

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

Part 4: Specification for 13 A fused connection units switched and unswitched

ICS 29.120.30

Committees responsible for this British Standard

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Association of Control Manufacturers [TACMA (BEAMA Ltd.)]
Association of Manufacturers of Domestic Electrical Appliances
ASTA Certification Services
British Cable Makers Confederation
British Electrical Systems Association (BEAMA Ltd.)
British Electrotechnical Approvals Board
British Radio and Electronic Equipment Manufacturers' Association
BSI Testing Services
Consumers' Association
Consumer Policy Committee of BSI
Copper Development Association
Department of Trade and Industry (Consumer Safety Unit, CA Division)
BEAMA Installation
Electricity Association
ERA Technology Ltd.
Federation of the Electronics Industry
Industry Council for Electronic Equipment Recycling
Institute of Trading Standards Administration
Institution of Electrical Engineers
Institution of Incorporated Executive Engineers
International Consumer Electronics Association (ICEA)
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Foreword

This part of BS 1363 is published by BSI Standards Limited, under licence from The British Standards Institution. This part of BS 1363 has been prepared by Technical Committee PEL/23.

BS 1363-4:1995+A4:2012 supersedes BS 1363-4:1995 (incorporating Amendments Nos. 1:1997, 2:2003 and 3:2007), which, however, remains current and will be withdrawn on 31 May 2015.

The start and finish of text introduced or altered by Amendment No. 3 and Amendment No. 4, respectively is indicated in the text by tags A3 A3 and A4 A4 respectively. Text introduced or altered by Amendment No. 1 and Amendment No. 2 is not tagged. Minor editorial corrections are not tagged.

BS 1363 comprises four parts covering the following.

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

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

BS 6500, which is called up in this part of BS 1363, has been superseded by BS EN 50525. In the transition period up until 31 December 2012 cords to either standard may be used. After that date all cords have to be to the relevant part of BS EN 50525.

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 G for the convenience of users of this part of BS 1363.

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.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 38, an inside back cover and a back cover.

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1 Scope

This part of BS 1363 specifies requirements for 13 A fused fixed connection units for household, commercial and light industrial purposes, with particular reference to safety in normal use. The connection units are suitable for the connection of appliances, in a.c. circuits only, operating at voltages not exceeding 250 V r.m.s at 50 Hz.

Requirements are specified for connection units incorporating a fuse-link complying with BS 1362:1973.

Requirements are specified for 13 A connection units with or without associated controlling switches, for flush mounting in suitable enclosures, e.g. boxes complying with BS 4662:1970, or for surface or panel mounting. Connection units are intended for use with cables complying with BS 6004:2000 having copper conductors. **[A4]** Connection units with cord outlets are additionally intended for use with flexible cords, complying with BS 6500:2000, or equivalent cords to the relevant part of BS EN 50525 (see Annex G), on the load (output) side **[A4]**. Connection units containing devices other than fuse-links, switches and indicator lamps are outside the scope of this standard.

NOTE 1 The titles of the publications referred to in this standard are listed on the inside back cover.

NOTE 2 Requirements for electromagnetic compatibility are not given for the following reasons.

A connection unit does not emit intolerable electromagnetic interference since significant electromagnetic disturbances are only generated during insertion and withdrawal which are not continuous.

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

2 Conditions of use

Fused connection units 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, rain, spray, prolonged periods of high humidity 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 British Standard the following definitions apply.

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

3.1

fused connection unit

[A3] a device associated with the fixed wiring of an installation by which equipment may be connected, and having provision for a replaceable cartridge fuse-link **[A3]**

3.2

cord outlet connection unit

a fixed wiring device as in 3.1 having provision for a flexible cable or cord

3.3

switched connection unit

a fused connection unit as in 3.1 or 3.2, with an associated switch to disconnect the supply to both line and neutral load terminals

3.4

surface-mounted connection unit

a fused connection unit as in 3.1, 3.2 or 3.3, which is intended to be mounted on a wall or other flat surface without the need for recessing

3.5

flush-mounted connection unit

a fused connection unit as in 3.1, 3.2 or 3.3, which is intended to be mounted in a box which is recessed into a wall or other flat surface. The fused connection unit plate and the base are regarded as forming a complete unit, and the connection unit plate is mounted with its back either flush with a wall or other flat-surfaced structure, or flush with the front of a box or enclosure

3.6

panel-mounted connection unit

a fused connection unit intended for incorporation into equipment panels or electrical trunking and which depends upon such incorporation for its enclosure

3.7

connection unit base

that part of the fused connection unit which carries live parts. It may be integral with the fused connection unit plate

3.8

connection unit plate

the external plate which covers the base and live parts of a fused connection unit

3.9

actuating member

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

3.10

indicator lamp (pilot lamp)

 a lamp or similar device which illuminates to indicate that the connection unit load terminals are energized 

3.11

terminal

a means by which the user can make an electrical connection between the appropriate cable or flexible cord and the conducting parts of the connection unit without the use of special tools

3.12

screw-type terminal

a 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.

