



UL 588

STANDARD FOR SAFETY

Seasonal and Holiday Decorative Products

UL Standard for Safety for Seasonal and Holiday Decorative Products, UL 588

Nineteenth Edition, Dated October 26, 2015

Summary of Topics

This revision of ANSI/UL 588 dated December 5, 2024 includes the following changes in requirements:

- ***Additional Standard References as Options for LED drivers; [34.1](#), Appendix [A](#)***
- ***Clarification of Requirements in 22.2.1.2 to require the small-scale flame test for series-connected lampholders in 22.2.1.2C; [22.2.1.2](#), [22.2.1.2B](#)***
- ***Additional Option for Determining Maximum Surface Temperature of Seasonal-Lighting Lamps in [SA9.4](#)***
- ***Cord Tag Marking Exception for Temporary Product Requirements for Class 2 LED Lighting Strings; [125.1.2](#)***
- ***Introduction of New Requirements for Button or Coin Cell Batteries in Accordance with UL 4200A; [36A.1](#), [36A.2](#)***
- ***Add “lanterns” to Scope paragraph 1.2 in order to correlate with Bureau of Philippine Standards adoption of the Standard for Safety for Seasonal and Holiday Lighting, UL 588; [1.2](#)***
- ***Add reference to the Standard for Safety for Decorative Lighting Cords, UL 6288, in [13.2.1](#)***
- ***Correction of Typographical error for CXTW-EX in [13.2.4](#)***
- ***Addition of Cord Connector Option for Commercial Use Lighting Strings; [SE2.2](#), [SE3.4](#), [SE4.4A](#), [SE4.5](#), [SE8.1](#), [SE10.3](#), [SE10.4](#)***
- ***Consolidation of Class 2 and Battery-Operated Products; [2.4](#), [7.1](#), [Table 10.1](#), [13.2.1](#), [13.2.10](#) (deleted), [13.3.1](#), Section [18](#) (deleted), Section [18A](#), [19.1](#), [19.5](#), [22.1.1](#), [22.2.1.7](#), [33.1](#), Section [36](#) (deleted), [121.1](#) – [121.2](#), [124.1.2](#), [125.10](#) (deleted), [125.10A](#), [125.11](#) (deleted), [125.13](#) (deleted), [125.11A](#), [129.2.1](#)***
- ***Addition of Caution Marking Class 2 Power Supply Products Connected to Receptacles Controlled by a Dimmer in [125.11A.3](#)***

Text that has been changed in any manner or impacted by ULSE'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 July 19, 2024 and October 4, 2024.

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INTRODUCTION

1 Scope

1.1 These requirements cover temporary-use, seasonal decorative-lighting products and accessories with a maximum input voltage rating of 120 V to be used in accordance with the National Electrical Code, ANSI/NFPA 70. Temporary-use is considered to be a period of installation and use not exceeding 90 days. This Standard also covers factory-assembled parallel-connected string lights intended for year round use as described in Supplement [SD](#).

1.2 These requirements cover factory-assembled seasonal lighting strings with push-in, midget-screw, or miniature-screw lampholders or non-replaceable lamps connected in series for across-the-line use or with candelabra- or intermediate-screw lampholders connected in parallel for direct-connection use. These requirements also cover factory-assembled seasonal decorative outfits such as lanterns, wreaths, stars, light sculptures, crosses, candles or candle sets without lamp shades, products in the shape of, or in resemblance to, Christmas trees with simulated branches and needles, products in the shape of, or in resemblance to, wreaths provided with simulated branches and needles, blow-molded figures or objects, animated figures, tree tops, controllers, tree stands, electric tree poles, and motorized decorative displays. These requirements cover products which are portable and not permanently connected to a power source.

1.3 These requirements additionally cover ornaments which are provided with an adapter for connection to a push-in lampholder and are intended to replace a push-in lamp in a series-connected decorative-lighting string or decorative outfit.

1.4 These requirements do not cover strings employing lampholders larger than intermediate-screw, non-seasonal lighting, non-seasonal products, permanently connected products, non-decorative lighting intended for illumination only, cord sets, or temporary power taps. These requirements also do not cover nightlights which are covered under the Standard for Direct Plug-In Nightlights, UL 1786, or flexible lighting products that are not part of a decorative outfit which are covered under the Standard for Flexible Lighting Products, UL 2388.

1.5 These requirements do not cover portable electric lamps intended for general illumination with a seasonal decoration and a typical lamp shade construction open at the top and bottom, which are covered under the Standard for Portable Electric Luminaires, UL 153.

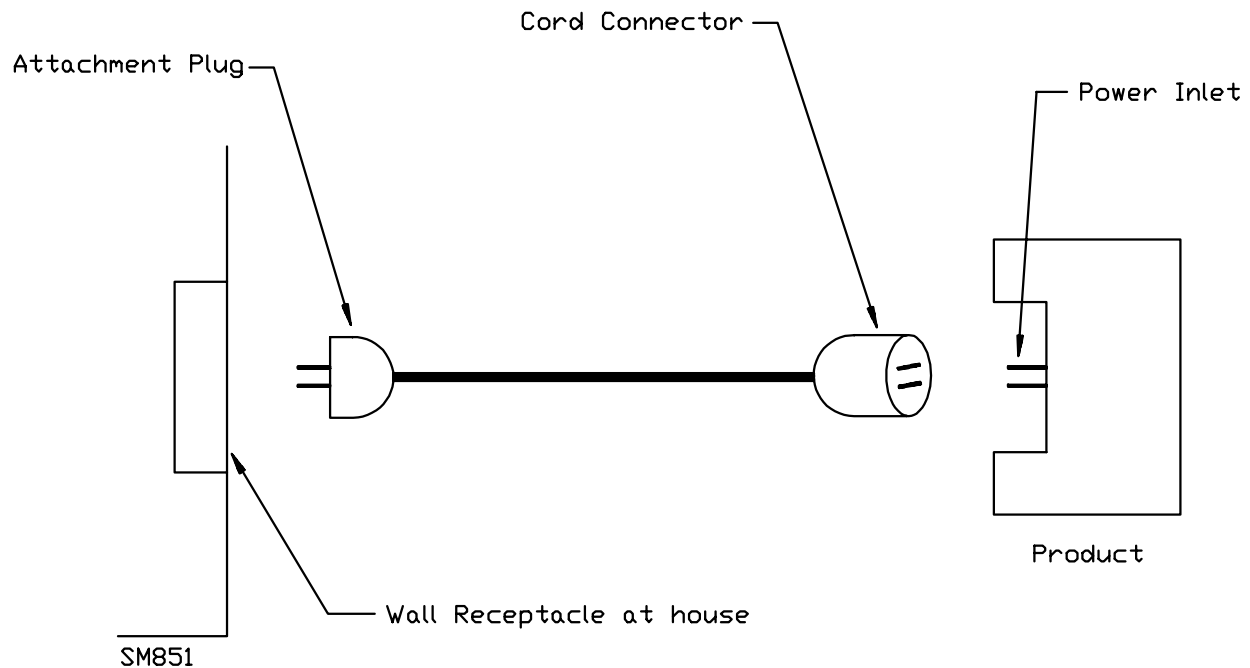
1.6 Christmas trees exceeding 30 in (762 mm) in height but not exceeding 12 ft (3.7 m) in height, as measured from the top of the tree to the bottom of the base of the tree and provided with simulated branches and needles, products in the shape of, or in resemblance to, a wreath exceeding 48 in (1219 mm) in outer diameter and provided with simulated branches and needles, or other similar seasonal-use decorative outfits shall additionally be investigated to the Outline of Investigation for Fire Tests of Pre-Lit Artificial Seasonal Use Trees and Other Seasonal Decorative Items, UL 2358.

