



BSI Standards Publication

13 A plugs, socket-outlets, adaptors and connection units

Part 1: Rewirable and non-rewirable 13 A fused plugs –
Specification

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Summary of pages

This document comprises a front cover, an inside front cover, pages I to VI, pages 1 to 78, an inside back cover and a back cover.

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 30 June 2023. It was prepared by Technical Committee PEL/23, *Electrical accessories*. A list of organizations represented on this committee can be obtained on request to the committee manager.

Supersession

This part of BS 1363 supersedes BS 1363-1:2016+A1:2018 which remains current and will be withdrawn on 30 June 2026.

Relationship with other publications

BS 1363 is published in the following parts:

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

Information about this document

This is a full revision of the document, and introduces the following principal changes:

- the Scope now covers operating frequencies from 50 Hz to 60 Hz;
- current carrying parts made of brass are required to have a minimum content of 58% copper;
- the overload test has been revised for rewirable and non-rewirable plugs.

The numbering of figures within this standard remains as in the previous version; however, future revisions will implement consecutive numbering throughout.

[Annex J](#) gives details of the annex renumbering from the 2016 editions of BS 1363, Part 1 to Part 5 to the 2023 editions.

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at bsigroup.com/standards, or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

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 the *Rules for the structure and drafting of UK standards:2022*, 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.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

Contractual and legal considerations

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The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

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

In 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 fused plugs having insulating sleeves on line and neutral pins, for household, commercial and light industrial purposes, with particular reference to safety in normal use. The plugs are suitable for the connection of portable appliances, sound-vision equipment, luminaires, etc. in a.c. circuits only, operating at voltages not exceeding 250 V r.m.s. and frequencies from 50 Hz to 60 Hz. Additional requirements are included for plugs suitable for electric vehicle charging.

Requirements are specified for plugs incorporating a fuse link conforming to BS 1362:1973+A3:2021. The plugs might be rewirable or non-rewirable complete with flexible cable. Categories of plugs are specified covering normal and rough use. Rewirable plugs are intended for use with flexible cables conforming to the relevant parts of [BS EN 50525](#) (see [Clause 2](#)), having conductor cross-sectional areas from 0.5 mm² to 1.5 mm² inclusive. See [20.1](#).

Non-rewirable plugs are intended for use with flexible cables having conductor cross-sectional areas not exceeding 1.5 mm². See [20.4](#).

This standard also applies to non-rewirable 13 A plugs which have the earth pin replaced with a similarly dimensioned protrusion made of insulating material designated as an insulated shutter opening device (ISOD) designed to operate the shutter mechanism of socket-outlet conforming to BS 1363-2:2023.

A plug is mechanical by nature of construction. The product is therefore immune from electromagnetic interference.

Plugs incorporating switches and indicator lamps are included within the scope of this part of BS 1363.

Plugs incorporating electronic components detailed in [Annex A](#) are included within the scope of this part of BS 1363.

Recommendations for plug in equipment incorporating BS 1363-1 plug pins are given in [Annex B](#).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions, or limits the application, of this document¹⁾. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[BS 1362:1973+A3:2021](#), *General purpose fuse links for domestic and similar purposes (primarily for use in plugs) – Specification*

[BS 1363-2:2023](#), *13 A plugs, socket-outlets, adaptors and connection units – Part 2: 13 A switched and unswitched socket-outlets – Specification*

[BS 2572](#), *Specification for phenolic laminated sheet and epoxy cotton fabric laminated sheet*

[BS 2870:1980](#), *Rolled copper and copper alloys – Sheet, strip and foil*

[BS 4662:2006+A1:2009](#), *Boxes for flush mounting of electrical accessories – Requirements and test methods and dimensions*

[BS 4800:2011-SET](#), *Schedule of paint colours for building purposes*

¹⁾ Documents that are referred to solely in an informative manner are listed in the Bibliography.

[BS 6004:2012+A1:2020](#), *Electric cables – PVC insulated and PVC sheathed cables for voltages up to and including 300/500 V, for electric power and lighting*

BS EN 1652:1998, *Copper and copper alloys – Plate, sheet, strip and circles for general purposes*

[BS EN 10270-1:2011+A1:2017](#), *Steel wire for mechanical springs – Part 1: Patented cold drawn unalloyed spring steel wire*

[BS EN 50525-2-11:2011](#), *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U_o/U) – Part 2-11: Cables for general applications – Flexible cables with thermoplastic PVC insulation*

[BS EN 50525-2-12:2011](#), *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U_o/U) – Part 2-12: Cables for general applications – Cables with thermoplastic PVC insulation for extensible leads*

[BS EN 50525-2-21:2011](#), *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U_o/U) – Part 2-21: Cables for general applications – Flexible cables with crosslinked elastomeric insulation*

