UL 496

STANDARD FOR SAFETY

Lampholders

UL Standard for Safety for Lampholders, UL 496

Fourteenth Edition, Dated September 5, 2017

Summary of Topics

This revision of ANSI/UL 496 dated March 28, 2022 includes the following changes in requirements:

Update ANSI C81.63 Gauge references; Table 13 – Table 16

Screwshell and device screw base material options; 4.10.3.1, 4.10.3.2, 4.10.3.4, Clause 5.2.19, Table 8, Table 9, Table 13, Table 21, Table 22, Annex A

Editorial corrections; 1.1, 1.14, 2.41, 3.1.1, 3.3.2, 4.4.6.1, 4.4.7.3, 5.1.3.1, 5.2.2.1, Table 6, Table 20, Figure 1, SC2.1

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated December 4, 2020.

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Seventh Edition

Underwriters Laboratories Inc.
UL 496
Fourteenth Edition

Lampholders

September 5, 2017

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Approved American National Standard

ANSI/UL 496-2022

Commitment for Amendments

This standard is issued jointly by the Canadian Standards Association (operating as "CSA Group") and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to CSA Group or UL at any time. Revisions to this standard will be made only after processing according to the standards development procedures of CSA Group and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue.

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This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquiries@csagroup.org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the Fourteenth Edition including revisions through March 28, 2022.

The most recent designation of ANSI/UL 496 as an American National Standard (ANSI) occurred on March 28, 2022. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

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NOTE – The user's attention is called to the possibility that compliance with this standard may require use of an invention covered by patent rights.

By publication of this standard, no position is taken with respect to the validity of this claim or of any patent rights in connection there with. The patent holder has, however, filed a statement of willingness to grant a license under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license. Details may be obtained from UL.

CONTENTS

SUPPLEMENT SC – DIODE LAMP-LIFE EXTENDERS

SUPPLEMENT SD – LAMPHOLDERS FOR INSTANT-START FLUORESCENT LAMPS

ANNEX A (normative) Standards for Components

Preface

This is the harmonized CSA Group and UL standard for lampholders. It is the seventh edition of CSA C22.2 No. 43, and the fourteenth edition of UL 496. This edition of CSA C22.2 No. 43 supersedes the previous editions published in 2008, 2004, 1984, 1965, 1958, and 1937. This edition of UL 496 supersedes the previous edition published in 2008. This harmonized standard has been jointly revised on March 28, 2022. For this purpose, CSA Group and UL are issuing revision pages dated March 28, 2022.

This harmonized standard was prepared by a task force comprising members representing CSA Group, Underwriters Laboratories Inc. (UL), NEMA (National Electrical Manufacturers Association), and EFC (Electro-Federation Canada). The efforts and support of the Technical Harmonization Committee for Lampholders of the Council on the Harmonization of Electrotechnical Standards of the Nations of the Americas (CANENA) are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This standard was reviewed by the CSA Integrated Committee on Lighting Products, under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

Level of harmonization

This standard uses the IEC format but is not based on, nor is it to be considered equivalent to, an IEC standard. This standard is published as an identical standard for CSA and UL.

An identical standard is a standard that is exactly the same in technical content except for national differences resulting from conflicts in codes and governmental regulations. Presentation is word for word except for editorial changes.

Reasons for differences from IEC

This standard provides requirements for Lampholders in accordance with the codes of Canada and USA. At present there is no IEC standard for Lampholders for use in accordance with these codes. Therefore, this standard does not employ any IEC standard for base requirements.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

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1 Scope

1.1 The requirements of this standard cover holders and connectors for electric lamps, including incandescent, fluorescent, and other electric-discharge-type lamps, rated as indicated in Clause 6, to be used in accordance with CSA C22.1, Canadian Electrical Code (CE Code), Part I, and the National Electrical Code (NEC), ANSI/NFPA 70.

1.2 These requirements cover screw lampholders, including those intended to be mounted directly on an outlet-box, lampholders for special uses, lampholders for electric signs, and adapters that convert one lampholder size to another.