2 Glossary

2.1 For the purposes of this standard, the following definitions apply.

2.2 ATTACHMENT PLUG – A male contact device, which may be provided with integral overcurrent protection, for the temporary connection of a flexible cord or cable to a receptacle, cord connector, or other outlet device. The male screw of a lamp base would additionally be considered as meeting this definition when used for the connection. See [Figure 2.1](#).

Figure 2.1
Example of a cord set or detachable power-supply cord



2.3 BUBBLE LIGHT – A light assembly consisting of a liquid filled container assembled to a housing which contains a lamp. The lamp is used to heat and brighten the liquid producing an illuminated bubbling effect.

2.4 CLASS 2 CIRCUIT – A circuit powered from the output of a Class 2 transformer or a Class 2 power unit. Applicable requirements are also considered to apply to a product located in a battery-powered circuit or provided with a Universal Serial Bus (USB) connector, where the maximum available power is 15 watts as determined by the Component Power Measurement Test, Section [49](#). See Class 2 and Battery-Operated Products, Section [18A](#).

2.5 CONTROLLER – A product designed to electronically or electromechanically vary the power to or the on/off cycle of the seasonal decorative lighting product or products which it is intended to control. A controller may additionally provide sound effects. A controller may be a separate unit or an integral part of a string or decorative outfit.

2.6 CORD CONNECTOR – A female contact device which is part of a cord set, string, or detachable power-supply cord for connection to a male contact device such as an attachment plug, current tap, or power inlet. See [Figure 2.1](#).

2.7 CORD SET – A length of flexible cord assembled with an attachment plug or current tap as a line fitting and a cord connector as a load fitting. A cord set is sometimes referred to as an extension cord. See [1.4](#).

2.8 CURRENT TAP – A male and female contact device that, when connected to an outlet receptacle, provides multiple load fittings. A load fitting may consist of a slot configuration and provision for the

connection of a flexible cord. A current tap may be provided with integral overcurrent protection. See [13.3.4](#).

2.9 DECORATIVE LIGHTING HARNESS – A factory-assembled lighting assembly employing candelabra-, intermediate-, or medium-screw lampholders connected in parallel across the line and neutral blades of the attachment plug or current tap. A decorative lighting harness is employed in a decorative outfit and it is provided with overcurrent protection.

2.10 DECORATIVE OUTFIT – A factory-assembled, electrically-powered unit providing a seasonal theme such as a wreath, star, light sculpture, cross, candle or candle set without lamp shades, a product in the shape of, or in resemblance to, a Christmas tree not exceeding 12 ft (3.7 m) in height as measured from the top of the tree to the bottom of the base of the tree with simulated branches and needles, products in the shape of, or in resemblance to, a wreath provided with simulated branches and needles, a blow-molded figure or object, such as a pumpkin, a snowman, or a tree, an animated figure, a tree top, a tree stand, and a motorized decorative display having illumination or other decorative effects. It is provided with overcurrent protection and a means for attachment to an electrical outlet. It may be provided with either a lighting string as part of the illumination of the decorative outfit, or with a controller, or both. A lighting string or lighting harness provided with decorative covers over the lamps is considered as a decorative outfit.

2.11 DIRECT PLUG-IN UNIT – A power unit which employs a blade assembly on its enclosure for connection to the branch circuit and a means for connection to a seasonal lighting product. The unit may employ a transformer if the seasonal product requires a low-voltage supply source. A controller may be a direct plug-in unit.

2.12 ENCLOSURE – Any surface or surrounding structure that reduces the likelihood of access to any or all parts of the product that may otherwise present a risk of electric shock or injury to persons and reduces the likelihood of propagation of flame initiated by electrical disturbances occurring within. See [10.1.1](#) and [12.1](#).

2.13 FUSEHOLDER – A device which holds an overcurrent-protective fuse.

2.14 LAMP, BALLAST – A series-connected lamp used in conjunction with an individual-flashing lamp to limit the current flow to less than 0.6 A if all individual-flashing lamps were in their shorted state. See [28.3](#) and [28.4](#).

2.15 LAMP, CANDELABRA-BASE (E12) – A lamp employing a screw base approximately 0.47 inches (12 mm) in diameter. An E12 lamp is the ANSI designation for a candelabra-base lamp.

2.16 LAMP, FLASHING – A series- or parallel-connected lamp that automatically cycles on and off by means of a bimetallic strip connected in series with the filament. For series-connected strings, the flashing lamp causes all lamps connected in series with it to flash. For parallel-connected strings, only the flashing lamp is intended to flash.

2.17 LAMP, INDIVIDUAL-FLASHING – A series-connected lamp that automatically cycles on and off by means of a bimetallic strip connected in parallel with the filament. The cycling of the bimetallic strip causes only the individual-flashing lamp to flash by momentarily placing a short across the filament to turn the lamp on and off. An individual-flashing lamp is intended to be used in combination with a ballast lamp unless used in a light string whose construction is described in the Exception to [28.3](#). See [28.3](#) and [28.4](#).

2.18 LAMP, INTERMEDIATE-BASE (E17) – A lamp employing a screw base approximately 0.67 inches (17 mm) in diameter. An E17 lamp is the ANSI designation for an intermediate-base lamp.

2.19 LAMP, MEDIUM-BASE (E26) – A lamp employing a screw base approximately 1.02 inches (26 mm) in diameter. An E26 lamp is the ANSI designation for a medium-base lamp.

2.20 LAMP, MIDGET-BASE (E5) – A lamp employing a screw base approximately 0.20 inches (5 mm) in diameter. An E5 lamp is the ANSI designation for a midget-base lamp.

2.21 LAMP, MINIATURE-BASE (E10) – A lamp employing a screw base approximately 0.39 inches (10 mm) in diameter. An E10 lamp is the ANSI designation for a miniature-base lamp.

2.22 LAMP, PUSH-IN – A low-voltage lamp, intended for series connection, with a glass envelope provided with wire leads for electrical connection to the lampholder. The glass envelope is provided with an adapter which separates the leads and secures the entire assembly into the lampholder by push-in friction fit. The adapter may be provided with a positive latching mechanism.

2.23 LAMP, PUSH-IN LED – A light emitting diode (LED), intended for series connection, provided in an encapsulating enclosure with wire leads for electrical connection to the lampholder. The enclosure is provided with an adapter which separates the leads and secures the entire assembly into the lampholder by push-in friction fit. The adapter may be provided with a positive latching mechanism.

2.24 LAMP, SCREW-BASE (EDISON-SCREW) – A lamp provided with an Edison-screw base for electrical and mechanical connection to the lampholder.

2.25 LAMPHOLDER, CANDELABRA-SCREW (E12) – A screw-type lampholder which accepts a candelabra-base (E12) lamp. An E12 lampholder is the ANSI designation for a candelabra-screw lampholder.

2.26 LAMPHOLDER, INTERMEDIATE-SCREW (E17) – A screw-type lampholder which accepts an intermediate-base (E17) lamp. An E17 lampholder is the ANSI designation for an intermediate-screw lampholder.

2.27 LAMPHOLDER, MEDIUM-SCREW (E26) – A screw-type lampholder which accepts a medium-base (E26) lamp. An E26 lampholder is the ANSI designation for a medium-screw lampholder.