[BS EN 50525-2-71:2011](#), *Electric cables – Low voltage energy cables of rated voltages up to and including 450/750 V (U_o/U) – Part 2-71: Cables for general applications – Flat tinsel cables (cords) with thermoplastic PVC insulation*

BS EN 60893-3-4, *Insulating materials – Industrial rigid laminated sheets based on thermosetting resins for electrical purposes – Part 3-4: Specifications for individual materials – Requirements for rigid laminated sheets based on phenolic resins*

[BS EN 60695-10-2:2014](#), *Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method*

[BS EN 60664-3](#), *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

[BS EN 60664-5](#), *Insulation coordination for equipment within low-voltage systems – Part 5: Comprehensive method for determining clearances and creepage distances equal to or less than 2 mm*

[BS EN 61180:2016](#), *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements*

[BS EN 61032:1998](#), *Protection of persons and equipment by enclosures – Probes for verification*

BS EN 61643-311, *Components for low voltage surge protective devices – Part 311: Performance requirements and test circuits for gas discharge tubes (GDT)*

BS EN 61643-321, *Low voltage surge protective devices – Part 321: Specifications for avalanche breakdown diode (ABD)*

BS EN 61643-331, *Low voltage surge protective devices – Part 331: Specification for metal oxide varistors (MOV)*

[BS EN IEC 60112:2020](#), *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

[BS EN IEC 60664-1:2020](#), *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

[BS EN IEC 60669-2-1](#), *Switches for household and similar fixed electrical installations – Particular requirements – Part 2-1: Electronic control devices*

[BS EN IEC 60695-2-11:2021](#), *Fire hazard testing – Part 2-11: Glowing/hot wire based test methods – Glow-wire flammability test method for end-products (GWEPT)*

BS EN IEC 61000-6-1, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments*

[BS EN IEC 61000-6-3](#), *Electromagnetic compatibility (EMC) – Generic standards – Part 6-3: Emission standard for residential, commercial and light industrial environments*

[BS EN IEC 61051-2:2021](#), *Harmonized system of quality assessment for electric components – Varistors for use in electronic equipment – Part 2: Sectional specification for surge suppression varistors*

[BS EN ISO 9453:2020](#), *Soft solder alloys – Chemical compositions and forms*

IEC 60038, *IEC standard voltages*

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 accessible external surfaces of a plug

surfaces that can be touched by test probe B specified in BS EN 61032:1998 when the plug is in full engagement with a corresponding socket-outlet

3.2 actuating member

that part which is moved, e.g. pulled, pushed or turned by the user, to operate the switch mechanism of a switched plug

3.3 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.

3.4 calibrated link

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

3.5 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

3.6 class I

method of protection against electric shock which does not rely on basic insulation only, but which includes means for the connection of exposed conductive parts to a protective conductor in the fixed wiring of the installation

3.7 class II

method of protection against electric shock which does not rely on basic insulation only, but in which additional safety precautions, such as double insulation or reinforced insulation are provided, there being no provision for protective earthing or reliance upon installation conditions

NOTE 1 Such a method may be one of the following.

a) Equipment having a double and substantially continuous enclosure of insulation material which envelopes all metal parts with the exception of small parts such as name plates, screws and rivets which are isolated from live parts by insulation at least equivalent to reinforced insulation. Such equipment is called “insulated encased class II equipment”.

b) Equipment having a substantially continuous enclosure of metal, in which double insulation is used throughout, except for those parts where reinforced insulation is used. Such equipment is called “metal encased class II equipment”.

c) Equipment that is a combination of types a) and b) above.

NOTE 2 The enclosure of an insulation encased class II appliance may form a part or whole of the supplementary insulation, or reinforced insulation.

NOTE 3 If an appliance with double insulation and/or reinforced insulation throughout has an earthing terminal or an earthing contact, it is of class I construction.

NOTE 4 Class II appliances may have parts in which protection against electric shock relies on operation at safety extra-low-voltage (SELV).

3.8 clearance

shortest distance in air between two conductive parts

3.9 creepage distance

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

3.10 engagement surface of a plug

that surface which are not able to be touched by test probe B of BS EN 61032:1998 when the plug is in full engagement with a corresponding socket-outlet

3.11 fine wire thermocouple

thermocouple having wires not exceeding 0.3 mm in diameter

3.12 functional insulation

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

3.13 fuse carrier

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

3.14 fused plug

plug having provisions for a replaceable cartridge fuse link

3.15 indicator lamp (pilot lamp)

lamp or similar device which illuminates to indicate that the plug is energized

3.16 insignificant mass

insufficient combustible mass to constitute a fire hazard

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

3.17 insulated shutter opening device (ISOD)

protrusion from the engagement surface of the plug, in place of a brass earth pin, made of insulating material having dimensions similar to those of a brass earth pin

3.18 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.

