

# Woodburner Stove Installation instructions

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## SECTION 3 APPLIANCE INSTALLATION

### 3.1 GENERAL

Installation of an appliance or modification of an existing installation shall be in accordance with this Section.

#### NOTES:

- 1 The appliance should be assembled and installed in accordance with the manufacturer's instructions. All manufacturer's installation, operation, and maintenance instructions supplied with the appliance should be left with the appliance after work on the installation has been completed.
- 2 Appliances altered in any way from the original specification should be considered to be 'untested' appliances for purposes of installation (see Section 5).
- 3 Recommendations for installation and operating instructions should be included with the appliance (see Appendix G).

### 3.2 CLEARANCES AND HEAT SHIELDING

#### 3.2.1 Access clearances

To provide the user with access to the appliance, the clearance between any part of the appliance and any adjacent fixed surface or object shall be not less than the following:

- (a) For the appliance front surface ..... 1 m.

The clearance specified shall apply when any door or drawer is in its closed position with respect to the appliance surface.

- (b) For any appliance surface (other than the appliance front surface) that includes an opening for fuelling or ash removal, or to which regular access by the user is otherwise necessary ..... 500 mm.

The clearance specified shall apply when any door or drawer is positioned at its fullest extent of protrusion from the appliance surface.

- (c) For any part of the appliance (other than the surfaces described in Items (a) and (b) above) to which only hand access, occasional user access, or maintenance access is necessary ..... 100 mm.

The clearance specified shall apply when any knob or control is positioned at its fullest extent of protrusion from the appliance surface.

#### 3.2.2 Safety clearance

Subject to the requirements of Clauses 3.2.1 and 3.4, and unless otherwise reduced by the provision of heat shielding (see Clause 3.2.3), the minimum clearance between any part of the appliance and any heat-sensitive material shall be one of the following, as appropriate:

- (a) *Where a sample installation has been tested in accordance with Appendix B* A clearance where the temperature rise of any surface of the test enclosure shall not exceed the temperatures specified in Appendix B during the high fire or flash fire tests, whichever is applicable.
- (b) *Where a sample installation has not been tested in accordance with Appendix B* A ceiling of not less than 1500 mm vertically above the appliance or 1200 mm in any other direction above the floor level.

Clearances specified shall be valid for commonly used building materials only.

## NOTES:

- 1 Materials with high heat-sensitivity, may necessitate an increase in specified clearances to prevent any adverse heat effects on the material.
- 2 Consideration should be given to clearances between the installation and window curtains and drapes; and to the proximity of window drapes and curtains, which should be restrained to maintain the minimum clearances for heat-sensitive materials.

**3.2.3 Shielding for appliances**

The safety clearances, specified in Clause 3.2.2, Items (a) and (b), between a tested, or an untested, appliance and a heat sensitive material, may be reduced by the provision of a heat shield. A heat shield may be made of a heat tolerant material as per Clause 3.2.4. A heat shield made of a heat-resistant material shall be constructed in accordance with Items (a) (b) and (c) or, alternatively, Item (d):

- (a) Except where the heat shield's size is restricted by an abutment with the floor, a wall or another heat shield (refer Clauses 3.3.2 and 3.3.3), the size of a heat shield shall either—
  - (i) extend in all directions such that the unobstructed straight-line distance between the appliance and the heat sensitive material is not less than the safety clearance established under Appendix B testing [see Figure 3.1(b)]; or
  - (ii) where the appliance has not been tested in accordance with Appendix B, a distance not less than 450 mm either side of the appliance and extending vertically to within 100 mm, but not less than 50 mm, of the ceiling having regard to the ventilation requirements of Clause 3.2.3(c) [see Figure 3.1(a)].
- (b) Subject to—
  - (i) access requirements of Clause 3.2.1; and
  - (ii) insert and built-in requirements of Clause 3.4,

