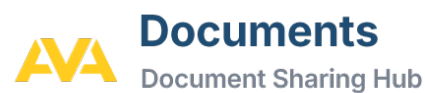


Australian/New Zealand Standard™

**Bayonet lampholders
(IEC 61184, Ed. 3.1 (2011) MOD)**



AS/NZS 61184:2015

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-041, Lamps and Related Equipment. It was approved on behalf of the Council of Standards Australia on 13 March 2015 and on behalf of the Council of Standards New Zealand on 25 March 2015.
This Standard was published on 4 May 2015.

The following are represented on Committee EL-041:

Australasian Fire and Emergency Service Authorities Council
Australian Industry Group
Consumers Federation of Australia
Department of Industry
Electrical Compliance Testing Association
Electrical Regulatory Authorities Council
Energy Efficiency and Conservation Authority of New Zealand
Fair Trading NSW
IES: The Lighting Society
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This Standard was issued in draft form for comment as DR AS/NZS 61184:2014.

Australian/New Zealand Standard™

Bayonet lampholders (IEC 61184, Ed. 3.1 (2011) MOD)

Originated as AS/NZS 61184:2007.
Second edition 2015.

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-041, Lamps and Related Equipment, to supersede AS/NZS 61184:2007, *Bayonet lampholders (IEC 61184, Ed. 2.0 (1997) MOD)* six months from publication. During this period, both editions of the Standard will operate in parallel, then the 2007 edition is anticipated to be withdrawn.

This Standard will also operate in parallel with AS/NZS 3117, *Approval and test specification—Bayonet lampholders*, until AS/NZS 3117 is withdrawn. It is anticipated that AS/NZS 3117 will be withdrawn in December 2016.

While this Standard (AS/NZS 61184:2015) and AS/NZS 3117 operate in parallel, they are separate stand-alone documents and the chosen Standard (i.e. AS/NZS 61184 or AS/NZS 3117) is applied in its entirety. The interchanging of requirements from each Standard is not permitted to determine overall compliance of a bayonet lampholder, except when either Standard specifically references the other Standard's requirements.

The objective of this Standard is to specify particular requirements for bayonet lampholders used in general purpose lighting.

This Standard is an adoption with national modifications; it has been reproduced from IEC 61184, Ed. 3.1 (2011), *Bayonet lampholders*, its Amendment 1 (2011) and its Corrigendum 1 (2009), which have been incorporated into the source text. Corrigendum 2 (2012) has been added at the end of the source text. A vertical line in the margin shows where the base publication has been modified by Amendment 1. Additions and deletions are displayed in red, with deletions being struck through. This Standard has been varied as indicated to take account of Australian/New Zealand conditions.

This Standard is structured as follows:

- (a) Preface (including Australian and Australian/New Zealand references).
- (b) IEC 61184, Ed. 3.1 (2011) (unedited from the contents page to the final clause of the IEC Standard).
- (c) Appendix ZZ—Australian/New Zealand variations to the IEC Standard.

The variations listed in Appendix ZZ address issues including resistance to flame and ignition.

The variations described in Appendix ZZ form the Australian and New Zealand variations for the purposes of the IECEE CB Scheme for recognition of testing to Standards for safety of electrical equipment (the CB Scheme).

The essential safety requirements of AS/NZS 3820, *Essential safety requirements for electrical equipment*, that could be applicable to Bayonet lampholders are covered by this Standard, taken in conjunction with any other relevant requirements affecting safety.

In this Standard, the following print types are used:

- (i) Requirements proper: in roman type.
- (ii) *Test specifications: in italic type.*
- (iii) Notes: in small roman type.