3.19 moulded-on plug

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

3.20 non-rewirable plug

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

NOTE See also 13.6.

3.21 plug

portable fused device having projecting pins designed to engage with the contacts of a corresponding socket-outlet, incorporating means for the electrical connection and the mechanical retention of a suitable flexible cable

3.22 rated voltage

voltage assigned by the manufacturer for a specified operating condition

3.23 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

3.24 resilient material

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

3.25 rewirable plug

plug so constructed to enable the fitting or replacing of a flexible cable using general purpose tools

3.26 rough use plug

plug designed to withstand severe mechanical handling

NOTE Rough use plugs are identified by additional marking in accordance with 8.1d). They are not intended for gross misuse. For instance, a plug should not be withdrawn from a socket-outlet by pulling on the attached flexible cable.

3.27 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 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.

3.28 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 IEC 60695-2-11:2021, 3.15, modified]

NOTE More information concerning small parts can be found in BS EN IEC 60695-2-11:2021, 4.4.

3.29 switched plug

plug with associated switch or switches to disconnect the supply to the line terminal/termination or to both line and neutral terminals/terminations

3.30 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

3.31 terminal

means which facilitates an electrical connection between the appropriate flexible cable and the conducting parts of the plug without the use of special purpose tools

3.32 termination

means which facilitates an electrical connection between the appropriate flexible cable and the conducting part of the plug using special purpose tools, e.g. soldering, welding, crimping

3.33 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

3.34 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

4 Conditions of use

Plugs 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 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; and
- d) an atmosphere not subject to abnormal pollution by smoke, chemical fumes, rain, spray, prolonged periods of high humidity or other abnormal conditions. This is equivalent to pollution degree 2 (see [Annex C](#)), and Overvoltage Category III (see [Annex D](#)).

5 General

Plugs 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 plugs shall be capable of meeting all the relevant requirements and tests specified in this part of BS 1363. Plugs shall not be used for the connection of electrical power generators to socket-outlets.

NOTE Throughout this standard the term *flexible cable* has replaced the term *flexible cord* which was used in the previous edition.

6 General conditions for type testing

6.1 All tests shall be type tests.

Unless otherwise specified in this part of BS 1363, the plugs 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 and after being conditioned at normal laboratory temperature and humidity levels for at least 4 days.

The plugs used for the tests shall be representative of normal production items in respect of all details which might affect the test results.

Incorporated electronic components shall conform to their relevant standards and their incorporation shall not introduce a non-conformity with BS 1363-1:2023 (see [Annex A](#)). Conformity shall be checked by inspection of component conformity evidence and the tests of BS 1363-1:2023.

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

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

If one sample fails in a complete series of tests given in [Table 1](#), then plugs of that type shall be deemed to have failed to conform to this part of BS 1363, unless the plug is 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 plugs 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 plugs of that type shall be deemed not to conform to this part of BS 1363.

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

6.2 All inspections and tests, of any one classification (see [Clause 7](#)), 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.

