mm below a projection and the projection is plastic or has a combustible finish, then a heat shield of at least 750mm wide must be fitted.
6. The distance from an appliance terminal installed at right angles to a *boundary* may be reduced to 300mm in accordance with Diagram 2 to (F5.10).
7. Where a terminal is used with a vaporising burner, a horizontal distance of at least 2300mm is required between the terminal and the roof line.
8. Notwithstanding the dimensions above, a terminal should be at least 300mm from combustible material.
9. n/all = not allowed.
**RELATIONSHIP TO COMBUSTIBLE MATERIALS**

**(_F5.11_)** The requirements of F5.11 will be met where the temperature beneath the oil-fired appliance has been tested to, and is in accordance with, OFTEC Standard OFS A100 for boilers or OFS A101 for cookers.

**(_F5.12_)** The requirements of F5.12 will be met where the appliance is located on a hearth in accordance with the diagram to this specification -

**Diagram to (F5.12): Locating an oil-fired appliance on a hearth**

**Note:**
1. The 150mm does not apply where the appliance is located in a fireplace recess, nor does it apply where the back or sides of the hearth either abut or are carried into a solid, non-combustible wall complying with (_F4.19b_)..

**(_F5.13_)** The requirements of F5.13 will be met where the back, sides and top of the oil-fired appliance has been tested to and are in accordance with the OFTEC Standard OFS A100 for boilers or OFS A101 for cookers.
GAS-FIRED COMBUSTION APPLIANCE INSTALLATIONS

APPLIANCES

(F6.2) The requirements of F6.2 will be met where the gas-fired appliance carries a CE mark under the Gas Appliances (Safety) Regulations 1995.

SUPPLY OF AIR FOR COMBUSTION

(F6.3) The requirements of F6.3 will be met where air for combustion is provided in accordance with -
   b. for an inset live fuel-effect gas appliance, BS5871: Part 2: 1991;

SUPPLY OF AIR FOR COOLING

(F6.4) The requirements of F6.4 will be met where the gas-fired appliance, located in an appliance compartment, is provided with air for cooling in accordance with BS5440: Part 2: 2000.

REMOVAL OF PRODUCTS OF COMBUSTION

(F6.5) The requirements of F6.5 will be met where the shared flue is constructed and installed in accordance with BS 5440: Part 1: 2000.

(F6.6) The requirements of F6.6 will be met where the chimney or flue-pipe is constructed and installed in accordance with -
   b. where the chimney or flue-pipe is in a timber frame building, Section 8 of publication ‘IGE/UP/7: ‘Gas Installation in Timber Framed Buildings’;
   c. where the flue-pipe is supplied as an integral part of the combustion appliance, the appropriate recommendations of the combustion appliance manufacturer;

(F6.7) The requirements of F6.7 will be met where the minimum area of the flue is provided in accordance with -
   b. for an inset live fuel-effect gas appliance, BS5871: Part 2: 1991;

(F6.9) The requirements of F6.9 will be met where the outer wall of a double-walled flue-pipe is manufactured from -
   a. aluminium, designation EN AW-1200 conforming to BS EN 573: Part 1: 1995;
   b. aluminium alloy, designation EN AW-3103 or EN AW-5251 conforming to BS EN 573: Part 1: 1995;
   c. stainless steel, number 1.4335 to BS EN 10088: 1995;
   d. aluminium/zinc alloy coated steel of grades DX51D, DX52D, DX53D or DX54D with coating AZ185 or AZ150 conforming to BS EN 10215: 1995.
The requirements of F6.10 will be met where the outlet is separated from openings, obstructions or combustible material by at least the distances shown in the diagrams and tables to this specification.