As this Standard is reproduced from an International Standard, the following applies:

- (A) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.
- (B) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
IEC		AS	
60068	Environmental testing	60068	Environmental testing
60068-2-75	Part 2-75: Tests—Test Eh: Hammer tests	60068.2.75	Part 2.75: Tests—Test Eh: Hammer tests
		AS/NZS	
60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V (series)	60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V (series)
60245	Rubber-insulated cables—Rated voltages up to and including 450/475 V (series)	60245	Rubber-insulated cables—Rated voltages up to and including 450/475 V (series)
		AS	
60417	Graphical symbols for use on equipment	60417	Graphical symbols for use on equipment
		AS/NZS	
60432	Incandescent lamps—Safety specifications (series)	60432	Incandescent lamps—Safety specifications (series)
		AS	
60529	Degrees of protection provided by enclosures (IP Code)	60529	Degrees of protection provided by enclosures (IP Code)
		AS/NZS	
60598	Luminaires	60598	Luminaires
60598-1	Part 1: General requirements and tests	60598.1	Part 1: General requirements and tests (IEC 60598-1, Ed. 7.0 (2008) MOD)
60695	Fire hazard testing	60695	Fire hazard testing
60695-2-11	Part 2-11: Glowing/hot-wire based test methods—Glow-wire flammability test method for end-products	60695.2.11	Part 2.11: Glowing/hot-wire based test methods—Glow-wire flammability test method for end-products (IEC 60695-2-11:2000, MOD)

Only normative references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The term ‘normative’ has been used in this Standard to define the application of the annex or appendix to which it applies. A ‘normative’ annex or appendix is an integral part of a Standard.

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INTRODUCTION

This standard covers safety requirements for bayonet lampholders and includes references to IEC 60061 for the control of interchangeability and safety of the cap and holder fit.

NOTE Safety requirements ensure that electrical equipment constructed in accordance with these requirements does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was intended.

The thermal characteristics of lampholders are specified by the rated operating temperature (symbol T), which is the highest temperature for which the lampholder is designed. The temperature rating and the resistance to heat specified in this standard are based on two different principles, as presently found in IEC 60238 for Edison screw lampholders and in other national standards for bayonet lampholders. After experience, it may be possible to rationalize the systems in future editions of this standard.

AUSTRALIAN/NEW ZEALAND STANDARD

Bayonet lampholders (IEC 61184, Ed. 3.1 (2011) MOD)**1 General****1.1 Scope**

This International Standard applies to bayonet lampholders B15d and B22d for connection of lamps and semi-luminaires to a supply voltage of 250 V.

This standard also covers lampholders which are integral with a luminaire or intended to be built into appliances. It covers the requirements for the lampholder only.

For all other requirements, such as protection against electric shock in the area of the terminals, the requirements of the relevant appliance standard shall be observed and tested after building into the appropriate equipment, when that equipment is tested according to its own standard. Lampholders for use by luminaire manufacturers only are not for retail sale.

NOTE Where lampholders are used in luminaires, their maximum operating temperatures are specified in IEC 60598-1.

B15d denotes the cap/holder fit as defined by IEC 60061-1, sheet 7004-11 and IEC 60061-2, sheet 7005-16 with the corresponding gauges.

B22d denotes the cap/holder fit as defined by IEC 60061-1, sheet 7004-10 and IEC 60061-2, sheet 7005-10 with the corresponding gauges.

1.2 Normative references

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

IEC 60061 (all parts), *Lamp caps and holders together with gauges for the control of interchangeability and safety*

IEC 60061-1, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 1: Lamp caps*

IEC 60061-2, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 2: Lampholders*

IEC 60061-3, *Lamp caps and holders together with gauges for the control of interchangeability and safety – Part 3: Gauges*

IEC 60064, *Tungsten filament lamps for domestic and similar general lighting purposes – Performance requirements*

IEC 60068-2-75:1997, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60112:2003, *Method for the determination of the proof and the comparative tracking indices of solid insulating materials*

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60245 (all parts), *Rubber insulated cables – Rated voltages up to and including 450/750 V*

IEC 60399, *Barrel thread for lampholders with shade holder ring*

IEC 60417, *Graphical symbols for use on equipment*

IEC 60432 (all parts), *Incandescent lamps – Safety specifications*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60598-1, *Luminaires – Part 1: General requirements and tests*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60695-2-11:2000, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-11-5:2004, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

ISO 4046-4:2002, *Paper, board, pulps and related terms – Vocabulary – Part 4: Paper and board grades and converted products*

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE For clarification of some definitions, see also Figure 4.

