

BRITISH STANDARD

Specification for steel and aluminium access cover systems with over 1 m clear opening

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This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 24, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI and came into effect on 29 August 2008. It was prepared by Technical Committee B/505, Wastewater engineering. A list of organizations represented on this committee can be obtained on request to its secretary.

Relationship with other publications

This standard is complementary to BS EN 124, which specifies requirements for gully tops and manhole tops with a clear opening up to and including 1 m, for use in vehicular and pedestrian areas.

The 1994 edition of EN 124 does not include requirements for the slip/skid resistance of manhole tops or gully tops. However, European Commission mandate M/118 “Wastewater engineering products”, given to CEN under the EU Construction Products Directive (89/106/EEC) for a “harmonized” European Standard for manhole tops and gully tops, requires the skid resistance of covers for manhole tops to be included as a performance characteristic. This is being addressed in the current revision of EN 124:1994, to which the United Kingdom is contributing under the supervision of B/505. Accordingly B/505 gratefully acknowledges the contributions made by the Health and Safety Executive, the County Surveyors’ Society and the Highways Agency to the development of the provisions for slip/skid resistance in this British Standard.

Information about this document

For an enquiry or order to be fully understood it is essential that the manufacturer be given the information set out in Annex A.

Attention is drawn to the fact that cover systems under the scope of this British Standard are intended only to facilitate access to underground chambers.

Product certification/inspection/testing

Users of this British Standard are advised to consider the desirability of third-party certification/inspection/ testing of product conformity with this British Standard. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

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

Products under the scope of this British Standard are normally bespoke and so it is inappropriate for the evaluation of conformity to be verified by systematic examination of the extent to which they fulfil specified requirements. Therefore, although type tests are specified for all requirements, they fall into three categories.

1. Calculation in accordance with established method (e.g. structural performance).
2. Evaluation of a particular material or design element (e.g. slip/skid or sealing).
3. Measurement (e.g. design dimensions).

Some requirements (e.g. design dimensions) are absolute, in that every product needs to conform to the specified requirement.

1 Scope

This British Standard specifies requirements for access cover systems manufactured from steel or aluminium and with a clear opening greater than 1 m for installations within areas subject to pedestrian and/or slow moving vehicular traffic, for use as covers over chambers and ducts.

NOTE For clear openings up to 1 m, BS EN 124 applies.

This standard establishes definitions; materials; design; structural performance; technical documentation; installation and operating guidance notes; warning notes; testing requirements; verification and marking of such access cover systems.

2 Normative references

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

BS EN 1991, *Eurocode 1: Actions on structures*

BS EN 1993, *Eurocode 3: Design of steel structures*

BS EN 1999, *Eurocode 9: Design of aluminium structures*

BS EN 287-1, *Qualification test of welders – Fusion welding – Part 1: Steels*

BS EN 287-2, *Approval testing of welders for fusion welding – Part 2: Aluminium and its alloys*

BS EN 571-1, *Non-destructive testing – Penetrant testing – Part 1: General principles*

BS EN 1386, *Aluminium and aluminium alloys – Tread plate – Specifications*

BS EN 1418, *Welding personnel. Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

BS EN 10025, *Hot rolled products of structural steels*

BS EN 10056, *Specification for structural steel equal and unequal angles*

BS EN 10088, *Stainless steels*

BS EN 10130, *Cold-rolled low-carbon steel flat products for cold forming – Technical delivery conditions*

BS EN 10210-1, *Hot finished structural hollow sections of non-alloy and fine grain steels – Part 1: Technical delivery conditions*

BS EN 10219-1, *Cold formed welded structural hollow sections of non-alloy and fine grain steels – Part 1: Technical delivery conditions*

BS EN 13036-4, *Road and airfield surface characteristics – Test methods – Part 4: Method for measurement of slip/skid resistance of a surface – The pendulum test*

BS EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods*

BS EN ISO 14554, *Quality requirements for welding – Resistance welding of metallic materials*

BS EN ISO 15609, *Specification and qualification of welding procedures for metallic materials – Welding procedure specification*

DD ENV 12633, *Method of determination of unpolished and polished slip/skid resistance value*

3 Terms and definitions

For the purpose of this standard, the following terms and definitions apply.