**Diagram 1 to (F6.10): Flue terminal positions for gas-fired appliances**

**Table 1 to diagram (F6.10): Flue terminal positions for gas-fired appliances**

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum distance to terminal in millimetres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Balanced <em>flue, room-sealed appliance</em></td>
</tr>
<tr>
<td></td>
<td>Natural draught</td>
</tr>
<tr>
<td>A</td>
<td>Directly below an opening, air brick, opening window, etc</td>
</tr>
<tr>
<td></td>
<td>(0-7 kW)</td>
</tr>
<tr>
<td></td>
<td>(&gt;7-14 kW)</td>
</tr>
<tr>
<td></td>
<td>(&gt;14-32 kW)</td>
</tr>
<tr>
<td></td>
<td>(&gt;32-70 kW)</td>
</tr>
<tr>
<td>B</td>
<td>Above an opening, air brick, opening window, etc</td>
</tr>
<tr>
<td></td>
<td>(0-32 kW)</td>
</tr>
<tr>
<td></td>
<td>(&gt;32-70 kW)</td>
</tr>
<tr>
<td>C</td>
<td>Horizontally to an opening, air brick, opening window, etc</td>
</tr>
<tr>
<td></td>
<td>(0-7 kW)</td>
</tr>
<tr>
<td></td>
<td>(&gt;7-14 kW)</td>
</tr>
<tr>
<td></td>
<td>(&gt;14-70 kW)</td>
</tr>
<tr>
<td>D</td>
<td>Below a gutter, or sanitary pipe work</td>
</tr>
<tr>
<td>E</td>
<td>Below the eaves</td>
</tr>
<tr>
<td></td>
<td>300 [2]</td>
</tr>
</tbody>
</table>

*Amndt: September 2001*
### Table 1 to diagram (F6.10): Flue terminal positions for gas-fired appliances

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum distance to terminal in millimetres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Balanced flue, room-sealed appliance</td>
</tr>
<tr>
<td></td>
<td>Natural draught</td>
</tr>
<tr>
<td>F</td>
<td>Below a balcony or carport roof</td>
</tr>
<tr>
<td>G</td>
<td>Above ground, roof or balcony level</td>
</tr>
<tr>
<td>H</td>
<td>From vertical drain/soil pipe work</td>
</tr>
<tr>
<td>J</td>
<td>From an internal or external corner</td>
</tr>
<tr>
<td>K</td>
<td>From a surface or boundary facing the terminal</td>
</tr>
<tr>
<td>L</td>
<td>Vertically from terminal on same wall</td>
</tr>
<tr>
<td>M</td>
<td>Horizontally from terminal on same wall</td>
</tr>
<tr>
<td>N</td>
<td>From a terminal facing the terminal</td>
</tr>
<tr>
<td>P</td>
<td>From an opening in a carport (e.g. door, window) into the building</td>
</tr>
<tr>
<td>R</td>
<td>From a vertical structure on the roof [Note 4]</td>
</tr>
<tr>
<td>S</td>
<td>Above an intersection with the roof</td>
</tr>
</tbody>
</table>

**Notes:**

1. Notwithstanding the dimensions above, a terminal serving a natural draught and fanned draught appliance more than 5kW heat input should be at least 300mm and 150mm respectively from combustible material.
2. Where a natural draught flue terminates not more than 1m below a plastic projection or not more than 500mm below a projection with a painted surface, then a heat shield at least 1m long should be fitted.
3. The distance from a fanned draught appliance terminal installed at right angles to a boundary may be reduced to 300mm in accordance with Diagram 2 to (F6.10).
4. Vertical structure includes a chimney-stack, dormer window, tank room, lift motor room or parapet.
5. See Table 2 to (F6.10).
6. n/all = not allowed. n/app = not applicable.
Diagram 2 to (F6.10)  Separation between a boundary and terminal at right angles

Table 2 to diagram (F6.10): Minimum height $S$ to the base of the terminal for roof mounted individual natural draught open-flued systems

<table>
<thead>
<tr>
<th>Type of Roof</th>
<th>Where $R$ is more than 1.5 m</th>
<th>Where $R$ is not more than 1.5 m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a) where the flue system is internal</td>
<td>All flue systems internal and external.</td>
</tr>
<tr>
<td>Flat roof</td>
<td>where the roof has a parapet - 600mm</td>
<td>where the roof has no parapet - 250mm</td>
</tr>
<tr>
<td>Pitched roof</td>
<td>where the roof pitch is more than 45º from the horizontal - 1 m;</td>
<td>where the roof pitch is not more than 45º from the horizontal - 600mm,</td>
</tr>
<tr>
<td></td>
<td>except -</td>
<td>where the terminal is a ridge terminal, situated on or above the roof ridge, no minimum dimension for $S$ is required.</td>
</tr>
<tr>
<td></td>
<td>(b) where the flue system is external</td>
<td></td>
</tr>
<tr>
<td>All roofs</td>
<td>600mm above the level of the adjacent roof edge</td>
<td>600mm above the level of the vertical structure.</td>
</tr>
</tbody>
</table>

PROTECTION FROM PRODUCTS OF COMBUSTION

(F6.11) The requirements of F6.11 will be met where the flue-pipe is manufactured from -

a. any material described in (F4.12a) (solid fuel); or

b. sheet metal as listed in BS715: 1993; or

c. fibre cement as described in BS7435: Part 1: 1991, except -
   when serving a gas-fired appliance that can operate in condensing mode; or

d. any other suitable material approved and tested under the relevant conditions by a notified body.
The requirements of F6.13 will be met where the flue-pipe is protected in accordance with BS 5440: Part 1: 2000.

