

Specification for

Edison screw lampholders

The European Standard EN 60238 : 1992 has the status of a
British Standard

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Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Standard was prepared, comprises the national committees of the following countries:

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Summary of pages

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National foreword

This British Standard has been prepared under the direction of the Electrical Illumination Standards Policy Committee and is the English language version of EN 60238 *Edison screw lampholders* including amendment A1 and amendment A2, published by the European Committee for Electrotechnical Standardization (CENELEC). It was derived by CENELEC from IEC 238 : 1991 published by the International Electrotechnical Commission (IEC).

In 1995 the European Committee for Electrotechnical Standardization (CENELEC) accepted amendment 1 : 1993 to IEC 238 : 1991 as amendment A1 : 1995 to EN 60238 : 1992 and accepted amendment 2 : 1995 to IEC 238 : 1991 as amendment A2 : 1995 to EN 60238 : 1992.

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by a single side line in the margin. Parts of the original IEC text that have been modified by CENELEC have been quoted in national annex NA.

In addition, the CENELEC editorial modifications correcting textual errors in IEC 238 : 1991 have been implemented at the appropriate places in the text. It is envisaged that IEC will publish a corrigendum to correct these errors in due course.

The foreword of the EN makes reference to the 'date of withdrawal', dow, of the relevant national standard. In this case the relevant national standard is BS 6776 : 1990 which will be withdrawn on 1993-03-01. Certificates and marks will not be awarded after this date with respect to the withdrawn British Standard. However such certificates and marks, already awarded, may continue to apply to production until 1998-03-01.

The foreword of EN amendment A1 : January 1995 makes reference to the 'date of withdrawal (dow) of conflicting national standards' as 1995-12-01. In this case, the relevant national standard is BS EN 60238 but the date of withdrawal relates only to those parts of the British Standard subject to Amendment No. 2. Certificates and marks will not be awarded after this date with respect to the British Standard not incorporating Amendment No. 2. They will be awarded only to the amended British Standard. However, such certificates and marks already awarded with respect to the British Standard not incorporating Amendment No. 2 may continue to apply for production until 2000-12-01.

The foreword of EN amendment A2 : November 1995 makes reference to the 'date of withdrawal (dow) of conflicting national standards' as 1996-05-01. In this case, the relevant national standard is BS EN 60238 but the date of withdrawal related only to those parts of the British Standard subject to Amendment No. 3. Certificates and marks will not be awarded after this date with respect to the British Standard not incorporating Amendment No. 3. They will be awarded only to the amended British Standard. However, such certificates and marks already awarded with respect to the British Standard not incorporating Amendment No. 3 may continue to apply for production until 2000-05-01.

In this standard, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Descriptors: Edison screw holders, dimensions, requirements, testing, definitions, switches

English version

Edison screw lampholders

(includes amendments A1 : 1995 + A2 : 1995)

(IEC 238 : 1991/A1 : 1993 + A2 : 1995)

Douilles à vis Edison pour lampes
(inclut les amendements A1 : 1995 + A2 : 1995)
(CEI 238 : 1991/A1 : 1993 + A2 : 1995)

Lampenfassungen mit Edisongewinde
(enthält Änderungen A1 : 1995 + A2 : 1995)
(IEC 238 : 1991/A1 : 1993 + A2 : 1995)

This European Standard was approved by CENELEC on 1992-03-24. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 60238 : 1992/A1 : 1995 + A2 : 1995 E

Foreword

Following the decision taken by CENELEC Technical Committee TC 34Z at their meeting in Brussels in February 1989, the International Publication IEC 238 : 1991 was submitted to the CENELEC Unique Acceptance Procedure (UAP) in June 1991 for acceptance as a European Standard.

The text of the draft was approved by CENELEC as EN 60238 on 24 March 1992.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1993-03-01
- latest date of withdrawal of conflicting national standards (dow) 1993-03-01

For products which have complied with EN 60238 : 1989 before 1993-03-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1998-03-01.

Annexes designated 'normative' are part of the body of the standard. In this standard, annex ZA is normative.