1.3 These requirements also cover holders for automatic starters used with fluorescent lamps.

1.4 These requirements also cover GU24 and GU24-1 holders for fluorescent and LED self-ballasted lamps and fluorescent lamp adapters with mating pin bases.

1.5 These requirements also cover indicator lamps.

1.6 These requirements also cover lampholder inserts.

1.7 These requirements also cover naval-use lampholders. See Supplement SB.

1.8 These requirements do not cover fluorescent self-ballasted lamps and fluorescent lamp adapters covered in UL 1993.

1.9 These requirements do not cover seasonal-lighting lampholders, which are covered in UL 588, and CSA C22.2 No. 37.

1.10 These requirements do not cover electrode receptacles for use in gas-tube signs, which are covered in UL 879 and CSA C22.2 No. 34.

1.11 These requirements do not cover devices requiring a cross-bar, mounting strap, or other mounting means; such devices are considered to be luminaires.

1.12 These requirements do not cover nightlights, which are covered in UL 1786 and CSA C22.2 No. 256.

1.13 These requirements do not cover ceiling outlet-box lampholders that incorporate one or more of the following features:

a) more than one lampholder;

b) provisions for conduit connection such as openings or knockout;

c) an integral ballast, transformer or power supply; or

d) a lamp shade or lamp guard that completely encloses the lamp.

Such devices are covered by UL 1598 and CSA C22.2 No. 250.0.

1.14 In Canada, general requirements applicable to these products are provided in CSA C22.2 No. 0.

2 Definitions

2.1 For the purpose of this standard, the following definitions apply:

2.2 Actuating member – the part of a switch actuator that extends outside the body and is exposed to contact by the user.

2.3 Actuator – the part that drives a switch mechanism into action.

2.4 Adapter – a device that adapts one form or size of connecting means to another, and in some cases incorporates circuits or controls such as a dimmer or photo-control or a switch.

2.5 Base – that part of a lampholder that is used for mounting of the device.

2.6 Cap – a component of screw-type lampholders that is provided to supply a mounting means for the lampholder, enclose live or current-carrying parts, and/or prevent inadvertent accessibility to live parts.

Note: Internationally, the word “cap” is used in place of the North American term “base” to describe the means of connection of the lamp to the lampholder.

2.7 Center contact – a contact used in a screw lampholder to engage the center contact of a lamp base.

2.8 Current tap – an adapter that is screwed into a base-supply lampholder and provides multiple outlets of the lampholder or slotted receptacle type.

2.9 Damp location – an interior or exterior location that is normally or periodically subject to condensation of moisture. Damp locations include partially protected locations under canopies, roofed open porches, and similar locations.

2.10 Device screw base – a cylindrical component of a screw device having an external male thread or form for engaging a corresponding lampholder.

2.11 Dry location – a location not normally subject to dampness. Dry locations include locations subject to temporary dampness, as in the case of a building under construction, provided ventilation is adequate to reduce the likelihood of accumulation of moisture.

2.12 Enclosure – that part or parts of a lampholder that:

a) renders inaccessible all or any parts of the equipment that may otherwise present a risk of electric shock; or

b) retards propagation of flame caused by electrical disturbances occurring within.

2.13 General-use – suitable for direct installation in the field.

2.14 Holder, GU24 and GU24-1 – a holder with a twist and lock bi-pin configuration that is intended to supply power to fluorescent and LED self-ballasted lamps and fluorescent lamp adapters with mating pin bases. This holder is not intended for use with incandescent lamps.

2.15 Husk – a covering over a screwshell, usually of paper, that renders the screwshell and terminals inaccessible.

2.16 Indicator lamp – an indicating device consisting of a lamp, with or without a lampholder, that is provided with leads or terminals. In some cases indicator lamp also incorporates a bracket or other mounting provision.

2.17 Insulating link – a section of the chain of a pull-type switching mechanism intended to prevent the accessible portion of the chain from becoming energized.

2.18 Interior – a component of an screw metal shell lampholder that engages the threads of the lamp base and that supports live parts, such as lamp contacts, switch contacts, and actuators, and that is intended to be enclosed within a body.

