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Incorporating Corrigenda Nos. 1 and 2

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Specification for outdoor electricity meter cupboards

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Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 22, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 July 2012. It was prepared by Technical Committee PEL/13, *Electricity Meters*. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

The start and finish of text introduced or altered by Corrigenda No. 1 and No. 2 are indicated in the text by tags [C1⟩ ⟨C1] and [C2⟩ ⟨C2].

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

Outdoor meter cupboards for the installation of electricity service terminations and metering equipment were introduced in the late 1960s.

The specification for such cupboards has hitherto been published by the Electricity Association/Energy Networks Association (ENA) as their Technical Specification 12-3.

The gas industry has recently created a British Standard for its gas installation cupboards (BS 8499) and this combined with the imminent introduction of smart electricity meters has prompted the electricity industry to revise and update TS 12-3 and publish it as a British Standard.

1 Scope

This British Standard specifies requirements for outdoor electricity meter cupboards. It is intended to accommodate the Electricity Supply Industry's service termination and metering equipment, in particular cut-outs, single and polyphase meters, isolators and communication equipment.

It is also applicable to the following types of meter cupboards:

a) built-in;

b) surface-mounted.

This British Standard also specifies requirements for the design, material and composition of the meter board.

It is not applicable to multiple service metering installations which are installed in the same housing or security shrouds intended to provide additional protection to meter installations.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

〚C1〛 BS 410-1, *Test sieves – Technical requirements and testing – Part 1: Test sieves of metal wire cloth* 〈C1〉

BS 3532, *Method of specifying unsaturated polyester resin systems*

BS 4781:1990, *Specification for pressure-sensitive adhesive plastics labels for permanent use*

BS 7371-12, *Coatings on metal fasteners – Part 12: Requirements for imperial fasteners*

BS EN 312:2010, *Particleboards – Specifications*

〚C1〛 *Text deleted.* 〈C1〉

BS EN 10088-2:2005, *Stainless steels – Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

BS EN 14020, *Reinforcements – Specification for textile glass rovings*

BS EN ISO 178, *Plastics – Determination of flexural properties*

BS EN ISO 179-1:2001, *Plastics – Determination of Charpy impact properties – Part 1: Non-instrumented impact test*

BS EN ISO 295:2004, *Plastics – Compression moulding of test specimens of thermosetting materials*

BS EN ISO 1183-1:2004, *Plastics – Methods for determining the density of non-cellular plastics – Part 1: Immersion method, liquid pyknometer method and titration method*

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1 distribution network operator
company, licensed by Ofgem, which distributes energy to the customer

3.2 knockout
section of material which can be removed under pressure to leave a hole

3.3 meter
instrument designed to measure, store, display and communicate the quantity of electricity that has passed through it

3.4 meter cupboards

3.4.1 built-in meter cupboard
purpose-made meter cupboard, fitted with a meter board, for insetting into a building wall, normally during the construction of the wall

3.4.2 surface-mounted meter cupboard
purpose-designed meter cupboard fitted with a meter board and intended for attaching to the outside face of an existing wall

3.5 meter installation
installation that could comprise of energy meter(s), isolation device, communications equipment, switching devices and associated interconnection cables

3.6 service position
distribution network operators incoming service termination

3.7 service termination equipment
service cable, cut-out, associated connector blocks, cable covers

4 Dimensions and features

4.1 General

The meter cupboard and door shall be designed to enclose the service termination and meter installation and shall:

a) allow the fitting, operation and replacement of any service termination or meter installation; and

b) provide unrestricted access, once the meter is installed, to enable:

   1) the removal and replacement of the cut-out fuse;

   2) commissioning to be undertaken;

   3) the operation of any prepayment mechanism by the consumer;

   4) the meter register to be easily read;

5) safety inspections and maintenance activities, including the replacement of any associated equipment or batteries, without the need to remove the meter.

NOTE A meter cupboard conforming to this standard can be expected to meet these objectives.

The meter cupboard shall be designed to allow for left-hand opening or designed to allow for right-hand opening. For all designs, the hinging arrangement shall be substantially concealed when the door is in the closed position.

4.2 Security and weather resistance

*COMMENTARY ON **4.2***

A meter cupboard conforming to this British Standard is deemed to protect the meter installation and distribution termination equipment against the ingress of moisture and accidental damage.

4.2.1 The meter cupboard shall be designed and manufactured such:

a) as to prevent warping of the door; and

b) that the latch is secure when locked.

NOTE Provision may be made for the fitting of a cord or strap to prevent the door opening beyond an angle of 100° when specified by the purchaser. The cord or strap should be designed for easy release and fitting.

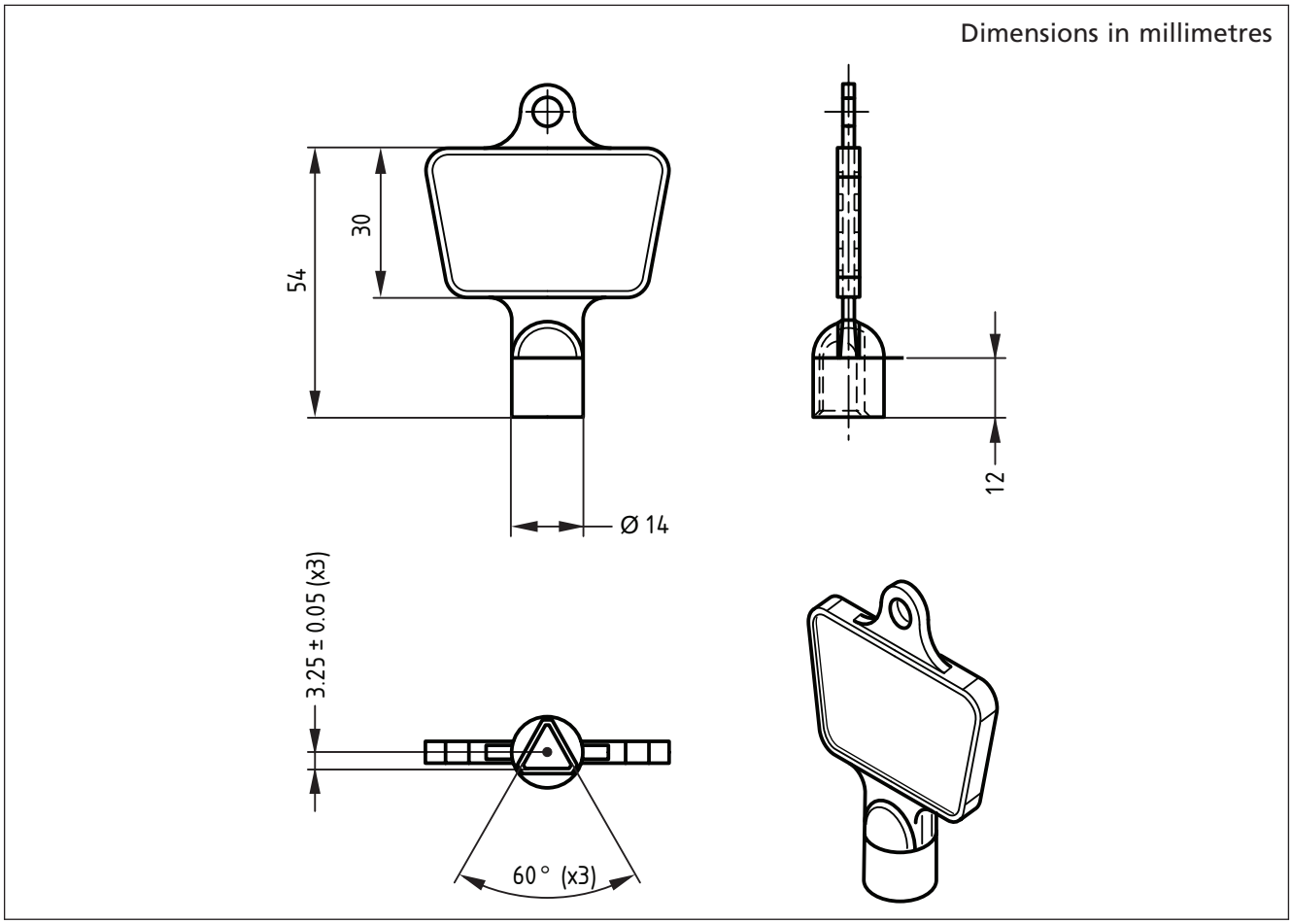
4.2.2 To prevent unauthorized access to the meter installation, the meter cupboard shall be supplied with:

a) a door, as appropriate;

b) a lock, conforming to **7.2**; and

c) a key manufactured from polypropylene, with the dimensions given in Figure 1.