3.13

fuse carrier

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

3.14

type test

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

3.15

type test sample

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

3.16**accessible external surface of a connection unit**

all surfaces of a fused connection unit which can be touched by test probe B of BS EN 61032:1998 when the connection unit is installed as in use

3.17**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

3.18**fine wire thermocouple**

a thermocouple having wires not exceeding 0.3 mm in diameter

3.19**calibrated link**

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

3.20**creepage distance**

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

3.21**clearance**

shortest distance in air between two conductive parts

3.22**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.

3.23**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

3.24**reinforced insulation**

a 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

3.25**functional insulation**

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

** 3.26****isolation**

function intended to make dead for reasons of safety all or a discrete section of the electrical installation by separating the electrical installation or section from every source of electrical energy 

** 3.27****insignificant mass**

insufficient combustible mass to constitute a fire hazard

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

** 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

[BS EN 60695-2-11:2001, 3.1, modified]

NOTE More information concerning small parts can be found in BS EN 60695-2-11:2001, 3.1. 

4 General

Connection units 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 connection units shall be capable of meeting all the relevant requirements and tests specified in this part of BS 1363.

A4 Throughout this standard, where cords to BS 6500 are referred to these may be replaced by equivalent cords (now referred to as cables) to BS EN 50525 which has superseded BS 6500; when BS 6500 is withdrawn, equivalent cables (cords) to BS EN 50525 shall be used. **A4**

5 General conditions for type testing

5.1 All tests shall be type tests.

Unless otherwise specified in this part of BS 1363, connection units shall be tested as delivered by the manufacturer or responsible vendor and under normal conditions of use, at an ambient temperature of $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, after being conditioned at normal laboratory temperature and humidity levels for at least 4 days.

Unless otherwise stated by the manufacturer, flush-mounted connection units shall be tested when mounted on a corresponding insulated box complying with BS 4662:1970, the fixing screws being tightened with a torque of $0.6\text{ N}\cdot\text{m} \pm 5\%$. Other types are mounted according to the manufacturer's instructions.

Connection units used for the tests shall be representative of normal production items in respect of all details which may affect the test results.

Connection units shall be deemed to comply with this part of BS 1363 if no specimen fails in the complete series of tests given in Table 1.

If one specimen fails in the complete series of tests given in Table 1, then connection units of that type shall be deemed to have failed to comply with this part of BS 1363, unless the connection units can 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 re-test then connection units of that type shall be deemed to comply with this Part of BS 1363.

If more than one specimen fails in the complete series of tests given in Table 1 then connection units of that type shall be deemed not to comply with 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 1 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.

NOTE 2 Where reference to BS 6500:2000 is made equivalent flexible cords to the latest version of the standard may be used.

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 specimens in the sample column and in the order given.

6 Classification

6.1 Fused connection units shall be classified as follows:

- switched or unswitched;
- flush or surface or panel-mounting;
- with or without provision for outgoing flexible cable or cord;
- with or without indicator lamp.

7 Marking and labelling

7.1 Connection units 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 or trademark of the manufacturer or responsible vendor, which may be duplicated on a removable fuse carrier;
- b) the number of this British Standard, i.e. BS 1363¹⁾;

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. **A3** Text deleted **A3**

c) terminals intended for the connection of the various conductors shall be identified by the symbols given in 7.2;

d) the words “FUSE” or “FUSED” or the symbol (given in 7.2) on the external accessible surface of a connection unit or fuse carrier;

e) all connection units shall be marked with:

- 1) rated current;
- 2) rated voltage;
- 3) nature of supply;
- 4) incoming (in or supply) terminals;
- 5) outgoing (out or load) terminals.

7.1.1 Compliance 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 approximately 69 °C and a relative density of approximately 0.68. The marking shall remain legible. Markings produced by an engraving or moulding process shall be deemed to comply without test.

