



BSI Standards Publication

13 A plugs, socket outlets, adaptors and connection units

Part 2: Specification for 13 A switched and unswitched socket outlets

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Summary of pages

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Foreword

Publishing information

This part of BS 1363 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 August 2016. It was prepared by Technical Committee PEL/23, *Electrical accessories*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

BS 1363-2:2016+A1:2018 supersedes BS 1363-2:2016, which is withdrawn.

BS 1363-2:2016 superseded BS 1363-2:1995+A4:2012, which remains current and will be withdrawn on 31 August 2019.

Information about this document

BS 1363 comprises five parts covering the following:

- *Part 1: Specification for rewirable and non-rewirable 13 A fused plugs;*
- *Part 2: Specification for 13 A switched and unswitched socket-outlets;*
- *Part 3: Specification for adaptors;*
- *Part 4: Specification for 13 A fused connection units switched and unswitched;*
- *Part 5: Specification for fused conversion plugs.*

NOTE In order to prevent confusion with [BS 1363:1984](#), the figure and clause numbers have been retained.

The structure of [BS EN 50525](#) and its derivation from British Standards and HD 21 and HD 22 is set out in [BS EN 50525-1:2011](#), National Annex NA. This is reproduced in [Annex H](#) for the convenience of users of this part of BS 1363.

BS 1363-2 was a new edition and incorporated technical changes only. It did not represent a full review or revision of the standard, which will be undertaken in due course. The new edition of BS 1363-2 incorporated [Annex I](#) (normative) which provides requirements for incorporated electronic components.

Text introduced or altered by Amendment No. 1 is indicated in the text by tags A1 A1. Minor editorial changes are not tagged.

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 **G.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.

Particular attention is drawn to the following specific regulations:

- The Plugs and Sockets etc. (Safety) Regulations 1994. SI No. 1768. [1]

1 Scope

This part of BS 1363 specifies requirements for 13 A switched and unswitched shuttered socket-outlets for household, commercial and light industrial purposes, with particular reference to safety in normal use. The socket-outlets are suitable for the connection of appliances, sound-vision equipment, luminaires, etc. in a.c. circuits only, operating at voltages not exceeding 250 V r.m.s. at 50 Hz using plugs in accordance with BS 1363-1:2016. Additional requirements are included for socket-outlets suitable for electric vehicle charging.

Requirements are specified for 13 A shuttered socket-outlets in single or multiple arrangements, with or without associated controlling switches, for flush mounting in suitable boxes, e.g. conforming to BS 4662:2006+A1:2009, or for surface or panel mounting or for portable use. Fixed socket-outlets are intended for use with cables conforming to [BS 6004:2012](#) and cables to the relevant part of [BS EN 50525](#) (see [Annex H](#)), having copper conductors. Portable socket-outlets are intended for use with flexible cables conforming to the relevant part of [BS EN 50525](#). Socket-outlets incorporating fuse links, switches and indicator lamps are included within the scope of this part of BS 1363. Socket-outlets incorporating electronic components as detailed in [Annex I](#) are included within the scope of this part of BS 1363.

Socket-outlets conforming to this standard are shuttered and therefore do not require the use of additional means to shield the current-carrying contacts when no plug is present in the socket-outlet.

NOTE 1 The titles of the publications referred to in this part of BS 1363 are listed in the bibliography.

NOTE 2 In order to maintain safety and interchangeability with plugs and socket-outlets it is necessary that these products conform to the requirements of [Clause 9](#) and [Clause 13](#) of this part of BS 1363, however their body outline need not be limited at a distance of 6.35 mm from the plug engagement surface.

NOTE 3 Requirements for electromagnetic compatibility for socket-outlets that incorporate electronic devices are given in [Annex I](#).

A socket-outlet that does not incorporate electronic devices does not emit intolerable electromagnetic interference since significant electromagnetic disturbances are only generated during insertion and withdrawal which are not continuous.

A socket-outlet that does not incorporate electronic devices is mechanical by nature of construction. The product is therefore immune from electromagnetic interference.

2 Conditions of use

Socket-outlets shall be suitable for use under the following conditions:

- a) an ambient temperature in the range -5°C to $+40^{\circ}\text{C}$, the average value over 24 h not exceeding 25°C ;

NOTE Under normal conditions of use, the available cooling air is subject to natural atmospheric variations of temperature and hence the peak temperature occurs only occasionally during the hot season, and on those days when it does occur it does not persist for lengthy periods.

- b) a situation not subject to exposure to direct radiation from the sun or other source of heat likely to raise temperatures above the limits specified in a);
- c) an altitude not exceeding 2 000 m above sea level;
- d) an atmosphere not subject to abnormal pollution by smoke, chemical fumes or other abnormal conditions. This is equivalent to pollution degree 2, (see [Annex E](#)) and Overvoltage Category III (see [Annex D](#)).

3 Terms and definitions

For the purposes of this part of BS 1363 the following terms and definitions apply.

NOTE Where the terms voltage and current are used, they imply r.m.s. values, unless otherwise stated.

3.1 socket-outlet

accessory having a set of three socket-contacts designed to engage with the pins of a corresponding plug and having means for the electrical connection of appropriate flexible cables and may include its dedicated enclosure

3.2 fixed socket-outlet

socket-outlet which with its associated enclosure is intended for use mounted in or on a fixed surface

3.3 surface-mounted socket-outlet

socket-outlet which is intended to be mounted on a wall or other flat surface without the need for recessing

3.4 flush-mounted socket-outlet

socket-outlet which is intended to be mounted in a box which is recessed into a wall or other flat surface

NOTE The socket-outlet plate and the socket-outlet base are regarded as forming a complete unit, and the socket-outlet plate is mounted with its back either flush with a wall or other flat-surface structure, or flush with the front of a socket-outlet box or enclosure.

3.5 panel-mounted socket-outlet

socket-outlet intended for incorporation into equipment panels or electrical trunking and which depends upon such incorporation for its enclosure

3.6 portable socket-outlet

socket-outlet intended to be connected to, or integral with, a flexible cable, and which can easily be moved from one place to another while connected to the supply

3.7 rewirable portable socket-outlet

portable socket-outlet so constructed that a flexible cable can be fitted or replaced using general purpose tools

3.8 non-rewirable portable socket-outlet

portable socket-outlet so constructed that it forms a complete unit with the flexible cable which cannot be replaced after assembly by the manufacturer of the portable socket-outlet

NOTE See also [13.18](#).