2.28 LAMPHOLDER, MIDGET-SCREW (E5) – A screw-type lampholder which accepts a midget-base (E5) lamp. An E5 lampholder is the ANSI designation for a midget-screw lampholder.

2.29 LAMPHOLDER, MINIATURE-SCREW (E10) – A screw-type lampholder which accepts a miniature-base (E10) lamp. An E10 lampholder is the ANSI designation for a miniature-screw lampholder.

2.30 LAMPHOLDER, SEASONAL LIGHTING – A lampholder that is restricted for use with seasonal-lighting strings and decorative-lighting outfits and which, by its construction and intended application, is not suitable for general use.

2.31 LAMPHOLDER, SKELETON-TYPE – An Edison-screw lampholder that does not use conductive screw shell 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 base cavity or a contact in the bottom of the lamp base cavity, such as ring contact. The lampholder also employs a center contact.

2.32 LIGHTING STRING – A factory-assembled series, series-parallel, or parallel string of replaceable lamps consisting of an attachment plug or current tap, lampholders, lamps, wire, and overcurrent protection. A lighting string optionally may be provided with a load fitting (cord connector), a controller, or both. A lighting string is intended to be draped over or around an object to provide a decorative effect. A lighting string may also be a factory-assembled series- or series-parallel string consisting of non-

replaceable lamps without shunts, an attachment plug, wire, and overcurrent protection. See [28.1](#) and [29.1](#).

2.33 LIGHTING STRING, PARALLEL-CONNECTED – A lighting string employing either candelabra- or intermediate-screw lampholders connected in parallel across the line and neutral blades of the attachment plug or current tap.

2.34 LIGHTING STRING, SERIES-CONNECTED – A lighting string employing push-in, midget-screw, or miniature-screw lampholders or non-replaceable lamps connected in series with each other. The series-connected assembly is connected across the line and neutral by means of an attachment plug or current tap. Lighting strings configured in the shape of a net (see Exception No. 2 to [13.2.4](#)), as icicles, or other configurations, are series-connected lighting strings. LED lighting strings that employ lamps with covers that are not removable are also considered as lighting strings.

2.35 LIGHTING STRING, SERIES-PARALLEL-CONNECTED – A lighting string consisting of two or more series-connected strings of lampholders or non-replaceable lamps connected in parallel to each other and across the line and neutral by means of an attachment plug or current tap.

2.36 LIGHT SCULPTURE – A polymeric or coated metallic rigid or flexible frame to which lampholders and lamps are attached. The lamps provide outline illumination of the figure or object created by the frame.

2.37 LIVE PART – A current-carrying component other than a Class 2 circuit.

2.38 LOAD FITTING – A female contact device, such as a cord connector or dedicated receptacle, which is part of a lighting string or decorative outfit and is intended for connection to an attachment plug.

2.39 ORNAMENT – A unit provided with a lampholder adapter or input leads and an adapter intended to take the place of a push-in lamp in a series-connected lighting string or decorative outfit. An ornament may be electronically- or non-electronically-operated.

2.40 ORNAMENT, ELECTRONICALLY-OPERATED – An ornament which employs a motor, a printed wiring assembly, electronic components, or similar item. This type of ornament may produce sound, be illuminated, animated, or similar effect, or a combination of the above.

2.41 ORNAMENT, NON-ELECTRONICALLY-OPERATED – An ornament provided with a wiring assembly consisting of only a lamp and lampholder, or of more than a single lamp connected in series or parallel, on one end and an adapter on the other end. This type of ornament is illuminated only.

2.42 POWER INLET (MOTOR ATTACHMENT PLUG) – A male contact device to be mounted on the product to provide an integral blade configuration for the connection of a cord connector. See [Figure 2.1](#).

2.43 RECEPTACLE, DEDICATED – A receptacle that is intended for connection to the attachment plug or current tap of a specific product such as a decorative-lighting string or a decorative outfit and which is not for general use.

2.44 SEASONAL (HOLIDAY) PRODUCT – A product painted in colors to suggest a holiday theme or a snow covering, a figure in a holiday costume, or any decoration associated with a holiday or particular season of the year.

2.45 SHUNT, LAMP – A device used in series-connected lamps to provide a current path when the filament of a lamp opens so that the remaining lamps in the series-connected string or decorative outfit remain illuminated. A shunt typically consists of several turns of aluminum wire wound around the pair of filament support posts. The aluminum oxide coating on the wire acts as an insulator, allowing current to normally flow through the filament. When the filament of the lamp opens, a high voltage (approximately

120 V) is present across the support posts causing the oxide coating of the shunt to break down. The shunt then becomes electrically connected to the support posts and allows current to continue to flow through the shunt despite the open filament.

2.46 TERMINAL, INSULATION-PIERCING – A terminal having a contact pin that punctures the conductor insulation and penetrates between the conductor strands. This does not include an insulation-displacement terminal which has a contacting member that forces the conductor insulation aside and presses against the side of the conductor to make contact.

2.47 TREE POLE, ELECTRIC – A unit that is designed to provide electrical power to a Christmas tree or equivalent either directly to integral lighting strings or through load fittings (cord connector) of a standard or non-standard configuration, with or without a through-cord switch.

2.48 WIRING DEVICE – A device which is wired on flexible cord for temporary connection of the cord to a receptacle, cord connector, or other outlet device, to make a detachable electrical connection to an attachment plug, to provide multiple outlet configurations, or similar connection. An attachment plug, current tap, cord connector, and load fitting are examples of a wiring device.

3 Components

3.1 Except as indicated in [3.2](#), a component of a product covered by this standard shall comply with the requirements for that component. See Appendix [A](#) for a list of standards covering components generally used in the products covered by this standard.

3.2 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.

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

3.4 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.

4 Units of Measurement

4.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

5 References

5.1 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.

CONSTRUCTION

ALL PRODUCTS

6 General

6.1 If a product employs a component or another product as part of its construction, each part of the product shall comply with its applicable construction requirements. For example, if a series-connected string employs a controller, construction requirements for a series-connected string, controller, cord-connected wiring device, and series-connected lampholder and lamp shall all be applied.

6.2 The wire type and overcurrent protection requirements for a seasonal lighting product are summarized in [Table 6.1](#) and [Table 6.2](#).

Table 6.1
Wire types and overcurrent protection ratings for series-connected seasonal lighting products

	Non-polarized fittings		Polarized fittings	
	With load fitting	Without load fitting	With load fitting	Without load fitting
Minimum wire size, AWG (mm ²)	22 (0.32) ^a	22 (0.32) ^a	20 (0.52) ^a	22 (0.32) ^a
Wire type	CXTW, XTW ^a	CXTW, XTW ^a	CXTW, XTW ^a	CXTW, XTW ^a
Minimum wire temperature	105°C	105°C	105°C	105°C
Maximum current rating, Amperes	0.6	0.6	0.6	1.8
Total maximum wattage of strings allowed to be connected together, end-to-end	216 Watts	—	432 Watts	—
Fuse rating, Amperes	3	3	5	3
Fuse location	Grounded and ungrounded conductor	Grounded and ungrounded conductor	Ungrounded conductor (hot)	Ungrounded conductor (hot)
On/Off switch and type (if located in other than a Class 2 circuit)	Double-pole in both conductors	Double-pole in both conductors	Single-pole ungrounded conductor (hot)	Single-pole ungrounded conductor (hot)
See Figure	Figure 7.4 , Figure 7.6 , Figure 7.15	Figure 7.3 , Figure 7.7 , Figure 7.13	Figure 7.6 , Figure 7.10 , Figure 7.16	Figure 7.5 , Figure 7.9 , Figure 7.14

^a A motorized product shall employ minimum 20 AWG Type SPT-2 wire for the supply connections. See [Figure 7.11](#) – [Figure 7.16](#).