6.3 Gauges in accordance with [Figure 5](#) 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.

Table 1 — *Schedule of tests*

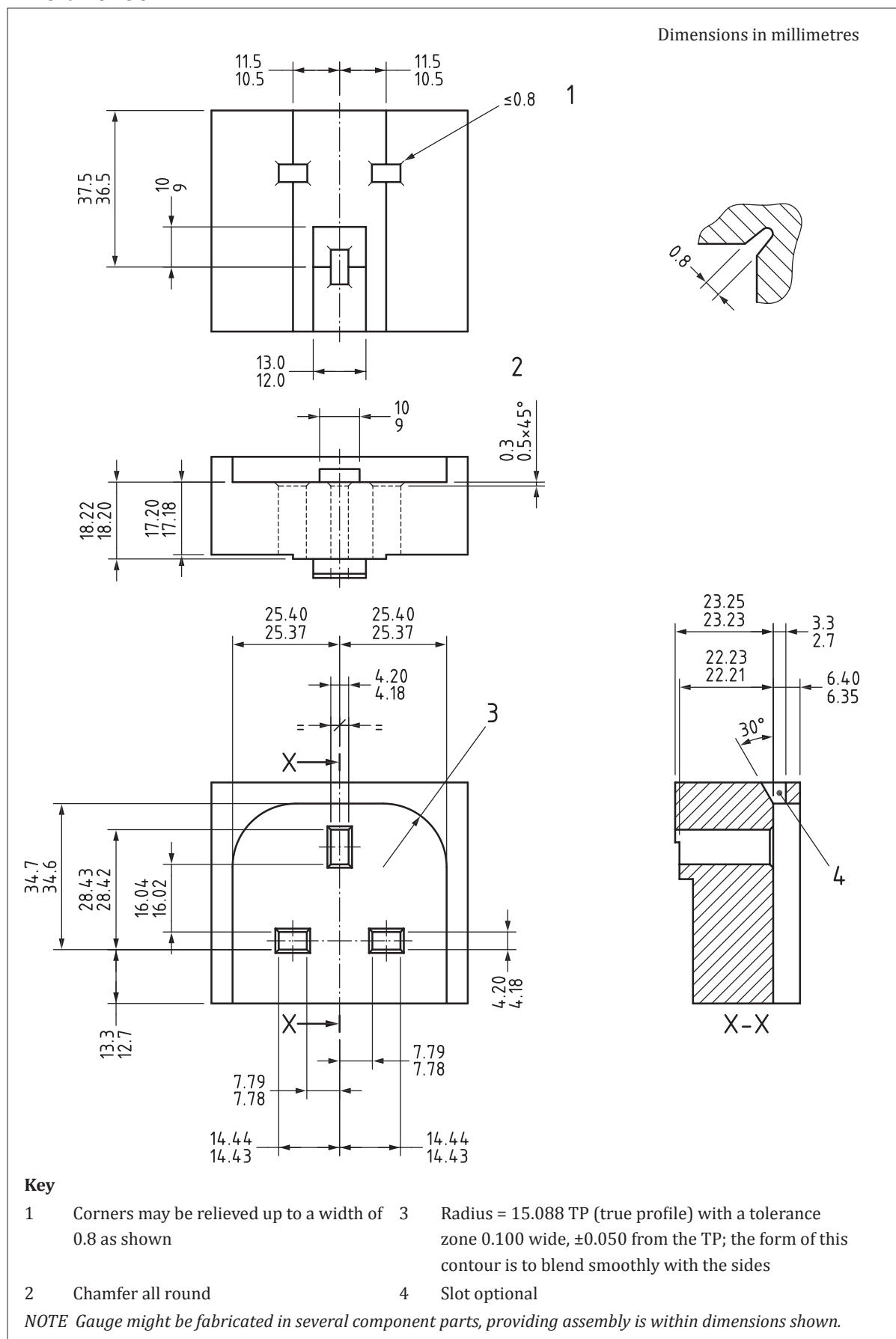
Sequence	Samples	Tests	Clause number
1	3	Inspection, measurement, gauging and manipulation	6, 7, 8, 12.1, 10.1, 10.2, 10.4, 13.1, 13.2, 13.3, 13.4, 13.5, 13.9 , (13.9.1, 13.9.2, 13.9.3 and 13.9.6 only), 13.13, 13.14, 13.15, 13.16, 13.19 ^{**} , 20.2, 20.3, 20.4, 20.6, 9 (except Annex I) 22
2	3	General	6, 10.3, 20.1, 13.12, 13.17.2, 13.17.3, 13.17.2
3	3		6, 15.2, 13.8, 20.5, 13.17.4
4	3		6, 15.1, 16.1, 17, 18, 13.18.1, 19, 21, 13.7, 11.1, 12.12, 13.10, 13.6, 13.11
5	3*		6, 13.9.4.1 or 13.9.4.2
6	3	Additional tests for rewirable plugs with clamp type (screwless) terminals	6, 15.1, 22.1
7	3	Additional tests for plugs with nickel plated brass pins, non-solid pins and/or ISODs	6, 12.10, 12.11
8a)	9		6, 13.9.5
8b)	3		6, 13.9.4.3
9	3	Materials	6, 23
10	3		6, 24.2, 9.2 (Annex I only)
11	3		6, 25
12 ^{A)}	3	Positive break (switched plugs)	6, 13.18.2
13	3	Overloads	6, 15.1, 27
14	3	Cyclic loading [plugs for Electric Vehicles (EV)]	6, 28

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

NOTE 2 *denotes that an additional three samples will be required for plugs with non-solid pins.

NOTE 3 ** denotes that additional samples might be required for plugs incorporating electronic components.

^{A)} An additional new set of three samples prepared with the contacts closed might be required.

Figure 5 — Gauge for plug pins

7 Classification and rating

7.1 Classification

Plugs shall be classified as follows:

- a) rewirable or non-rewirable;
- b) switched or unswitched;
- c) for normal use or rough use;
- d) for electric vehicle (EV) charging;
- e) fitted with screw or clamp type (screwless) terminals;
- f) for non-rewirable plugs for class II applications only, fitted with an unterminated brass earth pin or ISOD.

7.2 Rating

The rated voltage of plugs which do not incorporate any electronic components other than indicator lights shall be 250 V.