the minimum allowable clearance between an appliance and heat-sensitive material shall be calculated by multiplying the safety clearance, specified in Clause 3.2.2(a) or (b), by the clearance factor that corresponds with the heat shield's construction specified in Tables 3.1 or 3.2 [see Figures 3.1(a) and 3.1(b)].
- (c) Where an air gap separates a heat shield from a heat-sensitive surface, or an adjacent layer of a heat shield having more than one layer, the top and bottom air gaps shall be vented. Where the heat shield is not horizontal, the opposite upper and lower air gap openings shall be vented. The ventilation openings shall be not less than half the cross-sectional area of the air gap behind the shield.
- (d) Alternatively, heat shield constructions, including safety clearances, between the appliance and a heat-sensitive surface shall be determined by either Appendix A or Appendix B testing.

NOTE: Clause 4.5.2, sets out additional wall-mounted shield requirements for flue systems.

TABLE 3.1

**CONSTRUCTIONS AND CLEARANCE FACTORS FOR APPLIANCE  
HEAT SHIELDS THAT ARE WITHIN 45° OF THE VERTICAL**

<b>Heat shield construction</b>	<b>Minimum air gap dimension(s) mm</b>	<b>Clearance factor</b>
Single layer of continuous material	12	0.40
Single layer of continuous material	25	0.30
Two spaced layers of continuous material	12 + 12	0.20

## NOTES:

- 1 Masonry may be used as a heat shield material.
- 2 Where heat shields are used to reduce appliance clearance dimensions, additional flue shielding may also be required (see Clause 4.5.2).