3.9 moulded-on portable socket-outlet

non-rewirable portable socket-outlet, the manufacture of which is completed by insulating material moulded around pre-assembled component parts and the terminations of the flexible cable

3.10 fused socket-outlet

socket-outlet having provision for a replaceable cartridge fuse link

3.11 switched socket-outlet

socket-outlet with an associated switch to disconnect the supply to the line socket contact or to both line and neutral socket contacts

3.12 multiple socket-outlet

combination of two or more socket-outlets

3.13 socket-outlet base

part of the socket-outlet which carries the contacts

NOTE It may be integral with the socket-outlet plate.

3.14 socket-outlet plate

external plate which covers the base and contact assembly of a socket-outlet and through which the pins of the plug are inserted

3.15 socket-outlet box

box suitable for mounting one or more socket-outlets

3.16 shutter

movable device arranged to shield the current-carrying socket-outlet contacts automatically when a corresponding plug is removed

3.17 actuating member

part which is moved, e.g. pulled, pushed or turned by the user, to operate the switch mechanism

3.18 indicator lamp (pilot lamp)

lamp or similar device which illuminates to indicate that the socket-outlet contacts are energized

3.19 terminals

means by which the user can make an electrical connection between the appropriate cable or flexible cable and the conducting parts of the socket-outlet without the use of special tools

3.20 screw-type terminal

terminal in which the connection is made directly by means of screws or nuts of any kind or indirectly through an intermediate metal part such as a washer, clamping plate or anti spread device on which the screw or nut bears directly

NOTE The following are examples of screw-type terminals.

- a) *A pillar terminal is a terminal in which the conductor is inserted into a hole or cavity, where it is clamped under the shank of the screw or screws.*
- b) *A screw terminal is a terminal in which the conductor is clamped under the head of the screw.*
- c) *A stud terminal is a terminal in which the conductor is clamped under a nut.*

3.21 clamp type (screwless) terminal

terminal for the connection and subsequent disconnection of one or more conductor(s), the connection being made directly or indirectly by means of springs, wedges or the like

3.22 termination

means by which an electrical connection can be made between the appropriate flexible cable and the conducting part of the socket-outlet using special purpose tools, e.g. soldering, welding, crimping

3.23 fuse carrier

moveable or removable part designed to carry, retain, cover and/or remove the fuse link

3.24 type test

test or series of tests made on a type test sample, for the purpose of checking conformity of the design of a given product with the requirements of the relevant standard

3.25 type test sample

sample consisting of one or more similar units or specimens submitted by the manufacturer or responsible vendor for the purpose of a type test

3.26 accessible external surface of a socket-outlet

all surfaces which can be touched by test probe B of [BS EN 61032:1998](#) when the socket-outlet is installed as in use

3.27 live parts

current-carrying parts and those metal parts in contact with them during normal use

NOTE Metal parts of the earthing circuit are not considered to be current-carrying parts.

3.28 fine wire thermocouple

thermocouple having wires not exceeding 0.3 mm in diameter

3.29 calibrated link

calibrated heat source for use in place of a fuse link during temperature-rise tests

3.30 resilient material

material having the inherent capability of regaining or substantially regaining its original form when deforming loads are removed

3.31 creepage distance

shortest distance along the surface of the insulating material between two conductive parts

3.32 clearance

shortest distance in air between two conductive parts

3.33 basic insulation

insulation applied to live parts to provide basic protection against electric shock

NOTE Basic insulation does not necessarily include insulation used exclusively for functional purposes.

3.34 supplementary insulation

independent insulation applied in addition to basic insulation, in order to provide protection against electric shock in the event of failure of basic insulation

3.35 reinforced insulation

single insulation system applied to live parts, which provides a degree of protection against electric shock equivalent to double insulation under the conditions specified in the relevant standard

3.36 functional insulation

insulation between conductive parts which is necessary only for the proper functioning of the equipment

3.37 engagement surface of a socket-outlet

surface, ignoring any raised marking, which is in contact with or directly beneath the [Figure 11](#) gauge when it is in full engagement with the socket-outlet

NOTE See [13.1](#).

3.38 insignificant mass

insufficient combustible mass to constitute a fire hazard

NOTE Parts of insignificant mass are usually less than 2 g.

3.39 small parts

parts where each surface lies completely within a circle of 15 mm diameter or where some of the surface lies outside the 15 mm diameter circle but in such a way that it is not possible to place a circle of 8 mm diameter on any of this remaining surface

[SOURCE: BS EN 60695-2-11:2014, [3.15](#), modified]

NOTE More information concerning small parts can be found in [BS EN 60695-2-11:2014](#), 4.4.

4 General

Socket-outlets shall be so designed and constructed that in normal use their performance is reliable and minimizes the risk of danger to the user or to the surroundings. Such socket-outlets shall be capable of meeting all the relevant requirements and tests specified in this part of BS 1363.

Unless otherwise stated, reference to a plug in this part of BS 1363 shall mean a plug in accordance with BS 1363-1:2016.

5 General conditions for type testing

5.1 All tests shall be type tests.

Unless otherwise specified in this part of BS 1363 the socket-outlets shall be tested as delivered by the manufacturer or responsible vendor and under normal conditions of use, at an ambient temperature of 20 °C ±5 °C, after being conditioned at normal laboratory temperature and humidity levels for at least 4 days.

Unless otherwise stated by the manufacturer, flush-mounted socket-outlets shall be tested when mounted on a corresponding insulated box conforming to the dimensional requirements of [BS 4662:2006+A1:2009](#), the fixing screws being tightened with a torque of 0.6 Nm ±10%.

Other types shall be mounted according to the manufacturer's instructions.

Socket-outlets having a declared IP rating shall be tested as a complete assembly (socket-outlet and enclosure) when mounted in accordance with manufacturer's instructions and conditions of use.

The socket-outlets used for the tests shall be representative of normal production items in respect of all details which may affected the test results.

Non-rewirable socket-outlets shall be supplied with an appropriate flexible cable which shall be at least 1 m long.

Socket-outlets shall be deemed to conform if no sample fails in the complete series of tests given in [Table 1](#).