2.1 Materials

2.1.1

plastic lampholder

lampholder, the exterior of which is made wholly of plastic material

NOTE The exterior is any part of the lampholder which, when wired and fully assembled and fitted with the testing device shown in Figure 7, can be touched directly by the standard test finger of IEC 60529.

2.1.2

ceramic lampholder

lampholder, the exterior of which is made wholly of ceramic material (see note to 2.1.1)

2.1.3

metal lampholder

lampholder, the exterior of which is made wholly or partly of metal (see note to 2.1.1)

2.2 Means of fixing

2.2.1

cord grip lampholder

lampholder incorporating a method of retaining a flexible cord by which it may be suspended (see Figure 4a)

2.2.2**threaded entry lampholder**

lampholder incorporating a threaded component at the point of entry of the supply wires permitting the lampholder to be mounted on a mating threaded support (formerly called nipple lampholder) (see Figure 4b)

2.2.3**backplate lampholder**

lampholder so designed as to be suitable for mounting, by means of an associated or integral backplate, directly on to a supporting surface or appropriate box (see Figure 4c)

2.3**terminal/contact assembly**

part or assembly of parts which provides a means of connection between the termination of a supply conductor and the contact-making surfaces of the corresponding lamp cap as well as resilient means to maintain contact pressure

- a) rising type, where the terminal is allowed to rise parallel with the lamp axis on insertion of a lamp cap;
- b) non-rising type, where the terminal is not allowed to rise on insertion of a lamp cap

NOTE The terminal and the barrel may be a unique element.

2.4**union ring**

cylindrical component which joins together separate external parts of the lampholder

2.5**shade ring**

cylindrical component having an internal thread or other means to engage a corresponding support on the outer shell and intended to carry or retain a shade

2.6**skirt** (plastic lampholders only)

component similar to a shade ring but having a longer cylindrical form to extend to the full length of the lampholder body

2.6.1**protective shield** (plastic lampholders only)

component similar to a skirt but having a flared open end to protect the user from accidental contact with the lamp cap (see Figure 9)

2.7**dome**

part of a cord grip lampholder or threaded entry lampholder which shields the connecting terminals

2.8**barrel**

part of a lampholder which serves for mechanical connection of the lamp cap with the lampholder

2.9**lampholder for building-in**

lampholder designed to be built into a luminaire, an additional enclosure or the like

2.9.1**unenclosed lampholder**

lampholder for building-in so designed that it requires additional means, for example enclosures, to meet the requirements of this standard with regard to protection against electric shock

2.9.2**enclosed lampholder**

lampholder for building-in so designed that, on its own, it fulfils the requirements of this standard with regard to protection against electric shock and, if appropriate, IP classification

2.10**independent lampholder**

lampholder so designed that it can be mounted separately from a luminaire and at the same time provide all the necessary protection according to its classification and marking

2.11**switched lampholder**

lampholder provided with an integral switch to control the supply to the lamp

2.12**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.

2.13**supplementary insulation**

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

2.14**double insulation**

insulation comprising both basic insulation and supplementary insulation

2.15**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

NOTE The term "insulation system" does not imply that the insulation must be one homogeneous piece. It may comprise several layers which cannot be tested singly as supplementary or basic insulation.

2.16**live part**

conductive part which may cause an electric shock in normal use

The neutral conductor is, however, regarded as a live part.

The test to determine whether or not a conductive part is a live part which may cause an electric shock is given in Annex A of IEC 60598-1.

2.17**type test**

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

2.18**type test sample**

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

2.19**semi-luminaire**

unit similar to a self-ballasted lamp but designed to utilize a replaceable light source and/or starting device

2.20**rated operating temperature**

highest temperature for which the lampholder is designed

2.21**rated pulse voltage**

highest peak of pulse voltages that the holder is able to withstand

2.22**impulse withstand category**

numeral defining a transient overvoltage condition

NOTE Impulse withstand categories I, II, III and IV are used.

a) Purpose of classification of impulse withstand categories

Impulse withstand categories are to distinguish different degrees of availability of equipment with regard to required expectations on continuity of service and on an acceptable risk of failure.

By selection of impulse withstand levels of equipment, insulation co-ordination can be achieved in the whole installation reducing the risk of failure to an acceptable level providing a basis for overvoltage control.