Figure 1 **Meter cupboard key**



4.3 General features

4.3.1 The wall thickness of the meter cupboard and door shall be not less than 2.5 mm at any point, except in designated knockout areas.

4.3.2 The meter cupboard door shall be removable and replaceable.

4.4 Cable entries

Access for cable entries shall be provided by means of knockouts let into the cupboard as shown in Figure 2 to Figure 5, or by other suitable means.

NOTE Attention is drawn to the Building Regulations [1, 2, 3].

4.5 Provision for fixing of equipment

4.5.1 Material

The board material of medium density chipboard shall conform to any of Type P2 to Type P7 in BS EN 312:2010.

4.5.2 Fixing of meter board

Provision shall be made for fixing, and possible subsequent replacement of, a meter board to the rear wall by means of M5 x 20 mm countersunk headed screws. Separation between the rear wall of the cupboard and the meter board shall not exceed 3 mm.

NOTE 1 The preferred fixing positions are shown in Figure 2 to Figure 5.

NOTE 2 Alternative means for fixing a meter board in a cupboard are subject to agreement between the purchaser and the supplier.

The meter board shall be 12 mm thick and fit the meter cupboard.

NOTE 3 When required, provisions should be made for fixing a cut-out in small and narrow cupboards in those situations where the service cable enters the cupboard through a knockout in the bottom architrave without causing damage to the service cable by excessive bending. A minimum bending radius for the service cable of 125 mm should be assumed. An inclined flat surface should be provided for mounting the cut-out, which should be not less than 220 mm long by 140 mm wide.

4.6 Built-in cupboard

In addition to the requirements in **4.1** to **4.5**, the minimum dimensions of the meter cupboard shall conform to Figure 2 to Figure 5.

Figure 2 **Small outdoor meter cupboard** *(1 of 2)*

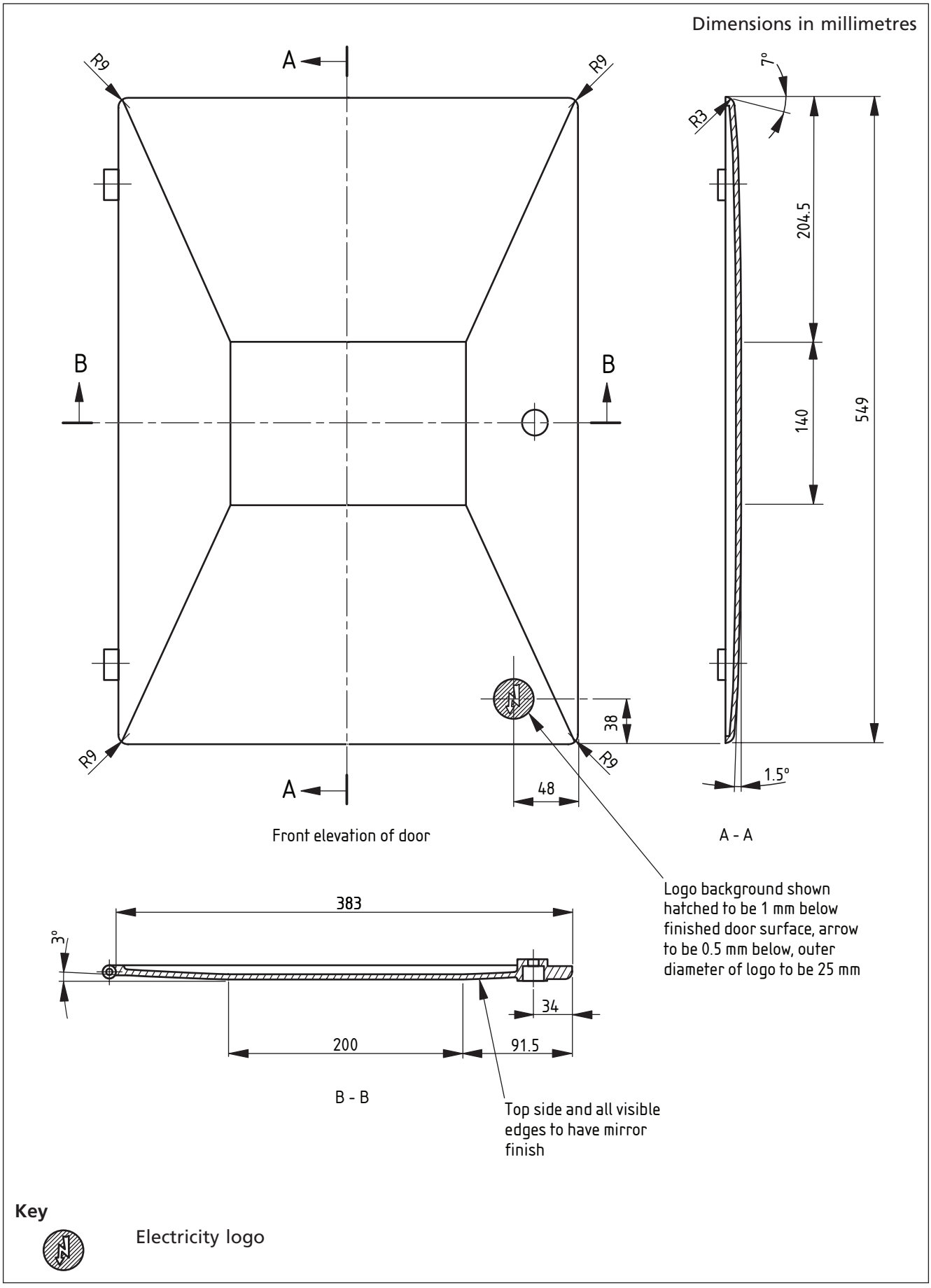
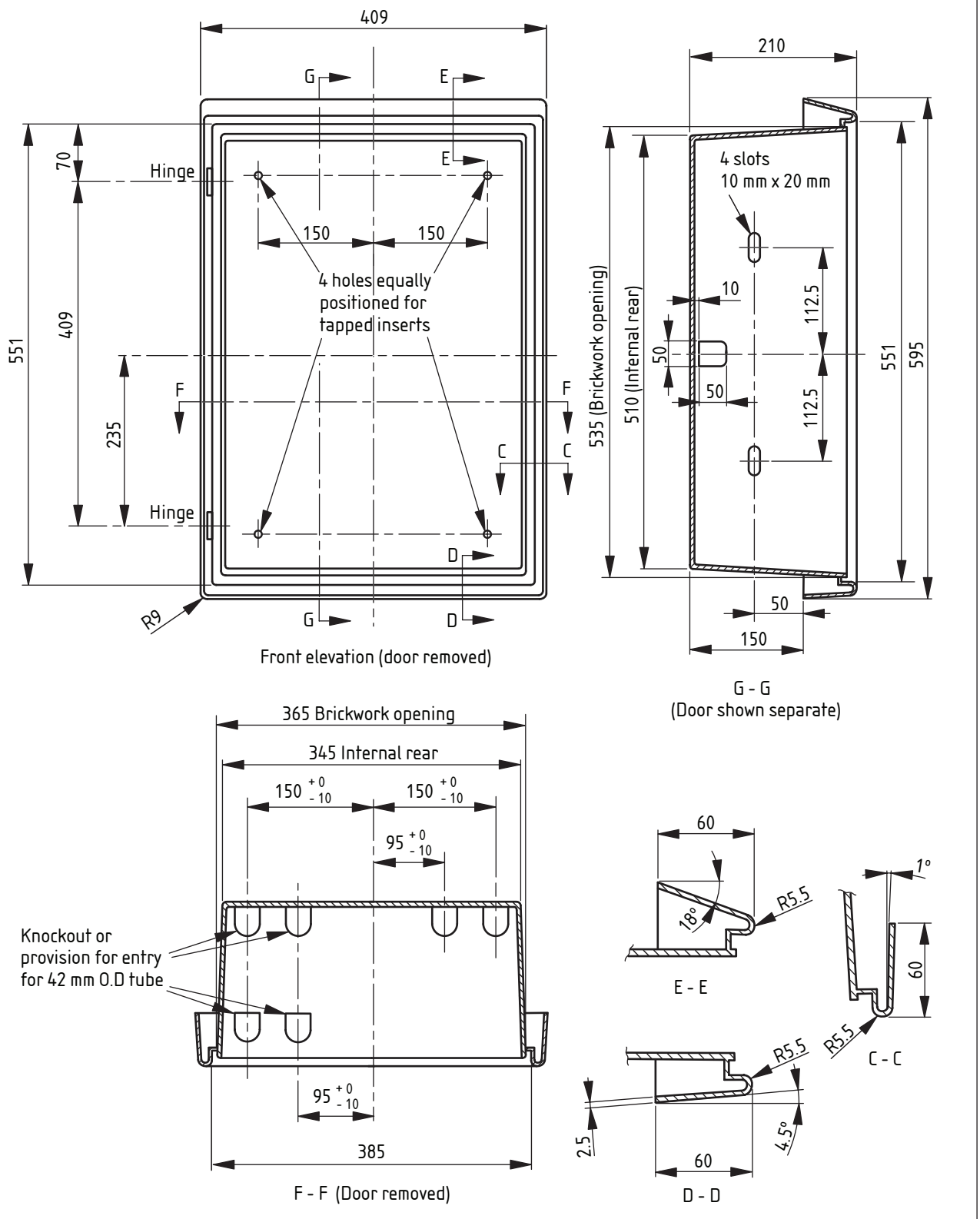