Foreword to amendment A2

The text of document 34B/547/DIS, future amendment 2 to IEC 238 : 1991, prepared by SC 34B, Lamp caps and holders, of IEC TC 34, Lamps and related equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60238 : 1992 on 1995-09-20.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-05-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1996-05-01

For products which have complied with EN 60238 : 1992 and its amendment A1 : 1995 before 1996-05-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2001-05-01.

Foreword to amendment A1

The text of amendment 1 : 1993 to the International Standard IEC 238 : 1991, prepared by SC 34B, Lamp cap and holders, of IEC TC 34, Lamps and related equipment, was submitted to the Unique Acceptance Procedure, and was approved by CENELEC as amendment A1 to EN 60238 : 1992 on 1994-12-06, without any modification.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1995-12-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1995-12-01

For products which have complied with EN 60238 : 1992 before 1995-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-12-01.

Annexes designated 'normative' are part of the body of the standard. In this standard, annex ZA is normative and replaces annex ZA of EN 60238 : 1992. Annex ZA has been added by CENELEC.

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EDISON SCREW LAMPHOLDERS

1 General

1.1 Scope

This International Standard applies to lampholders with Edison thread E14, E27 and E40, designed for connection to the supply of lamps and semi-luminaires* only.

It also applies to switched-lampholders for use in a.c. circuits only, where the working voltage does not exceed 250 V r.m.s.

This standard also applies to lampholders with Edison thread E5 designed for connection to the supply mains of series connected lamps, with a working voltage not exceeding 25 V, to be used indoors, and to lampholders with Edison thread E10 designed for connection to the supply mains of series connected lamps, with a working voltage not exceeding 60 V, to be used indoors or outdoors.

As far as it reasonably applies, this standard also covers lampholders other than lampholders with Edison thread designed for connection of series-connected lamps to the supply.

NOTE - This type of lampholder is for example used in Christmas tree lighting chains.

This standard also covers lampholders which are, wholly or partly, 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. Such lampholders are not intended for retail sale. Independent lampholders, e.g. backplate lampholders, not specifically intended for building-in, are also tested as luminaires.

This standard applies to lampholders to be used indoors or outdoors in residential as well as in industrial lighting installations. It also applies to candle lampholders. In locations where special conditions prevail, as for street lighting, on board ships, in vehicles and in hazardous locations, e.g. where explosions are liable to occur, special constructions may be required.

NOTES

- 1 This standard does not apply to three-light lampholders E26d.
- 2 This standard is based on the following data relative to lamps for general lighting service:
 - caps E14 are used for lamps with a current not exceeding 2 A;
 - caps E27 are used for lamps with a current not exceeding 4 A;
 - caps E40 are used for lamps with a current not exceeding 16 A.
- 3 If the nominal voltage of the supply does not exceed 130 V, the maximum current for caps E40 is 32 A (see 4.5 and 5.3).
- 4 Where lampholders are used in luminaires, their maximum operating temperatures are specified in IEC 598.

* Requirements for lampholders suitable for semi-luminaires are under consideration.

1.2 Normative references

NOTE — Other international publications quoted in this standard are listed in annex ZA (normative).

2 Definitions

For the purposes of this International Standard the following definitions apply. For clarification of some definitions see also figure 18.

2.1 cord-grip lampholder: A lampholder incorporating a method of retaining a flexible cord by which it may then be suspended.

2.2 threaded entry lampholder: A 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").

2.3 backplate lampholder: A lampholder so designed as to be suitable for mounting by means of an associated or integral back plate, directly onto a supporting surface or appropriate box.

2.4 lampholder for building-in: A lampholder designed to be built into a luminaire, an additional enclosure or the like.

2.4.1 unenclosed lampholder: A lampholder for building-in so designed that it requires additional means, for example an enclosure, to meet the requirements of this standard with regard to protection against electric shock.

2.4.2 enclosed lampholder: A 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 IP classification, if appropriate.

2.5 Independent lampholder: A lampholder so designed that it can be mounted separately from a luminaire and at the same time providing all the necessary protection according to its classification and marking.

2.6 terminal/contact assembly: A part or assembly of parts which provide(s) a means of connection between the termination of a supply conductor and the contact making surfaces of the corresponding lamp cap.

2.7 outer shell: A cylindrical component protecting the user from contact with the lamp cap. It may or may not be provided with an external screw thread for fixing a shade ring.