A higher characteristic numeral of an impulse withstand category indicates a higher specific impulse withstand of the equipment and offers a wider choice of methods for overvoltage control.

The concept of impulse withstand categories is used for equipment energized directly from the mains.

b) Description of impulse withstand categories

Equipment of impulse withstand category I is equipment which is intended to be connected to the fixed electrical installations of buildings. Protective means are taken outside the equipment - either in the fixed installation or between the fixed installation and the equipment - to limit transient overvoltages to the specific level.

Equipment of impulse withstand category II is equipment to be connected to the fixed electrical installations of buildings.

Equipment of impulse withstand category III is equipment which is part of the fixed electrical installations and other equipment where a higher degree of availability is expected.

Equipment of impulse withstand category IV is for use at or in the proximity of the origin of the electrical installations of buildings upstream of the main distribution board.

2.23**primary circuit**

circuit which is directly connected to the AC mains supply

It includes, for example, the means for connection to the AC mains supply, the primary windings of transformers, motors and other loading devices.

2.24**secondary circuit**

circuit which has no direct connection to a primary circuit and derives its power from a transformer, converter or equivalent isolation device, or from a battery

Exception: autotransformers. Although having direct connection to a primary circuit, the tapped part of them is also deemed to be a secondary circuit in the above sense.

NOTE Mains transients in such a circuit are attenuated by the corresponding primary windings. Also inductive ballasts reduce the mains transient voltage height. Therefore, components located after a primary circuit or after an inductive ballast can be suited for an impulse withstand category of one step lower, i.e. for impulse withstand category II.

2.25**enclosed reinforced insulated lampholder**

lampholder for building-in, so designed that on its own it fulfils the requirements for double or reinforced insulated parts in class II applications

2.26**partly reinforced insulated lampholder**

lampholder for building-in, so designed that some parts of the lampholder require additional means to fulfil the requirements with regard to double or reinforced insulation

NOTE In some cases, the dimensions might be achieved only after mounting into the luminaire.

3 General requirements

Lampholders shall be so designed and constructed that in normal use they function reliably and cause no danger to persons or surroundings.

In general, compliance is checked by carrying out all the relevant tests specified.

Independent lampholders, not specifically intended for building-in, shall comply with the requirements of the following sections and subclauses of IEC 60598-1 where the subject-matter of these headings is not dealt with in the present standard.

Section 2	– Classification
Section 3	– Marking
Section 4	– Construction (as appropriate)
Section 8	– Protection against electric shock
Section 9	– Resistance to dust, solid objects and moisture
Section 10	– Insulation resistance and electric strength (for class II)
Subclauses 12.4 and 12.5	– Thermal tests

4 General conditions for tests**4.1 Tests according to this standard are type tests.**

NOTE The requirements and tolerances permitted by this standard are related to testing of a type test sample submitted for that purpose. Compliance of the type test sample does not ensure compliance of the whole production of a manufacturer with this safety standard. In addition to type testing, conformity of production is the responsibility of the manufacturer and may include routine tests and quality control.

For further information see IEC 60061-4, sheet 7007-13.

4.2 Unless otherwise specified, the samples are tested as delivered and installed as in normal use without lamps, at an ambient temperature of $20\text{ °C} \pm 5\text{ °C}$.

4.3 All inspections and tests are carried out on a total of:

- 8 specimens for unswitched lampholders, or
- 11 specimens for switched lampholders;

in the order of the clauses as follows:

- 3 specimens: Clauses 3 to 12;
- 3 specimens: Clauses 14 to 18;
- 3 specimens: Clause 13 (switched lampholder tests only);
- 2 specimens: Clauses 19 and 20.

NOTE For testing of screwless terminals according to 10.2, separate additional specimens are required.

This is also necessary for independent lampholders not specifically intended for building-in (see Clause 3).

4.4 If no lampholder fails in the complete series of tests specified in 4.3, then lampholders of that type shall be deemed to comply with this standard.

If one lampholder fails in any group in the complete series of tests specified in 4.3, the lampholders of that type shall be deemed to have failed to comply with this standard, unless that lampholder can be shown to be not representative of normal production or design, in which case a further set of lampholders shall be submitted to the test or tests in that group. Generally, it will be necessary to only repeat the test in which failure occurs. However, if the lampholder fails in the test specified in Clauses 14 to 18 inclusive, the tests shall be repeated from the tests of Clause 14 onwards.