Figure 2 **Small outdoor meter cupboard** *(2 of 2)*

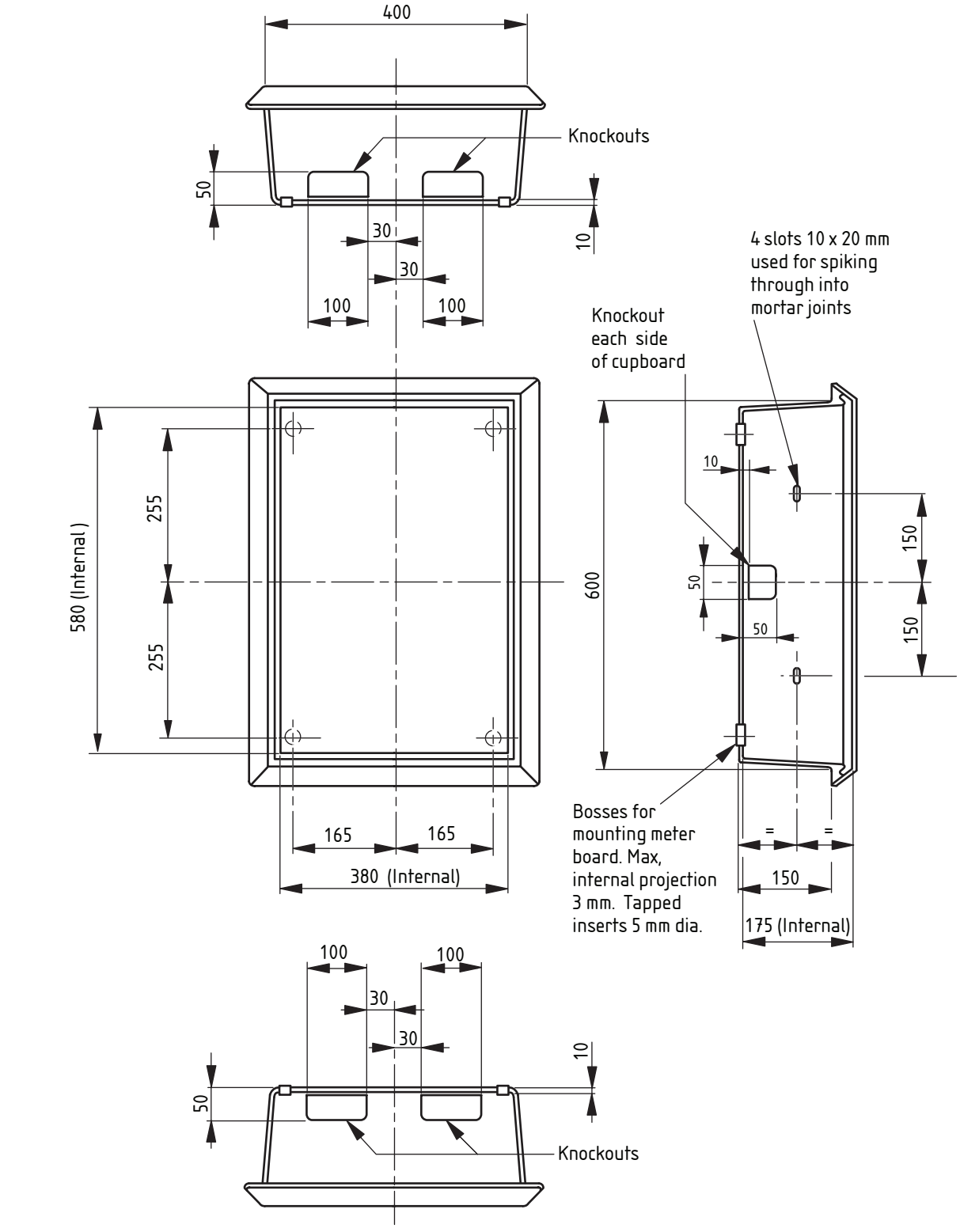
C2

Dimensions in millimetres



C2

Figure 3 **Medium outdoor meter cupboard** [A)]