2.8 screw shell: A cylindrical component having an internal screw thread of Edison form for the retention of the corresponding lamp (cap). In some constructions, the screw shell is permanently fixed to or integral with the outer shell.

2.9 Insulating ring: A cylindrical intermediate piece of insulating material separating a metal screw shell and a metal outer shell.

2.10 shade ring: A 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.

2.11 dome: A part of a cord-grip lampholder or threaded entry lampholder which shields the connecting terminals.

2.12 basic insulation: An 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: An 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: An insulation comprising both basic insulation and supplementary insulation.

2.15 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.

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: A conductive part which may cause an electric shock.

2.17 type test: A test or series of tests made on a type test sample, 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: A 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: A unit similar to a self-ballasted lamp but designed to utilize a replaceable light source and/or starting device.

2.20 rated operating temperature: The highest temperature for which the holder is designed

2.21 rated minimum temperature: The lowest temperature for which the holder is designed (applicable only to lampholders intended for use in refrigerators and food freezers).

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 tests specified.

In addition, the enclosure of independent lampholders shall comply with the requirements of IEC 598-1, including the classification and marking requirements of that standard.

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 assurance.

4.2 Unless otherwise specified, the tests are made at an ambient temperature of $20\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ and with the holder tested as delivered and installed as in normal use.

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

- nine specimens for non-switched lampholders, or
- twelve specimens for switched lampholders;

in the following order of clauses:

- three specimens: clauses 1 to 12 (except for 10.2) and 14 to 17;
- three specimens: clause 13 (switched-lampholder tests only);
- three specimens: clauses 18 and 19;
- two specimens: clause 20 (of which one specimen for the test of 20.1 and the other for the tests of 20.3 or 20.4);
- one specimen: 20.5 and clause 21.

NOTE - For testing of screwless terminals according to 10.2, separate specimens are required in addition.

4.4 In case of doubt, gauges, test caps and mandrels are introduced into the specimens, unless otherwise specified, by applying the following torques:

- 0,2 Nm for lampholders E5;
- 0,2 Nm for lampholders E10;
- 0,2 Nm for lampholders E14;
- 0,4 Nm for lampholders E27;
- 0,8 Nm for lampholders E40.

4.5 *For lampholders E40 with a rated current of 32 A, the tests shall be based on this rated current.*

4.6 *Lampholders are deemed to comply with this standard if no specimen fails in the complete series of tests specified in 4.3.*

If one specimen fails in one test, that test and the preceding ones which may have influenced the result of that test are repeated on another set of specimens to the number required by 4.3, all of which shall then comply with the repeated tests and with the subsequent tests. Lampholders are deemed not to comply with this standard if there are more failures than one.

NOTE - In general, it will only be necessary to repeat the relevant test unless the specimen fails in the tests according to clauses 18 and 19, or if failure occurs with regard to resilient side or central contact(s); in these cases, both tests are repeated with a second set of three specimens.

The applicant may submit, together with the first set of specimens, the additional set which may be wanted in case of failure of one specimen. The testing station shall then, without further request, test the additional specimens and will reject only if a further failure occurs.

If the additional set of specimens is not submitted at the same time, a failure of one specimen entails a rejection.

5 Standard ratings

5.1 Standard rated voltages are: 250 V, 500 V and 750 V.

For lampholders E14, and for switched lampholders E27, a rated voltage of 250 V only is allowed.

For lampholders E5 and E10 designed for a supply voltage not exceeding 250 V, the working voltage shall not exceed 25 V for lampholders E5 and not exceed 60 V for lampholders E10.

The rated voltage shall be not less than 250 V, an additional rated voltage of 125 V being allowed for lampholders E40.

Compliance is checked by inspection of the marking.

5.2 Standard rated currents are:

- 0,2 A for lampholders E5;
- 0,5 A for lampholders E10;
- 0,5 A for lampholders (with or without switch) intended for use in refrigerators and food freezers.

For such lampholders replacement of the rated current by the rated wattage of the lamp is also allowed; the choice shall be made between 10 W, 15 W and 25 W;

- 2 A for lampholders E14;
- 2 A for switched-lampholders E27;
- 4 A for other lampholders E27;
- 16 A for lampholders E40.

The rated current shall be not less than the standard value.

Compliance is checked by inspection of the marking.