Table 1 — *Schedule of tests*

Sequence	Samples	Test	Clause no.
1	3	Inspection, measurement, gauging and manipulation	5 , 6 , 7 , 9.1 , 11.1 (except 11.10), 9.2 , 9.4 , 10.1 , 13.1 , 13.2 , 13.3 , 3.9 , 13.10 , 13.12 , 13.14 , 13.15 , 3.16 , 13.17 , 13.18 , 13.20 , A1 13.21 , 13.25 ** A1 , 19.2 , 19.3 , 19.4 , 19.6 , 8 (except Annex C), 21
2	3		5 , 9.3 , 21.3 (10.2 , 10.3 only), 19.1 , 14.2 , 13.13 , (9.1.1 only), 13.4.1a), 13.4.1b), 13.5 , 13.6
3	3	General	5 , 13.13 (20.1.2 only), 17 , 13.11 , (13.11.1 only), 16 , 19.5
4	3		5 , 14.1 , 15 , 18.1.2 (9.1 , 16 , 13.19 , 15 , 13.4.1a), 10.2 , 13.6 , 13.7 , 13.8)
5	3		5 , 14.2 , 18.1.3 , 20
6	3		5 , 22
7	3	Materials	5 , 23.2 , 8.2 (Annex C only)
8	3		5 , 24
9 ^{A)}	3	Positive break	5 , 13.11.2
10	3	Ingress protection	5 , 13.22 , 13.23 , A1 13.24 A1
11	3	Electric vehicle charging	5 , 14.1 , 17.2 , 18.2
12	3		5 , 26
13	3	Additional tests for rewirable fixed socket-outlets with screwless terminals	5 , 14.1 , 11.10

NOTE 1 The order of tests given in sequence 1 above is preferred but not mandatory except where required within the text of the appropriate clause.

A1 **NOTE 2** ** denotes that additional samples may be required for socket-outlets incorporating electronic components. **A1**

^{A)} An additional new set of three samples prepared with the contacts closed is supplied by the manufacturer for this test.

If one sample fails in the complete series of tests given in [Table 1](#), then socket-outlets of that type shall be deemed to have failed to conform to this part of BS 1363, unless the socket-outlets shall be shown to be not representative of normal production or design, in which case a further type test sample shall be submitted to the test or tests in that particular group. If there is no failure in this retest then socket-outlets of that type shall be deemed to conform to this part of BS 1363.

If more than one sample fails in the complete series of tests given in [Table 1](#) then socket-outlets of that type shall be deemed not to conform to this part of BS 1363.

For type testing, all tests have been included in the test schedule and shall be performed in the specified order.

NOTE References to carrying out specific tests in various clauses are not intended to indicate a sequence of testing different to that in the schedule and should not be conducted as separate additional tests.

5.2 All inspections and tests, of any one classification (see [Clause 6](#)), shall be carried out as specified in the clauses listed in [Table 1](#) on the number of samples in the sample column and in the order given.

5.3 Gauges in accordance with [Figure 11](#), [Figure 12](#), [Figure 14](#), and [Figure 16](#) shall be considered to conform to the dimensional requirements if the results of the measured values are within the specified

dimensions and the uncertainty of measurement at not less than 95% confidence level does not exceed ± 0.005 mm.

6 Classification and rating

6.1 The rated current of all socket-outlets shall be 13 A.

6.2 Socket-outlets shall be classified as follows:

6.2.1 according to the number of gangs:

- single; or
- multiple.

6.2.2 according to switching capability:

- switched; or
- unswitched.

6.2.3 according to fusing capability:

- fused; or
- unfused.

6.2.4 according to method of mounting:

- fixed flush; or
- fixed surface; or
- panel-mounting; or
- portable rewirable; or
- portable non-rewirable.

6.2.5 according to indicator type:

- with indicator lamp; or
- without indicator lamp.

6.2.6 according to the IP rating if declared:

- for socket-outlets having an IP rating with the plug inserted;
- for socket-outlets having an IP rating only when no plug is inserted.

6.2.7 according to the type of terminal:

- socket-outlets with screw-type terminals;
- socket-outlets with screwless terminals for rigid conductors only;
- socket-outlets with screwless terminals for flexible conductors only;
- socket-outlets with screwless terminals for rigid and flexible conductors.

6.2.8 according to suitability for electric vehicle charging:

- intended for electric vehicle charging, applicable to fixed socket-outlets only;
- not intended for electric vehicle charging.

6.2.9 according to incorporation of electronic components:

- with electronic components;
- without electronic components.

7 Marking and labelling

7.1 Socket-outlets shall be legibly and durably marked with the following information, which shall not be placed on screws, removable washers or other easily removable parts, or upon parts intended for separate sale:

- either the name, trade mark or identification mark of the manufacturer or responsible vendor, which may be duplicated on a removable fuse carrier;
- the number of this British Standard, i.e.  BS 1363 ¹;
- for portable socket-outlets the number of this British Standard shall be followed by “/A”;
- for socket-outlets for electric vehicle charging, the number of this British Standard shall be followed by “/EV”, this shall only be marked on the rear of a fixed socket-outlet;
- on rewirable socket-outlets the terminals intended for the connection of the various conductors shall be identified by the symbols given in [7.5](#);
- for fused socket-outlets, the words “FUSE” or “FUSED” or the symbol (given in [7.5](#)) on the engagement surface of a socket-outlet;
- fixed fused multiple socket-outlets shall be marked on the engagement surface with the maximum rated current of 13 A (e.g. MAX. 13 A);
- all socket-outlets shall be marked with the following:
 - rated current “13 A”;
 - rated volts;
 - nature of supply.
- for socket-outlets with screwless terminals:
 - an appropriate marking indicating the length of insulation to be removed before insertion of the conductor into the screwless terminal;
 - an indication of the suitability to accept rigid conductors only for those socket-outlets having this restriction;
 - an indication of the suitability to accept flexible conductors only for those socket-outlets having this restriction.
- where the declared IP classification is higher than IP20 then the IP classification shall be marked. The marking shall be discernible when the socket-outlet is mounted and wired as in normal use.

Portable socket-outlets shall be marked on the accessible external surface.

¹ Marking  BS 1363  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 second or third-party certification of conformity. Further testing and conformity certification remains at the discretion of the manufacturer and is not a requirement of this standard.

Table 2 — Rated current and maximum fuse rating in normal use, and load for flexing and flexible cable grip tests related to size of flexible cable

Flex cable nom cross-sectional area	Rated current	Test current ± 0.4 A	Fuse rating	Load for flexing test +2%, -0%	Cable grip tests	
					Load +2%, -0%	Torque ^{A)}
mm ²	A	A	A	kg	kg	Nm
1 ^{B)}	13	14	13	2	3	0.25
1.25	13	14	13	2	6	0.30
1.5	13	14	13	2	6	0.35

^{A)} The recording of a measured value of torque in accordance with this table is considered to conform to this part of BS 1363 on condition that the uncertainty of measurement at not less than 95% confidence level does not exceed $\pm 10\%$.

^{B)} The flexible cable size which may be used with a maximum length of 2 m.