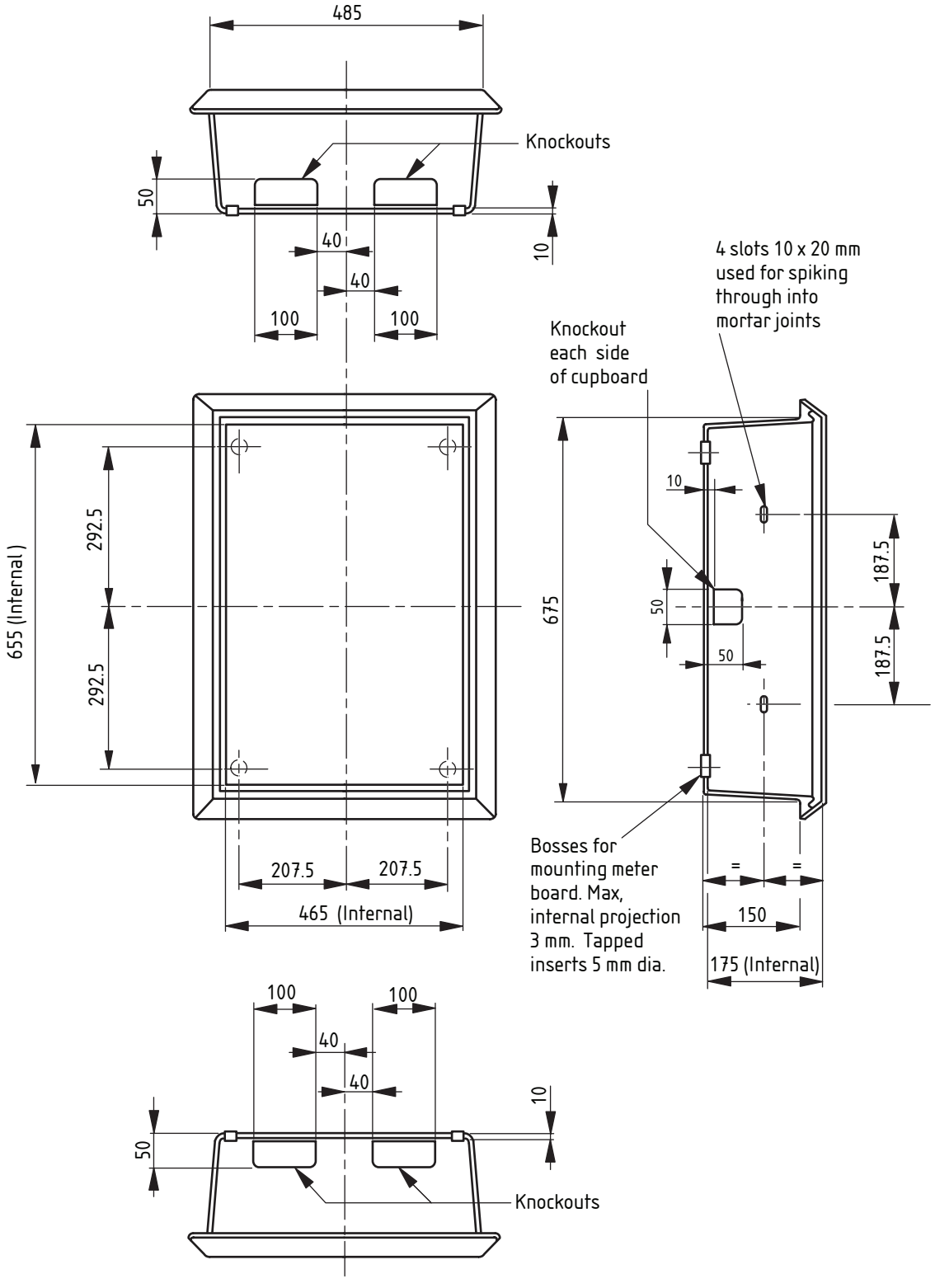


[A)] Where the hockey stick is to be fitted on the outside of the cavity wall, the minimum depth of the architrave shall be 60 mm.

Figure 4 **Large outdoor meter cupboard** [A)]

C1

Dimensions in millimetres

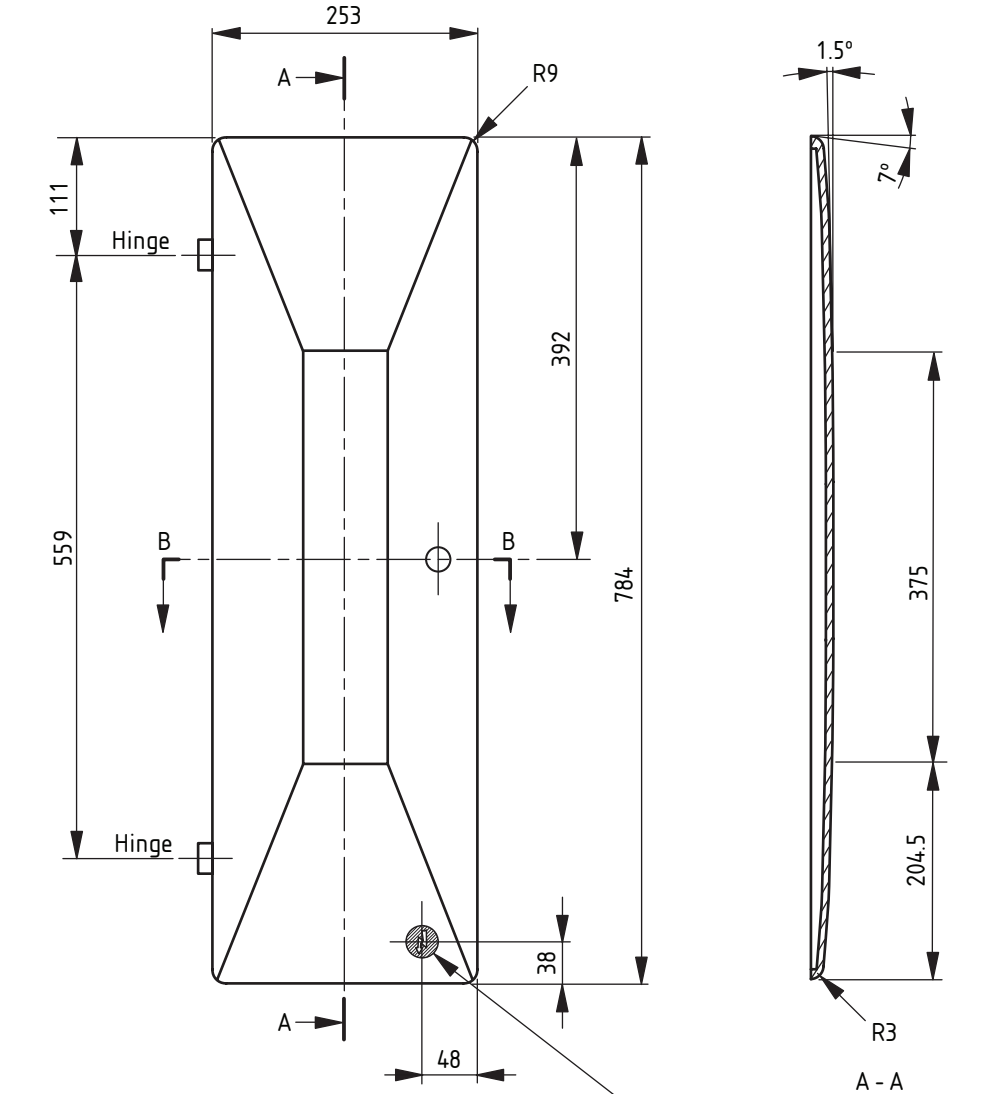


C1

[A)] Where the hockey stick is to be fitted on the outside of the cavity wall, the minimum depth of the architrave shall be 60 mm.

