

Specification for

General requirements for electrical accessories

ICS 29.120

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PEL/23, Electrical accessories, upon which the following bodies were represented:

- ASTA Certification Services
- Association of Consulting Engineers
- Association of Control Manufacturers [TACMA (BEAMA Ltd.)]
- Association of Manufacturers of Domestic Electrical Appliances
- British Electrical Systems Association (BEAMA Ltd.)
- British Electrotechnical Approvals Board
- British Plastics Federation
- Consumer Policy Committee of BSI
- Department of Health
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- Electrical Installations Equipment Manufacturers' Association (BEAMA Ltd.)
- Electricity Association
- Electronic Components Industry Federation
- Institution of Electrical Engineers
- Lighting Association
- Lighting Industry Federation Ltd.
- National Inspection Council to Electrical Installation Contracting

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Cable Makers' Confederation
- British Radio and Electronic Equipment Manufacturers' Association
- ERA Technology Ltd.
- Institute of Trading Standards Administration
- Institute of Incorporated Executive Engineers
- National Standards Authority of Ireland
- Royal Society for the Prevention of Accidents

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Foreword

This general revision of BS 5733 has been prepared under the direction of the Electrotechnical Sector Board. It supersedes BS 5733:1979 which will be withdrawn three years from the date of publication of this standard.

NOTE Upon publication of BS 5733:1995, BSI Customer Services will respond to purchase orders for BS 5733 by supplying copies of the 1995 edition. Copies of the 1979 edition may be obtained by quoting the number "BS 5733/79".

It has been assumed in the drafting of this standard that it will be used and applied by those who are appropriately qualified and experienced.

This British Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

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 does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 51 and a back cover.

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1 Scope

1.1 This British Standard specifies requirements and tests to check the safety in normal use of electrical accessories which are not covered by other specific British Standards.

Such accessories are intended for use in household, commercial and light industrial premises where:

- the nominal supply voltage does not exceed 250 V a.c. single-phase, 50 Hz to 60 Hz or 250 V d.c.;
- the rated current of the accessory does not exceed 63 A;
- the rated current of an accessory incorporating screwless terminals does not exceed 13 A.

Unless otherwise stated by the manufacturer, accessories conforming to this standard are intended for connection by cables or flexible cords conforming to BS 6004, BS 6007 or BS 6500.

1.2 This standard also covers “plug-in” and other accessories in which electrical accessory components such as plug-pins, socket-contacts, switches, terminals, etc. are incorporated.

NOTE See 5.1.

1.3 Accessories conforming to this standard are suitable for use under the following conditions of service:

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

NOTE 1 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.

- a situation not subject to direct radiation from the sun or other source of heat likely to raise temperatures above the limits specified above;
- an altitude not exceeding 2 000 m above sea-level;
- an atmosphere not subject to excessive pollution by smoke, chemical fumes, rain, spray, prolonged periods of high humidity or other abnormal conditions.

NOTE 2 Accessories conforming to this standard may be suitable for use in other conditions, subject to agreement between manufacturer and user. Information given in a manufacturer's catalogue may take the place of such an agreement.

1.4 Requirements for electromagnetic compatibility are not given, as accessories do not in themselves produce extraneous emissions, nor is their functioning affected by external emissions. Therefore no emission or immunity tests are necessary.

It should be noted that accessories containing active electronic components, other than luminous indicating devices, may be susceptible to, or emit, electromagnetic interference. Tests for these are under consideration.

2 References

2.1 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this only when incorporated in it by amendment or revision. For undated references, the latest edition applies, together with any amendments.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

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

3.1
accessory
a device associated with an electrical installation excluding the switchgear and cables

3.2
fixed accessory
an accessory intended to be connected to the fixed wiring of an installation

3.3
flush accessory
a fixed accessory intended for mounting substantially into a fixed surface, generally into a box

3.4
surface accessory
a fixed accessory intended for mounting onto a fixed surface

3.5
panel mounted accessory
an accessory intended for incorporation into equipment panels or electrical trunking and which depends upon such incorporation for its enclosure

3.6
portable accessory
an accessory not intended for fixed mounting and which may have provision for the connection of a flexible cord

3.7
rewirable accessory
an accessory so constructed that a cable or flexible cord may be fitted or replaced using general purpose tools

3.8
non-rewirable accessory
an accessory supplied complete with an appropriate cable or flexible cord but having no provision for replacement by the user and no provision for dismantling the accessory using general purpose tools

3.9
fused accessory
an accessory having provision, internally, for a replaceable cartridge fuse-link

3.10
infrequent use
use of an accessory, which although providing a means of connection between equipment and an electrical supply, is intended only to provide disconnection at infrequent intervals

NOTE Examples include the following:

- a) fuse holders;
- b) clock connectors;
- c) accessories requiring connection/disconnection by means of a tool;
- d) accessories, the connection/disconnection of which is evidently intended to be infrequent, e.g. up to 100 operations during its life expectancy.