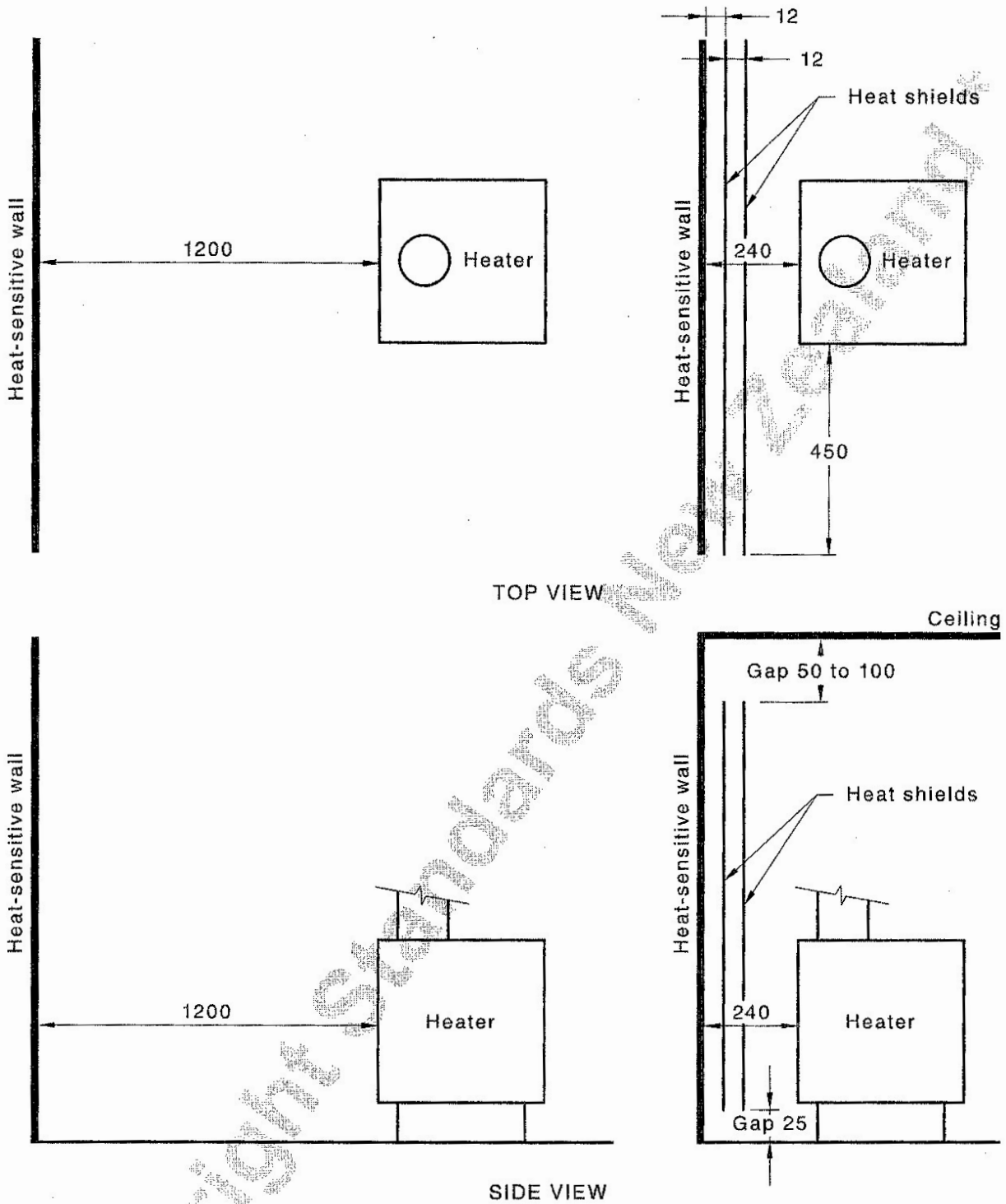
TABLE 3.2

**CONSTRUCTIONS AND CLEARANCE FACTORS FOR APPLIANCE  
HEAT SHIELDS THAT ARE MORE THAN 45° OF THE VERTICAL**

<b>Heat shield construction</b>	<b>Minimum air gap dimension(s) mm</b>	<b>Clearance factor</b>
Single layer of continuous material	12	0.80
Single layer of continuous material	25	0.60

## NOTES:

- 1 Masonry may be used as a heat shield material.
- 2 Where heat shields are used to reduce appliance clearance dimensions, additional flue shielding may also be required (see Clause 4.5.2).