The rated voltage of plugs which incorporate electronic components shall be 230 V, 240 V or 250 V.

The rated current of rewirable plugs shall be 13 A.

The rated current of non-rewirable plugs shall be according to [Table 2](#).

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

Flex cable nominal cross- sectional area	Rated current ^{A)}	Test current ±0.4 A	Fuse rating	Load for flexing	Cable grip tests	
				test	Load	Torque ^{B)}
mm ²	A	A	A	+2%, -0% kg	+2%, -0% kg	Nm
0.5	3	3.5	3 (5) ^{D)}	1	3	0.15
0.75	6	7	7 (13) ^{D)}	1	3	0.20
1 (0.75) ^{C)}	10	11	10 (13) ^{D)}	2	3	0.25
1.25 (1) ^{C)}	13	14	13	2	6	0.30
1.5	13	14	13	2	6	0.35

^{A)} Non-rewirable plugs may have a rated current appropriate to a smaller cable size than that fitted (e.g. a plug rated at 3 A may be fitted with a 0.75 mm² cable). In such cases, load and torque parameters for testing shall relate to the size of cable fitted and the test current shall relate to the rated current of the plug.

^{B)} 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 ±10%.

^{C)} The figure in brackets indicates the flexible cable size which may be used for cable sets where non-rewirable plugs are used with a maximum flexible cable length of 2 m.

^{D)} The figure in brackets indicates the maximum fuse rating when a plug is used with an appliance where the manufacturer specifies a higher rating of fuse is appropriate for the particular appliance.

8 Marking and labelling

- 8.1** Plugs 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:
- a) either the name, trade mark or identification mark of the manufacturer or responsible vendor, which might be duplicated on a removable fuse carrier;
 - b) the number of this British Standard, i.e. BS 1363²⁾;
 - c) the rated voltage;
 - d) for rough use plugs the number of this British Standard shall be followed by “/A”;
 - e) on rewirable plugs the terminals intended for the connection of the various conductors shall be identified by the symbols given in [8.5](#);
 - f) the words “FUSE” or “FUSED” or the symbol (as given in [8.5](#)) on the external accessible surface of a plug;
 - g) all rewirable plugs shall be marked on the engagement surface with the rated current. All non-rewirable plugs shall be marked with the rated current of the fuse link fitted, which shall not exceed the value given in [Table 2](#) for the appropriate size of flexible cable;
 - h) plugs with clamp type (screwless) terminals shall be marked to show the length of conductor insulation to be removed before fitting the conductor in the terminal; and
 - i) for plugs for electric vehicle charging, the number of this British Standard shall be followed by “/EV”.
- 8.1.1** Conformity shall be checked by inspection and by rubbing the marking 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, an 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.
- 8.2** Rewirable plugs shall have a removable tag or label indicating the rating of the fuse link fitted, e.g. “Fitted with “X” ampere fuse” (where “X” denotes the rating of the fuse link).
- 8.2.1** Conformity shall be checked by inspection.
- 8.3** Except where a plug fitted with a flexible cable is supplied direct to a manufacturer for incorporation in other equipment, the free end of such an assembly shall have a label attached which shall include the following:
- a) the statement: “The flexible cable of this plug must be connected to an item of equipment before being plugged into a socket-outlet”;
 - b) the maximum rating, in amperes, of the equipment to which it might be fitted (as given in [Table 2](#));
 - c) the colour code of the cores of the flexible cable as follows:
- “IMPORTANT. Wires in the mains lead are coloured in accordance with the following code:

²⁾ 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.

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

d) if the plug is fitted with a 2-core flexible cable, the following statement:

"This lead must not be used with equipment requiring the protection of an earth continuity conductor".

8.3.1 Conformity shall be checked by inspection.

8.4 Rewirable plugs shall be provided with adequate instructions for the safe connection of the appropriate flexible cables, including clear instructions for the removal of insulation from the conductors.

Plugs incorporating clamp type (screwless) terminals shall be supplied with information indicating that the plug is fitted with clamp type (screwless) terminals and containing clear instructions for the removal of insulation from the conductors and for the effective connection and disconnection of conductors.

8.4.1 Conformity shall be checked by inspection.

8.5 Symbols shall be as follows:

amperes	A
volts	V
line	L
neutral	N
earth	 (preferred) or 

NOTE The letter "E" may be used in addition to either of these symbols.

fuse	
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9 Clearances, creepage distances and solid insulation

Plugs 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 might occur. Clearances, creepage distances and solid insulation shall conform to the relevant requirements of [9.1](#), [9.2](#), [9.3](#) and [9.4](#). The distance between lead wires in the pinch of a neon lamp with external resistor shall be a minimum of 1 mm.