An additional type test sample may be submitted, together with the first type test sample, in case one lampholder fails, in which case the additional type test sample shall then be tested and shall only be rejected if a further failure occurs. If there is no failure in this retest, then lampholders of that type shall be deemed to comply with this standard. If the additional type test sample is not submitted at the same time, a failure of one lampholder shall entail a rejection.

If more than one specimen fails in the complete series of tests specified in 4.3 then lampholders of that type shall be deemed to have failed to comply with this standard.

NOTE In view of the duration of the test procedure, lampholders differing only in detail and having the same constructional principles and materials may be covered by a single series of type tests, subject to agreement between applicant and test house.

5 Standard ratings

5.1 Standard rated voltage

For all lampholders only a rated voltage of 250 V is allowed.

Lampholders B15d are not intended for use in circuits with ignitors.

Lampholders B22d shall not be used in circuits with ignitors without approval from the lampholder manufacturer.

NOTE From the theoretical point of view, the minimum creepage distance required for a holder B22d will result in a clearance sufficient to withstand a pulse voltage of 2,5 kV.

The measures required to allow easy contact travel and lamp removal might in some situations, however, be accompanied by unforeseen reduction of the clearance without influence on normal operation (without ignition) where only the creepage distances are critical.

BY22d lampholders are specially designed for use in ignitor circuits.

5.2 Standard rated currents

Standard rated currents are:

- 2 A for lampholders B15d;
- 2 A for lampholders B22d.

The rated current shall be not less than the standard value. Rated currents higher than 2 A are allowed.

Compliance with the requirements of 5.1 and 5.2 is checked by inspection of the marking.

6 Classification

Lampholders are classified:

6.1 According to the material of the exterior:

- lampholders whose exterior is made wholly of plastic material;
- lampholders whose exterior is made wholly of ceramic material;
- lampholders whose exterior is made wholly or partly of metal.

NOTE For definition of "exterior", see note to 2.1.1.

Lampholders with external parts consisting partly of metal and lampholders comprising external parts of insulating material with a conductive outer surface, e.g. a metallized outer shell, are considered as metal lampholders.

This does not apply to threaded entries and external parts, as for example a metal shade ring mounted on to the outside of a lampholder of insulating material, which cannot become live even in the case of an insulation fault. Metal lampholders with insulating coverings are considered as metal lampholders.

If in doubt as to whether or not a surface is conductive, two stripe-electrodes 1,5 mm wide, 25 mm long and with a distance of 2 mm from each other are applied to the surface (e.g. with silver conductive paint). In accordance with 14.3, the insulating resistance is measured between the stripes. The surface is considered to be conductive if the resistance is less than 5 MΩ.

6.2 According to degree of protection against solid objects and ingress of water:

- ordinary lampholders;
- drip-proof lampholders.

NOTE A classification for higher degrees of protection against ingress of water is under consideration.

6.3 According to method of fixing:

- threaded entry lampholders;
- cord grip lampholders;
- backplate lampholders;
- other lampholders.

NOTE Examples of other lampholders are lampholders provided with a mechanical suspension device e.g. a hook.

6.4 According to type:

- switched lampholders provided with an integral switch to control the supply to the lamp;
- non-switched lampholders.

6.5 According to protection against electric shock:

- ~~— enclosed lampholders;~~
- ~~— unenclosed lampholders;~~
- ~~— independent lampholders.~~
- unenclosed lampholders;
- enclosed lampholders;
- independent lampholders;
- partly reinforced insulated lampholders;
- enclosed reinforced insulated lampholders.

NOTE Where a lampholder is used with a working voltage of 50 % or less of its maximum rating, it may be regarded as equivalent to a reinforced insulated lampholder.

6.6 According to resistance to heat:

- without T marking, suitable for rated operating temperatures up to and including 135 °C for B15d lampholders and 165 °C for B22d lampholders;
- with Txxx marking, suitable for rated operating temperatures up to and including the temperature marked or declared by the manufacturer. These temperatures shall be not lower than 140 °C for B15d lampholders and not lower than 170 °C for B22d lampholders;

NOTE The value of the temperature marking is increased by steps of 10 °C.