Figure 5 **Slim outdoor meter cupboard** *(1 of 2)*

Dimensions in millimetres



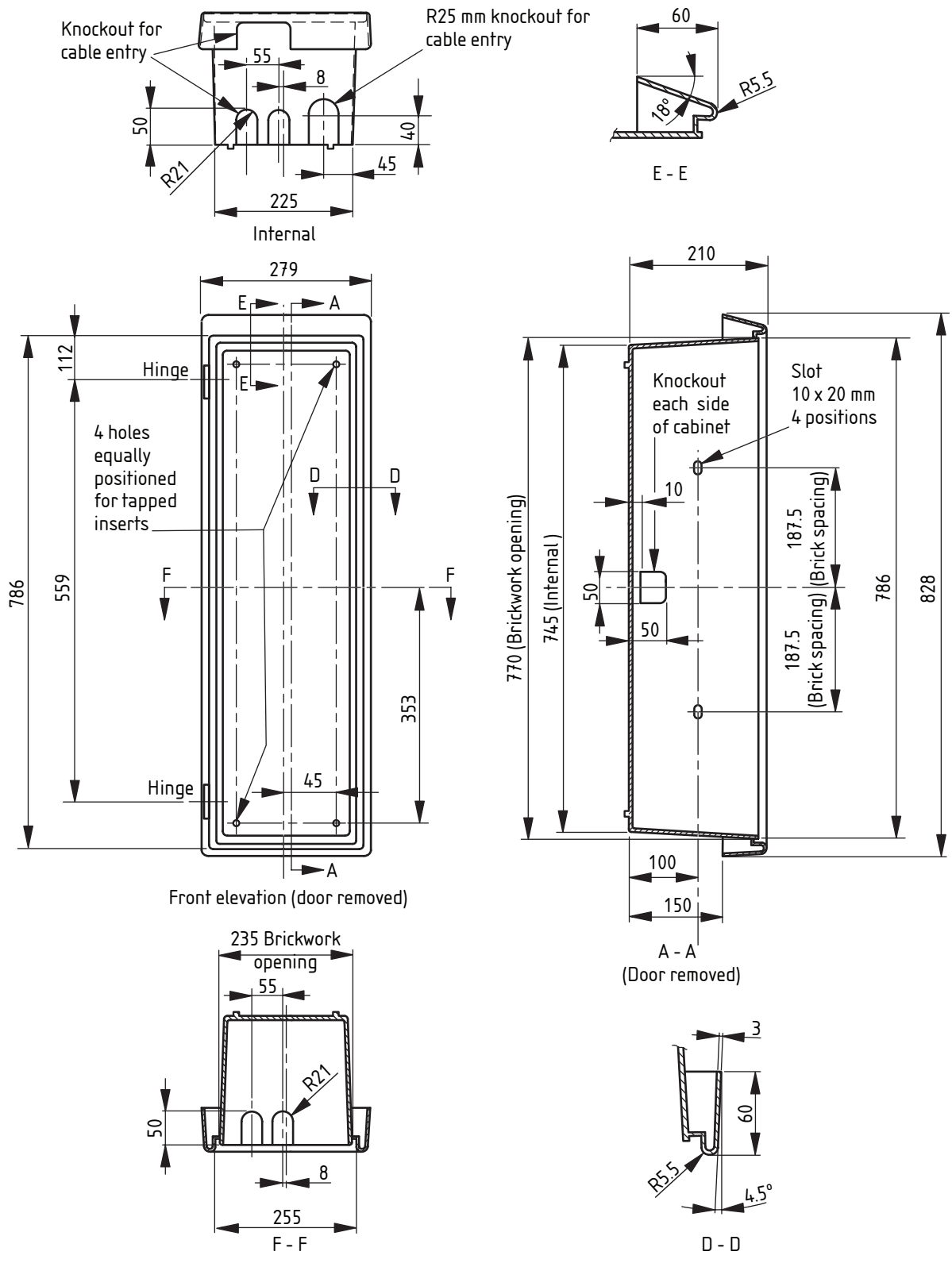
Key

Electricity logo

Figure 5 **Slim outdoor meter cupboard** *(2 of 2)*

C2

Dimensions in millimetres



C2

4.7 Surface-mounted cupboard

4.7.1 In addition to the requirements in **4.1** to **4.5**, surface-mounted cupboards shall conform to **4.7.2** to **4.7.4**.

4.7.2 The minimum dimensions of the meter cupboard shall conform to Figure 6 and Figure 7.

4.7.3 The meter cupboard shall be designed such that, when installed, there is a gap of not less than 3 mm between the rear of the cupboard and fixing area, e.g. brick wall.

4.7.4 Where the meter cupboard casing is designed to be removable and replaceable, this shall be possible with the installation service cable in place.

Figure 6 **Small surface-mounted cupboard dimensions and features (minimum dimensions)**

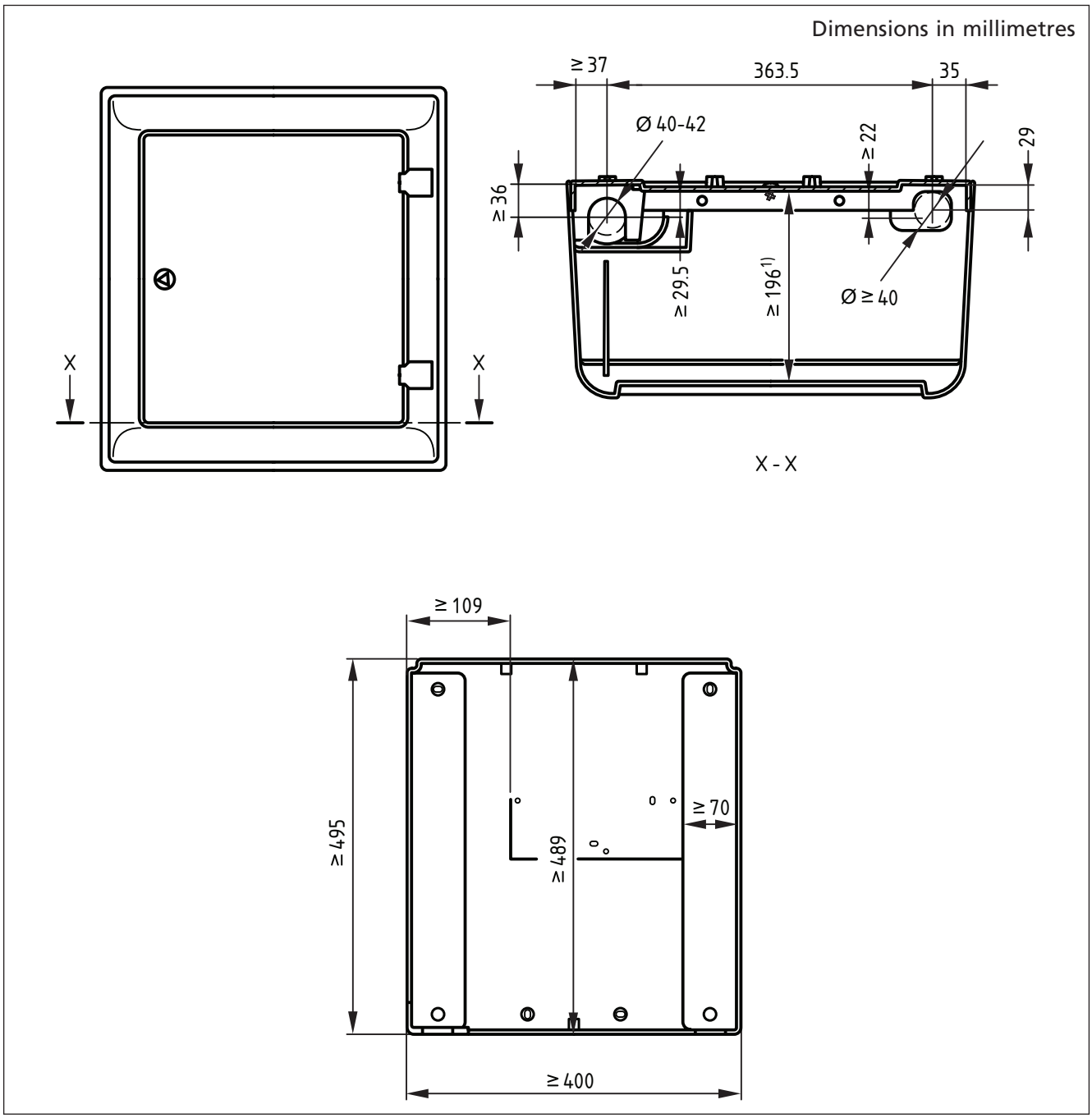
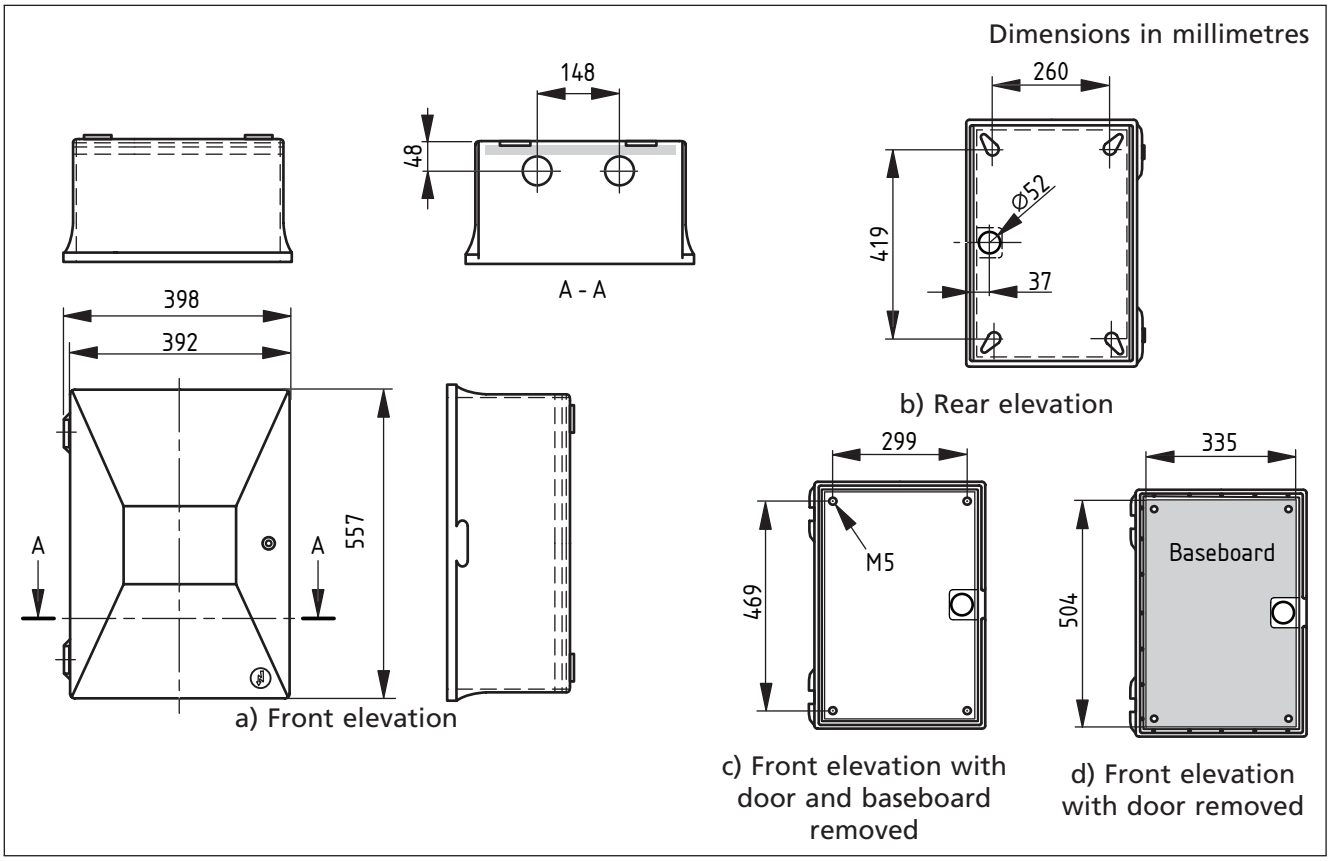