3.1 access cover

single plate capable of being removed from a frame, or hinged to a frame, allowing access to an underground chamber

3.2 frame

fixed part of the access cover system that houses the cover

3.3 access cover system

assembly of removable or hinged access cover elements supported by a removable structural frame allowing clear access to a chamber or similar

3.4 access cover element

constituent part of the access cover system which may include all or any of the following: the frame, the removable cover, the removable support beams, the support pockets, the hinged cover, the lift assist mechanism, the seals and the locks

3.5 safety grid

protective frame below an access cover or access cover element which allows visual inspection of the chamber but provides protection against falls of persons or materials

3.6 clearance

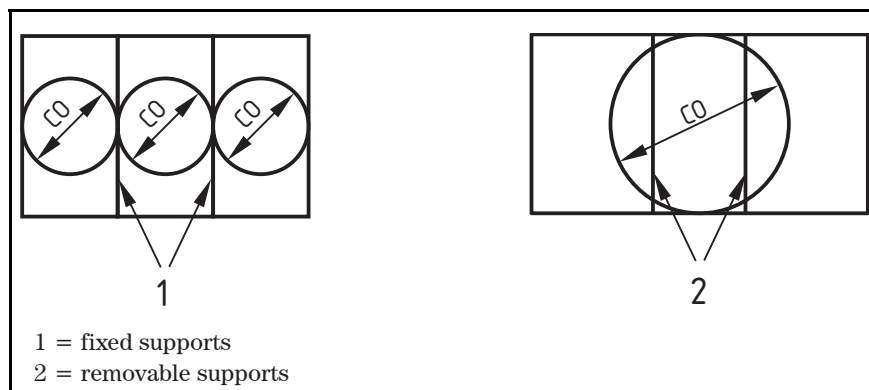
the gap between two adjacent access covers

3.7 clear opening (CO)

the diameter of the largest circle that can be inscribed within the clear area of the frame

NOTE The clear opening is shown in Figure 1.