7.2 If symbols are used they shall be as follows:

amperes	A
volts	V
*alternating current	~
line	L
neutral	N
*earth	⊕ (preferred) or ⊥
*fuse	⊞

NOTE BS 6217 gives details of symbols marked*.

Table 1 — Schedule of tests

Sequence	Sample	Test	Clause number
1	3	Inspection, measurement, and manipulation.	5, 6, 7, 9, 11.1, 13 (13.1, 13.2, 13.3 ^{A4} 13.4 and 13.8 ^{A4} 19 (19.2, 19.3 and 19.4 only), 21, 8 ^{A4} (except Annex C) ^{A4}
2	3	General	5, 10, 19.1, 14.2, 13.5 (9.1.1 only), 20.1.3.
3	3		5, 14.1, 15, 13.5 (20.1.2 and 17.1.3 only), 17.1.2, 13.6, 16, 21.3
4	3		5, 14.1, 15, 18,
5	3	Materials	5, 22
6	3		5, 23.2 ^{A4} , 8.2 (Annex C only) ^{A4}
7	3		5, 24, 21.3
8 ^a	3	Positive break	5, ^{A3} 13.7 ^{A3}
^{A3} 9	3	Isolation	5, 15.2 ^{A3}

NOTE The order of tests given in sequence no. 1 above is preferred but not mandatory except where required within the text of the appropriate clause.

^a An additional new set of three samples prepared with the contacts closed is supplied by the manufacturer for this test

For the marking of the rated current and rated voltage of the connection unit 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.

8 Clearances, creepage distances and solid insulation

Connection units 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. ^{A3} Clearances, creepage distances and solid insulation shall conform to the relevant subclauses of 8.1, 8.2 and 8.3. The distance between lead wires in the pinch of a neon lamp with external resistor shall be a minimum of 1 mm.

^{A4} Text deleted ^{A4}

^{A4} Connection units complying with the requirements for basic insulation shall be deemed to meet the requirements of this clause. ^{A4} If the manufacturer declares an insulation level exceeding basic insulation then the connection unit shall be tested accordingly.

NOTE 1 The requirements and tests are based on BS EN 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 the specific mechanical and material tests of BS 1363. ^{A3}

8.1 Clearances

Connection units energized directly from the low-voltage supply fall into Overvoltage Category III.

The clearances shall be dimensioned to 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.

^{A3} Text deleted ^{A3}

8.1.1 Clearances for basic insulation

The clearances for basic insulation shall not be less than the values given in Table 6 except as described below.

Smaller ^{A3} unspecified ^{A3} clearances (except those values marked in Table 6 with Note b) may be used if the connection unit 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.

Compliance shall be checked by inspection, and if necessary by measurement, or by the test of Annex F

^{A3} If clearance distances are to be measured, this shall be carried out in accordance with Annex B. ^{A3}

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.

Compliance shall be checked by inspection, and if necessary by measurement, or by the test of Annex F.

^{A3} If clearance distances are to be measured, this shall be carried out in accordance with Annex B. ^{A3}

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.

Compliance shall be checked by inspection, and if necessary by measurement, or by the test of Annex F.

^{A3} If clearance distances are to be measured, this shall be carried out in accordance with Annex B. ^{A3}

Table 6 — Minimum clearances for basic insulation

Rated impulse withstand voltage KV ^a	Minimum clearances 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
6.0	5.5
^a See Annex D. This voltage is: — for functional insulation: the minimum 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 connection unit; — 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.	

8.1.4 Clearances for reinforced insulation

The clearances 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 6.

Compliance shall be checked by inspection and by measurement A_3 , or by the test of Annex F A_3 .

A_3 8.1.5 Contact gap

The minimum contact gap shall be 3 mm in the open position.

Compliance shall be checked by measurement. A_3

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 7.

Compliance shall be checked by measurement.

Table 7 — Minimum creepage distances 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 3a and Table 3b of BS EN 60664-1 based on the rated voltage.
^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.

Compliance 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.

Compliance 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 7.

Compliance shall be checked by measurement.

8.3 Solid insulation

Solid insulation for basic, A_4 functional, A_4 supplementary and reinforced insulation shall be capable of withstanding electrical stresses which may occur in normal use.

No minimum thickness is specified for solid insulation.