3.11
flush box
a device intended to be flush mounted into a fixed surface and having one open side to accept a flush accessory

3.12**surface box**

a device intended to be mounted on a fixed surface and having one open side to accept a cover plate or a plate-mounted accessory

3.13**enclosure**

a complete outer protective case for an accessory

NOTE It may be integral with the complete assembly, as in a surface accessory or a portable accessory, or it may comprise a flush accessory mounted in a corresponding box.

3.14**plug**

an accessory having contacts designed to engage with the contacts of a socket-outlet, also incorporating means for the electrical connection and mechanical retention of flexible cables or cords

3.15**socket-outlet**

an accessory having socket-contacts designed to engage with the contacts of a plug and having terminals for the connection of cables or cords

3.16**shutter**

a movable part incorporated into a socket-outlet arranged to shield at least the live socket-outlet contacts automatically when the plug is withdrawn

3.17**adaptor**

a portable accessory having plug-pins, intended to engage with the contacts of a corresponding socket-outlet, and having socket-outlet contacts to accommodate one or more plugs

3.18**switch**

a device designed to make or break the current in one or more electric circuits

3.19**isolating switch**

a switch designed to make and break the current in all current-carrying poles of an electric circuit to provide the safe isolation of equipment from the supply

3.20**functional switch**

a switch not intended for safety isolating purposes

3.21**flex-outlet**

an unfused accessory intended for connection to the fixed wiring of an installation and having provision for the connection of a flexible cord to supply a fixed or stationary appliance

3.22**fused flex-outlet**

a flex-outlet incorporating a replaceable cartridge fuse-link to protect the flexible cord

NOTE A clock-connector is an example of a fused flex-outlet.

3.23**in-line cord connector**

a coupling device comprising a plug part and a socket part, both having provision for flexible cords which enter the respective accessories in an axial line coincident with the engagement axes of the two parts

3.24

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 accessory without the use of special tools

3.25

screw type terminal

a terminal for the connection and subsequent disconnection of one conductor or the inter-connection of two or more conductors capable of being disconnected, the connection being made directly or indirectly by means of screws or nuts

3.26

pillar terminal

a terminal with screw clamping in which the conductor is inserted into a hole or cavity, where it is clamped under the end of the screw or screws

NOTE 1 The clamping pressure may be applied directly by the end of the screw or through an intermediate clamping member to which pressure is applied by the end of the screw.

NOTE 2 Examples of pillar terminals are shown in Figure 1.

3.27

stud terminal

a terminal with screw clamping in which the conductor is clamped under a nut

NOTE 1 The clamping pressure may be applied directly by a suitably shaped nut or through an intermediate part, such as a washer, a clamping plate or an anti-spread device.

NOTE 2 Examples of stud terminals are shown in Figure 2.

3.28

saddle terminal

a terminal with screw clamping in which the conductor is clamped under a saddle by means of two or more screws or nuts

NOTE Examples of saddle terminals are shown in Figure 3.

3.29

lug terminal

a screw terminal or a stud terminal, designed for clamping a cable lug or bar by means of a screw or nut

NOTE Examples of lug terminals are shown in Figure 4.

3.30

mantle terminal

a terminal with screw clamping in which the conductor is clamped against the base of a slot, in a threaded stud, by means of a nut

NOTE 1 The conductor is clamped against the base of the slot by a suitably shaped washer under the nut, by a central peg if the nut is a cap nut, or by equally effective means for transmitting the pressure from the nut to the conductor within the slot.

NOTE 2 Examples of mantle terminals are shown in Figure 5.