- 7.1.1** Conformity shall be checked by inspection and by rubbing the markings for approximately 15 s with a cloth soaked in water, and again for approximately 15 s with a cloth soaked in an aliphatic solvent hexane with a content of aromatics of maximum 0.1% by volume, a Kauri-butanol value of 29, initial boiling point of approximately 69 °C, and relative density of approximately 0.68.

The marking shall remain legible. Markings produced by an engraving or moulding process shall be deemed to conform without test.

- 7.2** Portable socket-outlets fitted with a flexible cable shall be supplied with a label or instruction indicating the colour coding of the cores of the flexible cable as follows.

Cores or conductors in the mains shall be coloured in accordance with the following code:

Green-and-yellow	Earth (if any)
Blue	Neutral
Brown	Line

- 7.2.1** Conformity shall be checked by inspection.

- 7.3** Rewirable portable socket-outlets shall be provided with adequate instructions for the safe connection of the appropriate 3-core flexible cable, including clear instructions for the removal of insulation from the conductors.

- 7.3.1** Conformity shall be checked by inspection.

- 7.4** If symbols are used they shall be as follows:

amperes	A
volts	V
*alternating current	~
*direct current (d.c.)	— — — —
line	L
neutral	N

*earth  (preferred) or 

*fuse 

For screwless terminals
suitable for rigid conductors r
only

For screwless terminals
suitable for flexible f
conductors only

Degree of protection, where IPXX
relevant

*NOTE 1 IEC 60417-DB gives details of symbols marked with *.*

NOTE 2 For the marking of the rated current and rated voltage of the socket-outlet, figures may be used alone, the figures for the current rating being placed before or above that of the rated voltage and separated by a line.

If a symbol for nature of supply is used, it shall be placed next to the marking for rated current and rated voltage. Examples are as follows:

13 A 250 V ~ or 13/250 ~ or $\frac{13}{250}$ ~

or 13 A 250 V a.c. or 13/250 a.c. or $\frac{13}{250}$ a.c.

- 7.5** Instructions for installation and use of socket-outlets having an IP classification greater than IP20 shall be provided.

8 Clearances, creepage distances and solid insulation

Socket-outlets shall be constructed so that the clearances, creepage distances and solid insulation are adequate to withstand the electrical stresses taking into account the environmental influences that may occur. Clearances, creepage distances and solid insulation shall conform to the relevant requirements of [8.1](#), [8.2](#), [8.3](#) and [8.4](#).

The distance between lead wires in the pinch of a neon lamp with external resistor shall be a minimum of 1 mm.

Socket-outlets conforming to the requirements for basic insulation shall be deemed to meet the requirements of this clause. If the manufacturer declares an insulation level exceeding basic insulation then the socket-outlet shall be tested accordingly.

NOTE 1 The requirements and tests are based on [BS EN 60664-1:2007](#).

NOTE 2 Product insulation consists of basic insulation and protective earthing as required by BS EN 61140:2016 for Class I equipment. Mechanical strength equivalent to that which would be provided by reinforced insulation as listed in BS EN 61140:2016 is achieved in BS 1363 products through specific mechanical and material tests.

8.1 Clearances

Socket-outlets energized directly from the low voltage supply fall into Overvoltage Category III.

The clearances shall withstand the rated impulse voltage declared by the manufacturer considering the rated voltage and the Overvoltage Category as given in [Annex D](#) and the pollution degree declared by the manufacturer in accordance with [Annex E](#).

For the measurements, all parts which may be removed without the use of a tool are removed and moveable parts which can be assembled in different orientations are placed in the most unfavourable position.

NOTE Moveable parts are, for example, hexagonal nuts, the position of which cannot be controlled throughout an assembly.

8.1.1 Clearances for basic insulation

The clearances for basic insulation shall not be less than the values given in [Table 3](#) except as described below.

Smaller unspecified clearances (except those values marked in [Table 3](#) with footnote “B”) may be used if the socket-outlet meets the impulse withstand voltage test of [Annex F](#) at the impulse voltage specified in [Annex D](#) but only if the parts are rigid or located by mouldings or if the construction is such that it is unlikely that distances will be reduced by distortion or by movement of the parts during mounting connection and normal use.

Conformity shall be checked by inspection, and if necessary by measurement, or by the test of [Annex F](#).

If clearance distances are to be measured, this shall be carried out in accordance with [Annex B](#).

8.1.2 Clearances for functional insulation

The clearances for functional insulation shall not be less than the values specified for basic insulation in [8.1.1](#).

Conformity shall be checked by inspection, and if necessary by measurement, or by the test of [Annex F](#).

If clearance distances are to be measured, this shall be carried out in accordance with [Annex B](#).

8.1.3 Clearances for supplementary insulation

The clearances for supplementary insulation shall not be less than the values specified for basic insulation in [8.1.1](#).

Conformity shall be checked by inspection, if necessary by measurement, or by the test of [Annex F](#). If clearance distances are to be measured, this shall be carried out in accordance with [Annex B](#).

Table 3 — Minimum clearances for basic insulation

Rated impulse withstand voltage kV ^{A)}	Minimum clearance in air up to 2 000 m above sea level mm
0.33	0.2 ^{B)}
0.50	0.2 ^{B)}
0.80	0.2 ^{B)}
1.5	0.5
2.5	1.5
4.0	3.0
6.0	5.5

Table 3 (continued)

Rated impulse withstand voltage kV ^{A)}	Minimum clearance in air up to 2 000 m above sea level mm
^{A)} See Annex D . This voltage is: • for functional insulation: the maximum impulse voltage expected to occur across the clearance; • for basic insulation directly exposed to or significantly influenced by transient overvoltage from the low voltage mains: the rated impulse withstand voltage of the socket-outlet; • for other basic insulation: the highest impulse voltage that can occur in the circuit.	
^{B)} Minimum clearance values are based on BS EN 60664-1:2007 .	

8.1.4 Clearances for reinforced insulation

The clearance for reinforced insulation shall be not less than the values specified for basic insulation in [8.1.1](#) but using the next higher step for rated impulse withstand voltage given in [Table 3](#).

Conformity shall be checked by inspection and by measurement, or by the test of [Annex F](#).

8.1.5 Contact gap

The minimum contact gap shall be 1.2 mm in the open position, except for electronic switches covered by Annex I.5.

Conformity shall be checked by measurement.

8.2 Creepage distances

The creepage distances shall be dimensioned for the voltage, which is expected to occur in normal use taking into account the pollution degree, and the material group as declared by the manufacturer.

For the measurements, all parts which may be removed without the use of a tool are removed and moveable parts which can be assembled in different orientations are placed in the most unfavourable position.