Table 6.2
Wire types and overcurrent protection ratings for parallel-connected seasonal lighting products^c

	With load fitting		Without load fitting	
	20 (0.52) ^a	18 (0.82) ^b	20 (0.52) ^a	18 (0.82) ^b
Minimum wire size, AWG (mm ²)	20 (0.52) ^a	18 (0.82) ^b	20 (0.52) ^a	18 (0.82) ^b
Wire type	XTW	SPT-1, SP-2, SPT-2, S, ST, SE, SO, SOO, SJ, SJT, SJE, SJO, SJOO	XTW	SPT-1, SP-2, SPT-2, S, ST, SE, SO, SOO, SJ, SJT, SJE, SJO, SJOO
Minimum wire temperature	105°C		105°C	
Fuse location	Ungrounded conductor (hot)		Ungrounded conductor (hot)	

Table 6.2 Continued on Next Page

Table 6.2 Continued

	With load fitting	Without load fitting
On/Off switch and type (if located in other than a Class 2 circuit) See Figure	Single-pole ungrounded conductor (hot) Figure 7.2 , Figure 7.12	Single-pole ungrounded conductor (hot) Figure 7.1 , Figure 7.11
^a A motorized product shall employ minimum 20 AWG Type SPT-2 wire for the supply connections. (See Figure 7.11 – Figure 7.16). ^b The wire Type for products intended for outdoor use shall be SPT-1W, SP-2W, SPT-2W, STW, SEW, SOW, SOOW, SJTW, SJEW, SJOW, or SJOOW. ^c For current rating and overcurrent protection refer to Table 13.1.		

7 Overcurrent Protection

7.1 A product covered by this standard shall be provided with integral overcurrent protection which complies with the Standard for Low-Voltage Fuses – Part 1: General Requirements, UL 248-1, and the Standard for Low-Voltage Fuses – Part 14: Supplemental Fuses, UL 248-14. Refer to [Table 13.1](#) for overcurrent protection ratings for each wire size.

Exception No. 1: An ornament need not be provided with integral overcurrent protection.

Exception No. 2: Deleted

Exception No. 3: Direct plug-in products provided with a maximum of three load fittings with no external wiring need not be provided with overcurrent protection, provided that the product is capable of carrying 15A of current.

7.2 A product employing a power inlet intended for use with a cord set or a detachable power-supply cord shall be provided with fusing in accordance with this Section:

- a) In the power inlet or adjacent to the point of connection to the power-supply source provided by the product, and
- b) In the detachable power-supply cord if provided.

7.3 The overcurrent protection shall be either an integral part of the attachment plug or current tap, or of a through-cord design (in-line fuseholder) located so that there is not more than 6 inches (152 mm) between the face of the attachment plug or current tap and the side of the fuseholder furthest from the attachment plug or current tap. If a through-cord design is employed, a minimum 20 AWG (0.52 mm²) wire shall be used between the attachment plug or current tap and the fuseholder.

Exception No. 1: A product employing minimum 16 AWG (1.31 mm²) flexible cord is permitted to have the overcurrent protection located inside the enclosure.

Exception No. 2: A product that is not provided with a load fitting is permitted to have the overcurrent protection located inside the enclosure provided that the fuse is the first electrically connected item in the circuit after entrance into the enclosure, and is before any other electrical components in the product.

7.4 The rating of the overcurrent protection shall be as indicated in [Table 6.1](#) or [Table 6.2](#).

Figure 7.1

Parallel-connected string with a polarized line fitting and without a load fitting
(See note 1)

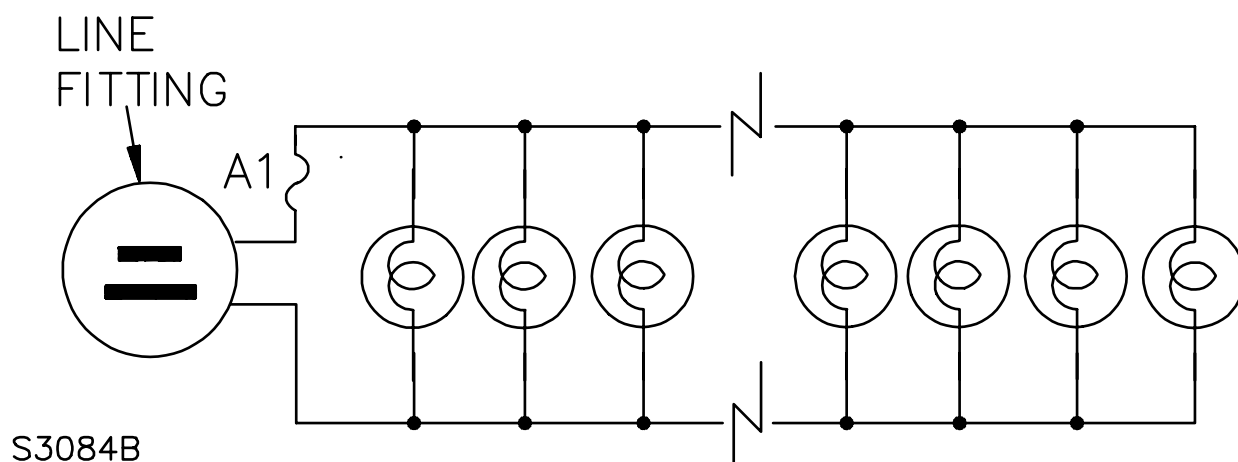


Figure 7.2

Parallel-connected string with a polarized line and load fitting
(See note 1)

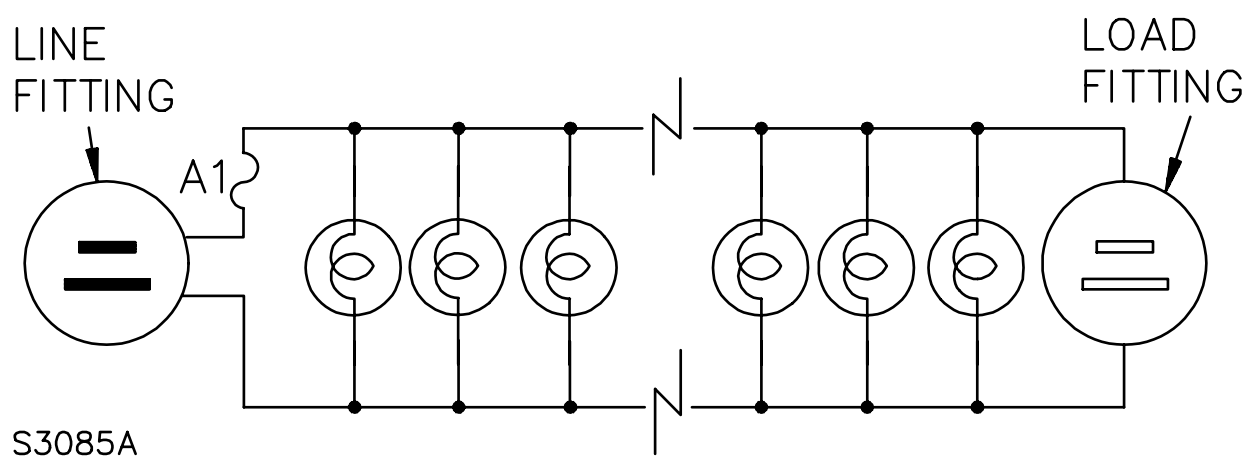


Figure 7.3

Series-connected string with a non-polarized line fitting and without a load fitting
(See note 1)