5.3 Lampholders E40 to be used on 125 V* installations may have an additional nominal rating of 32 A.

Compliance is checked by inspection of the marking.

5.4 The rated operating temperature for lampholders intended for use in high temperature conditions (T marked holders) shall be not lower than 140 °C for E14 lampholders, not lower than 170 °C for E27 lampholders and not lower than 230 °C for lampholders E40.

For lampholders intended to be installed in a refrigerated compartment of refrigerators and food freezers, the rated operating temperature shall not be lower than 80°C.

For lampholders intended to be installed outside a refrigerated compartment, the values mentioned in the first paragraph apply.

NOTE - The values of the temperature marking shall be increased by steps of 10 °C.

Compliance is checked by inspection of the marking.

NOTE - The rated operating temperatures for Edison screw lampholders without T marking are given in IEC 598-1, table 12.1. They are:

- 135 °C for lampholders E14;
- 165 °C for lampholders E27;
- 225 °C for lampholders E40.

6 Classification

Lampholders are classified:

6.1 According to the material of the external parts:

- lampholders of insulating material;
- metal lampholders.

NOTE - Lampholders with external parts consisting partly of metal and lampholders comprising external parts of insulating material with a conductive outer surface, for example a metallized outer shell, are considered as metal lampholders (see 12.3).

This does not apply to threaded entries and external parts, as for example a metal shade ring mounted onto the outside of a lampholder of insulating material, which cannot become live even in the case of an insulation fault. Metal holders with insulating coverings are considered as metal lampholders (see 9.5).

In order to check 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 14.4, the insulating resistance is measured between the stripes. The surface is considered to be conductive if the resistance is less than 5 MΩ.

* This nominal rating covers the voltages up to and including 130 V.

6.2 According to degree of protection against ingress of water:

- ordinary lampholders;
- drip-proof lampholders.

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;

- unenclosed lampholders;
- enclosed lampholders;
- independent lampholders.

6.6 According to resistance to heat:

- lampholders for rated operating temperatures up to the limits given in 5.4;
- lampholders for operating in high temperature conditions (T marked holders).

7 Marking

7.1 Lampholders, other than lampholders E5 and E10, shall be marked with:

- rated current, in amperes;

In case of lampholders intended for use in refrigerators and food freezers the marking with the rated wattage of the lamp instead is allowed. If no marking of the rated wattage is provided on such holders, it shall be accompanied by the relevant manufacturer's instructions.

If marking of the rated wattage is provided, it shall be so placed that it cannot be confused with the wattage marking in the refrigerator.

- rated voltage, in volts;
- rated voltage, in volts and rated pulse voltage in kV, if higher than:

2,5 kV for lampholders rated 250 V;
4 kV for lampholders rated 500 V;
5 kV for lampholders rated 750 V;

- symbol for nature of current, if required, (for switched lampholders only);
- mark of origin (this may take the form of a trade mark, manufacturer's identification mark or the name of the responsible vendor);
- type reference;

- the degree of protection against ingress of water for drip-proof lampholders (see 7.2);
- rated operating temperature "T", indicating the highest operating temperature, if applicable.

In case of lampholders intended for use in a refrigerated compartment of refrigerators and food freezers, the rated minimum temperature to which the lampholders can be subjected (e.g. -30 °C).

The marking of the rated operating temperature is not required for lampholders the exterior of which is made wholly of ceramic material. For these lampholders, this information, if applicable, shall either be marked on the lampholder or be made available in the manufacturer's catalogue.

Lampholders E10 shall be marked with:

- mark of origin;
- type reference;
- the degree of protection against ingress of water, if applicable.

Compliance is checked by inspection.

NOTE - The type reference may be a catalogue number. Marking requirements for lampholders E5 are under consideration.

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

NOTE - Alternatively, for volt and ampere ratings, figures may be used alone, the figure for the rated current being marked before or above that for the rated voltage and separated from the latter by an oblique stroke or line.

Therefore the marking of current and voltage may be as follows:

2 A 250 V or 2/250 or $\frac{2}{250}$

The symbol for d.c. shall be --- .

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

NOTE - Where X is used in the IP number it indicates a missing numeral in the example, but both the appropriate numerals in accordance with IEC 529 shall be marked.