NOTE 1 Moveable parts are, for example, hexagonal nuts, the position of which cannot be controlled throughout an assembly.

NOTE 2 A creepage distance cannot be less than the associated clearance.

Creepage distances are measured in accordance with [Annex B](#).

The relationship between material group and between comparative tracking index (CTI) values and proof tracking index (PTI) values is as follows:

Material group I	$600 \leq \text{CTI/PTI}$
Material group II	$400 \leq \text{CTI/PTI} < 600$
Material group IIIa	$175 \leq \text{CTI/PTI} < 400$
Material group IIIb	$100 \leq \text{CTI/PTI} < 175$

The CTI or PTI values are determined in accordance with [Annex C](#).

NOTE 3 For glass, ceramics and other inorganic materials which do not track, creepage distances need not be greater than their associated clearance.

8.2.1 Creepage distances for basic insulation

The creepage distances for basic insulation shall not be less than the values given in [Table 4](#).

Conformity shall be checked by measurement.

Table 4 — Minimum creepage distances (mm) for basic insulation

Rated voltage ^{A)} V (r.m.s.)	Pollution degree 2 ^{B)}			Pollution degree 3 ^{B)}		
Up to and including	Material group			Material group		
—	I	II	IIIa/IIIb	I	II	IIIa
250	1.3	1.8	2.5	3.2	3.6	4.0

^{A)} This voltage is the voltage rationalized through Table F.3a and Table F.3b of [BS EN 60664-1:2007](#) based on the nominal voltage of the supply system.

^{B)} Details of pollution degrees are given in [Annex E](#).

8.2.2 Creepage distances for functional insulation

The creepage distances for functional insulation shall not be less than the values specified for basic insulation in [8.2.1](#).

Conformity shall be checked by measurement.

8.2.3 Creepage distances for supplementary insulation

The creepage distances for supplementary insulation shall not be less than the values specified for basic insulation in [8.2.1](#).

Conformity shall be checked by measurement.

8.2.4 Creepage distances for reinforced insulation

The creepage distances for reinforced insulation shall not be less than those derived from twice the distance specified for basic insulation in [Table 4](#).

This requirement shall not be applied to the sleeves of the plug pins.

Conformity shall be checked by measurement.

8.3 Solid insulation

Solid insulation for basic, functional, supplementary and reinforced insulation shall be capable of withstanding electrical stresses which can occur in normal use.

No minimum thickness is specified for solid insulation.

8.3.1 Conformity shall be checked by tests in accordance with [15.1.3](#) using the values given in [Table 5](#).**Table 5** — Withstand voltages for insulation types

Insulation	Test voltage V (r.m.s.)
Functional insulation	1 500
Basic insulation	1 500
Supplementary insulation	1 500
Reinforced insulation	3 000

8.4 Requirements for printed wiring boards and equivalent construction

Printed wiring boards and equivalent construction shall conform to [BS EN 60664-5:2007](#).

Where coating, potting or moulding is used articles shall conform to BS EN 60664-3:2003+A1:2010.

9 Accessibility of live parts

- 9.1** Socket-outlets shall be so designed that when they are mounted and wired as in normal use, live parts are not accessible.

- 9.1.1** Conformity shall be checked by the application of the test pin shown in [Figure 1](#) perpendicular to the accessible external surface of the socket-outlet with a force of 5_{-1}^0 N. It shall not be possible to touch live parts.

NOTE SELV parts are not considered to be live parts for the purpose of this test.

- 9.2** Socket-outlet shall be designed and constructed so as to protect the user against accidental contact with live parts during insertion or withdrawal of plugs.

- 9.2.1** Conformity shall be verified by satisfying the dimensional and gauging requirements of this part of BS 1363.

- 9.3** Resilient accessible external surfaces of socket-outlets shall be so designed and constructed that when assembled and wired as in normal use, there is no risk that, as a result of undue pressure, live parts could penetrate the accessible external surfaces or become so disposed as to reduce creepage and clearances below those given in [Clause 8](#).

- 9.3.1** Conformity shall be checked by the following test (an example of a suitable test apparatus is shown in [Figure 2](#)).

The design of the apparatus shall be such that a steady force of 240_{-10}^0 N can be applied to those places where the possibility of a failure exists, the force being applied through a metal test pressure block as shown in [Figure 2a](#)).

Each sample is subjected to the force at each chosen place in turn. During each application of force, a test voltage of $2\,000\text{ V} \pm 60\text{ V}$ 50 Hz of substantially sinusoidal waveform is applied for 60_{+5}^0 s between all live parts bonded together and the metal test pressure block.

During the test no flashover or breakdown shall occur.

After the test it shall not be possible to touch live parts with test probe 11 of [BS EN 61032:1998](#) applied with a force of 30_{-2}^0 N.

- 9.4** It shall not be possible to introduce a conducting device through the earthing socket aperture(s) of a socket-outlet in such a manner that there is a risk of making contact with any live conductor, with or without insulation.

- 9.4.1** Conformity shall be checked by introducing a rigid metal pin, $1_{-0.05}^0$ mm diameter $\times$ 60 mm $\pm$ 1 mm long, through the earthing socket aperture or apertures of a socket-outlet mounted and wired within an appropriate enclosure, applying a force of 5_{-1}^0 N, with the conductors in the most unfavourable positions.

10 Provisions for earthing

10.1 Socket-outlets shall be so constructed that, when inserting the plug, the earth connection is made before the current-carrying pins of the plug become live. When withdrawing the plug, the current-carrying parts shall separate before the earth contact is broken.

10.1.1 Conformity shall be checked by inspection and electrical test.

10.2 All accessible metal parts of socket-outlets shall be in effective electrical contact with the earthing socket contact, except that metal parts on, or screws in or through, non-conducting material, and separated by such material from current-carrying parts in such a way that in normal use they cannot become live, need not be in effective electrical contact with the earthing socket contact.

Metal parts having an accessible surface coating of lacquer or enamel shall be tested as accessible metal parts.

10.2.1 Conformity shall be checked by inspection and the following:

- a) for metal parts insulated from live parts, by the test described in [15.1.3](#);
- b) for metal parts connected to an earthing terminal by the following test. A current of 25 A ± 0.75 A, derived from an a.c. source having a no-load voltage not exceeding 12 V, is passed for 60^{+5}_0 s between the earthing terminal and any accessible metal part intended to be earthed and between the earthing terminal and an earthing plug pin inserted in the earthing socket contact;
- c) the resistance between the earthing terminal and any other nominated part shall not exceed 0.05 Ω .