Plugs 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 plug shall be tested accordingly.

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

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

9.1 Clearances

Plugs 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 C](#).

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

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

9.1.1 Clearances for basic insulation

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

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

Smaller clearances, other than those values marked in [Table 3](#) with footnote “B”, shall be permitted if the plug meets the impulse withstand voltage test of [Annex E](#) at the impulse voltage specified in [Table E.1](#). This exception shall apply 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.

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

Table 3 — Minimum clearances for basic insulation

Rated impulse withstand voltage kV ^{A)}	Minimum clearances in air up to 2 000 m above 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

^{A)} See [Annex D](#). This voltage is:

- for functional insulation: the maximum impulse voltage expected to occur across the clearance;
- or basic insulation directly exposed to or significantly influenced by transient overvoltage from the low voltage mains: the rated impulse withstand voltage of the plug;
- for other basic insulation: the highest impulse voltage that can occur in the circuit.

^{B)} Minimum clearance values are based on [BS EN IEC 60664-1](#).

9.1.2 Clearances for functional insulation

The clearances for functional insulation shall be not less than the values specified for basic insulation in [9.1.1](#).

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

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

9.1.3 Clearances for supplementary insulation

The clearances for supplementary insulation shall not be less than the values specified for basic insulation in [9.1.1](#).

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

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

9.1.4 Clearances for reinforced insulation

The clearances for reinforced insulation shall be not less than the values specified for basic insulation in [9.1.1](#) but using the next higher step for rated impulse withstand voltage given in [Table 3](#).

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

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

9.1.5 Contact gap

The minimum contact gap shall be 1.2 mm in the open position, except for electronic switches covered by [A.4](#).

Conformity shall be checked by measurement.

9.2 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 are removable without the use of a tool shall be removed and movable parts which might be assembled in different orientations shall be placed in the most unfavourable position.

NOTE 1 Movable 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 shall be measured in accordance with [Annex F](#).

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 shall be determined in accordance with [Annex I](#).

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

9.2.1 Creepage distances for basic insulation

The creepage distances for basic insulation shall be not 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)}	Pollution degree 2 ^{B)}			Pollution degree 3 ^{B)}		
V (r.m.s.)						
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 [BS EN IEC 60664-1:2020](#), Table F.3a and Table F.3b based on the nominal voltage of the supply system.

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

9.2.2 Creepage distances for functional insulation

The creepage distances for functional insulation shall be not less than the values specified for basic insulation in [9.2.1](#).

Conformity shall be checked by measurement.

9.2.3 Creepage distances for supplementary insulation

The creepage distances for supplementary insulation shall be not less than the values specified for basic insulation in [9.2.1](#).

Conformity shall be checked by measurement.

9.2.4 Creepage distances for reinforced insulation

The creepage distances for reinforced insulation shall be not less than those derived from twice the distances 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.

9.3 Solid insulation

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

No minimum thickness is specified for solid insulation.

9.3.1 Conformity shall be checked by tests in accordance with [16.1.3](#) 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

9.4 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.

10 Accessibility of live parts

- 10.1** Live parts of plugs shall not be accessible when the plugs are wired as in normal use and in full engagement in a corresponding socket-outlet.

Removal of detachable fuse carriers shall not result in live parts becoming accessible when the plug is in full engagement with the socket-outlet or the socket-outlet portion of an adaptor.

- 10.1.1** Conformity shall be checked by the application of test probe 12 of BS EN 61032:1998 applied with a force of 5_{-1}^0 N with rewirable plugs fitted with a 2-core flexible cable as given in BS EN 50525-2-71:2011 and non-rewirable plugs as supplied. Detachable fuse carriers shall be removed before this test is undertaken.

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

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

- 10.3** Resilient covers of plugs 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 cover or become so disposed as to reduce creepage distances and clearances below those given in [Clause 9](#).

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

The design of the apparatus shall be such that a steady force of 240_{-10}^0 N shall 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 shall be 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_{0}^{+5} 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 11 of BS EN 61032:1998 applied with a force of 30_{-2}^0 N.

- 10.4** Except for a plug fitted with a flexible cable supplied to equipment manufacturers for incorporation into their equipment, a plug supplied with a flexible cable shall have the free end encapsulated in insulating material.

- 10.4.1** Conformity shall be checked by inspection.