Figure 7 **Large surface-mounted electric meter cupboard (minimum dimensions)**



5 Materials

5.1 General

The meter cupboard shall be constructed generally of a chemically inert glass reinforced thermoset plastics material. The material shall be:

- substantially non-hygroscopic;
- resistant to normal environmental conditions, including ultraviolet radiation, dampness and abrasion; and
- capable of being painted without special preparation.

Necessary metal parts incorporated in the cupboard shall be made from non-ferrous materials or suitably protected to prevent corrosion.

5.2 Composition

Bodies, doors and panels shall be made from polyester moulding compound, containing unsaturated polyester resin conforming to BS 3532 and E glass fibre conforming to BS EN 14020, of a normal type suitable for polyester resin systems.

5.3 Properties

5.3.1 Flammability

When tested in accordance with Annex A, the specimen shall not burn back or scorch more than 38 mm, i.e. not beyond the line marked on the sample.

5.3.2 Mechanical

5.3.2.1 Flexural properties

When tested in accordance with a) and b), the flexural modulus of elasticity of the material shall be not less than 7.5 GPA; V and the flexural strength at rapture shall be not less than 60 MPa.

a) Type test: Test ten specimens from a cupboard sample conforming to **B.1** in accordance with BS EN ISO 178, using V (relative rate of movement of the loading nose and supports) equal to (5 ±1) mm/min.

b) Production test on polyester mould compound (when a new batch of resin is used or every ten working days, whichever is shorter): Test ten specimens from a cupboard sample conforming to **B.2** in accordance with BS EN ISO 178, using V (relative rate of movement of the loading nose and supports) equal to (5 ±1) mm/min.

NOTE For a) and b) the value specified for each property refers to the arithmetic mean value obtained from the appropriate ten test specimens cut from the test plaque.

5.3.2.2 Impact strength

When tested in accordance with a) and b), the impact strength shall be not less than 12 kJ/m^2.

a) Type test: Test ten specimens from a cupboard sample conforming to **B.1** in accordance with BS EN ISO 179-1:2001, Method ISO 179/1eU (specimen type 1, un-notched).

b) Production test: Type test: Test ten specimens from a cupboard sample conforming to **B.2** in accordance with BS EN ISO 179-1:2001, Method ISO 179/1eU (specimen type 1, un-notched).

NOTE For a) and b) the value specified refers to the arithmetic mean value obtained from the appropriate ten test specimens cut from the cupboard.

5.4 Density

When three specimens from a cupboard sample conforming to **B.1** are tested in accordance with BS EN ISO 1183-1:2004, Method A, the density shall be (1.9 ±0.1) g/cm^3.

NOTE The value specified refers to the arithmetic mean value obtained from the appropriate three test specimens cut from the cupboard.

5.5 Hinges (built-in and surface-mounted cupboards)

When tested in accordance with Annex C, the average maximum force for each hinge section shall be not less that that given in Table 1.

Table 1 **Hinge strength**

Hinge section	**Average peak force for:**	
	built-in cupboard	**surface-mounted cupboard**
Top	500 N	400 N
Bottom	350 N	250 N

Hinges shall be strong enough that, when the door is opened at its designed normal opening limit, they withstand a force of 500 N applied at 25 mm from the outer edge of the door. The hinge fitting to the door shall be designed to break free before damage to the architrave occurs. Where removable hinge pins are used, these shall be held captive with the door in the closed position.

5.6 Latches and studs

Latch arms, latch pins and fastening studs shall be made from acetal copolymer or acetal homopolymer.

5.7 Small metal components (e.g. latch plates, latch washers)

Components shall be made from stainless steel conforming to BS EN 10088-2:2005, grade 1.4301.

Spring pins shall be made from brass.

6 Finish

6.1 Meter cupboard

The mouldings for bodies, doors, panels and covers shall be:

a) complete and uniform in colour (white, unless otherwise specified);

b) free of all moulding flash;

c) free from imperfections.

NOTE Examples of what might constitute imperfection(s) are cracks, voids, glass protrusion, shrink or flow lines, resin starvation or enrichment. Clusters or quantities of pinholes that affect the appearance of outside surfaces are considered imperfections.

6.2 Screws

Screws shall be zinc plated and chrome passivated in accordance with BS 7371-12.

7 Marking

7.1 Meter cupboard

As part of the manufacturing process, the body and all detachable components (e.g. door), shall be legibly and permanently marked on internal surfaces with the following information:

a) the manufacturer's name or trademark;

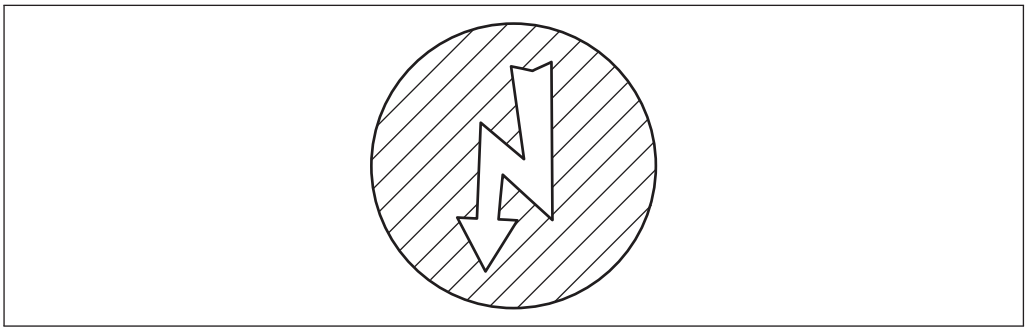
b) the day, month and year of manufacture, such that when the meter cupboard is assembled the marking is not externally visible.

7.2 Door

In addition to the marking specified in **7.1**, the electricity approved logo shall be permanently moulded into or embossed (1 mm deep) on the external surface as in Figure 8.

The design of the door shall be such as to avoid warping and shall open to the side, swinging to at least 100° to provide full access to the interior of the meter cupboard. The door shall have a lock sufficiently robust for normal long term use.

Figure 8 **Electricity logo**



8 Labels

8.1 General

All labels shall be in permanent form and conform to BS 4781:1990, Type 1.

8.2 Colour

The background colour of labels shall be white with black text.

8.3 General instructions label

A general instructions label shall be fitted on the internal wall of the meter cupboard, providing information on how to install the meter cupboard.

NOTE 1 Attention is drawn to the Building Regulations [1, 2, 3].

NOTE 2 An example of a typical label is shown in Figure 9.