Figure 1 Clear opening

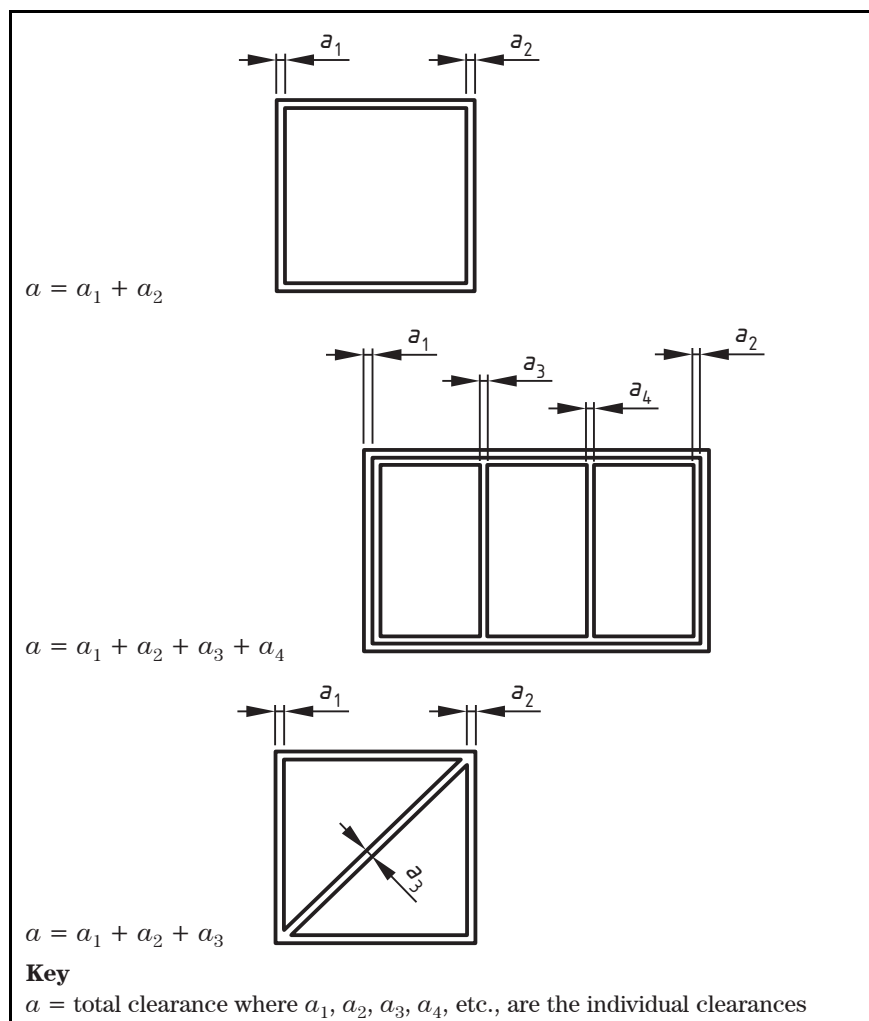


3.8 total clearance

the sum of the maximum individual clearances between adjacent elements of the frame and access covers in any one direction

NOTE The total clearance is shown in Figure 2.

Figure 2 Total clearance



3.9 span
distance between centres of adjacent supports

3.10 airtight cover
access cover system capable of preventing the passage of odours at normal atmospheric pressure

3.11 watertight cover
access cover system capable of preventing the ingress of water

3.12 pressure tight cover (hydraulic surcharge)
access cover system capable of resisting hydraulic pressure from within the chamber

3.13 normal conditions
wet, rarely dry conditions and a slightly aggressive chemical environment, i.e. normal conditions for domestic sewage and treated industrial effluent, and for most natural soils and groundwater

NOTE A “wet, rarely dry” condition for concrete surfaces subject to long term water contact and a “slightly aggressive chemical environment” are defined in EN 206-1 as classes XC2 and XA1 respectively. More severe environments are also defined. If more severe conditions are expected, additional requirements for corrosion protection may be necessary, see Annex A.

3.14 debris gasket
integral element within the cover assembly to prevent or limit the ingress of detritus that may otherwise prevent the operation of the cover

3.15 PSRV
polished slip resistance value

NOTE This value is also used in relation to skid resistance.

3.16 USRV
unpolished slip resistance value

NOTE This value is also used in relation to skid resistance.

3.17 macrotextured surface
area of an access cover system with a distinct raised pattern or studding, which is produced by casting, rolling or machining the face of the area

4 Materials

4.1 General

Access cover systems shall be suitable for use in normal conditions.

NOTE 1 If covers are to be used in more aggressive/severe conditions, additional requirements for corrosion protection may be necessary.

NOTE 2 If sealed covers are to be used in more aggressive/severe conditions, special requirements for the durability of the seal may be necessary.

Access covers, frames and all structural elements shall be made from any of the following materials:

- a) aluminium conforming to **4.2**;
- b) mild steel conforming to **4.3**;
- c) stainless steel conforming to **4.4**.

Operating systems for lift assistance and security locks may be made from additional materials; however, such materials shall have durability and corrosion properties compatible with those of the access cover and frame.

4.2 Aluminium alloy access cover systems

Aluminium access cover systems for use in normal conditions shall be fabricated from aluminium EN-AW 5052 or marine grade aluminium grade 5086-H34 and 6063-T5, 6063-T6 conforming to BS EN 1386 (see Annex A).

Where aluminium access cover systems are to be used in contact with other metals or cementitious materials, corrosion protection shall be applied to the aluminium surface (see **4.6.4**).

NOTE See BS 8118 for aluminium in contact with concrete.

4.3 Mild steel access cover systems

Mild steel access cover systems shall be fabricated from steel conforming to BS EN 10025, BS EN 10210-1, BS EN 10219-1, BS EN 10130 or BS EN 10056.

Mild steel access cover systems shall be made resistant to corrosion in accordance with **4.6**, unless specified otherwise by the purchaser (see Annex A).

4.4 Stainless steel access cover systems

Stainless steel access cover systems shall be fabricated from austenitic stainless steel grades 1.4301 or 1.4401, conforming to BS EN 10088.

If the stainless steel surface is given a decorative finish the treatment shall not be detrimental to the corrosion or slip resistance of the stainless steel.

NOTE For normal conditions no surface corrosion protection system is required for stainless steel. Post fabrication finishing processes are permitted, providing they do not provoke corrosion.