TOP VIEW

SIDE VIEW

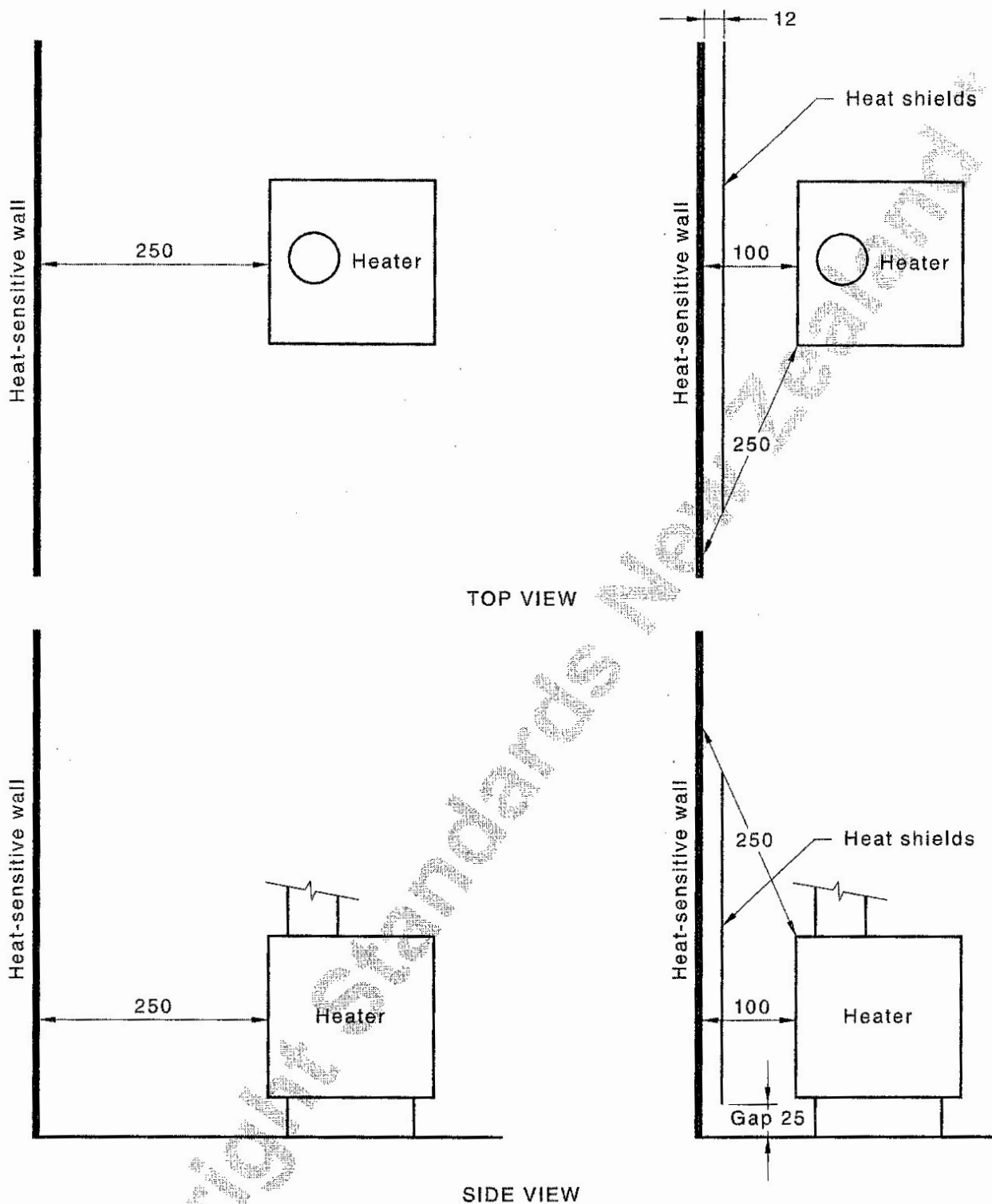
Figure not to scale

(a) Untested appliance double heat shield—2 × 12 mm ventilated air gaps

NOTE: The safety clearance of an untested appliance multiplied by clearance factor for double heat shield equals reduced clearance, e.g. 1200 mm [see Clause 3.2.2(b)] × 0.2 (see Table 3.1) = 240 mm. In this case, the heat shield is less than 250 mm from the appliance and so is constructed of heat-resistant material.

DIMENSIONS IN MILLIMETRES

FIGURE 3.1 (in part) EXAMPLES OF THE USE OF HEAT SHIELDS TO REDUCE APPLIANCE CLEARANCE WHERE THE SHIELDING IS WITHIN 45° OF THE VERTICAL



TOP VIEW

SIDE VIEW

Figure not to scale

(b) Tested appliance single heat shield—12 mm ventilated air gaps

NOTE: Safety clearance, as specified for a particular appliance by test, multiplied by clearance factor for a single heat shield equals reduced clearance, e.g. 250 mm [see Clause 3.2.2(a)]  $\times$  0.4 (see Table 3.1) = 100 mm, in this case, the heat shield is less than 250 mm from the appliance and so it is constructed of heat-resistant material.

DIMENSIONS IN MILLIMETRES

FIGURE 3.1 (in part) EXAMPLES OF THE USE OF HEAT SHIELDS TO REDUCE APPLIANCE CLEARANCE WHERE THE SHIELDING IS WITHIN 45° OF THE VERTICAL

### 3.2.4 Heat tolerant and non-continuous materials

The minimum allowable clearance between the appliance and either a heat-sensitive wall or a heat-shield, when using heat-tolerant or non-continuous materials, shall be determined by either Appendix A testing, or further reduced by Appendix B testing, whenever the shield's material is—

- (a) made of a heat-tolerant material where Appendix C testing establishes a safe service temperature of less than 250°C; or
- (b) made of a heat-tolerant material located less than 250 mm from the appliance; or
- (c) not continuous, such as perforated materials.

NOTE: See Table 3.1 or 3.2 for requirement for continuous materials.