The letter T shall be followed by the value of the rated operating temperature in degrees Celsius.

Compliance is checked by inspection.

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

Compliance is checked by inspection.

7.4 An earthing terminal shall be indicated by the symbol $\text{---}\perp$. This symbol shall not be placed on screws, removable washers or other easily removable parts.

Compliance is checked by inspection.

7.5 Marking shall be durable and easily legible.

Compliance is checked by inspection and, after the tests of clause 19 have been completed, 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 test, the marking shall still be 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.

8 Dimensions

8.1 Lampholders E10, E14, E27 and E40 shall comply with the current edition of the standard sheets of IEC 61.

Compliance shall be checked, by measuring in conformity with the current edition of IEC 61-2, Standard Sheet 7005-20.

The minimum dimensions of the screw thread and dimension X shall be checked by means of gauges according to the current edition of Standard Sheets 7006-25 (E10, E14 and E40) and 7006-25A (E27), and by means of the gauge according to the current edition of Standard Sheet 7006-26 of IEC 61-3.

Lampholders E14 and E27, designed with a barrel thread for shade holder rings shall comply with the current edition of IEC 399.

Compliance shall be checked by means of the gauges according to the current edition of IEC 399.

8.2 Lampholders shall allow insertion of all corresponding lamps so as to make contact.

Compliance is checked by means of gauges according to the current edition of the following standard sheets of IEC 61-3 and according to the indications of these sheets:

- *lampholders E14: 7006-30 and 7006-31;*
- *candle lampholders E14: 7006-30A and 7006-31;*
- *lampholders E27: 7006-21 and 7006-22A;*
- *lampholders E40: 7006-23 and 7006-24.*

Pending gauges for lampholders E5 and E10, the contact-making is checked by means of the corresponding lamps. It is presumed that the manufacturer of the lampholder for the purpose of the test delivers the lamps for which the lampholder is intended.

The checking of contact-making is done on lampholders as delivered and after the tests of clauses 18 and 19.2.

8.3 The following dimensions shall be not less than the values shown in table 1.

Table 1

Thickness of the screw shell, if any:	E5 mm	E10 mm	E14 mm	E27 mm	E40 mm
– when the shell is unsupported	0,20	0,20	0,30	0,30	0,50
– when the shell is supported by insulating material over a total distance of at least three-quarters of the circumference of the shell	0,15	0,15	0,25	0,25	0,40
Thickness of side or central contacts, if resilient	0,18	0,18	0,28	0,38	0,48*
* For the use of side-contacts in lampholders E40, see 12.11.					

Compliance is checked by measurement.

NOTE - Thicknesses are measured by means of a micrometer with pointed noses and ratchet screw.

For the screw shell, two sets of three measurements are made, each set carried out on one of two different generating lines of the screw shell. The mean value of the six measurements shall be at least equal to the specified value.

NOTE - The deletion of dimensional requirements is under consideration.

8.4 The effective length of screw engagement, if any, of outer shell and dome shall meet one of the following requirements whereby the engagement shall always be over one full turn.

Either the effective length shall be not less than the values shown in table 2.

Table 2

	E14 mm	E27 mm	E40 mm
Metal lampholders: :			
for rolled thread	5,0	7,0	10,0
for cut thread	5,0	5,0	7,0
Lampholders of insulating material	5,0	7,0	10,0

– or the effective length shall be at least two turns provided the test according to 15.3 is withstood with a torque equal to 1,2 times the torque given in 15.2.

These requirements do not apply to lampholders E5 and E10.

Compliance is checked by measurement.

8.5 The threaded entries of lampholders shall be provided with one of the following screw threads:

- lampholders E14: M10x1;
- lampholders E27: M10x1, M13x1 or M16x1;
- lampholders E40: M13x1, M16x1 (or G3/8A).

NOTE - The size between brackets is non-preferred; in addition, the threaded entry M10 is mainly intended for internal wiring of luminaires.

The thread of the entry shall comply with figures 1a or 1b.

These requirements do not apply to lampholders E5 and E10.

Compliance is checked by measurement and by means of gauges according to figures 2a or 2b.

In case of doubt, the gauge is introduced into the entry by applying a torque of 0,5 Nm.