2.19 Intermediate contact – a contact used in an E26d or E39d double-contact lampholder to engage the ring contact of a double-filament lamp.

2.20 Isolated screwshell – a mechanical device for engaging the threads of a screw base lamp that supports the lamp but is not conductively connected to the supply circuit.

2.21 Lamp base – the part of a lamp that engages the lampholder and makes contact with the electrical circuits of the lampholder.

2.22 Lamp cavity – that portion of the lampholder which is provided for the insertion of the lamp.

2.23 Lamp connector – a set of contacts provided with flexible conductors which provides for electrical connection to a lamp but does not provide support.

2.24 Lampholder – a wiring device intended for making connection to the electrical circuits of a lamp and, in some cases, providing support.

2.25 Lampholder, bayonet – a device equipped with retaining slots in the shell for holding the lamp base.

2.26 Lampholder, candle-type (stem type) – a screw lampholder having an insulating covering (husk), such as paper, over the screwshell and terminals, which in some cases provides the required depth of lamp cavity. In some cases the lampholder also has a close-fitting, nonmetallic outer decorative casing.

Note: These lampholders are commonly used in luminaires and portable luminaires to give the appearance of a candle.

2.27 Lampholder, ceiling outlet-box – a lampholder intended for mounting to a ceiling outlet-box that also serves as the outlet-box cover.

2.28 Lampholder, circuit-interrupting – a fluorescent-type lampholder that incorporates a switch to de-energize a circuit when the lamp is removed.

2.29 Lampholder, cleat-type – a lampholder used for open wiring on insulators that in some cases have exposed wiring terminals prior to installation.

2.30 Lampholder, flush-type – a lampholder intended for mounting in an outlet-box with a cover plate, usually serving as a pilot or indicator light.

2.31 Lampholder insert – a device that is interposed between the base of a screw lamp and the lampholder center contact.

Note: Such devices are commonly used to reduce the lamp power consumption or for remote control such as dimming.

2.32 Lampholder, metal cap and shell – a lampholder type consisting of a metal cap and shell, an interior, and an insulating lining.

2.33 Lampholder, open-rated – a screw lampholder with an EX26 medium base or EX39 mogul base and intended for use with a “Type O” metal halide lamp. These lampholders have a physical means that only allows the use of a lamp that is “Type O” and excludes lamps with an E26 or E39 base.

2.34 Lampholder, pendant-type (cord-grip lampholder) – a lampholder intended to be supported and suspended by a flexible cord.

2.35 Lampholder, pulse-rated – a lampholder or lamp connector intended for use with a lamp that requires a starting pulse in excess of 600 Vpk.

2.36 Lampholder, refrigeration – a lampholder intended to be installed in a refrigerated compartment of refrigerators or freezers.

Note: The interior of a refrigerated compartment is considered an indoor damp location.

2.37 Lampholder, screw – a lampholder employing a threaded screwshell.

Note: Standardized screw types include the following bases:

a) E10 (miniature);

b) E11 (mini can);

c) E12 (candelabra);

d) E17 (intermediate);

e) E26 (medium);

f) E29 (admedium) (not standardized);

g) E39 (mogul).

2.38 Lampholder, screw-ring – an externally threaded lampholder intended for mounting in a panel opening by means of a threaded ring.

2.39 Lampholder, seasonal-lighting – a lampholder that is restricted for use with Christmas-tree and decorative lighting outfits and which by its construction and application is not suitable for general use.

2.40 Lampholder, skeleton-type – a screw lampholder that does not use conductive screwshell threads to make electrical contact with the lamp screw base. Electrical contact with the lamp screw base is made with one or more separate contacts in the side wall of the lamp cavity or a ring contact in the bottom of the lamp cavity.

2.41 Lampholder, temporary use – a lampholder intended for installation and use in accordance with Article 527 of the National Electrical Code, ANSI/NFPA 70, and Section 76 of the Canadian Electrical Code, Part I, CSA C22.1.

2.42 Lampholder, weatherproof – a lampholder intended for direct exposure to the weather.

2.43 Lamplock – a feature intended to keep a lamp from being removed except by a person having a key or special tool.

2.44 Lining – an intermediate piece of insulating material constructed to prevent electrical contact between live parts, such as the screwshell, and the outer shell, cap, or cover.