In each case, the shield's material safe service temperature, as established by Appendix C testing, shall not be exceeded.

Unless otherwise determined by testing, the shield's construction, in terms of sizing, air gap and ventilation, shall be in accordance with Clause 3.2.3.

#### NOTES:

- 1 Appendix A uses a hot plate at 500°C during the test, whereas Appendix B uses the actual appliance, which may yield more favourable results.
- 2 Ensure that the heat shield's service temperature will not exceed the allowable service temperature of the shield's protective finish (e.g. powder coatings).

## 3.3 FLOOR PROTECTOR

### 3.3.1 General requirements

Where any part of the floor area where the appliance is to be installed includes a heat-sensitive material that would be under the appliance or within 500 mm of the appliance, the appliance shall be installed on a floor protector.

NOTE: The floor protector may be an integral part of the appliance.

Distances shall be measured horizontally from the external surface of the appliance with any doors and ash-removal trays closed, disregarding knobs, controls, ash spill trays, and other minor projections. The floor protector shall be horizontal or inclined upwardly away from the appliance.

Where the floor protector consists of a number of components, it shall include a continuous layer of heat-resistant material extending under the appliance to the perimeter of the floor protector. All joints shall be fixed to prevent accidental separation, and shall be sealed to prevent any spilt ash or embers contacting any heat-sensitive material.

### 3.3.2 Performance and construction requirements for a floor protector where a sample installation has been tested

The maximum surface temperature rises specified in Appendix B shall apply for commonly used flooring materials only. Alternative floor protector, heat-resistant material may be used, provided the thermal properties are equivalent to or better than the tested material.

NOTE: Flooring materials with high heat-sensitivity, e.g. plastics materials, may necessitate a reduction of the specified maximum temperatures.

For an appliance other than a fireplace insert appliance, the floor protector shall extend under the appliance and not less than 300 mm beyond the front of the fuel-loading and ash-removal openings. The width of the floor protector shall be not less than the width of the appliance and shall extend not less than 200 mm from each side of any ash-removal or fuel-loading openings unless the floor protector forms an abutment with a wall or heat shield at a lesser distance. For a fireplace insert appliance, the floor protector shall extend not less than 300 mm beyond the front of the fuel-loading and ash removal openings. The width of the floor protector shall be not less than the width of the appliance and shall extend not less than 200 mm from each side of any ash-removal or fuel-loading openings unless the floor protector forms an abutment with a wall or heat shield at a lesser distance.

For an appliance having a ventilated airspace of not less than 100 mm between the base of the firebox and the floor protector, a heat-resistant material shall be used for the top surface of the floor protector.

NOTE: Heat-tolerant material may be used for other components.

The floor protector shall be constructed of heat-resistant material.

### 3.3.3 Construction requirements for a floor protector where a sample appliance installation (or prototype appliance installation) has not been tested

Where a sample appliance installation has not been tested, the floor protector shall extend either to a distance of not less than 1000 mm beyond any part of the appliance or a lesser distance at which it forms an abutment with a wall or heat shield (subject to the requirements of Clause 3.2), and shall be constructed as follows:

- (a) For an appliance having a ventilated airspace not less than 50 mm between the base of the firebox and the floor protector, the floor protector shall conform to either of the following:
- (i) It shall be in accordance with the requirements of Appendix D.
- or*
- (ii) It shall be constructed to a thickness of not less than 75 mm (see Clause 3.3.4) of masonry or concrete laid on a supporting sheet of continuous heat-resistant material. The floor protector shall be separated from the floor by means of heat-resistant spacers forming an air gap of not less than 25 mm between the floor protector and the floor or floor covering. Total plan area of the air gap shall be not less than 90% of the area of the floor protector. Openings shall be provided along at least one pair of opposite edges of the floor protector to ventilate the air gap. The total opening area at each edge of the floor protector along which openings are provided shall be not less than that determined from the following equation:

$$A = s \times 3 \quad \dots 3.3.3(1)$$

where

$A$  = minimum total opening area along one edge of the floor protector, in square millimetres

$s$  = perimeter of the floor protector, in millimetres

NOTES:

- 1 For example, a 2 m × 2 m floor protector has a perimeter of 8000 mm. The minimum open area along one edge is  $8000 \times 3 = 24\,000 \text{ mm}^2$ . For a 25 mm air gap, the length has to be not less than 960 mm (i.e. about half the length of the edge of the hearth).
- 2 For a typical installation, see Figure 3.2.