RELATIONSHIP TO COMBUSTIBLE MATERIALS

The requirements of F6.16 will be met where the hearth is provided -

a. for a gas fire, convector heater and fire/back boiler, in accordance with Clause 11 of BS5871: Part 1: 1991;

b. for an inset live fuel-effect gas appliance, in accordance with Clause 11 of BS5871: Part 2: 1991;

c. for a decorative fuel-effect gas appliance, in accordance with Clause 10 of BS5871: Part 3: 1991;

d. for any other gas-fired appliance, by a solid, heat resistant, non-combustible, non-friable material at least 12mm thick and at least the plan dimension shown in the diagram to this specification -

Diagram to (F6.16d): Hearth size suitable for any other gas-fired appliance

Note:
1. The 150mm does not apply where the appliance is located in a fireplace recess, nor does it apply where the back or sides of the hearth either abut or are carried into a solid, non-combustible wall complying with (F4.19b).

The requirements of F6.17 will be met where the gas-fired appliance and any associated draught diverters -

a. are separated from combustible material by a shield of non-combustible material at least 25mm thick or an air space of at least 75mm; or

b. where the appliance is CE marked, is installed in accordance with the manufacturer’s instructions.

Diagram to (F6.17a): Appliance separation from combustible material
(F7.1), (F7.2)

OIL STORAGE

(F7.1) The requirements of F7.1 will be met where the tank is

a. constructed in accordance with -
   i. for a steel tank, BS799: Part 5: 1987,
   ii. for a polyethylene tank with or without integral bunding, OFTEC Technical Standard OFS T100,
   iii. a European harmonised product standard and assessed by a notified body; and

b. installed, together with the fuel feed system from the tank to the combustion appliance, in accordance with -
   i. for a tank with a capacity more than 3 500 litres, BS5410: Part 2: 1978,
   ii. for a tank with a capacity not more than 3 500 litres, BS5410: Part 1: 1997.

(F7.2) The requirements of F7.2a and b will be met where the tank with a capacity -

a. more than 3 500 litres, is located in accordance with Clauses 45.2 and 45.3 of BS5410: Part 2: 1978;

b. not more than 3 500 litres and located within a building, is installed within a place of special fire risk ventilated to the external air and having -
   i. an outward opening door that is readily openable, without a key, from the side approached by people making an escape, and
   ii. sufficient space for access to the tank and its mountings and fittings;

c. not more than 3 500 litres and not located within a building, is installed in accordance with the table to this specification -
### Table to (F7.2b): Location of an oil storage tank not more than 3 500 litres capacity

<table>
<thead>
<tr>
<th>Location of tank</th>
<th>Protection required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building without openings</strong></td>
<td><strong>Building with openings</strong></td>
</tr>
<tr>
<td>not more than 1.8 m from any part of any building</td>
<td>non-combustible base; and any part of the eaves not more than 1.8 m from the tank and extending 300 mm beyond each side of the tank must be non-combustible; and a barrier between the tank and any part of a building not more than 1.8 m from the tank that does not meet the fire safety performance required of an external wall with a short duration within 1 m of the boundary. (see D1.3) or a barrier.</td>
</tr>
<tr>
<td>More than 1.8 m from any building</td>
<td>non-combustible base.</td>
</tr>
<tr>
<td>Not more than 760mm from a boundary</td>
<td>non-combustible base, and a barrier, or a wall meeting the fire safety performance required of an external wall with a short duration within 1 m of the boundary (see D1.3).</td>
</tr>
<tr>
<td>More than 760mm from a boundary</td>
<td>non-combustible base.</td>
</tr>
<tr>
<td>Externally and wholly below ground</td>
<td>no protection required.</td>
</tr>
</tbody>
</table>

**Note:**

1. In the table -
   - **NON-COMBUSTIBLE BASE** means a solid base of concrete or of paving slabs at least 42mm thick that extends at least 300mm beyond all sides of the tank, except -
   - where the tank is not more than 300 mm from a barrier, or a wall meeting the fire safety performance required of an external wall with a short duration within 1 m of the boundary (see D1.3), the base need only extend as far as the wall;
   - **BARRIER** means an imperforate, non-combustible wall or screen at least 300mm higher and wider than any part of the tank, constructed so as to prevent the passage of direct radiated heat to the tank.
The requirements of F7.2c will be met where the catchpit is provided in accordance with the requirements of Clause 6.5 of BS5410: Part 1: 1997 and the table to this specification -