8.6 The dimensions of threaded entries and set screws, if any, shall be not less than the values shown in table 3.

Table 3

Nominal thread diameter	M10x1 M13x1 mm	M16x1 G3/8A mm
Length of thread: : metal entry entry of insulating material	3 5	8 10
Diameter of set-screw: screw with head screw without head – in case of one screw – in case of more than one screw	2,5 3,0 3,0	3,0 4,0 3,0

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

Compliance is checked by measurement.

These requirements do not apply to lampholders E5 and E10.

NOTE - If it is necessary to take the lampholder apart in order to check compliance with the requirements under 8.3 to 8.6, such checking is done after the test of clause 17.

8.7 Lampholders shall be so designed that they do not interfere with the proper engagement or disengagement of lamps, even if the lamp cap is slightly dented. In no case shall the holder contacts present a cutting edge to the lamp cap.

Compliance is checked by the following test:

For lampholders E27, compliance shall be checked by means of a gauge according to the current edition of Standard Sheet 7006-22B of IEC 61-3.

For lampholders other than E27, compliance shall be checked by inspection.

9 Protection against electric shock

9.1 Lampholders E5, E10, E14 and E27 shall be so designed that the lamp caps are not accessible when they become live during insertion.

NOTE - Details for checking compliance regarding protection against accidental contact with live parts during insertion for lampholders E5 and E10 are under consideration.

Lampholders E40 shall be so designed that the lamp cap is not accessible when fully inserted.

Candle lampholders are tested without decorative cover, unless this cover cannot be removed without making the lampholders obviously useless.

Compliance is checked as follows:

- for lampholders E10, by means of corresponding lamps and the standard test finger, shown in figure 16. For the purpose of the test, the lampholder manufacturer shall provide the lamps for which the lampholder is intended;*
- for lampholders E14, E27 and E40, by means of gauges according to the current edition of the following standard sheets of IEC 61-3:*
 - 7006-31 for lampholders E14;*
 - 7006-22A for lampholders E27;*
 - 7006-24 for lampholders E40.*

9.2 The external parts of enclosed and independent lampholders shall be so designed that live parts of the lampholder ready for use and with a corresponding normal lamp inserted are not accessible.

Candle lampholders are tested without decorative cover, unless this cover cannot be removed without making the lampholder obviously useless.

Compliance is checked by means of the standard test finger.

For the purpose of the test:

- enclosed lampholders are mounted as in normal use, for example on a threaded support, or the like, if appropriate, and provided with the most unfavourable conductor size fitted for which the lampholders are intended;*
- independent lampholders shall be mounted as in normal use on an appropriate plane surface.*

The standard test finger shown in figure 16 is applied in every possible position with a force of 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 be used.

NOTE - Unenclosed lampholders are only tested after appropriate installation in a luminaire or other additional enclosure.

9.3 Parts providing protection against accidental contact with the lamp cap shall be reliably secured so that they will not become detached when a tightly fitting lamp is removed, or when rotating the shade, if applicable.

Compliance is checked by the following test:

The coupling between dome and outer shell is tightened initially with a torque equal to two-thirds of the torque test value specified below. The relevant parts are then subjected to a torque during 1 min in an anticlockwise direction with the following test values:

- 1 Nm for lampholders E14;
- 2 Nm for lampholders E27.

The lampholder is mounted as in normal use and is tested first with and then without the appropriate test cap B according to figure 13 or figure 14.

After the test, the parts providing protection against accidental contact with the lamp cap shall not have become dismantled.

It shall not be possible to dismantle lampholders E5 and E10 without the aid of a tool.

Requirements for lampholders E40 are under consideration.

9.4 Where provision is made for attaching a shade to the lampholder, it is fitted to the lampholder by separate means, such as a shade ring; it is not permitted to fix a shade between parts providing protection against electric shock.

Compliance is checked by inspection.

9.5 The external parts of:

- drip-proof lampholders;
- lampholders with a rated voltage of more than 250 V;
- switched-lampholders, and
- lampholders E5 and E10

shall be of insulating material, with the exception of threaded entries and of those parts which cannot become live even 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.

NOTES

- 1 Parts which are separated from live parts by double or reinforced insulation are considered as parts which cannot become live in the event of a fault.
- 2 An example of an external part which cannot become live, even in the event of a fault, is a metal shade ring mounted on the outside of an insulated lampholder.
- 3 Switched-lampholders with external metal parts are permitted under the conditions of 12.3.