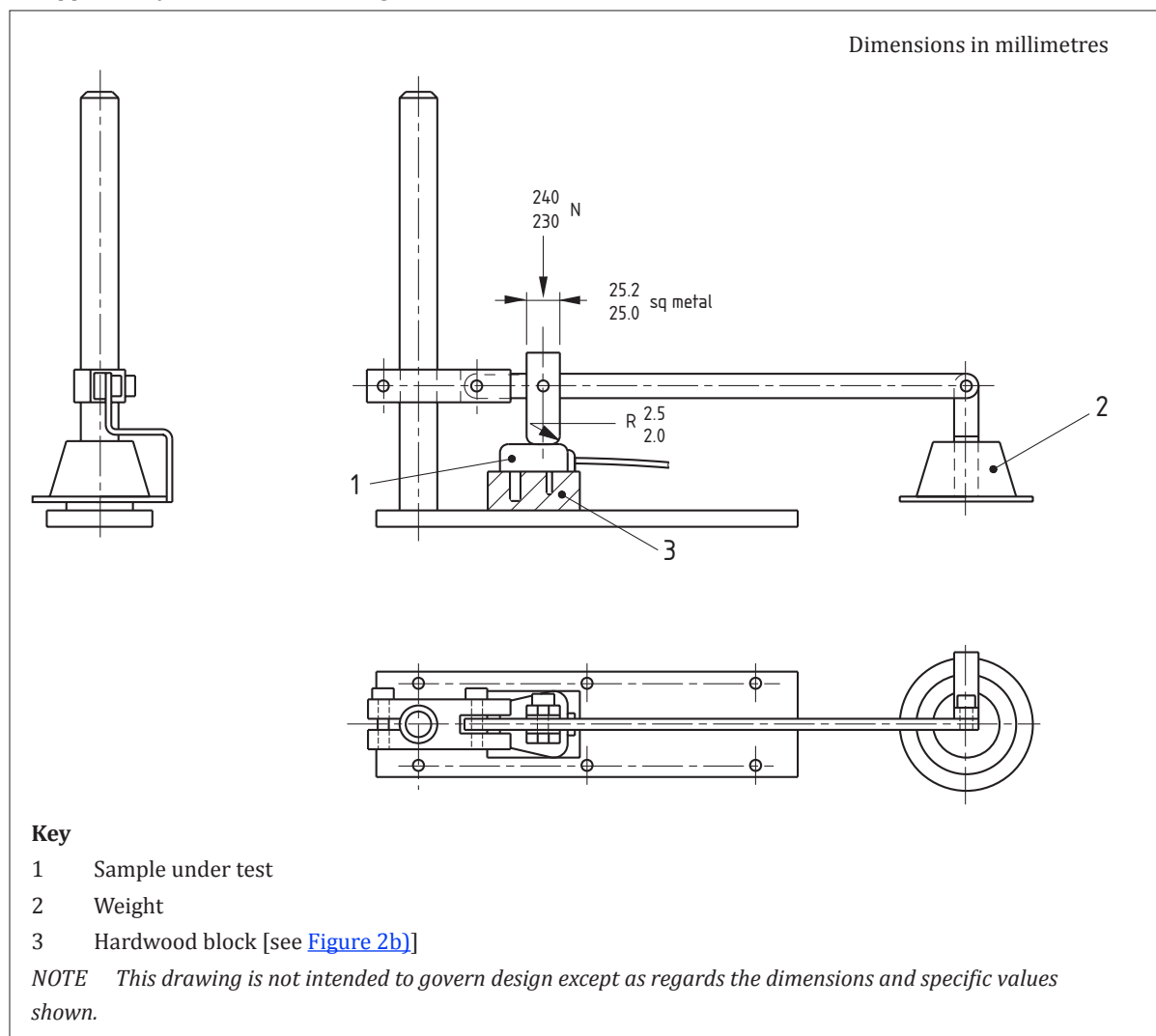
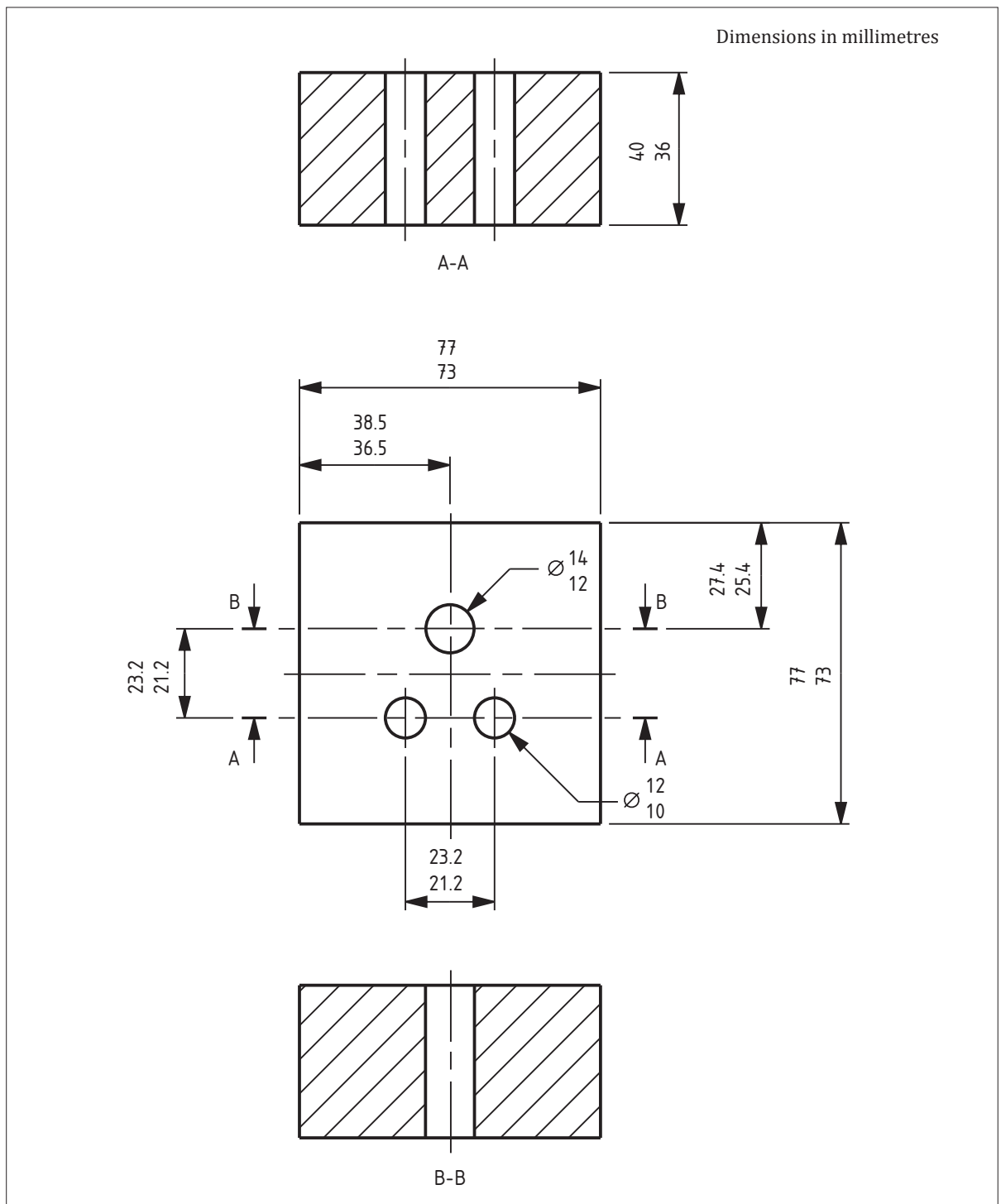
Figure 2a) — Apparatus for mechanical strength test on resilient covers