10.3 If means are provided for electrically bonding the mounting box to the earthing circuit of the socket-outlet by means of the fixing screws, the connection between the screw and earthing terminal shall be of low resistance.

10.3.1 Conformity shall be checked by the test described in **10.2.1b)** applied between the socket-outlet earthing terminals and any fixing screw in electrical contact with the earthing circuit. For the purpose of this test the socket-outlet shall be attached to its appropriate mounting box, the fixing screws being tightened to a value of two thirds those given in [Table 6](#).

Table 6 — *Torque values for screws and nuts*

Declared diameter of screw thread	Torque (see Note 1)		
	For metal screws (see Note 2)	For other metal screws and nuts	For screws of insulating material
mm	Nm	Nm	Nm
Up to and including 2.8	0.2	0.4	0.4
Over 2.8, up to and including 3	0.25	0.5	0.5
Over 3, up to and including 3.2	0.3	0.6	0.6
Over 3.2, up to and including 3.6	0.4	0.8	0.6
Over 3.6, up to and including 4.1	0.7	1.2	0.6
Over 4.1, up to and including 4.7	0.8	1.8	0.9
Over 4.7, up to and including 5.3	0.8	2.0	1.0
Over 5.3, up to and including 6	—	2.5	1.25

Table 6 (continued)

Declared diameter of screw thread	Torque (see Note 1)		
	For metal screws (see Note 2)	For other metal screws and nuts	For screws of insulating material
mm	Nm	Nm	Nm

NOTE 1 The recording of a measured value given in this table is considered to conform to this part of BS 1363 on condition that the uncertainty of measurement at not less than 95% confidence level does not exceed $\pm 10\%$.

NOTE 2 This column applies to metal screws without heads if the screw when tightened does not protrude from the hole, and to other metal screws which cannot be tightened by means of a screwdriver with a blade wider than the diameter of the screw.

11 Terminals and terminations

11.1 Terminals and terminations shall provide for effective clamping and securing of conductors connected to them, so that efficient electrical connection is made.

11.1.1 Conformity shall be checked in accordance with [11.2](#) to [11.10](#), according to the type of terminal or termination.

11.2 Rewirable portable socket-outlets shall be provided with terminals as defined in [3.20](#).

11.2.1 Conformity shall be checked by inspection.

11.3 Non-rewirable portable socket-outlets shall be provided with soldered, welded, crimped or similar terminations; for all these methods of termination, not more than $\overline{A_1}$ two strands of conductors $\overline{A_1}$ shall be fractured during connection.

Screwed and "snap-on" terminals shall not be used. Crimped connections shall not be made on to pre-soldered flexible cables unless the soldered area is entirely outside the crimp.

11.3.1 Conformity shall be checked by inspection and measurement.

11.4 Terminals in rewirable portable socket-outlets shall be of screw-type and permit the connection, without special preparation, of flexible cables having nominal conductor cross-sectional areas of 1 mm² and 1.5 mm² as given in [BS EN 50525-2-11:2011](#) and [BS EN 50525-2-12:2011](#).

11.4.1 Conformity shall be checked by inspection and fitting the appropriate conductors.

11.5 Line and neutral terminals in fixed socket-outlets shall permit the connection, without special preparation, of one, two or three 2.5 mm² solid or stranded or of one or two 4 mm² stranded conductors as given in Table 4 of [BS 6004:2012](#).

11.5.1 Conformity shall be checked by inspection and by fitting the appropriate conductors.

11.6 Earthing terminals in fixed socket-outlets shall permit the connection, without special preparation, of one, two or three 1.5 mm² or 2.5 mm² solid or stranded or of one or two 4 mm² stranded conductors.

11.6.1 Conformity shall be checked by inspection and fitting the appropriate conductors.

11.7 Where pillar terminals are used they shall have clamping screws of sufficient length to extend to the far side of the conductor hole. The end of the screw shall be slightly rounded so as to minimize damage to the conductors. The size of the conductor hole and the clamping screw shall be such that the

clearance between the sides of the major diameter of the clamping screw and the conductor hole does not exceed 0.4 mm when intended for the connection of flexible cables and 0.6 mm when intended solely for the connection of fixed wiring.

11.7.1 Conformity shall be checked by inspection and measurement.

11.8 Terminal screws shall have a declared outside diameter of not less than 3 mm or be not smaller than 6 B.A.

Thread cutting and/or thread forming screws shall not be used.

11.8.1 Conformity shall be checked by inspection and measurement.

11.9 In rewirable portable socket-outlets terminals shall be so located or shielded that if a stray strand of a flexible conductor escapes when the conductors are fitted, there is negligible risk of accidental connection between live parts and accessible external surfaces, or a stray strand by passing the fuse link if any.

11.9.1 Conformity shall be checked by inspection, and by the following test.

A length of insulation in accordance with the manufacturer's instructions is removed from the end of a flexible conductor having a nominal cross-sectional area of 1.5 mm². One free strand of the flexible conductor is left free and the other strands are fully inserted into and clamped in the terminal. The stray strand is bent, without tearing the insulation back, in every possible direction, but without making sharp bends round barriers unless a bend is reproduced by the replacement of the cover.

The free strand of a flexible conductor connected to a live terminal shall not:

- a) touch any metal part, so as to bypass any fuse link;
- b) touch any metal part which is accessible or is connected to an accessible metal part;
- c) reduce creepage distances and clearances to accessible surfaces to less than 1.3 mm.

The free strand of a flexible conductor connected to an earthing terminal shall not touch any live parts.

11.10 Screwless terminals for fixed socket-outlets

11.10.1 Screwless terminals for fixed socket-outlets shall be provided with clamping units which allow the proper connection of conductors as specified in [11.4](#), [11.5](#) or [11.6](#) as appropriate.

The terminals shall be of the type suitable for the following:

- a) rigid (solid or stranded) copper conductors only; or
- b) flexible copper conductors only; or
- c) both rigid (solid or stranded) and flexible copper conductors.

Conformity shall be checked by inspection and by fitting the appropriate conductors.

For screwless terminals intended to be suitable for the connection of both rigid and flexible copper conductors the tests given in [11.10](#) shall be carried out with rigid conductors first and then repeated with flexible conductors.

Screwless terminals shall be such that the conductor can be connected without special preparation.

NOTE Special preparation includes soldering of the wires of the conductor and use of terminal ends, but not reshaping of the conductor before its introduction into the terminal or the twisting of a stranded conductor to consolidate the end.

Conformity shall be checked by inspection.

- 11.10.2** Screwless terminals shall be so designed that they clamp the specified conductors with sufficient contact pressure and without undue damage to the conductor.

The conductor shall be clamped between metal surfaces.