10 Terminals

10.1 Lampholders, other than those provided with connecting leads (tails), shall be provided with terminals which allow connection of conductors having the following nominal cross-sectional areas:

- 0,5 mm² to 0,75 mm² for lampholders E10;
- 0,5 mm² to 1,0 mm² for lampholders E14 and lampholders E27 with M10x1 threaded entry;
- 0,5 mm² to 2,5 mm² for other lampholders E27;
- 1,5 mm² to 4 mm² for lampholders E40 with a rated current of 16 A;
- 2,5 mm² to 6 mm² for lampholders E40 with a rated current of 32 A.

Compliance is checked by inspection and by fitting conductors of the smallest and largest cross-sectional area specified. For cord-grip lampholders, lampholders E10, E14 and lampholders E27 with M10x1 threaded entry, stranded conductors are used; in all other cases the conductors are of the solid type.

Threaded entry lampholders are tested in a screwed conduit.

NOTE - Lampholders E27 with screwless terminals intended for use by luminaire or equipment manufacturers only need not fulfil the requirements for all the appropriate nominal cross-sectional areas.

10.2.1 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 (tails).

Terminal screws and nuts shall have a metric ISO thread or a thread comparable in pitch and mechanical strength.

Conductors may be connected to E5, E10 and similar small lampholders by soldering, welding, crimping or other equally effective means.

Lampholders with screwless terminals, unless intended for sale to luminaire or equipment manufacturers, shall be provided with terminals which are equally satisfactory with both rigid (solid or stranded) conductors and flexible cables or cords.

Compliance is checked by the tests of 10.2.2

10.2.2 Terminals shall comply with the following requirements, with the restriction that the requirements referring to internal wiring relate to wiring inside independent holders and to wiring inside luminaires for holders for building-in.

All terminal tests shall be made on separate specimens which have not been subjected to any other test.

- Terminals with screw clamping shall comply with the requirements specified in 10.3 to 10.6 inclusive, and 10.8;*
- screwless terminals shall comply with Section 15 of IEC 598-1, provided that the heating test is carried out at the rated operating temperature of the lampholder $\pm 5^{\circ}\text{C}$;*
- tabs or pins for push-on connections shall comply with Section 15 of IEC 598-1;*
- posts for wire wrapping shall comply with IEC 352-1.
Wire wrapping applies only to single solid round wire for internal wiring;*
- soldering lugs shall comply with the requirements for good solderability.
Suitable requirements can be found in IEC 68-2-20;*
- connecting leads (tails) shall comply with the requirements prescribed in 10.10.*

10.3 Terminals shall be fixed in such a way that they will not work loose when fastening or loosening the conductors.

For screw terminals, compliance is checked by inspection and by fastening and loosening a conductor of the largest cross-sectional area specified in 10.1 ten times, the applied torque being two-thirds of the torque specified in Section Fourteen of IEC 598-1.

NOTE - Terminals may be prevented from working loose by fixing with one screw in a recess without appreciable play, or by other suitable means. Covering with sealing compound without other means of locking is not deemed to be sufficient.

10.4 Screw terminals shall be so designed that they clamp the conductor between metal surfaces with sufficient contact pressure and without damage to the conductor. Terminals shall be so designed that they will prevent a conductor slipping out when the screws or nuts are tightened. They shall allow a conductor to be connected without special preparation (e.g. soldering of the strands of the conductor, use of cable lugs, formation of eyelets, etc.).

Compliance is checked by inspection of the conductors after fitting according to 10.1 and after the test of 19.3.

NOTE - The conductors are considered to be damaged if they show deep or sharp indentations.

10.5 Terminals of the pillar type shall have dimensions not less than those shown in table 4.

Table 4

Lampholder	Nominal thread diameter mm	Diameter of hole for conductor mm	Length of thread in pillar mm
E10	2,5	2,5	1,8
E14	2,5	2,5	1,8
E27	2,5	2,5	1,8
E40	3,5	3,5	2,5

NOTE - 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 - The length of the thread of the pillar is measured to the point where the thread is broken by the pillar hole.

Compliance is checked by measurement.