Figure 2b) — Hardwood block for [Figure 2a\)](#)

11 Provision for earthing

- 11.1** All accessible metal parts of plugs shall be in effective electrical contact with the earthing plug pin, 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 pin.

The earth pin shall be provided with a terminal or termination such as to provide a joint of low resistance with the earth conductor of a flexible cable.

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

11.1.1 Conformity shall be checked by inspection and the following:

- a) for metal parts insulated from live parts, by the test described in [16.1.3](#);
- b) for metal parts connected to an earthing terminal or earthing plug pin, by the following test.
A current of $25\text{ A} \pm 0.75\text{ A}$, derived from an a.c. source having a no-load voltage not exceeding 12 V, is passed for 60^{+5}_0 s between the remote end of the protective conductor of a 3-core flexible cable (cut to a length of $150\text{ mm} \pm 5\text{ mm}$ measured from the nearest edge of the earthing pin) and the remote end of the earthing plug pin and any accessible metal part intended to be earthed, taking account of the following:
 - 1) for non-rewirable plugs, the manufacturer's connection is tested as supplied, with the flexible cable cut to a length of $150\text{ mm} \pm 5\text{ mm}$ measured from the nearest edge of the earthing pin, precoiled flexible cables being extended before measurement.
 - 2) for rewirable plugs, 1.25 mm^2 flexible cable conforming to BS EN 50525-2-11:2011 shall be used:
 - i) for screw-type terminals the clamping screw shall be tightened with a torque equal to two thirds of the appropriate value given in [Table 6](#);
 - ii) for clamp type (screwless) terminals the connection shall be made in accordance with the manufacturer's instructions.

The resistance between the earthing terminals or termination and any other nominated metal part shall not exceed $0.05\ \Omega$.

Table 6 — Torque values for screws and nuts

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

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.

12 Terminals and terminations

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

12.1.1 Conformity shall be checked in accordance with [12.2](#) to [12.9](#).