3.31

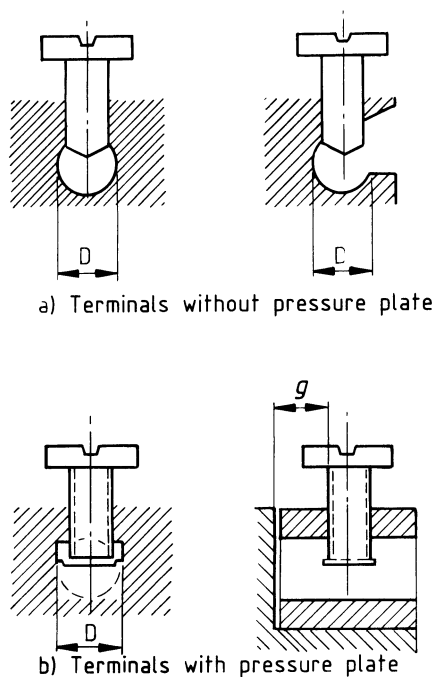
screwless terminal

a connecting device for the connection and subsequent disconnection of either

- a) a rigid (solid or stranded) or flexible conductor, or
- b) the interconnection of two conductors capable of being disconnected,

without special preparation of the conductor concerned other than removal of insulation

NOTE The connection may be made directly or indirectly by one of several methods, e.g. springs, or angled, eccentric or conical parts.



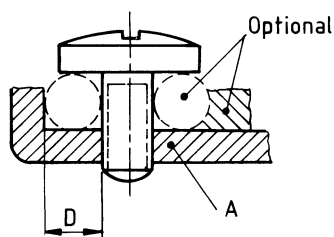
D is the conductor space.

Connecting capacity of terminal mm ²	Minimum distance <i>g</i> between clamping screws and conductor when fully inserted	
	<i>One Screw</i> mm	<i>Two screws</i> mm
0.5 to 1.5	1.5	1.5
1.0 to 4.0	1.8	1.5
4.0 to 6.0	2.0	1.5
6.0 to 10.0	2.5	2.0
10.0 to 16.0	3.0	2.0

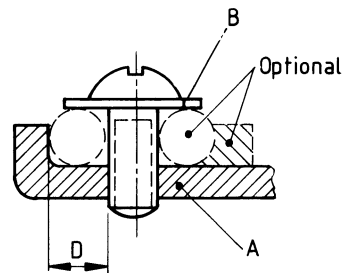
NOTE 1 The part of the terminal containing the threaded hole and the part of the terminal against which the conductor is clamped by the screw may be two separate parts as in the case of terminals provided with a stirrup.

NOTE 2 The shape of the conductor space may differ from those shown.

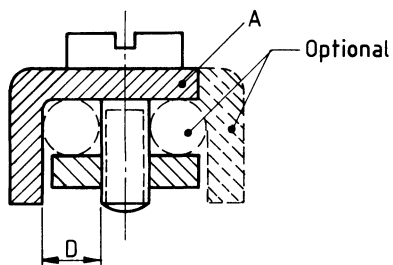
Figure 1 — Examples of pillar terminals



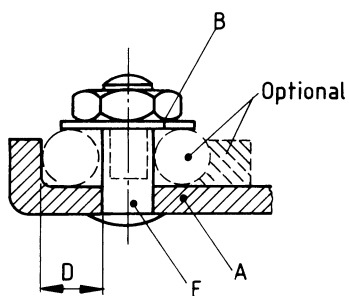
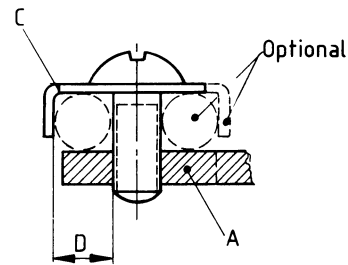
a) Screw not requiring washer, clamping plate or anti-spread device



