

BS 5834-1:2017



BSI Standards Publication

Surface boxes, guards and underground chambers for the purposes of utilities

Part 1: Specification for guards and plinths



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Published by BSI Standards Limited 2017

ISBN 978 0 580 91488 1

ICS 91.140.40; 91.140.60

The following BSI references relate to the work on this document:

Committee reference B/504

Draft for comment 16/30329500 DC

Publication history

First published January 1980

Second edition, September 1985

Third edition, July 2009

Fourth (present) edition, February 2017

Amendments issued since publication

Date	Text affected
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Foreword

Publishing information

This part of BS 5834 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 28 February 2017. It was prepared by Technical Committee B/504, *Water supply*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 5834 supersedes BS 5834-1:2009, which is withdrawn.

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.

Requirements in this standard are drafted in accordance with *Rules for the structure and drafting of UK standards*, subclause J.1.1, which states, "Requirements should be expressed using wording such as: 'When tested as described in Annex A, the product shall ...'". This means that only those products that are capable of passing the specified test will be deemed to conform to this standard.

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.

Section 1: General

1 Scope

This part of BS 5834 specifies requirements and test methods for:

- a) vitrified clay, unreinforced concrete, and plastic guards and plinths for use with utility apparatus and surface boxes (conforming to BS 5834-2); and
- b) boundary boxes for water service pipes consisting of flow-isolation and meter receptacle suitable for concentric manifold meters with G 1½" and G 2" connections (conforming to BS EN ISO 4064-4), contained within base units and guard tubes made from a thermoplastic or thermoset material for use with surface boxes (conforming to BS 5834-2).

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.

BS 65:1991, *Specification for vitrified clay pipes, fittings and ducts, also flexible mechanical joints for use solely with surface water pipes and fittings*

BS 3123, *Specification for spring calipers and spring dividers*

BS 4484-1, *Specification for measuring instruments for constructional works – Part 1: Metric graduation and figuring of instruments for linear measurement*

BS 5433, *Specification for underground stopvalves for water services*

BS 5834-2, *Surface boxes, guards and underground chambers for gas and the purposes of utilities – Part 2: Specification for surface boxes*

BS 8588:2017, *Polyethylene pressure pipe with an aluminium barrier layer and associated fittings for potable water supply in contaminated land – Size 20 mm to 630 mm*

BS EN 197-1, *Cement – Part 1: Composition, specifications and conformity criteria for common cements*

BS EN 197-4, *Cement – Part 4: Composition, specifications and conformity criteria for low early strength blastfurnace cements*

BS EN 450-1:2012, *Fly ash for concrete – Part 1: Definition, specifications and conformity criteria*

BS EN 934-2, *Admixtures for concrete, mortar and grout – Part 2: Concrete admixtures – Definitions, requirements, conformity, marking and labelling*

BS EN 1008:2002, *Mixing water for concrete – Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

BS EN 12201-1, *Plastics piping systems for water supply, and for drainage and sewerage under pressure – Polyethylene (PE) – Part 1: General*

BS EN 12201-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure – Polyethylene (PE) – Part 2: Pipes*

BS EN 12390-2, *Testing hardened concrete – Part 2: Making and curing specimens for strength tests*

BS EN 12390-3, *Testing hardened concrete – Part 3: Compressive strength test specimens*

BS EN 12620:2002, *Aggregates for concrete*

BS EN 13959:2004, *Anti-pollution check valves – DN 6 to DN 250 inclusive Family E, type A, B, C and D*

BS EN 15167-1, *Ground granulated blast furnace slag for use in concrete, mortar and grout – Part 1: Definitions, specifications and conformity criteria*

BS EN 15167-2, *Ground granulated blast furnace slag for use in concrete, mortar and grout – Part 2: Conformity evaluation*

BS EN ISO 4064-2, *Water meters for cold potable water and hot water – Part 2: Test methods*

BS EN ISO 4064-4:2014, *Water meters for cold potable water and hot water – Non-metrological requirements not covered in ISO 4064-1*

Other publications

[N1]WIS No. 4-23-04, *Specification for underground stop valves, including spherical valves, for potable water services for nominal sizes up to and including 63 and nominal pressures of 10 bar minimum and made principally of metal or thermoplastics*