Conformity shall be checked by inspection and by the test of [11.10.7](#).

- 11.10.3** It shall be clear how the conductors are to be inserted and disconnected.

The intended disconnection of a conductor shall require an operation, other than a pull on the conductor, which can be effected manually with or without the help of a tool in normal use.

Openings for the use of a tool intended to assist the insertion or disconnection shall be clearly distinguishable from the opening intended for the conductor.

Conformity shall be checked by inspection and by the test of [11.10.7](#).

- 11.10.4** Screwless terminals which are intended to be used for the interconnection of two or more conductors shall be so designed that:

- during the connection or disconnection the conductors can be connected or disconnected either at the same time or separately;
- each conductor is introduced in a separate clamping unit (not necessarily in separate holes).

Conformity shall be checked by inspection and by tests with the appropriate number and size of conductors as specified in [11.10.1](#).

- 11.10.5** Screwless terminals shall be so designed that undue insertion of the conductor is prevented and adequate insertion is obvious.

Marking indicating the length of insulation to be removed before the insertion of the conductor into the screwless terminal shall be given on the socket-outlet.

Conformity shall be checked by inspection and by the test of [11.10.7](#).

- 11.10.6** Screwless terminals shall be properly fixed to the socket-outlet.

When tested in accordance with [11.10.7](#), screwless terminals shall not work loose when the conductors are inserted or disconnected during installation.

Conformity shall be checked by inspection and the test of [11.10.7](#).

- 11.10.7** Screwless terminals shall withstand the mechanical stresses occurring in normal use. When tested in accordance with the following method, the conductors shall not have moved noticeably in the clamping unit, neither the terminals nor the clamping part shall have worked loose and the conductors shall show no deterioration, such that further use is impaired.

The test shall be carried out with uninsulated conductors on one screwless terminal of each sample.

The appropriate copper conductors shall be used, first conductors having the largest cross-sectional area, and then conductors having the smallest cross-sectional area specified in [11.4](#), [11.5](#) or [11.6](#) as appropriate.

Conductors shall be inserted and disconnected five times, new conductors being used each time, except for the fifth time, when the conductors used for the fourth insertion shall be clamped at the same place. For each insertion, the conductors shall be either:

- pushed as far as possible into the terminal; or
- inserted so that adequate connection is obvious.

After each insertion, the conductor shall be subjected to a pull of 30_{-1}^0 N. The pull shall be applied in one smooth and continuous motion for 60 ± 5 s, in the direction of the longitudinal axis of the conductor space.

During the application of the pull, the conductor shall not come out of the screwless terminal and the terminal shall not have become detached from the socket-outlet.

- 11.10.8** Screwless terminals shall withstand the electrical and thermal stresses occurring in normal use. When tested in accordance with the following methods, the screwless terminals shall show no changes likely to impair further use, e.g. cracks, deformation.

The following tests shall be carried out on five screwless terminals which have not been used for any other test.

Both tests shall be carried out with new copper conductors.

- a) The screwless terminals shall be connected with 1 m long conductors having a cross-sectional area of 1.5 mm^2 and loaded for 60 ± 1 min with an alternating current of 19 A.

The test shall be carried out on each clamping unit.

During the test the current shall not be passed through the socket-outlet, but only through the terminals. Immediately after this period, the voltage drop across each screwless terminal shall be measured with $13_{-0.2}^0$ A flowing.

In no case shall the voltage drop exceed 15 mV.

The measurements shall be made across each screwless terminal, as near as possible to the point of contact of each conductor.

NOTE The samples may be prepared by the manufacturer.

During the preparation of the samples, care shall be taken to ensure that the behaviour of the terminal is not affected.

When performing the test and taking the measurements, care shall be taken to ensure that the conductors and the measurement equipment are not moved.

- b) The screwless terminals, after being subjected to the determination of the voltage drop in accordance with item a) shall be tested as follows.

During the test, a current of 19 A shall be passed through the terminal.

The whole test arrangement, including the conductors, shall not be moved until the measurements of the voltage drop have been completed.

The terminals shall be subjected to 192 temperature cycles, each cycle having a duration of approximately 1 h and being carried out as follows:

- 1) with the current flowing for approximately 30 min; and
- 2) with no current flowing for approximately a further 30 min.

The voltage drop in each screwless terminal shall be determined in accordance with the test in item a) after every 24 temperature cycles and after 192 temperature cycles have been completed.

In no case shall the voltage drop exceed 22.5 mV.

On completion of the test, each screwless terminal shall be inspected using normal or corrected vision without additional magnification.

The mechanical stress test in accordance with [11.10.7](#) shall be repeated. All samples shall withstand the mechanical stress test.

12 (Not used)

13 Construction of socket-outlets

- 13.1** The disposition of the socket contacts shall be as shown in [Figure 3](#).

The engagement surface shall be substantially flat. Any steps or profile contours on the engagement surface shall not result in the surface deviating from the plane of engagement by more than 3 mm. Holes not exceeding 8 mm diameter for the purpose of assembly fixing shall be deemed acceptable. There shall be no projection on the engagement surface of a socket-outlet such as would prevent the full insertion of a plug. If raised marking is used it shall not project more than 0.5 mm from the engagement surface of a socket-outlet and shall allow conformity with [13.2](#). The spacing of the socket contacts shall correspond with that of plug pins as specified in BS 1363-1:2016.

- 13.1.1** Conformity shall be checked by inspection, measurement and the use of the gauges shown in [Figure 11](#).

- 13.2** The line and neutral socket contact in socket-outlets shall be positioned so as to make satisfactory contact with the corresponding pins of a plug in all positions that the contacts may occupy when the plug is correctly and fully inserted.

- 13.2.1** Conformity shall be checked by inspection and the use of the gauge shown in [Figure 12](#) and the circuit shown in [Figure 13](#). Both indicator lamps shall light.

- 13.3** On insertion of a plug into a socket-outlet, the travel of the end of either current-carrying pin from the front face of the socket-outlet to the first point of contact with the appropriate socket contact, in any position the socket contacts may occupy, shall be not less than 9.6 mm.

- 13.3.1** Conformity shall be checked by inspection and the use of the gauge shown in [Figure 14](#) and the circuit shown in [Figure 13](#). Neither indicator shall light.

- 13.4** Socket contacts shall be self-adjusting as to contact making and each socket contact shall be such as to make and maintain, in normal use, effective electrical and mechanical, contact with a corresponding plug pin. The means for producing the contact pressure shall be associated with each socket contact independently and shall not rely on any insulating material in contact with the socket contact. Each socket contact shall be reliably connected to the fixed parts of its terminal or termination.