A_4 8.3.1 Compliance shall be checked by tests in accordance with 15.1.3 using the values given in Table 8. A_4

A_4 Text deleted A_4

A_3 Table 8 — Withstand voltages for insulation types

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

A_3

9 Accessibility of live parts

9.1 Connection units shall be so designed and constructed that when they are mounted and wired as in normal use, live parts are not accessible even after removal of parts which can be removed without the use of a tool.

9.1.1 Compliance shall be checked by the application of test probe B of BS EN 60132:1998 to the accessible external surface of the connection unit applied with a force of 5_{-1}^0 N in the most unfavourable position. It shall not be possible to touch live parts.

10 Provision for earthing

10.1 All accessible metal parts of connection units shall be in electrical contact with the earthing terminal(s) 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 terminal(s) of the connection unit.

NOTE Metal parts having an accessible surface coating of lacquer or enamel are accessible metal parts within the meaning of this requirement.

10.1.1 Compliance 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 ± 0.75 A, derived from an a.c. source having a no-load voltage not exceeding 12 V, shall be passed for 60^{+5}_0 s between the earthing terminal and any accessible metal part intended to be earthed.

The resistance between the earthing terminal and any other nominated part shall not exceed 0.05Ω .

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

10.2.1 Compliance shall be checked by the test described in **10.1.1b**) applied between the connection unit earthing terminal(s) and any fixing screw in electrical contact with the earthing circuit. For the purpose of this test the connection unit shall be attached to its appropriate mounting box, the fixing screws being tightened to a value of two-thirds those given in Table 2.

Table 2 — Torque values for screws and nuts

Declared diameter of screw thread mm	Torque (see Note 1)		
	For metal screws as described below (see Note 2) N·m	For other metal screws and nuts N·m	For screws of insulating material N·m
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 comply with 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

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

11.1.1 Compliance shall be checked in accordance with **11.2** to **11.8**.

11.2 Connection units shall be provided with line, neutral and earth terminals as defined in **3.12**.

A4 Separate terminals shall be provided for incoming (supply) and outgoing (load) connections. **A4**

11.2.1 Compliance shall be checked by inspection.

11.3 Incoming (or supply) line and neutral terminals 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 **A3** as given in Table 8 of BS 6004:2000 **A3**.

11.3.1 Compliance shall be checked by inspection and by fitting the appropriate conductors.

11.4 Incoming earthing terminals 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 **A3** as given in Table 27 of BS 6500:2000 **A3**.

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

11.5 Outgoing (or load) line, neutral and earth terminals shall permit the connection without special preparation of one conductor of solid or stranded cables of 1.5 mm² or 2.5 mm² or one conductor of a flexible cord having a nominal cross-sectional area of 0.5 mm² up to and including 1.5 mm² where provision is made by the connection unit for the fitting of such a cable or cord.

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

11.6 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 sizes of the conductor hole and the clamping screw shall be such that the clearance between each side 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 cords and 0.6 mm when intended solely for the connection of fixed wiring.

11.6.1 Compliance shall be checked by inspection and measurement.

11.7 Terminal screws shall have a declared outside diameter of not less than 3 mm or be not smaller than 6 BA.

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

11.7.1 Compliance shall be checked by inspection and measurement.

11.8 Outgoing (or load) terminals of cord outlet connection units shall be so located or shielded that should a stray strand of a flexible conductor escape when the conductors are fitted, there is negligible risk of accidental connection between live parts and accessible external surfaces, or of a stray strand bypassing the fuse-link.

11.8.1 Compliance shall be checked by inspection, and by the following test.

A 6 mm length of insulation is removed from the end of a flexible conductor having a nominal cross-sectional area of 1.5 mm². One strand of the flexible conductor is left free and the other strands are fully inserted and clamped in the terminal. The free strand is bent, without tearing the insulation back, in every possible direction, but without making sharp bends round barriers.

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

12 (Not used)

13 Construction of connection units

13.1 Surface-mounted connection units shall be provided with means to ensure proper seating on a flat surface and with fixing holes which will accept No. 6 wood screws complying with BS 1210:1963.

Flush or semi-flush mounted socket-outlet plates shall have provision for two M3.5 fixing screws at centres of 60.3 ± 0.2 mm on the horizontal or vertical centrelines for boxes intended to accommodate 1-gang socket-outlets, 120.6 mm ± 0.3 mm on the horizontal or vertical centrelines for boxes intended to accommodate 2-gang socket-outlets or 180.9 mm ± 0.4 mm on the horizontal or vertical centrelines for boxes intended to accommodate 3-gang socket-outlets in accordance with BS 4662.