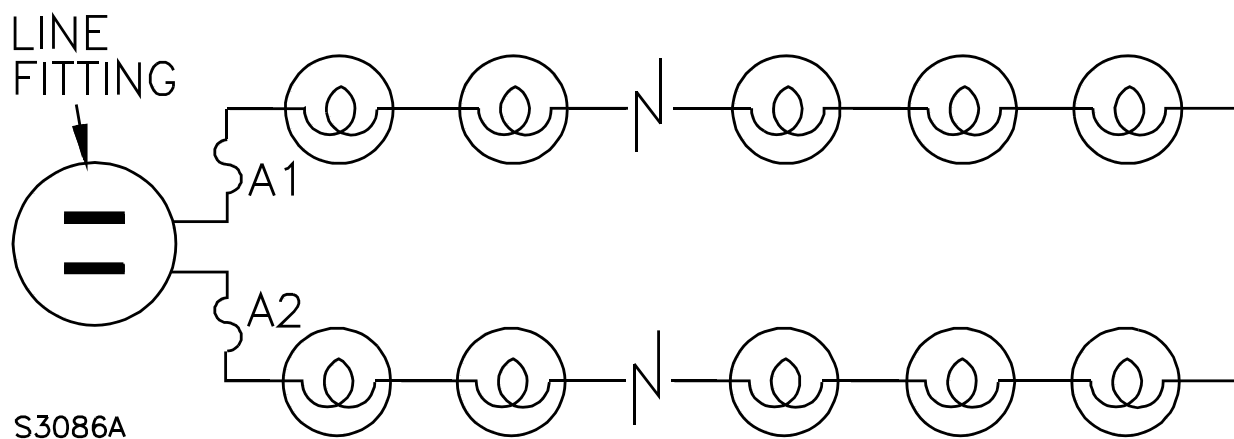


Figure 7.4

Series-connected string with a non-polarized line and load fitting
(See notes 1, 2, 3)

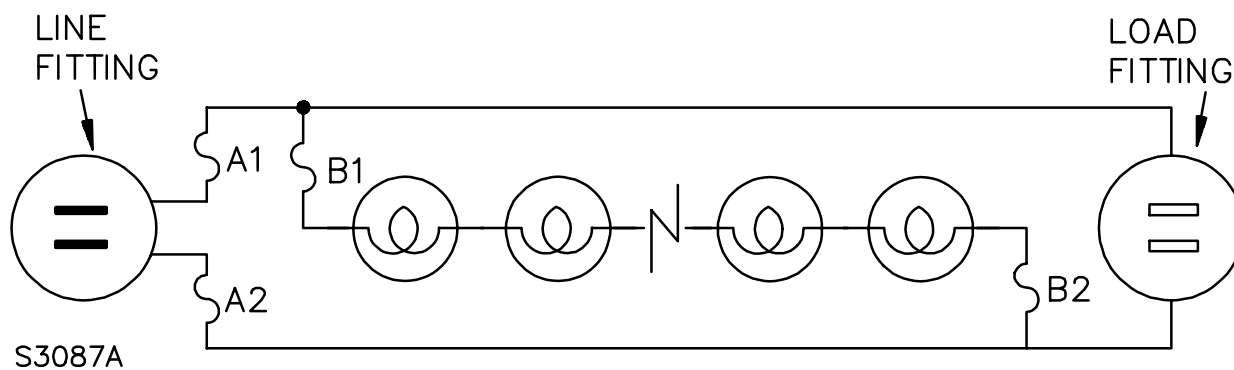


Figure 7.5

Series-connected string with a polarized line fitting and without a load fitting
(See note 1)

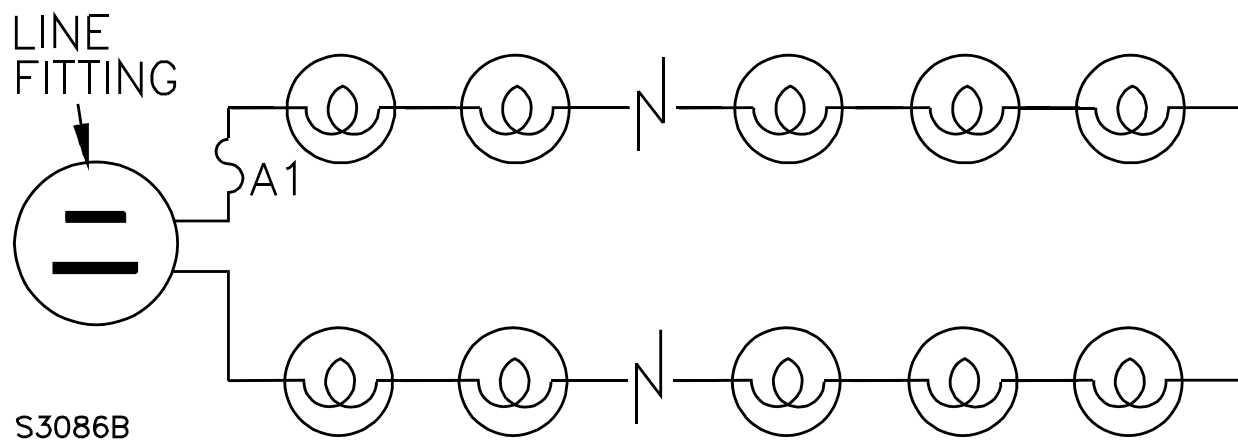


Figure 7.6

Series-connected string with a polarized line and load fitting
(See note 1)

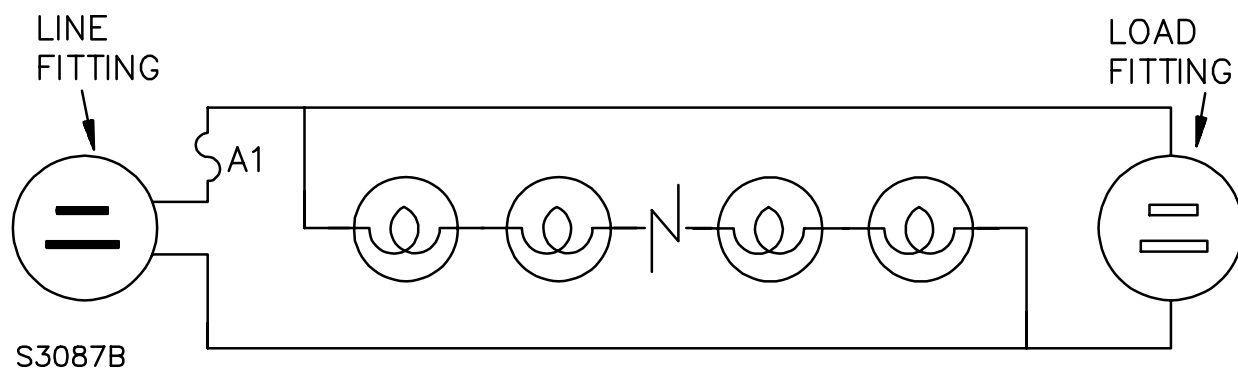


Figure 7.7

Series-parallel-connected string with a non-polarized line fitting and without a load fitting
(See notes 1, 2, 3)