- with T1 marking, suitable for temperatures on the lamp cap up to and including 165 °C;

NOTE The continued use of T1 lampholders is subject to review.

- with T2 marking, suitable for temperatures on the lamp cap up to and including 210 °C.

7 Marking

7.1 Lampholders shall be marked with:

- rated voltage, in volts;
- rated operating temperature Txxx, T1 or T2, if applicable (see 6.6).
In the first version, the letter T shall be followed by the value of the rated operating temperature in degrees Celsius;
- symbol for nature of supply, if required (for switched lampholders only);
- for lampholders whose exterior is made wholly of ceramic material, information on the rated operating temperature, if applicable, shall either be marked on the lampholder or given in the manufacturer's catalogue;
- mark of origin (this may take the form of a trade mark, or the manufacturer's or responsible vendor's name or identification mark);

NOTE The mark of origin is not intended to mean the country of origin.

- either a unique catalogue number or an identifying reference;

~~NOTE An identifying reference may include numbers, letters, colour, etc. to identify the lampholder by reference to the manufacturer's or responsible vendor's catalogue or similar literature.~~

NOTE Available technical documentation of the manufacturer like printed catalogues or online catalogues should allow a clear identification of a lampholder either by a unique catalogue number or by an identifying reference on the holder, specifying the essential characteristic features and the basic design of the product supplemented by a clear description. Variations of the basic design like for example different cable length, fixing means, colours etc., which do not affect safety or performance of the lampholder, may be disregarded in the type reference marked on the product. Variations included in the type testing procedure are listed in the corresponding test reports.

- rated current, in amperes, if greater than 2 A;
- IP number, if other than ordinary, for degree of protection against ingress of water (see 6.2);
- for single-pole switched lampholder, the switched pole shall be identified.

For lampholders according to this standard, the distances for impulse withstand category II are applicable. This information shall be indicated in the manufacturer's catalogue or the like.

~~Lampholders complying with the electrical strength test for double or reinforced insulation and having creepage distances and clearances equivalent to double or reinforced insulation offer an adequate level of protection for use in luminaires where they are accessible in normal use. Such lampholders are addressed as lampholders for use in class II applications. This information shall be indicated in the manufacturer's catalogue or the like.~~

NOTE Values for creepage distances and clearances as well as test voltages for the electrical strength test for double or reinforced insulation are given in IEC 60598-1.

~~To achieve sufficient creepage distances and clearances to outer accessible surfaces, additional attachments could be used. In some cases, these dimensions might be achieved only after mounting the lampholder in the luminaire. Relevant information should be provided in the manufacturer's catalogue or the like.~~

Enclosed reinforced insulated lampholders offer an adequate level of protection for use in luminaires where they are accessible in normal use. This information shall be indicated in the manufacturer's catalogue or the like.

For partly reinforced insulated lampholders, sufficient creepage distances and clearances to outer accessible surfaces will require additional protection to some parts of the lampholder by the luminaire design or by use of additional attachment(s) or cover(s). This information shall be indicated in the manufacturer's catalogue or the like.

7.2 If symbols are used for current and voltage, A shall denote amperes and V volts.

Alternatively, figures alone may be used, the figure for the rated current being marked before or above that for the rated voltage and separated from the latter by a line.

Therefore, the marking for current and voltage may be as follows:

$$4 \text{ A } 250 \text{ V or } 4/250 \text{ or } \frac{4}{250}$$

The symbol for d.c. shall be --- (see IEC 60417, symbol IEC 60417-5031(2002-10)).

The symbol for protection against ingress of water shall, for drip-proof lampholders, be IPX1.

NOTE Where X is used in an IP number, it is intended to indicate a missing numeral in the symbol but both the appropriate numerals in accordance with IEC 60529 must be marked on the lampholder.

7.3 The marking of degree of protection against ingress of water shall be on the outside of the lampholder.

7.4 An earthing terminal shall be indicated by the symbol  (see IEC 60417, symbol IEC 60417-5019 (2006-08)).

This symbol shall not be placed on screws, removable washers or other easily removable parts.