(b) For a fireplace insert appliance, the front floor protector shall conform to either of the following:

(i) It shall be in accordance with the requirements of Appendix D and of the same construction as that beneath the appliance.

or

(ii) It shall be constructed of continuous heat-tolerant material not less than 30 mm thick. The top surface of the floor protector shall be of heat-resistant material not less than 0.2 mm thick. The floor protector shall be separated from the floor by means of heat-resistant spacers forming an air gap of not less than 25 mm between the floor protector and the floor or floor covering. Total plan area of the air gap shall be not less than 90% of the area of the floor protector. Openings shall be provided along at least one pair of opposite edges of the floor protector to ventilate the air gap. The total opening area at edge of the floor protector along which openings are provided shall be not less than that determined from the following equation:

$$A = s \times 2 \quad \dots 3.3.3(2)$$

where

$A$  = minimum total opening area along one edge of the floor protector, in square millimetres

$s$  = perimeter of the floor protector, in millimetres

(c) Where the appliance operates with a fire built directly on the floor protector, or the airspace between the base of the firebox and the floor protector is less than 50 mm, the floor protector shall be constructed of hollow concrete blocks laid in two courses each of height not less than 90 mm and arranged so that the hollow cores in the two courses are at right angles to each other and will allow air circulation through them. A sheet of continuous heat-resistant material shall be placed on top of or between the two courses.

NOTES:

- 1 For a typical installation, see Figure 3 4.
- 2 A floor protector shown to be equivalent when tested in accordance with Appendix D may be used.

### 3.3.4 Decorative finishing

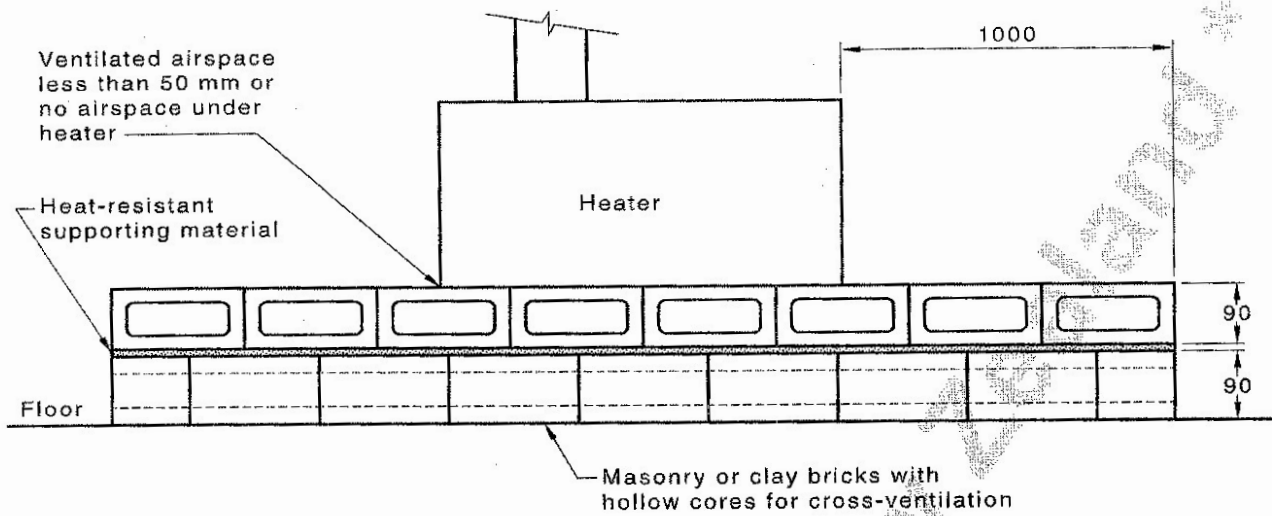
Excluding any area where a fire may be built directly on the floor protector, the top and sides of the floor protector may be finished with a decorative surface, provided the materials from which the decorative surface is constructed are heat-resistant.