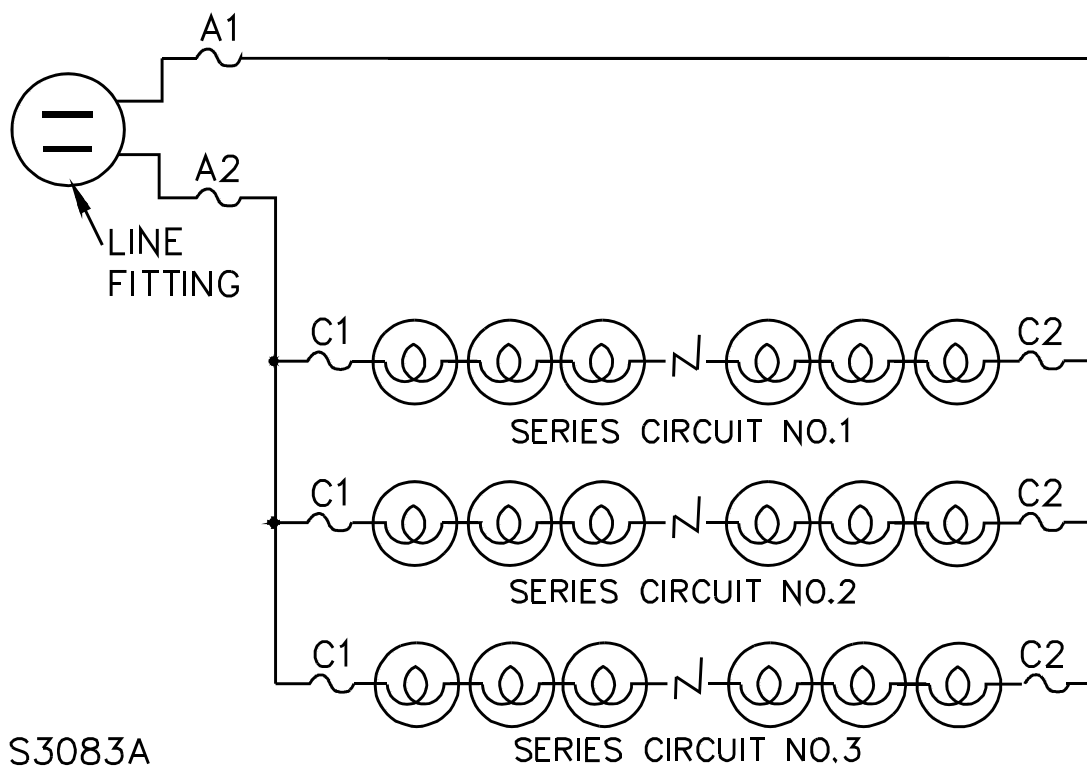


Figure 7.8

Series-parallel-connected string with a non-polarized line and load fitting
(See notes 1, 2, 3)

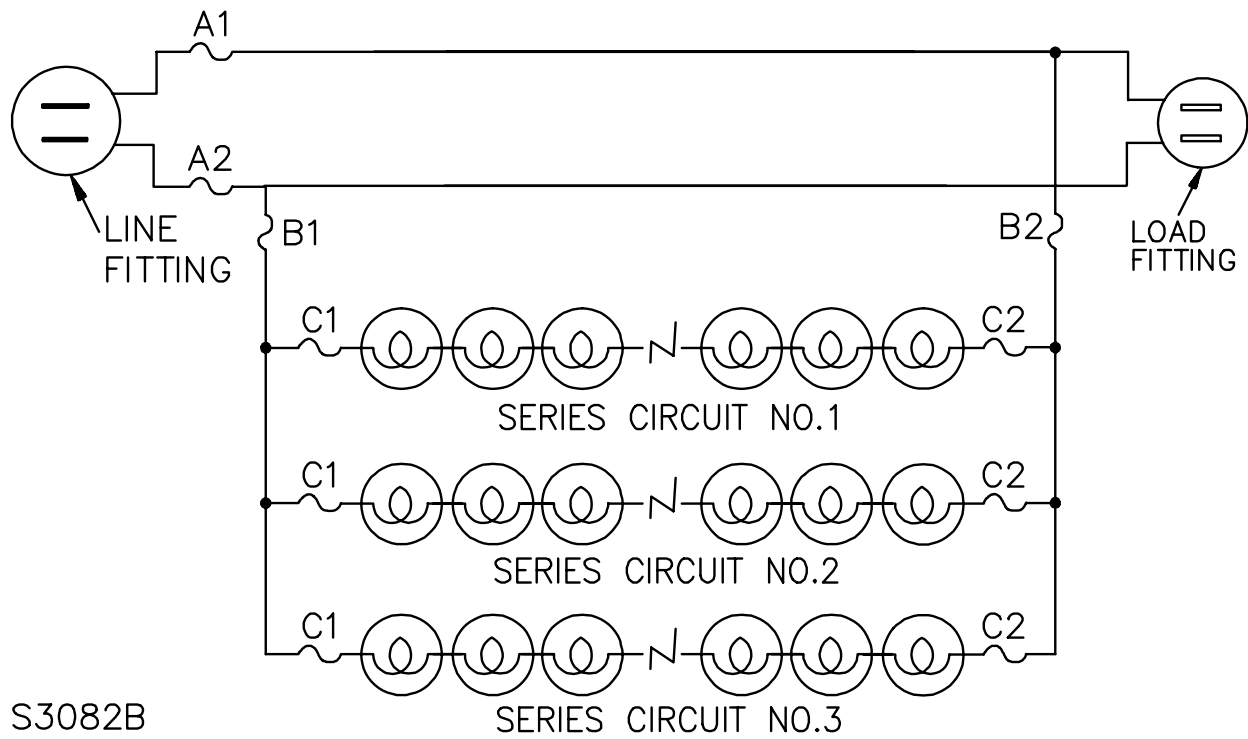


Figure 7.9

Series-parallel-connected string with a polarized line fitting and without a load fitting
(See note 1)