2.45 Live part – a part that is energized during normal operation.

2.46 Normal hand tools – any standard American or metric wrench or screwdriver (straight blade, Phillips (cross point) or Robertson head (square)).

2.47 Ratcheting mechanism – a device mechanism that does not permit removal of the lamp or lamp adapter.

2.48 Rated operating temperature – the highest temperature for which the device is rated.

2.49 Rated voltage – the voltage declared by the manufacturer to indicate the highest working voltage for which the device is rated.

2.50 Screwshell – a cylindrical component of a screw lampholder having an internal thread or form for the retention of the corresponding lamp.

Note: In some constructions, the screwshell is permanently fixed to or integral with the outer shell.

2.51 Screw types – a trade name (e.g., medium-screw) or designation (e.g., E26) assigned to a standardized lamp and lampholder configuration to control their interchangeability. Lamp base and holder designations, where referenced in this standard, are those assigned by the International Electrotechnical Commission (IEC).

Note: They may be followed by the commonly used trade name in parentheses.

2.52 Sealing compound – an insulating material that may be used to insulate live parts on the underside of a lampholder from the surface to which it is intended to be mounted or used to fill a void for the purpose of reducing clearances.

2.53 Set screw – a threaded device for securing a lampholder to its support or for securing leads within a terminal assembly.

2.54 Shell – a component of a screw metal shell lampholder that serves as the enclosure. A shell may also serve as the mounting surface for reflectors or guards.

2.55 Terminal – provision for the connection of supply conductors.

2.56 Terminal, insulation-piercing – a terminal having a contact pin that punctures the conductor insulation and penetrates between the conductor strands.

Note: Stripping the insulation from the conductor is not required for this type of connection.

2.57 Terminal, push-in – a terminal in which the stripped end of a conductor is pushed into the terminal and the clamping pressure is maintained by a spring mechanism without the use of screws.

2.58 Terminal, screw – a terminal in which the conductor is bent around the screw and clamped directly under the head of the screw when it is tightened.

2.59 Upset – a process for peening, staking, cross threading, or rounding, for example, a screw's shaft end to prevent it from loosening or being backed out.

2.60 Vulcanized fiber – a material normally used as electrical insulation, made by combining layers of chemically jelled paper.

Note: "Fish paper" is a designation commonly used in the trade to refer to thin sheets of electrical grade vulcanized fiber.

2.61 Wet location – a location in which uncontrolled liquids may drip, splash, or flow on or against electrical equipment.

3 General

3.1 Components

3.1.1 Except as indicated in Clause 3.1.2, a component of a product covered by this standard shall comply with the requirements for that component. See Annex A for a list of standards covering components generally used in products covered by this standard. A component shall comply with the Underwriters Laboratories Inc. or CSA Group standards as appropriate for the country where the product is to be used.

3.1.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

3.1.3 A component shall be used in accordance with its rating established for the intended conditions of use.

3.1.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

3.2 Units of Measurement

3.2.1 The values given in SI (metric) units shall be normative. Any other values given shall be for information purposes only.

3.3 Reference Publications

3.3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

3.3.2 This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below.

CSA Group

CSA C22.1
Canadian Electrical Code (CE Code), Part I

CSA C22.2 No. 0
General Requirements – Canadian Electrical Code, Part II

CSA C22.2 No. 0.3
Test Methods for Electrical Wires and Cables

CSA C22.2 No. 0.15
Adhesive Labels

CAN/CSA-C22.2 No. 0.17
Evaluation of Properties of Polymeric Materials

CSA C22.2 No. 18.1
Metallic Outlet Boxes

CSA C22.2 No. 34
Electrode Receptacles, Fittings, and Connectors for Gas Tubes

CSA C22.2 No. 37
Christmas Tree and Other Decorative Lighting Outfits

CAN/CSA-C22.2 No. 38
Thermoset-Insulated Wires and Cables

CSA C22.2 No. 42
General Use Receptacles, Attachment Plugs, and Similar Wiring Devices

CSA C22.2 No. 49
Flexible Cords and Cables

CSA C22.2 No. 75
Thermoplastic-Insulated Wires and Cables

CSA C22.2 No. 127
Equipment and Lead Wires

CSA C22.2 No. 153
Quick-Connect Terminals

CSA C22.2 No. 158
Terminal Blocks

CSA C22.2 No. 256
Direct Plug-In Nightlights

UL (Underwriters Laboratories Inc.)