Air gaps relative to the floor protector shall not be enclosed.

NOTE: Where the top of the floor protector is finished with a decorative surface, the thickness of the decorative surface may be regarded as contributory to the total thickness of the floor protector for the purpose of determining conformity with the requirements of Clause 3.3.3.

### 3.3.5 Design load capacity

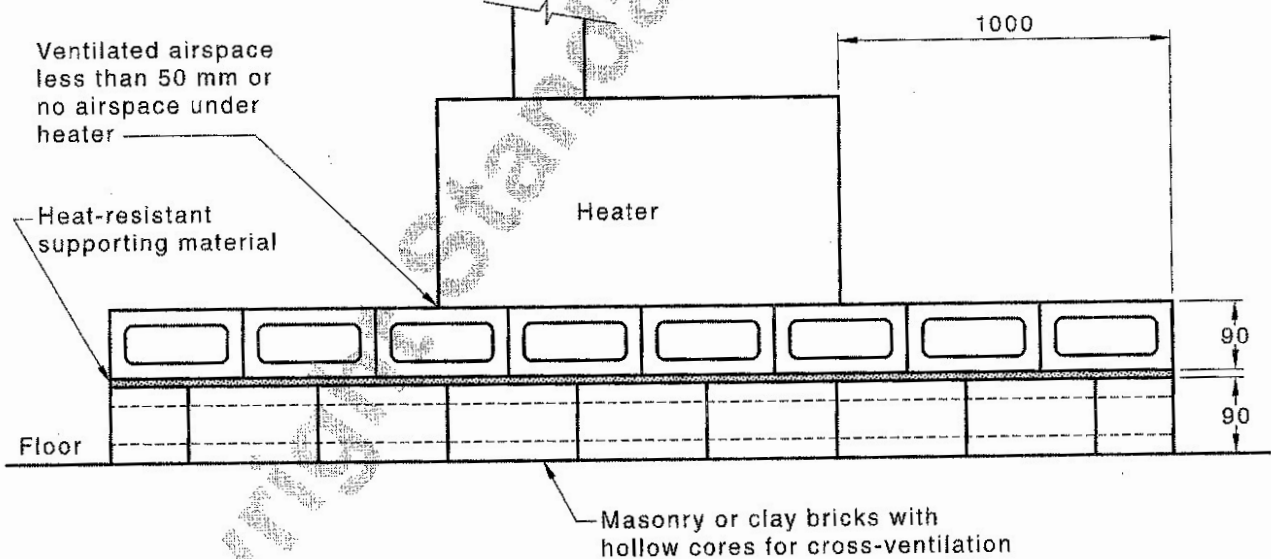
The strength of the floor protector shall support the heater installed on it without damage or distortion.



NOTE: Seismic restraints may be required (see Clause 3.8).

DIMENSIONS IN MILLIMETRES

FIGURE 3.2 TYPICAL FLOOR PROTECTOR CONSTRUCTION FOR AN APPLIANCE NOT TESTED IN ACCORDANCE WITH APPENDIX B WHERE THE FIREBOX BASE IS NOT LESS THAN 50 mm ABOVE THE FLOOR PROTECTOR



NOTE: Seismic restraints may be required (see Clause 3.8).

DIMENSIONS IN MILLIMETRES

FIGURE 3.3 TYPICAL FLOOR PROTECTOR CONSTRUCTION FOR AN APPLIANCE NOT TESTED IN ACCORDANCE WITH APPENDIX B WHERE A FIREBOX BASE IS LOCATED DIRECTLY ON THE FLOOR PROTECTOR