- 13.4.1** Conformity shall be checked by the following tests and [Clause 16](#).

- a) The voltage drop between any individual line or neutral socket contact and the corresponding plug pin is measured between the terminal connecting strap at a point immediately adjacent to the socket contact and the corresponding plug pin. The voltage drop shall not exceed 25 mV at 13 A $\pm$ 0.4 A.
- b) The withdrawal pull of a gauge as shown in [Figure 16b](#) from any individual line or neutral socket contact is checked ensuring that neither the shutter mechanism, nor any insulating material in contact with the socket contact have any effect on the results of the test. The socket contact shall retain the gauge for not less than 30 s when the socket-outlet is held horizontally with the gauge hanging vertically downwards.

- 13.5** Line and neutral socket contacts shall withstand the stresses imposed upon them by the use of socket-outlet adaptors and the like.

13.5.1 Conformity shall be checked by the following test.

The socket-outlet is mounted with the engagement surface of the socket-outlet in the vertical plane and with the major axis of the line and neutral pins horizontal ensuring that the shutter mechanism does not have any effect on the results of the test. The end E of the gauge shown in [Figure 15](#) is inserted into the line socket aperture as far as the pin D and a mass of 750 g $\pm$ 5 g is suspended from pin C for 30^{+5}_0 s.

The socket-outlet is rotated through 180° approximately about an axis perpendicular to the engagement surface of the socket-outlet and the load applied to pin C for a further 30^{+5}_0 s. The test is repeated with the gauge inserted in the neutral socket aperture. After the test the socket contact shall retain the weight gauge shown in [Figure 16b](#) for not less than 30 s when the engagement surface of the socket-outlet is held horizontally, with the gauge hanging vertically downwards. After the gauge is inserted, if any insulating material touches the moving parts of the contact, the test shall be repeated with this insulation removed.

- 13.6** Earth socket contacts shall withstand the stress imposed upon them by the attempted incorrect insertion of plugs.

13.6.1 Conformity shall be checked by the following test.

The socket-outlet is mounted with the engagement surface of the socket-outlet in the vertical plane and with the major axis of the earth pin aperture horizontal ensuring that the shutter mechanism does not have any effect on the results of the test. The end A of the gauge shown in [Figure 15](#) is inserted into the earth socket aperture as far as the pin B, and a mass of 750 g $\pm$ 5 g is suspended from pin D for 30^{+5}_0 s. The socket-outlet is rotated through 180° approximately about an axis perpendicular to the engagement surface of the socket-outlet and the load applied to pin D for a further 30^{+5}_0 s.

After the test the earth socket contact shall retain the weight gauge shown in [Figure 16a](#)) for not less than 30 s when the engagement surface of the socket-outlet is held horizontally with the gauge hanging vertically downwards. After the gauge is inserted, if any insulating material touches the moving parts of the contact, the test shall be repeated with this insulation removed.

- 13.7** The construction of the socket-outlet shall be such that when a plug is withdrawn from it, the current-carrying socket contacts are automatically screened by shutters. One socket aperture shutter shall not be capable of closing independently of the other aperture shutter. The shutters shall be operated either by the insertion of the earthing pin or by the simultaneous insertion of any two or more pins of the plug, provided that the gauge [see [Figure 16b](#)]) inserted into any current-carrying socket aperture shall not open the shutter. Conformity shall be checked by the test of [13.7.1](#).

It shall not be possible to operate a shutter by inserting a 2-pin plug into a 3-pin socket-outlet. Conformity shall be checked by the test of [13.7.2](#).

- 13.7.1** Conformity shall be checked by inspection, by the test described in [18.1.2](#), and by the application of the gauge shown in [Figure 16b](#). The gauge and the test pin, shown in [Figure 1](#), are applied to the shutter using a force of 5^{+0}_{-1} N applied perpendicular to the engagement surface of the socket-outlet.

It shall not be possible to touch current-carrying parts.

- 13.7.2** Earth pin operated shutters and 3-pin operated shutters shall be deemed to conform to this requirement without testing. For other shutter designs, conformity shall be checked by the following test.

A 2-pin plug conforming to [BS EN 50075:1991](#) shall be applied to the socket line and neutral apertures with a force of 30_{-2}^0 N. The plug pins, when applied in any direction, shall not make contact with live parts.

- 13.8** The construction of socket-outlet shall be such as to allow for easy withdrawal of the plug.

- 13.8.1** Conformity shall be checked by the following test.

A plug is inserted into and withdrawn from the socket-outlet ten times with the socket-outlet mounted as in normal use.

The plug is then inserted into the socket-outlet and a force is gradually exerted in a direction parallel to the axis of the pins.

It shall not be possible to reach a pull of 36 N without the plug coming out of the socket-outlet.

NOTE Care should be taken to remove any grease from the plug pins and socket contacts prior to the tests.

- 13.9** Apertures for the reception of the line and the neutral plug pins shall not exceed 7.2 mm × 4.8 mm and for the earthing plug pin 8.8 mm × 4.8 mm. It is permissible to shape apertures at their front edges to facilitate insertion of plugs conforming to BS 1363-1:2016.

The holes for the line and the neutral plug pins in metal plates shall have sufficient insulating material around them to ensure conformity with [Clause 8](#).

Earth socket contacts may be flush with the front face of covers or cover plates but shall not depend for their effectiveness on insulating material of the cover. In such a case the aperture shall be measured between the contact faces at the maximum separation.

- 13.9.1** Conformity shall be checked by inspection and measurement.

- 13.10** No part of the aperture intended for the reception of the line or neutral pin shall be less than 9.5 mm from the periphery of the engagement surface of a socket-outlet. When a shutter is operated by the simultaneous insertion of the current-carrying pins this dimension shall be increased to not less than 18 mm from the lower edge of the socket-outlet.

Where the 9.5 mm and 18 mm dimensions includes a peripheral edge radius, it shall not exceed 1 mm.

- 13.10.1** Conformity shall be checked by inspection and measurement.

- 13.11** Switches shall be so constructed that undue arcing cannot occur when the switch is operated slowly.

The switch in any switched socket-outlet shall disconnect at least the supply to the line socket contact.

Double pole switches shall make or break each pole with one movement of the actuator.

- 13.11.1** Conformity shall be checked by inspection and by the following test.

Following the test described in [Clause 17](#), the circuit is broken a further ten times, each time moving the actuating member by hand over a period of approximately 2 s in a manner such as to attempt to stop the moving contact in an intermediate position causing arcing. The actuating member shall be released after approximately 2 s and any arcing shall cease.