UL 44
Thermoset-Insulated Wires and Cables

UL 62
Flexible Cords and Cables

UL 83
Thermoplastic-Insulated Wires and Cables

UL 94
Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

UL 310
Electrical Quick-Connect Terminals

UL 486E
Equipment Wiring Terminals for Use with Aluminum and/or Copper Conductors

UL 498
Attachment Plugs and Receptacles

UL 514A
Metallic Outlet Boxes

UL 588
Seasonal and Holiday Decorative Products

UL 746A
Polymeric Materials – Short-Term Property Evaluations

UL 746B
Polymeric Materials – Long-Term Property Evaluations

UL 746C
Polymeric Materials – Use in Electrical Equipment Evaluations

UL 879
Electric Sign Components

UL 969
Marking and Labeling Systems

UL 1581
Reference Standard for Electrical Wires, Cables, and Flexible Cords

UL 1786
Direct Plug-In Nightlights

UL 1993
Self-Ballasted Lamps and Lamp Adapters

ASTM International

ASTM B858
Standard Test Method for Ammonia Vapor Test for Determining Susceptibility to Stress Corrosion Cracking in Copper Alloys

ASTM E28
Standard Test Methods for Softening Point of Resins Derived from Pine Chemicals and Hydrocarbons, by Ring-and-Ball Apparatus

ANSI/ASTM E230/E230M
Standard Specification and Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples

NEMA (National Electrical Manufacturers Association)

NEMA C78.901
Single-Based Fluorescent Lamps – Dimensional and Electrical Characteristics

NEMA ANSLG C81.61
Electrical Lamp Bases – Specifications for Bases (Caps) for Electric Lamps

NEMA ANSLG C81.62
Electric Lampholders

NEMA ANSLG C81.63
Gauges for Electric Lamp Bases and Lampholders

National Fire Protection Association (NFPA)

ANSI/NFPA 70
National Electrical Code (NEC)

3.4 Terminology

3.4.1 Where the term "lampholder" is used in this standard, it applies equally to lampholders and lamp connectors unless otherwise indicated.

4 Construction

4.1 Enclosures

4.1.1 A lampholder enclosure shall have the necessary strength and rigidity to resist the abuses likely to be encountered during normal service. The degree of resistance inherent in the unit shall preclude breaking, warping, or cracking without the required spacings being reduced or parts becoming loosened or displaced.

4.1.2 A lampholder enclosure shall not warp, creep, crack, or distort under conditions of arcing, temperature, and mechanical stress that are likely to occur in service.

4.1.3 Polymeric enclosure materials shall comply with the requirements in Clause 4.2.

4.2 Insulating Materials

4.2.1 Thermoset and Inorganic

4.2.1.1 Insulating material used for the support of, or as the retaining means for, live parts shall be porcelain, glass, urea composition, or other equivalent insulating material.

4.2.1.2 Phenolic composition may be used in a lampholder that is rated at not more than 1000 V.

4.2.1.3 A supporting base on which uninsulated live parts are mounted shall be of porcelain, cold-molded or phenolic composition, or other insulating material that is acceptable for the particular application.

4.2.1.4 Vulcanized fiber may be used for insulating washers, separators, and barriers, but not as the sole support for uninsulated live parts.

4.2.2 Thermoplastic

4.2.2.1 General

4.2.2.1.1 A thermoplastic material used in a lampholder shall comply with Clauses 4.2.2.2.1 – 4.2.2.4.1 and the mold stress-relief distortion test specified in Clause 5.2.17.