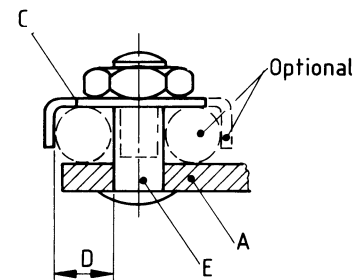
b) Screw requiring washer, clamping plate or anti-spread device



c) Screw terminals



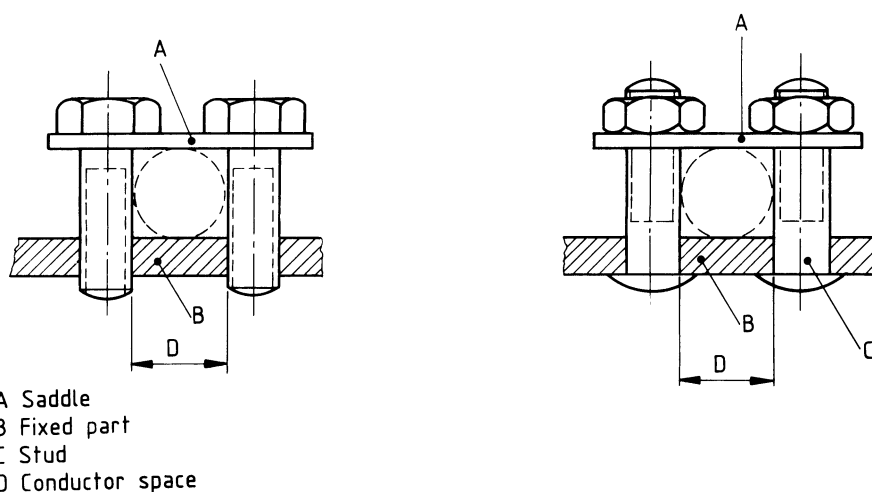
d) Stud terminals



- A Fixed part
- B Washer or clamping plate
- C Anti-spread device
- D Conductor space
- E Stud

NOTE The part which retains the conductor in position may be of insulating material provided the pressure necessary to clamp the conductor is not transmitted through the insulating material.

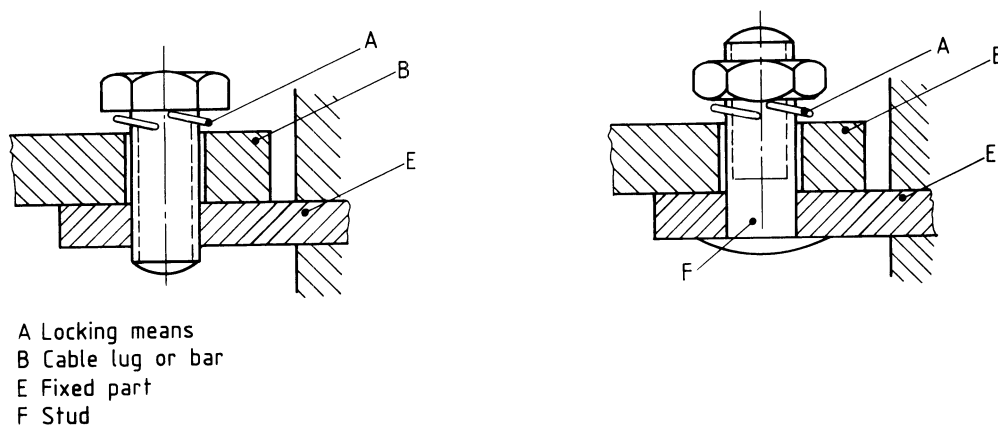
Figure 2 — Examples of screw terminals and stud terminals



NOTE 1 The shape of the conductor space may differ from that shown in the figure.

NOTE 2 The shape of the upper and lower faces of the saddle may be different to accommodate conductors of either small or large cross-sectional areas by inverting the saddle.

Figure 3 — Examples of saddle terminals



NOTE For this type of terminal, it is necessary that a spring washer or equally effective locking means is provided and the surface within the clamping area is smooth.

Figure 4 — Examples of lug terminals

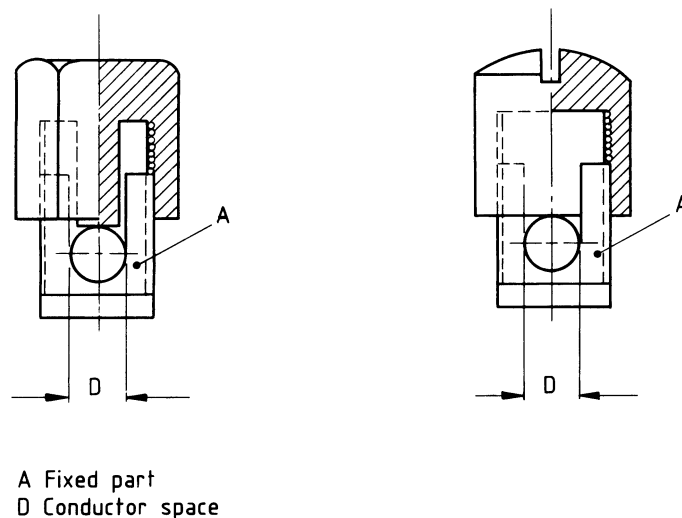


Figure 5 — Examples of a mantle terminal

3.32 termination

a method of making an electrical connection between the appropriate cable or flexible cord and the conducting part of the accessory using special purpose tools

NOTE Special purpose tools are used in processes such as soldering, welding or crimping.