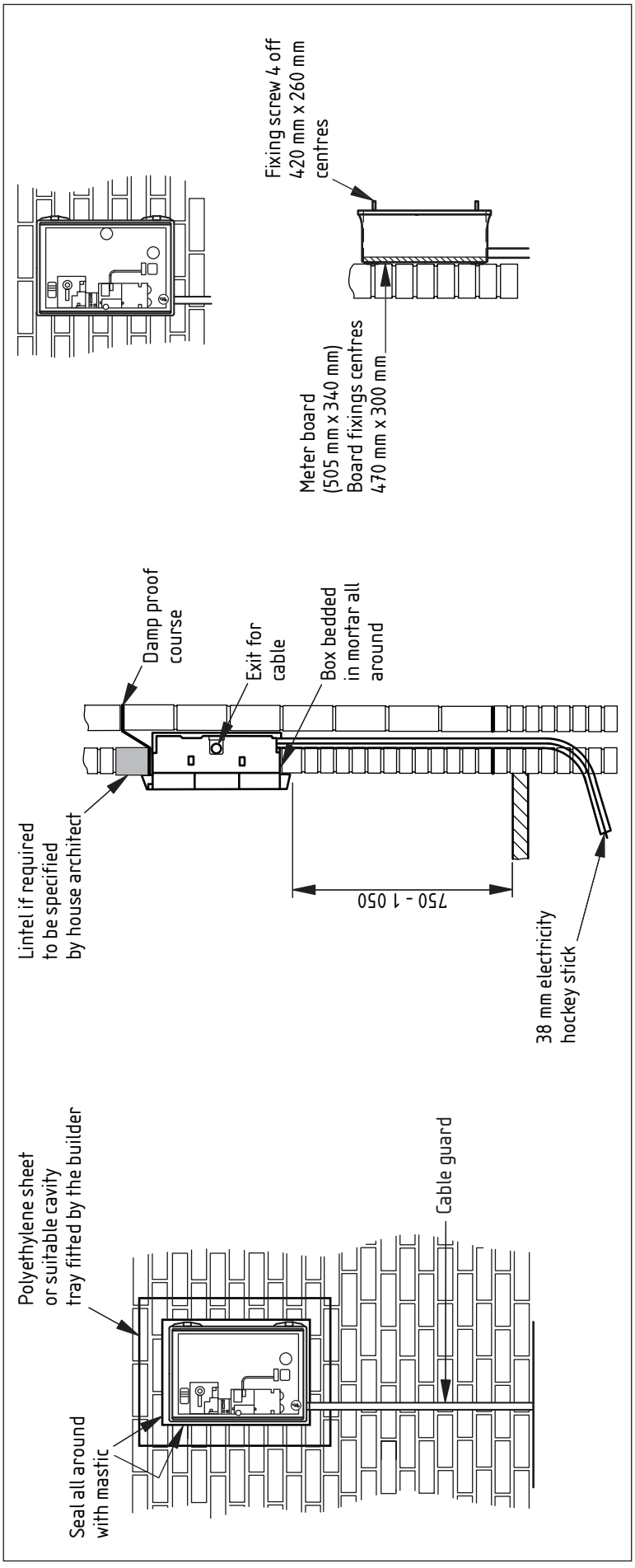


Figure 9 **Example instructions label**

8.4 Manufacturer's label

A manufacturer's label (see Figure 10 for example) shall be affixed or moulded inside the meter cupboard in a location readable after meter installation. The label as a minimum shall state:

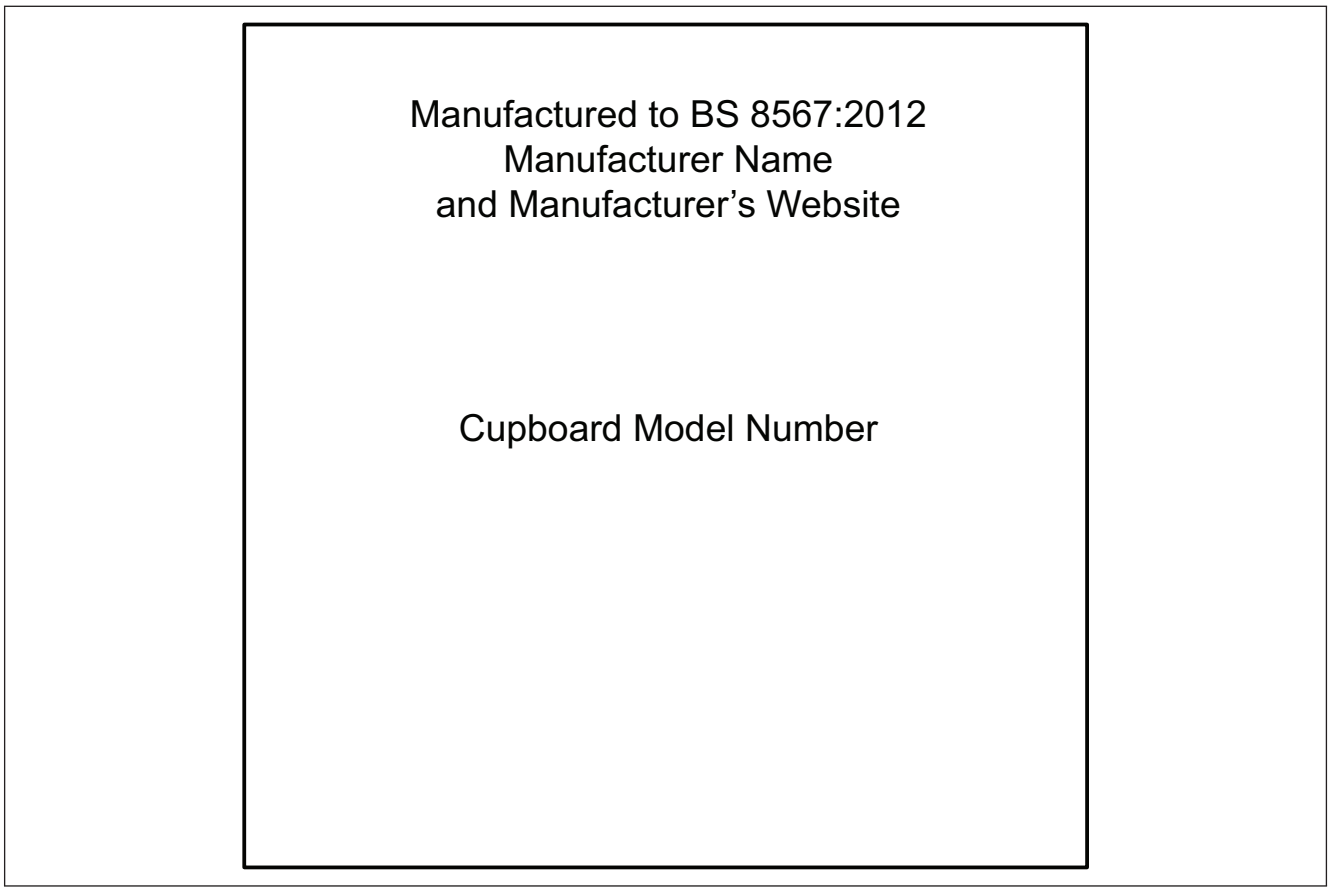
a) the number and year of this British Standard, i.e. BS 8567:2012 [1)] ;

b) the manufacturer's name and website;

c) the cupboard model number.

NOTE A manufacturer's label may be combined with instructions label.

Figure 10 **Typical manufacturer's label**



[1)] Marking BS 8567:2012 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity.

Annex A (normative) Flammability

A.1 Flame test

A specimen of the material used for the walls of the meter cupboard shall be tested in accordance with the conditions specified in **A.2** and **A.3**.

NOTE Figure A.1 gives an example of a specimen under test.

A.2 Form of test specimen

The test specimen shall be 127 mm long, 25 mm wide and 3 mm thick. A line shall be drawn across the specimen at 38 mm from one end.