Compliance is checked by inspection.

NOTE In the United Kingdom, metal lampholders intended for retail sale must have the following warning notice attached or incorporated in the associated packaging:

"THIS LAMPHOLDER MUST BE EARTHED".

7.5 Where the terminal size specified in 10.2 is not complied with, the relevant value, or values in case of a range, shall be shown in mm² followed by a small square (for example 0,5 □)

For unenclosed lampholders such marking is not required but relevant information shall be given in the manufacturer's mounting instructions.

7.6 Marking shall be durable and easily legible.

Compliance with the requirements of 7.1 to 7.5 shall be checked by inspection, and by trying to remove the marking by rubbing lightly for 15 s with a piece of cloth soaked with water and for a further 15 s with a piece of cloth soaked with petroleum spirit. After the tests, the marking shall be still legible.

NOTE The petroleum spirit used should consist of a solvent hexane with a content of aromatics of maximum 0,1 volume percentage, a kauri-butanol value of 29, an initial boiling-point of approximately 65 °C, a dry-point of approximately 69 °C and a specific density of approximately 0,68 g/cm³.

7.7 In the United Kingdom a threaded entry lampholder without means for restraining the flexible cord, intended for retail sale, shall have the following warning notice attached or incorporated in the associated packaging:

"Do not connect this lampholder to a flexible cord which may be subject to tension in normal use, unless means are provided to relieve the conductors from strain and to protect the insulation".

8 Dimensions

8.1 Lampholder dimensions shall comply with the current edition of the standard sheets of IEC 60061.

Compliance is checked by measuring in conformity with standard sheets 7005-10 and 7005-16 of IEC 60061-2 and by application of the specified gauges according to the current edition of IEC 60061-3.

Lampholders designed with a barrel thread for shade holder rings and shade holder rings shall comply with IEC 60399 where applicable and with the dimensional requirements of Figure 8.

Compliance is checked by measurement and by means of the gauges given in IEC 60399.

8.2 The threaded entries of lampholders shall be provided with one of the following screw threads in accordance with Figure 13.

- lampholders B15d: M10×1;
- lampholders B22d: M10×1 or M13×1.

NOTE 1

- The threaded entry M10×1 is mainly intended for the internal wiring of luminaires.
- In the United Kingdom, threaded entry lampholders with 3/8 inch × 26 TPI and 1/2 inch × 26 TPI screw threads are permitted for retail sale.
- In France, threaded entry lampholders with 11 mm × 19 TPI and 17 mm × 19 TPI screw threads are permitted for replacement.

Compliance is checked by means of the gauges in accordance with Figure 14. In case of doubt, the gauge is introduced into the entry by applying a torque of 0,5 Nm.

NOTE 2 Other thread sizes are permissible for lampholders not intended for retail sale.

8.3 The dimensions of threaded entries and set screws, if any, shall not be less than the values shown in Table 1.

Table 1 – Dimensions of threaded entries and set screws

Nominal thread diameter	M13×1 M10×1 mm
Length of threaded entry	
– metal entry	3,0
– entry of insulating material	5,0
Diameter of set screw (if any)	
– screw with head	2,5
– screw without head	3,0

A negative deviation of 0,15 mm from the nominal value for thread diameter is allowed.

Compliance is checked by measurement.

NOTE If it is necessary to take the lampholder apart in order to check compliance with the requirements of 8.2 to 8.3, such checking is done after the tests of Clause 12.

9 Protection against electric shock

9.1 Lampholders shall be so designed that, when fully assembled, live parts of the lampholder are not accessible when the lampholder is fitted with the testing device shown in Figure 7.

NOTE The use of a skirt or protective shield (see 2.6 and 2.6.1) is optional. An example of a protective shield is shown in Figure 9.

For independent and enclosed lampholders compliance shall be checked by the application of the standard test finger in accordance with IEC 60529.

This test finger is applied in every possible position with a force not exceeding 10 N, an electrical indicator being used to show contact with live parts. It is recommended that a voltage of not less than 40 V is used.