3.33 live parts

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

NOTE Metal parts of the earthing circuit are not considered to be live parts.

3.34 accessible external surface

any surface of an accessory which can be touched by test probe B of BS 3042:1992 when the accessory is properly assembled and correctly wired, and is carrying current as in normal use

3.35 type test

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

3.36 type test sample

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

3.37 ambient temperature

the temperature in the room or area in which a type test is conducted, measured in the same horizontal plane as the accessory under test, at a distance of approximately 1 m from the accessory and in a position not adversely affected by other heat sources nor by cooling air currents

3.38 rated current

the current assigned to the accessory by the manufacturer

3.39**rated voltage**

the voltage assigned to the accessory by the manufacturer

3.40**rough-use accessory**

an accessory designed to withstand severe mechanical handling

NOTE Rough-use accessories are identified by additional marking in accordance with 8.1 b). 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 cord.

3.41**thread-forming tapping screw**

a tapping screw having an uninterrupted thread which, by screwing in, forms a thread by displacing material

NOTE An example of a thread-forming tapping screw is shown in Figure 6.

3.42**thread-cutting tapping screw**

a tapping screw having an interrupted thread which, by screwing in, makes a thread by removing material

NOTE An example of a thread-cutting tapping screw is shown in Figure 7.

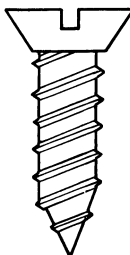


Figure 6 — Thread-forming tapping screw

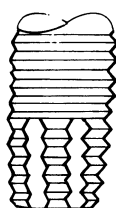


Figure 7 — Thread-cutting tapping screw

4 Classification

Accessories are classified, as appropriate, as the following:

- a) fixed or portable;
- b) flush or surface or panel-mounting;
- c) rewirable or non-rewirable;
- d) fused or unfused;
- e) switched or unswitched;
- f) with or without provision for earthing;
- g) according to the degree of protection against harmful ingress of water:
 - 1) ordinary, not higher than IPX0;
 - 2) splash-proof, IPX4;
 - 3) jet-proof, IPX5;

NOTE The IP ratings are defined in BS EN 60529.

- h) for normal use or rough-use.

5 General requirements

5.1 Incorporated components such as plug-pins, socket-contacts, switches, electronic components, printed circuit boards, transformers, timers and control devices shall conform to the relevant British Standard. Where no relevant standard for an incorporated component exists, the requirements of this standard shall apply.

5.2 Accessories shall be so designed and constructed that, in normal use, their performance is reliable and without danger to the user or surroundings.

6 Type testing

6.1 Type test samples shall be submitted to tests in the order specified in **6.3**.

NOTE 1 The tests may be made by the manufacturer, or the responsible vendor, or may be made on his behalf by any competent testing laboratory or certification authority.

The results of the tests shall be recorded and retained for reference and inspection.

NOTE 2 Where components such as switches, sockets, plugs, fuses, etc., conforming to other British Standards are incorporated, relevant test results obtained during their original compliance procedures may be accepted in order to avoid duplication of testing, provided that compliance criteria of the other British Standard(s) are at least as severe as those specified in this standard.

6.2 Unless otherwise specified in this standard the accessories shall be tested as delivered by the manufacturer or responsible vendor and under normal conditions of use, at an ambient temperature of $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

The accessories used for the tests shall be substantially identical to normal production items in respect of all details which may affect the test results.

Non-rewirable accessories shall be supplied with an appropriate cable, flexible cord or extensible lead. Except as specified in **21.3.3** and **21.3.5**, the cord or lead shall be at least 1 m long, including the length of any protective sleeve.