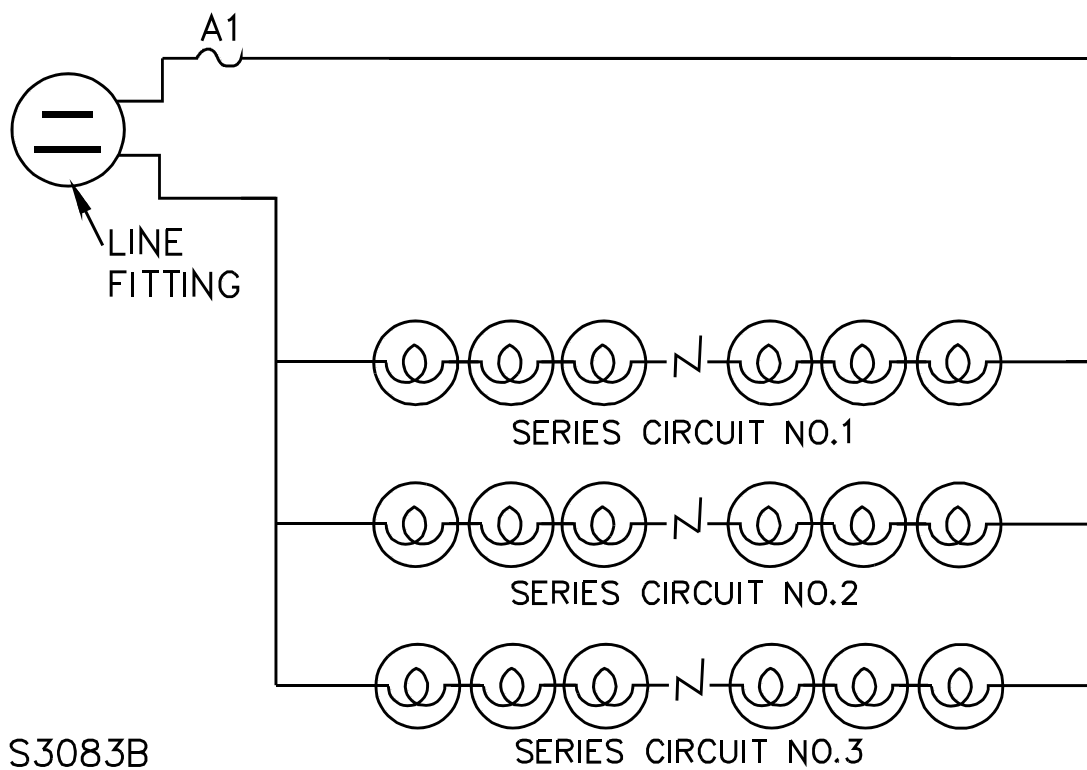


Figure 7.10

Series-parallel-connected string with a polarized line and load fitting
(See note 1)

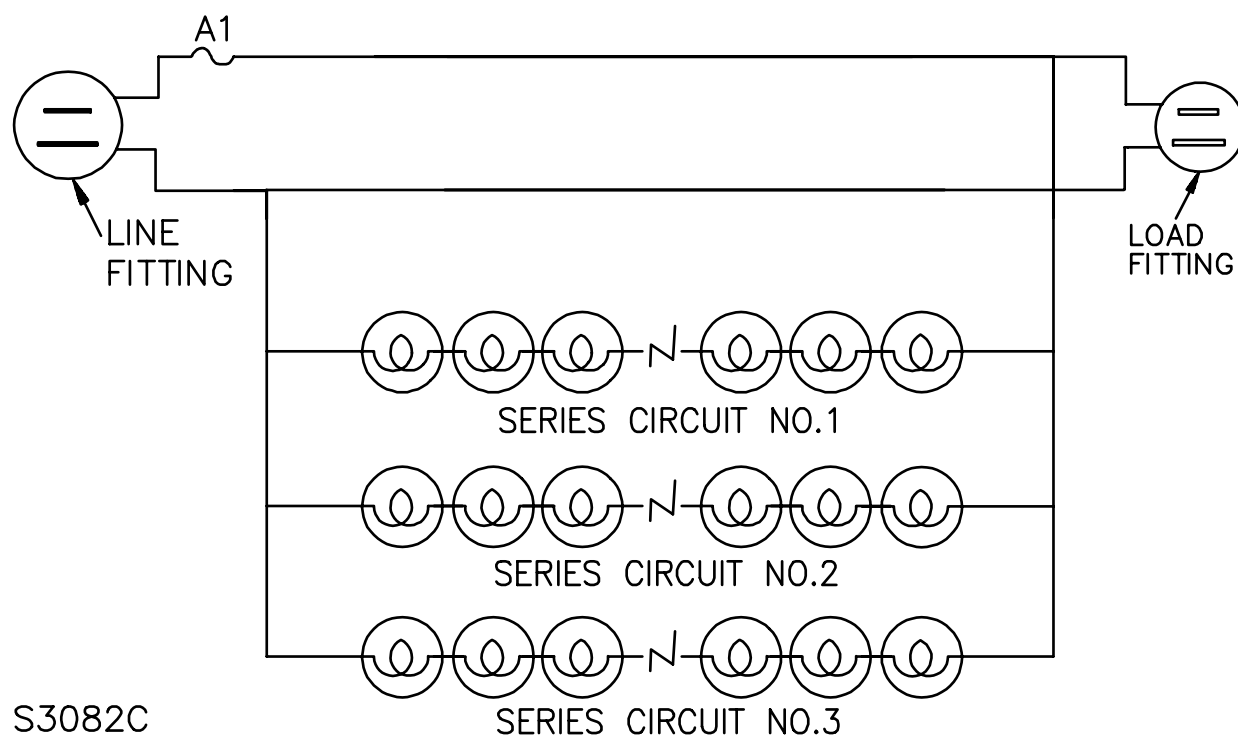


Figure 7.11

Decorative outfit or tree stand without a load fitting
Decorative lighting harness or parallel-connected string
(See notes 1, 4)

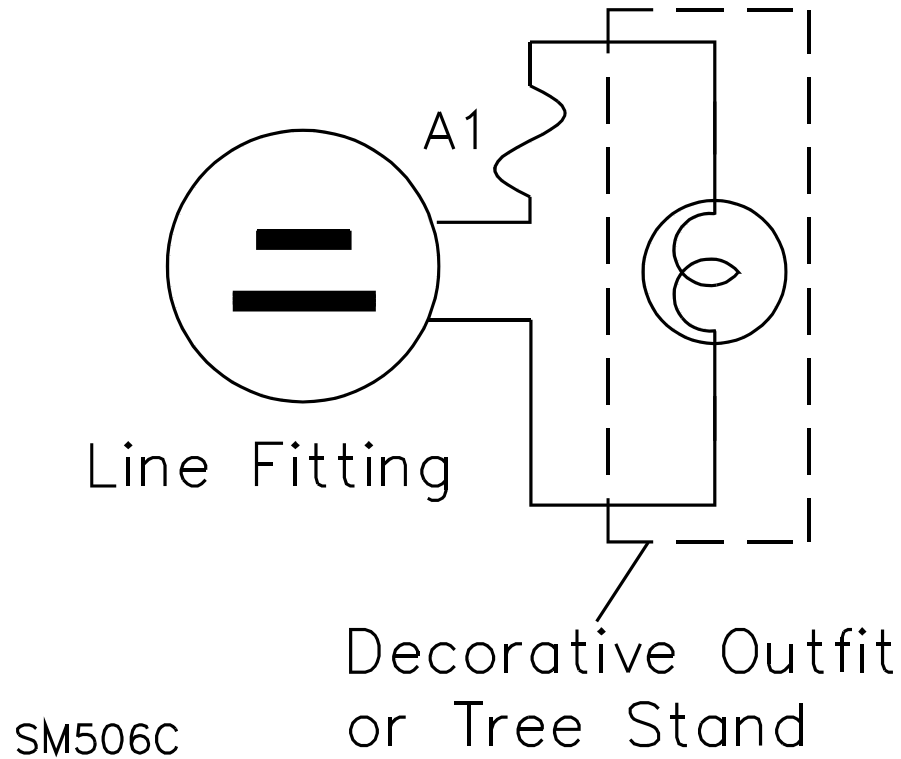


Figure 7.12

Decorative outfit or tree stand with a load fitting
Parallel-connected string
(See notes 1, 4)