3 Terms, definitions and symbols

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

3.1 Terms and definitions

3.1.1 boundary box

assembly of components consisting of base unit, manifold, guard tube (and integrated lid), normally installed on a water service pipe to premises, providing flow-isolation and metering facility

3.1.2 load-bearing boundary box

boundary box consisting of base unit, guard tube, and an integrated cover and frame where the surface load (or a major proportion thereof) is transmitted directly from the cover and frame through the walls of the guard tube to a base unit

3.1.3 non-load bearing boundary box

structure not designed to transmit surface load through the guard tube to the base unit

3.1.4 guard

circular pipe, or square sectional structure with a square or circular bore, used vertically to house utility apparatus and to permit access for inspection, operation and maintenance

3.1.5 guard tube

component of a boundary box installed upon a base unit, providing access to flow-isolation and metering facility contained therein

NOTE See Figure 1.

3.1.6 telescopic guard tube

guard tube with an integral height adjustment facility

3.1.7 base unit

lower section of the boundary box assembly providing support to inlet/outlet connection(s) and accommodation for the manifold

3.1.8 manifold

assembly comprising a flow isolation valve, concentric meter receptacle and a check valve

NOTE A flow isolation valve is also known as a stop valve/stop tap.

3.1.9 inlet/outlet

manifold water supply connection point

3.1.10 integrated surface box

box designed and supplied by the manufacturer for the specific application of a particular model or type of boundary box

3.1.11 cementitious content

quantity of cement plus any pozzolanic or latent hydraulic addition in the concrete mix measured in kg/m³