Independent lampholders and enclosed lampholders are mounted as in normal use, e.g. on a threaded support or on a supporting surface or the like.

Unenclosed lampholders are tested only after appropriate installation in a luminaire or other additional enclosure. For these reasons, such lampholders are not for retail sale.

9.2 The construction shall be such that no metal parts of the lampholder other than the terminals and contact mechanism shall become live in normal service either before, during or after insertion of the lamp.

Compliance is checked by inspection.

9.3 Parts providing protection against accidental contact with live parts shall, when correctly assembled, have sufficient mechanical strength to withstand such forces as may arise during normal removal and replacement as may be necessary to fit supply cords or cables.

They shall also withstand the normal stresses arising from the fitting of corresponding normal lamps and appropriate lamp shades.

It shall be possible to remove and replace, using a reasonable degree of force corresponding to normal use, a corresponding normal lamp and shade, or similar device if fitted, without removing those parts providing protection against accidental contact with live parts.

Compliance is checked by inspection and by the tests of 15.3 which shall be repeated following the test of 18.1.

9.4 External parts of drip-proof lampholders shall be of insulating material, with the exception of threaded entries and shade carrier rings, which cannot become live in the event of a fault.

Lacquer or enamel is not deemed to provide adequate protection for the purpose of this clause.

Compliance is checked by inspection.

NOTE Parts which are separated from live parts by double or by reinforced insulation are considered as parts which cannot become live in the event of a fault.

10 Terminals

10.1 Lampholders shall be provided with at least one of the following means of connection:

- screw-type terminals;
- screwless terminals;
- tabs or pins for push-on connections;
- posts for wire wrapping;
- soldering lugs;
- connecting leads (non-rewirable tails).

Compliance is checked by inspection.

10.2 Terminals shall permit the connection of conductors having the following nominal cross-sectional areas unless otherwise specified in the manufacturer's mounting instructions or marked on the lampholder (see 7.5):

- 0,5 mm² to 1,0 mm², for lampholders B15d and B22d with M10×1 threaded entry and those with cord grip;

NOTE In the United Kingdom, this requirement is amended to read:

"0,5 mm² to 0,75 mm² for 2 and 3 core PVC insulated sheathed flexible cord for use with lampholders B15d and B22d with a cord grip, or 0,5 mm² to 1,0 mm² for single insulated conductors for use with B15d and B22d lampholders with M10×1 threaded entry".

- 0,5 mm² to 2,5 mm² for other B22d lampholders.

Compliance is checked by inspection, by fitting conductors of the smallest and largest cross-sectional area specified and by the tests of Clause 16.

For cord grip lampholders, lampholders B15d and B22d with M10×1 threaded entry, flexible conductors are used. In all other cases, the conductors are of the solid type. Threaded entry lampholders are tested on a screwed conduit.

10.3 Terminals shall be of the screw type or the method of connection shall be at least equivalent.

Screw-type terminals shall have an ISO (metric) thread or a thread comparable in pitch and mechanical strength, and shall otherwise comply with Section 14 of IEC 60598-1.

Terminals of the pillar type shall have dimensions not less than those shown in Table 2.

Table 2 – Minimum dimensions of pillar type terminals

Lampholder	Minimum nominal thread diameter mm	Minimum diameter conductor hole mm
B22d	2,5	2,5
B15d	2,5	2,5 a
a The diameter of the hole shall be not more than 0,6 mm larger than the diameter of the screw.		

The length of the threaded part of the terminal screw shall be not less than the sum of the diameter of the hole for the conductor and the length of thread in the pillar.

NOTE In order to minimize damage to the conductor, the screw should have a slightly rounded end, and the wall of the hole (against which the screw clamps the conductor) should be unbroken.

Screwless terminals shall be considered equivalent to screw-type terminals when complying with Section 15 of IEC 60598-1. Lampholders, unless intended for sale to luminaire or other equipment manufacturers, shall be provided with terminals which will be equally satisfactory with both rigid (solid or stranded) conductors and flexible cables or cords.

Compliance is checked by inspection and measurement.

10.4 Terminals shall be so located that, after correct fitting of the wires, there is no risk of accidental contact between live parts and accessible metal parts, or moving parts of a switch, before, during and after operation.