<table>
<thead>
<tr>
<th>Location of tank</th>
<th>Catchpit or integrally bunded tank [Note 1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within a building</td>
<td>required</td>
</tr>
<tr>
<td>External, above ground (more than 2 500 litres)</td>
<td>required</td>
</tr>
<tr>
<td>External, above ground (not more than 2 500 litres)</td>
<td>[Note 2]</td>
</tr>
<tr>
<td>External, wholly below ground</td>
<td>not required</td>
</tr>
</tbody>
</table>

Notes:
1. In the table -
   CATCHPIT means a pit, without a drain, which is capable of containing the contents of the tank, plus 10%;
   INTEGRALLY BUNDED TANK is a tank, together with a catchpit, manufactured as a self-contained unit complete with a removable lid and designed to contain the escape of any liquid escaping from the tank in an overfill situation.
2. Every tank located not more than 50 m from a spring or bore hole, 10 m from controlled waters or where it is likely to constitute a hazard as decided by a risk assessment described in OFTEC Technical Information Note TI/133 requires a catchpit or should be of the integrally bunded type.

(F7.3) The requirements of F7.3 will be met where the fire valve is installed in accordance with -
   a. for tanks more than 3 500 litres, Clause 67 of BS5410: Part 2: 1978;
   b. for tanks not more than 3 500 litres, Clause 8.3 of BS 5410: Part 1: 1997.

LIQUEIFIED PETROLEUM GAS STORAGE

(F7.4) The requirements of F7.4 will be met where the installation is *constructed* and installed in accordance with the requirements of the Health and Safety Executive.

(F7.5) The requirements of F7.5a will be met by a container -
   a. *constructed* in accordance with the requirements set out in Section 3.1 of the LPGA Code of Practice 1: ‘Bulk LPG Storage at Fixed Installations’: Part 1; and
   b. installed in accordance with -
      i. for fixed storage tank(s), the LPGA Code of Practice 1: ‘Bulk LPG Storage at Fixed Installations’: Part 1,
      ii. for cylinder(s), the LPGA Code of Practice 24: ‘Use of LPG cylinders’: Parts 1 and 2.

The requirements of F7.5b will be met where the tank(s) is located in accordance with the table and Diagram 1 to this specification -
### Table to (F7.5b): Separation distances for liquefied petroleum gas storage tanks

<table>
<thead>
<tr>
<th>Maximum capacity in litres (water equivalent)</th>
<th>Minimum separation distance in metres for above ground tanks from building, boundary or fixed source of ignition to the tank -</th>
<th>between tanks without a fire wall (A)</th>
<th>with a fire wall (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>of any single tank</td>
<td>of any group of tanks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>1 500</td>
<td>2.5</td>
<td>0.3 [2]</td>
</tr>
<tr>
<td>2 500</td>
<td>7 500</td>
<td>3.0</td>
<td>1.5 [2]</td>
</tr>
<tr>
<td>9 000</td>
<td>27 500</td>
<td>7.5</td>
<td>4.0</td>
</tr>
</tbody>
</table>

#### Notes:

1. In the table -
   **FIRE WALL** means a wall or screen meeting the fire safety performance required of an *external wall* with a short duration within 1 m of the *boundary*, (see D1.3) and located between 1 m and 1.5 m from the tank and extending -
   a. **longitudinally**: so that the distance specified above without the fire wall is maintained when measured around the ends of the fire wall; and
   b. **vertically**: 2 m or the height to the top of the pressure relief valve, whichever is greater, **except** -
      where the tank capacity is not more than 2 500 litres, the fire wall need be no higher than the top of the pressure relief valve and may form part of the site *boundary*.

2. Where a tank(s) not more than 2 500 litres total capacity is located closer to a *building* than the separation distance in column A, the fire wall should form part of the wall of the *building* in accordance with Diagram 2 to this specification.

3. Motor vehicles under the control of the site occupier should be parked at least 6 m from LPG tanks or the separation distance in column A of Table to (F7.5b), whichever is the smaller. This does not apply to the loading/unloading of vehicles. Motor vehicles not under site control (eg those belonging to members of the public) should be parked no closer than the separation distance in column A to Table to (F7.5b).

#### Diagram 1 to (F7.5b): Separation or shielding of a liquefied petroleum gas tank from a *building*, *boundary* or fixed source of ignition

- **Plan view with and without a fire wall**
- **Fire wall as part of the *boundary***
Diagram 2 to (F7.5b): Small liquefied petroleum gas storage tank close to a building

The requirements of F7.5c will be met where the number of tanks in a group is not more than six.