3.1.12 plinth

component that provides additional support to a guard

3.1.13 section

make up or base component of a sectional guard

3.1.14 type

units of the same manufacturing process and design

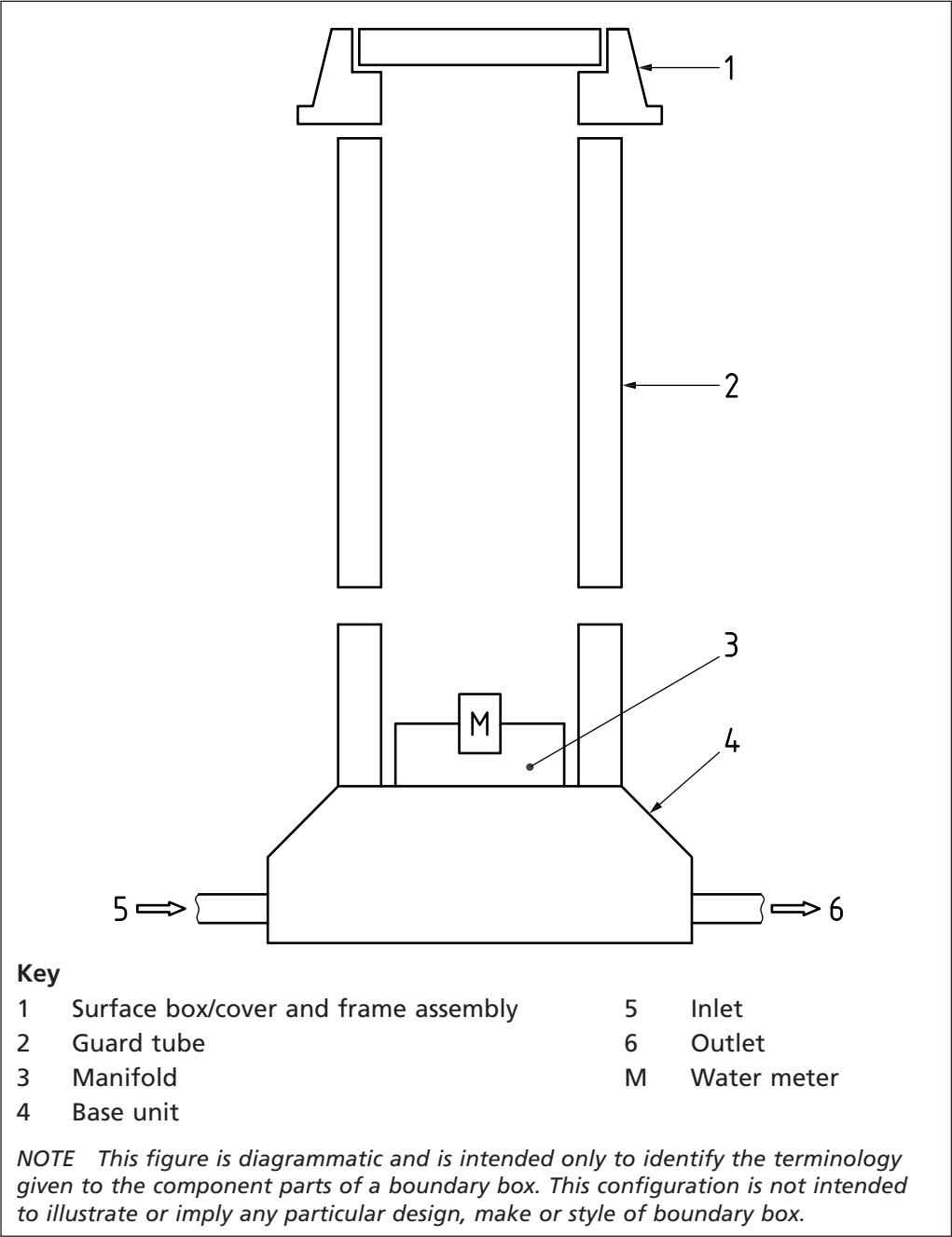
3.1.15 unit

pipe guard, section or plinth

3.2 Symbols

<i>B</i>	depth of seating in concrete plinth (mm)
<i>C</i>	minimum thickness of concrete plinth (mm)
<i>D</i>	internal seating width of concrete plinth (mm)
<i>E</i>	width of gap in seatings of concrete plinth (mm)
<i>F</i>	diameter of recessed seating in concrete plinth (mm)
<i>L</i>	overall length of pipe guard (mm)
<i>N</i>	test per nominal size
<i>R</i>	routine inspection test
<i>T</i>	initial type test
<i>Y</i>	test per type produced per 1 000, with a minimum of one per type and year
<i>X</i>	section/view lines

Figure 1 Basic components of a meter boundary box: terminology



Section 2: Plinths and guards

4 Requirements for plinths and guards

4.1 Guards

COMMENTARY ON 4.1

In cases where ground conditions might be too soft to support the guard without settlement, guards should be provided with an appropriate plinth, particularly in connection with plastics pipes. However, the range of apparatus in service is such that specifying a standardized range of matching channels is considered impractical. Therefore purchasers wishing to use channelled plinths should discuss their specific requirements with potential suppliers.

4.1.1 Vitrified clay guards

Vitrified clay guards shall be of the pipe type and shall be provided with a flange at the top, with a width of face of not less than 23 mm [see Figure 2.a)]. The thickness of the flange shall be not less than 12.5 mm or the thickness of the wall of the guard, whichever is the greater.

4.1.2 Concrete guards

Concrete guards shall be of the pipe type [see Figure 2.b)] or sectional type [see Figure 3].

4.1.3 Plastic guards

When tested in accordance with D.2, load-bearing plastic guards shall deflect not more than 10 mm during the application of the load and show no visible signs of cracking.

NOTE 1 Plastic guards for stop taps are generally manufactured as non-load bearing.

NOTE 2 The guard tube should:

- a) locate the surface box/cover and frame assembly. This may be either integral or via an additional adapter or component (e.g. "top hat"); and
- b) adequately support the external backfill material and withstand its loading.

4.2 Plinths

4.2.1 Vitrified clay plinths

Vitrified clay plinths shall be of the circular plate type [see Figure 2.c)].

NOTE Vitrified clay plinths are suitable for use with guards made only from the same material.

4.2.2 Concrete plinths

Concrete plinths shall be of the slab type, when intended for use in conjunction with slotted guards and rigid utility apparatus, or of the channel type when intended for use with slotted or unslotted guards and non-rigid apparatus. Concrete plinths shall be square or circular in plan and incorporate seatings to form an interlock with the guard to prevent horizontal displacement. In slab type plinths the seatings shall be so designed as not to reduce the clearance provided by the slot in the guard.

NOTE 1 Typical patterns of concrete plinths are shown in Figure 4.