6.3 A total of at least 11 accessories, of any one type, shall be submitted to inspection and tests in the following order:

- a) three accessories: Clauses **5** to **16** (visual inspection and manual examination);
- b) three accessories: Clauses **11** to **22** (general tests);
- c) up to three accessories: Clause **23** (material test);
- d) two dismantled accessories: Clauses **24** and **25** (material tests).

NOTE If any particular test is needed to be repeated, as part of the normal sequence, this is specified in the appropriate test method.

6.4 Accessories shall be deemed to conform if no accessory fails in the complete series of tests given in **6.3**.

Alternatively, if one accessory fails in any group in the complete series of tests specified in **6.3**, then accessories of that type shall be deemed to have failed to conform to this standard, unless that accessory can be shown to be not representative of normal production or design, in which case a further set of accessories shall be submitted to the test or tests in that group. If there is no failure in this retest then accessories of that type shall be deemed to conform to this standard.

If more than one accessory fails in the complete series of tests given in **6.3** then accessories of that type shall be deemed to have failed to conform to this standard.

7 Rating

Accessories shall have the following:

- a) a rated voltage not exceeding 250 V a.c. and/or 250 V d.c.; and
- b) a rated current not exceeding 63 A.

Conformity shall be checked by inspection of the marking and by the relevant tests given in this standard.

8 Marking

8.1 Information to be marked on accessories

Accessories shall be marked with the information given in items a), c) and j) in the following list. The other information listed shall be marked as applicable:

- a) the number of this British Standard i.e. BS 5733¹⁾
- b) for rough-use accessories and portable socket-outlets, the number of the standard shall be followed by “/A”;
- c) the name or trade mark of the manufacturer or responsible vendor;
- d) the rated current;
- e) the rated voltage;
- f) the nature of supply if this is relevant;
- g) terminal identification, if this is relevant;
- h) for fused accessories, the word “FUSE” or “FUSED”, or the appropriate symbol specified in **8.4**. The fuse marking shall be on the visible exterior of the accessory when in use;
- i) for other than ordinary accessories, an indication of the degree of protection, e.g. IPX4 or IPX5;
- j) type reference (which may be a catalogue number, code number, etc.);
- k) in rewirable accessories where cord anchorages are not intended to clamp effectively cords and/or cables smaller than the minimum size appropriate to the accessory, the minimum and maximum sizes for which the cord anchorage is provided, as given in Clause **16**, e.g. 6 mm² to 16 mm², shall be marked in an area adjacent to the anchorage;
- l) for accessories incorporating screwless terminals, the length of insulation to be removed, see **14.3.7**.

NOTE The information designated in items j), k) and l) may be shown on the product and/or the packaging unit.

¹⁾ Marking BS 5733 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 third party certification of conformity.

8.2 Safety information

Where it is necessary, for safe operation, that the user should be aware of any particular characteristics of the accessory, the necessary information shall be given by markings on the accessory itself, or, where this is not practicable, in instructions which may accompany it.

8.3 Visibility of marking

The marking specified in 8.1 shall be visible up to the time of installation, but need not be visible thereafter. The marking specified in 8.2, if on the accessory, shall be visible after installation.

8.4 Symbols for marking accessories

If symbols are used they shall be as follows:

Amperes	A
Volts	V
*Alternating current	
*Direct current	
Line	L
Neutral	N
*Earth	 preferred, or 
*On	I
*Off	O
*Fuse	
Cord/cable size	mm ² or mm

NOTE BS 6217 gives guidance on symbols marked with an asterisk. However, strictly proportional reductions may not be practical in certain media and interpretative licence is permissible, provided that a clear graphical representation of symbol is produced which communicates the intention.

8.5 Marking of rated current and voltage

For the marking of rated current and rated voltage, figures may be used alone. The figure for the d.c. current rating, if any, shall then be placed before the figure for the a.c. current rating, and shall be separated from it by an oblique line or dash, these figures being placed before or above that for the rated voltage and separated from the latter by a line. If a symbol for nature of supply is used, it shall be placed next to the marking for the rated current and rated voltage.

NOTE Examples of the marking for current, voltage and nature of supply are as follows:

10 A 250 V ~ or 10/250 ~ or $\frac{10}{250}$ ~

10 A-16 A 250 V or 10-16/250 or $\frac{10-16}{250}$

10 A 125-230 V or $\frac{10}{125-230}$

8.6 Inspection

Conformity to the requirements of 8.1 to 8.5 shall be checked by inspection.