A.3 Procedure

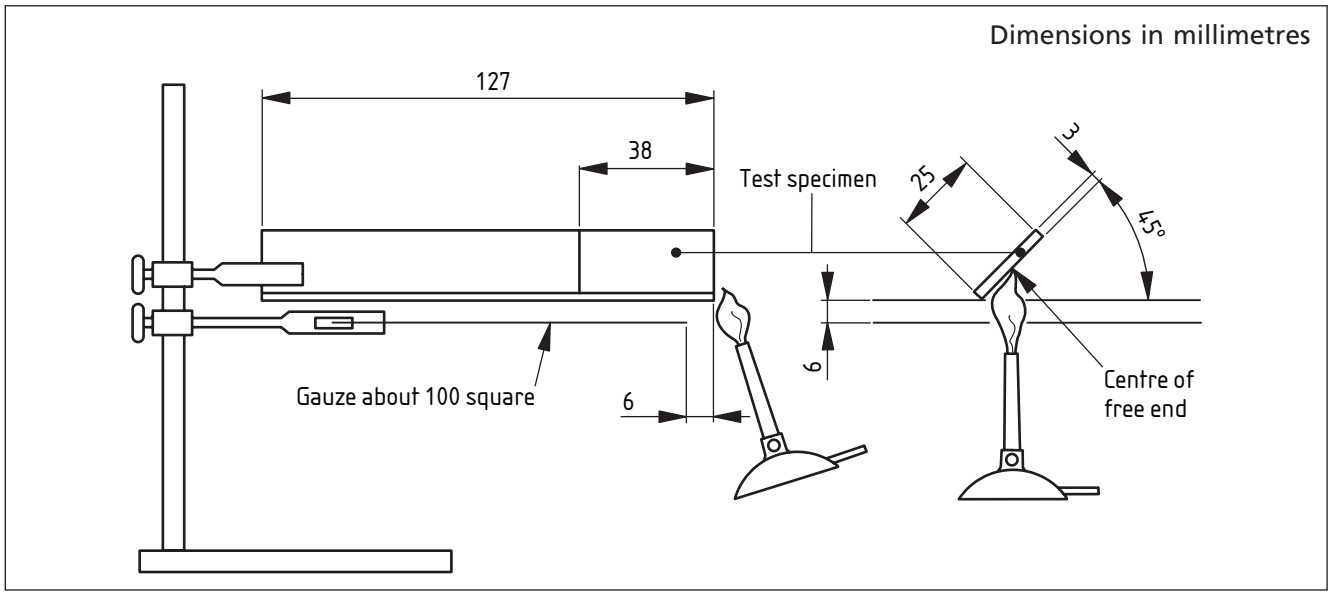
Test in a draught-free atmosphere. The test specimen shall be clamped in a rigid support at one end so that its longitudinal axis is horizontal and its transverse axis is 45° to the horizontal and so that the marked line on the specimen is clearly visible. The mark shall be 38 mm from the free end.

A piece of clean wire gauze (aperture 850 microns, mesh number 18 [see [c1] BS 410-1 [c1]], 100 mm square), shall be clamped in a horizontal position 6 mm below the specimen with 6 mm of the unsupported end of the specimen projecting beyond the edge of the gauze as shown on Figure A.1. A bunsen burner of 10 mm diameter bore with a non-luminous flame 12 mm to 19 mm in height shall be placed under the centre of the free end of the specimen so that the top of the flame just touches it. The flame shall be removed after 10 s.

Repeat test on two further samples, in which conformity with the same requirements shall be established.

If compliance with the requirements is obtained on all three samples, the material shall be deemed to be satisfactory.

Figure A.1 **Specimen under test**



Annex B (normative) Selection of meter cupboard samples and test plaques for testing

B.1 Type testing

B.1.1 Ten samples shall be selected from each of the flat areas of the meter cupboard and cut from the components shown in Figure B.1.

B.1.2 When cutting the sample, features such as ejector pads, markings and changes in section shall be avoided, wherever possible.

B.2 Production testing

B.2.1 Ten test plaques shall be manufactured from the materials specified in Clause **5** and prepared in accordance with BS EN ISO 295:2004, Clause **8**.

B.2.2 Actual test specimens shall be cut as shown in Figure B.1 and the dimensions of the test specimens shall be as follows:

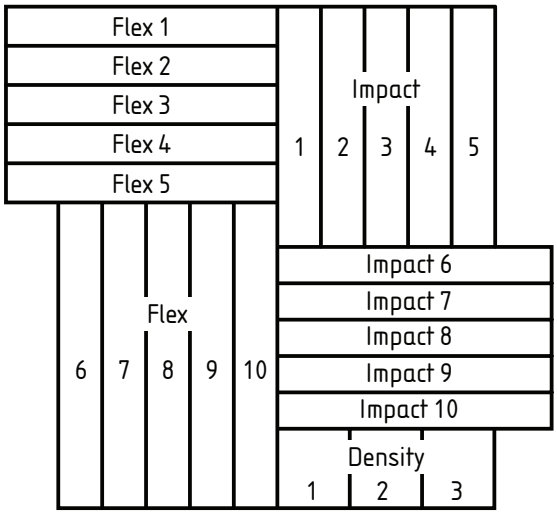
a) each "Flex": $[(80^{+2}_{-1})$mm×(15±0.5)mm]

b) each "Impact": [(80±2)mm×(10±0.5)mm]

NOTE 1 "Density" is not required for plaque testing. If density is used, dimensions should be [(25 ±1) mm × (25 ±1) mm].

NOTE 2 When testing flexural properties and Charpy impact strength on test plaques, a suitable size for the test plaques is [(250 ±5) mm × (250 ±5) mm × (3 ±0.2) mm].

Figure B.1 **Basic cutting plan**



NOTE Figure not to scale.

Annex C (normative) Methods of test for hinge strength (to built-in and surface-mounted cupboard)

C.1 Sample

C.1.1 Top hinge section of meter cupboard.

C.1.2 Bottom hinge section of meter cupboard.

C.2 Apparatus

C.2.1 *Tensile testing machine or force gauge*, fitted with a hook, with a range of at least 0 N to 700 N and an accuracy of ±5 N.

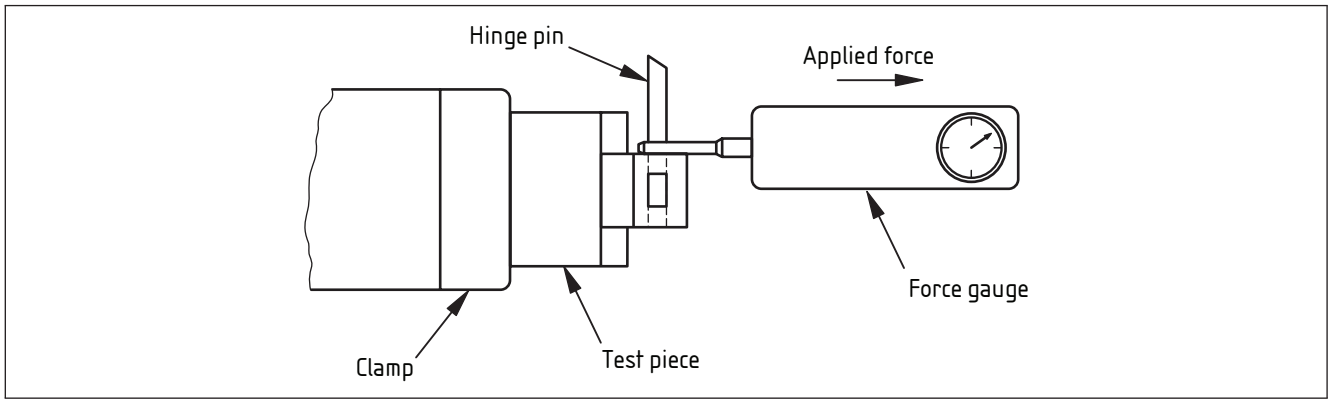
C.3 Procedure

Clamp the top hinge section of the meter cupboard door just behind the hinge. Place the hook around the hinge pin adjacent to its mounting (see Figure C.1). Pull in a direction that is perpendicular to the axis of the pin and parallel to the plane of the front face of the door.

Gradually increase the force until the hinge fails completely. Record the peak force. Calculate an average peak force from five such tests.

Repeat the tests on the bottom hinge section.

Figure C.1 **Built-in and surface-mounted hinge strength test**



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For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 8499, *Specification for domestic gas meter boxes and meter bracket*

Other publications

[1] GREAT BRITAIN. Building Regulations 2010. London: The Stationery Office.

[2] SCOTLAND. Building (Scotland) Regulations 2004 and subsequent amendments. Edinburgh: The Stationery Office.

[3] GREAT BRITAIN. Building Regulations (Northern Ireland) 2000 and subsequent amendments. Belfast: The Stationery Office.

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