NOTE 2 In channel type concrete plinths the channels should be so constructed as to prevent harmful stresses occurring in the utility apparatus during operation. Channel plinths may be provided with a local recess to accommodate a plug cock.

NOTE 3 Concrete plinths may be either single or double channel types.

NOTE 4 Concrete plinths are suitable for use with concrete or vitrified clay guards.

4.2.3 Plastic plinths

Plastic plinths may be square or circular in plan, and shall incorporate seatings to form an interlock with the guard to prevent horizontal displacement.

NOTE Plinths may provide support for stop taps or other apparatus.

Figure 2 Dimensions of pipe guards and vitrified clay plinths

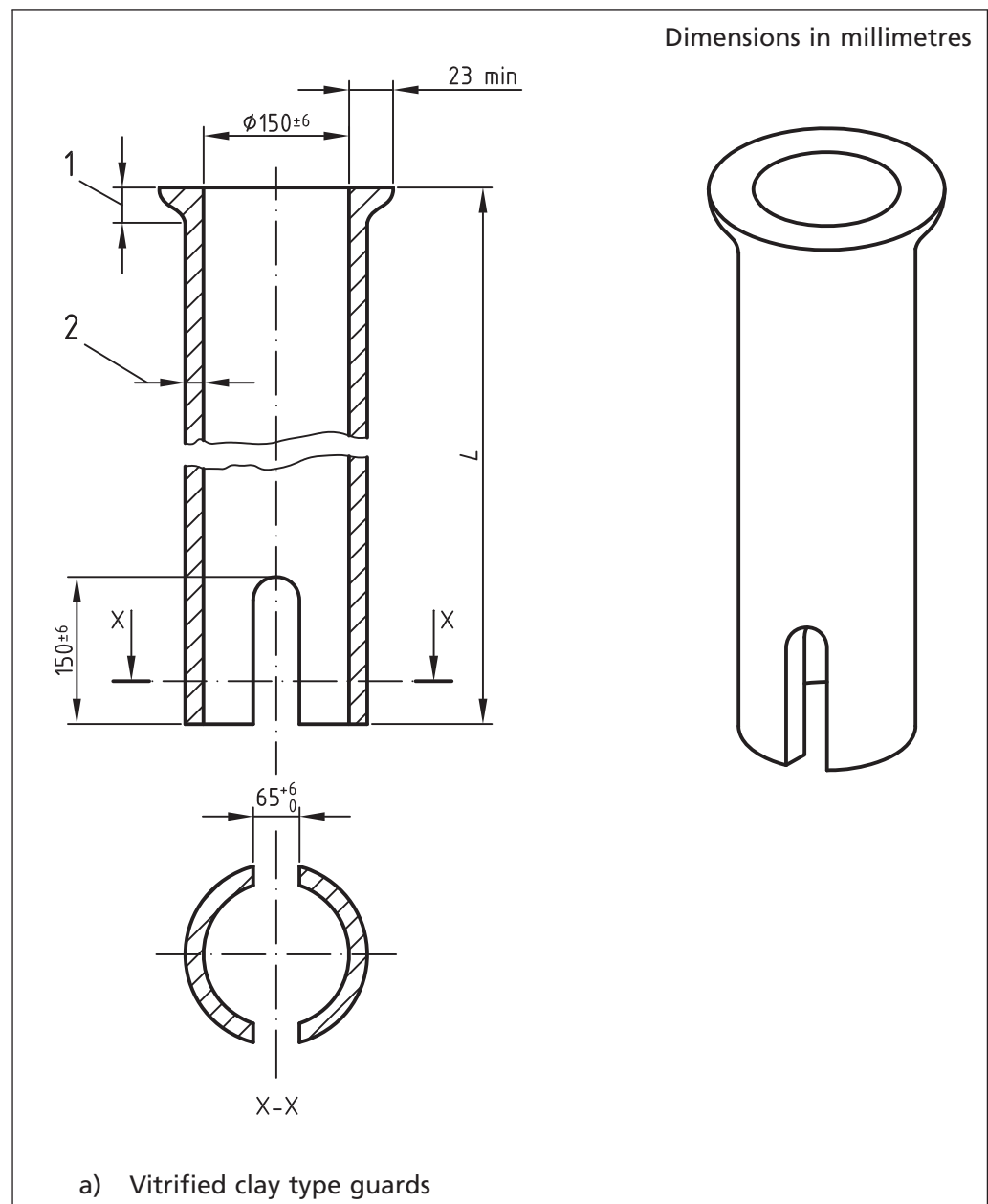