4.2.2.2 Flammability

4.2.2.2.1 A thermoplastic (polymeric) insulating material used to enclose electrical parts or used to provide direct or indirect support of live parts shall be classed either V-2, V-1, V-0, 5VA, or 5VB, by the burning tests described in UL 94 and CAN/CSA-C22.2 No. 0.17. Outlet-box mounted ceiling lampholders shall be rated 5VA.

4.2.2.3 Electrical properties

4.2.2.3.1 A thermoplastic (polymeric) insulating material used to enclose electrical parts or used to provide direct or indirect support of live parts for outdoor applications shall have a minimum comparative tracking index (CTI) of 175 as determined in accordance with the methods described in UL 746A, UL 746B, and CAN/CSA-C22.2 No. 0.17.

4.2.2.4 Thermal index

4.2.2.4.1 A thermoplastic insulating material used to enclose electrical parts or used to provide direct or indirect support of live parts shall possess a minimum relative thermal index (RTI) determined in accordance with the methods described in UL 746B and CAN/CSA-C22.2 No. 0.17, as follows:

a) 150 °C (302 °F) for a screw-type lampholder;

b) 90 °C (194 °F) for a fluorescent-type lampholder; or

c) 90 °C (194 °F) for an incandescent pilot type lampholder or indicator type light.

Note: A minimum RTI is not required for a pilot type lampholder or indicator type light intended for use with neon or LED light sources.

4.2.2.4.2 Lampholders marked with a temperature rating in accordance with Clause 7.5 shall possess a minimum relative thermal index (RTI) of at least their marked rating.

4.3 Sealing Compound

4.3.1 The depth or thickness of sealing compound over a live nut, screw head, or rivet shall not be less than 1.6 mm (1/16 in). If the underside of the base is not recessed and if in some cases it will be in contact with the surface upon which the lampholder is mounted, the depth or thickness of the sealing compound shall not be less than 3.2 mm (1/8 in).

4.3.2 Sealing compound shall be insulating and shall not soften at a temperature of 100 °C (212 °F). Compliance shall be determined by the sealing compound softening test specified in Clause 5.2.2.

4.3.3 Sulfur shall not be acceptable as a sealant.

4.4 Mounting

4.4.1 Bracket

4.4.1.1 A mounting bracket for a bayonet or screw lampholder shall be attached to the lampholder such that it cannot rotate during installation or removal of a lamp. A single rivet or screw shall not be considered to prevent rotation unless additional means such as projections, keys, or the like are provided to restrict movement.

Note: A lamp connector need not be prevented from turning during installation or removal of a lamp.

4.4.1.2 A mounting hole tapped to receive a screw shall be acceptable if it contains no fewer than two threads for the screw if in metal, or no fewer than five threads if in insulating material. Spring clips, clamps, or other means that provide equivalent support and restriction of rotation may also be used.

4.4.2 Cord pendant

4.4.2.1 The cap of a pendant-type lampholder shall have provision for strain relief such that a pull exerted on the flexible cord is not transmitted directly to the wiring terminals. If a knot is provided for strain-relief, all surfaces of the cap that a knot can touch shall be smooth and well insulated.

4.4.2.2 Hard fiber shall be acceptable as the insulating material employed if the bushing is not less than 1.2 mm (3/64 in) thick and if it is formed and secured in place such that it cannot be affected by conditions of ordinary moisture.

4.4.2.3 A threaded, insulating bushing shall not be used in a threaded nipple to form a pendant cap if the pipe size of the nipple is smaller than 9.5 mm (3/8 in).

4.4.2.4 A cord-grip shall be provided on a pendant lampholder designed for use with a jacketed flexible cord such as Type S, SJ, or SV.

4.4.3 Cap and shell

4.4.3.1 The cord-inlet hole in a metal pendant cap shall be provided with a bushing of porcelain, phenolic or cold-molded composition, or other insulating material that is acceptable for the purpose. An insulating bushing shall not soften at a temperature of 90 °C (194 °F). Hot-molded shellac or tar composition shall not be used in an insulating bushing.

4.4.3.2 A metal eyelet or grommet may be used as a side outlet for flexible cord in a metal cap, provided that all edges against which the cord may bear are smooth and well rounded, and provided that the eyelet