Figure 2 Dimensions of pipe guards and vitrified clay plinths

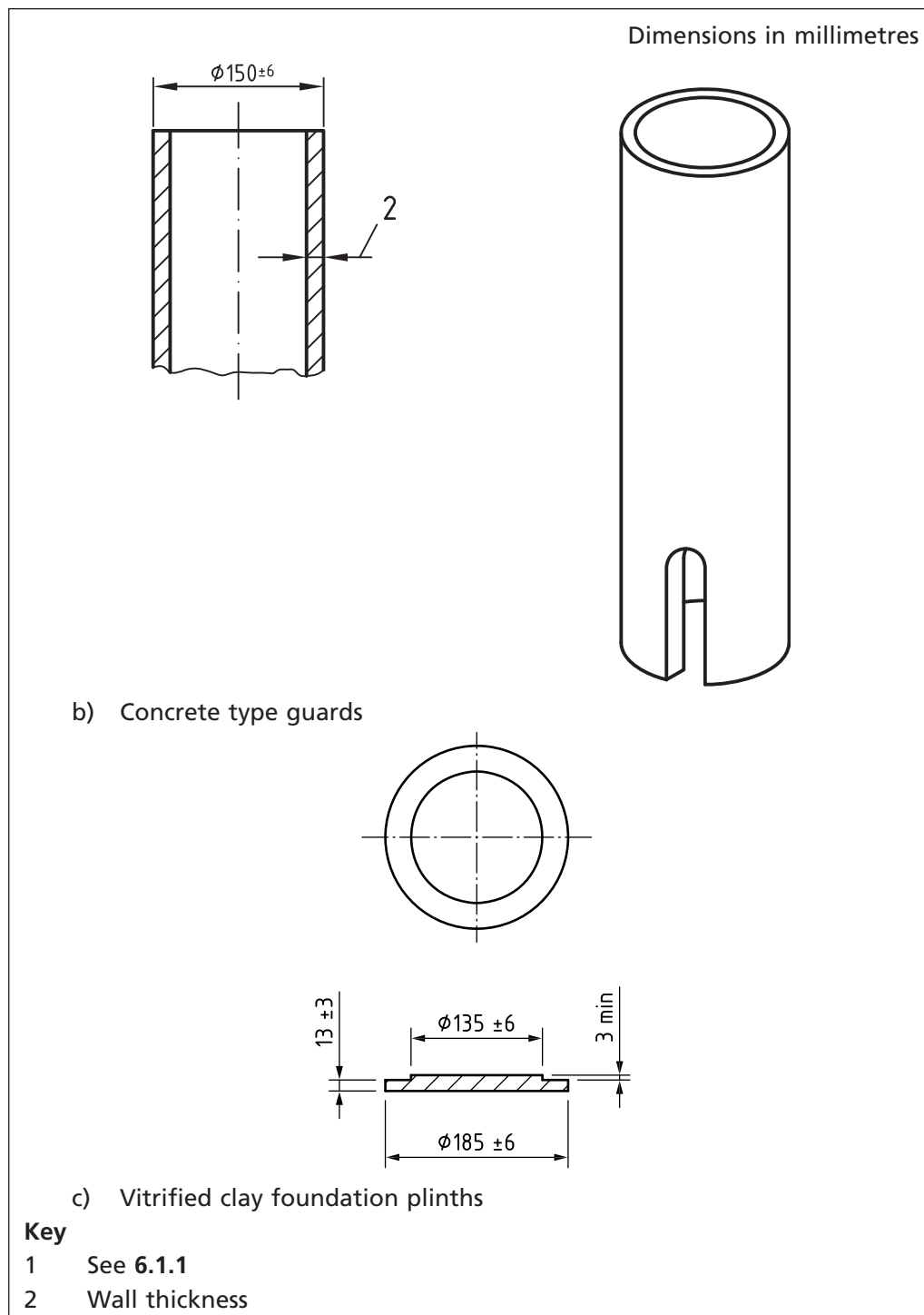
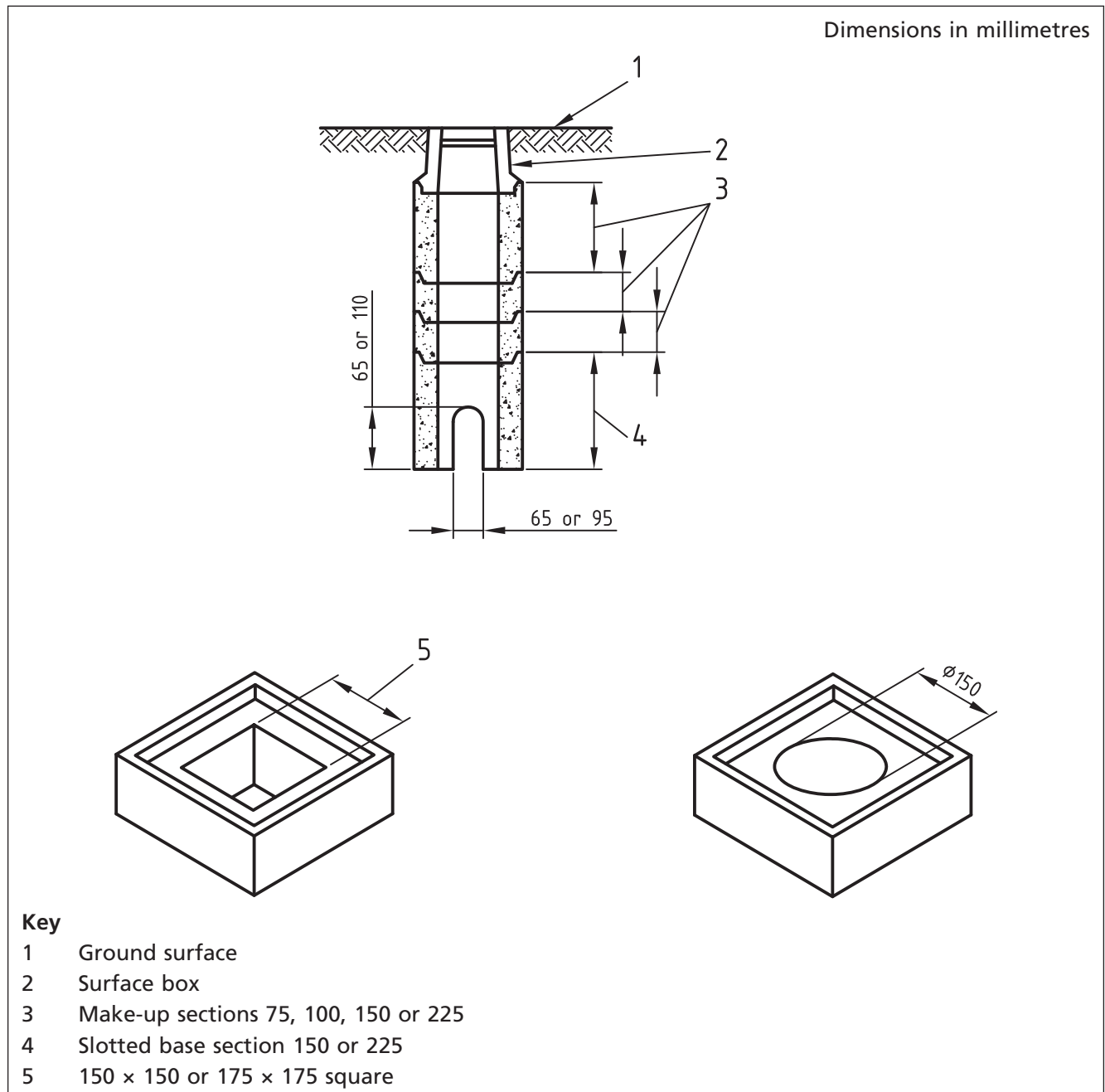


Figure 3 Dimensions of sectional guards



4.3 Dimensions of units

The dimensions of a unit shall conform to 6.2 to 6.6 inclusive, as appropriate to that unit, when measured in accordance with Annex B.