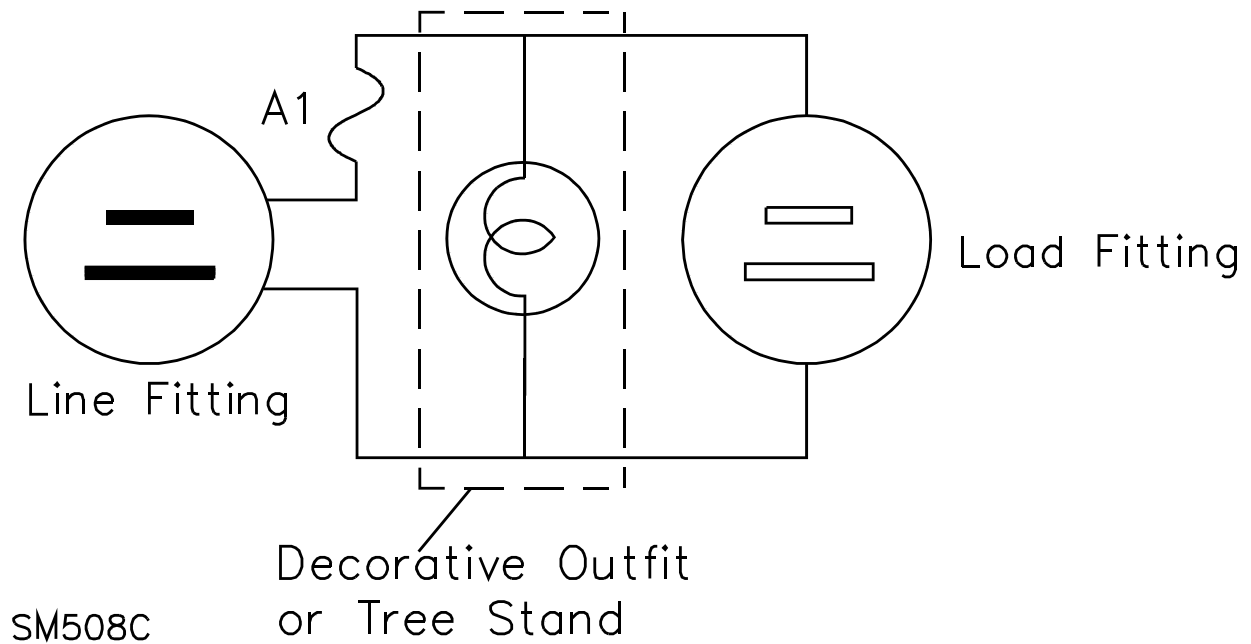
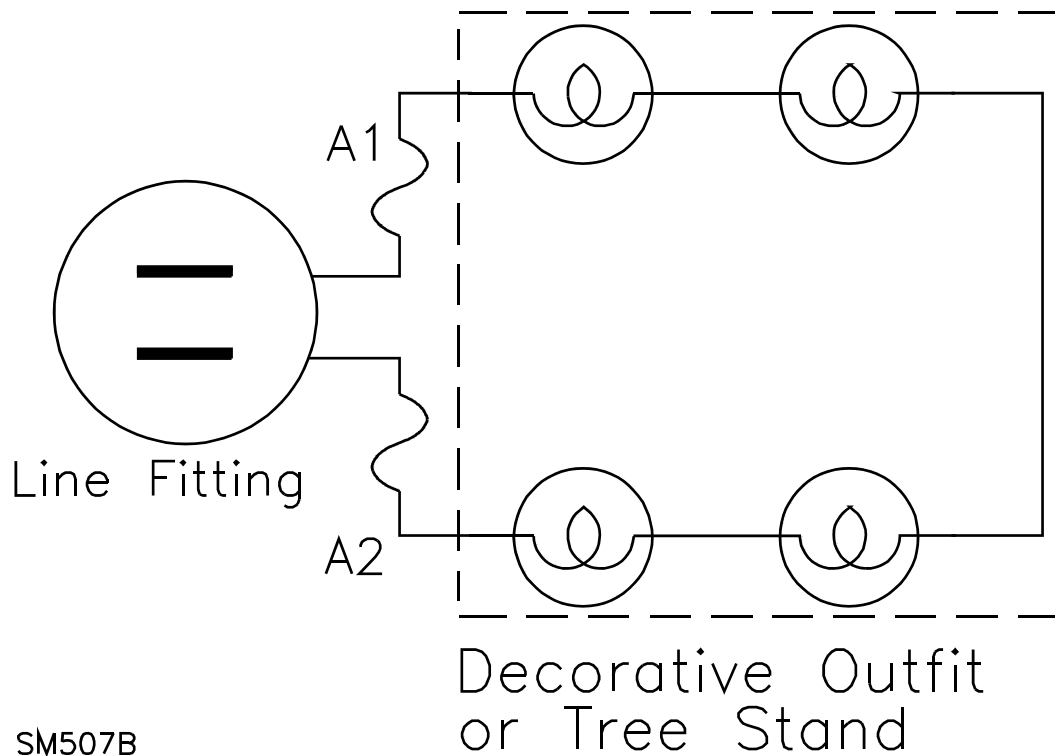


Figure 7.13

Decorative outfit or tree stand with a non-polarized line fitting without a load fitting
Series-connected string
(See notes 1, 4, 5)



SM507B

Figure 7.14

Decorative outfit or tree stand with a polarized line fitting and without a load fitting
Series-connected string
(See notes 1, 4, 5)

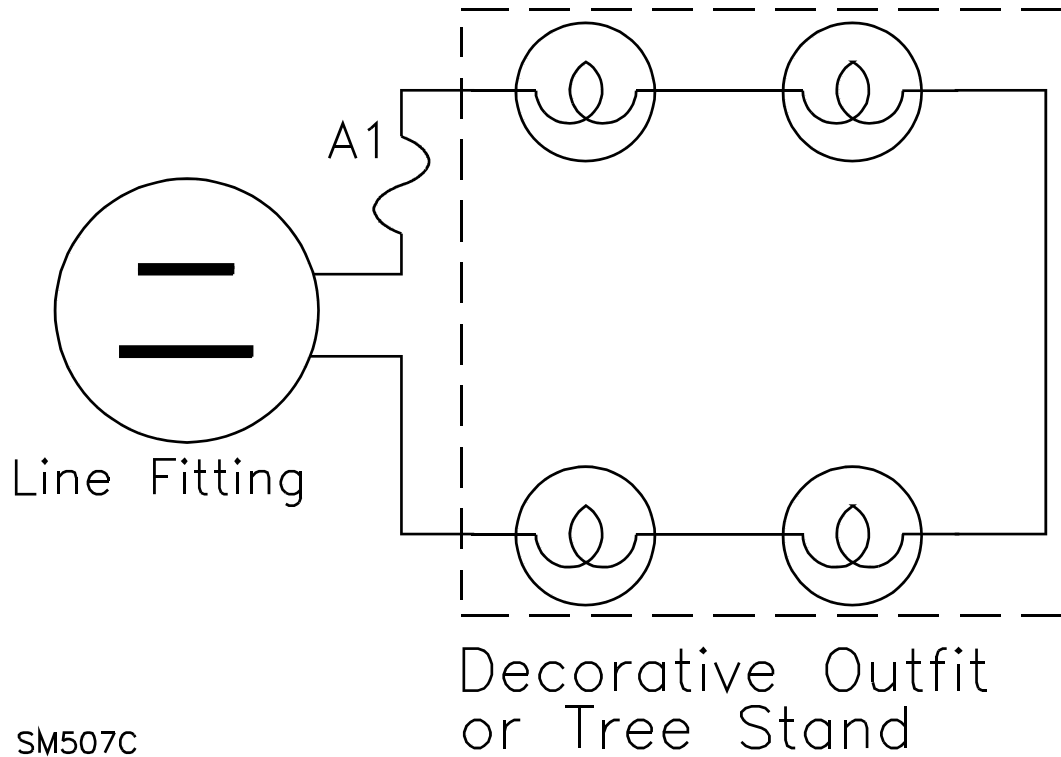


Figure 7.15

Decorative outfit or tree stand with a non-polarized line and load fitting
Series-connected string
(See notes 1, 2, 3, 4, 6)

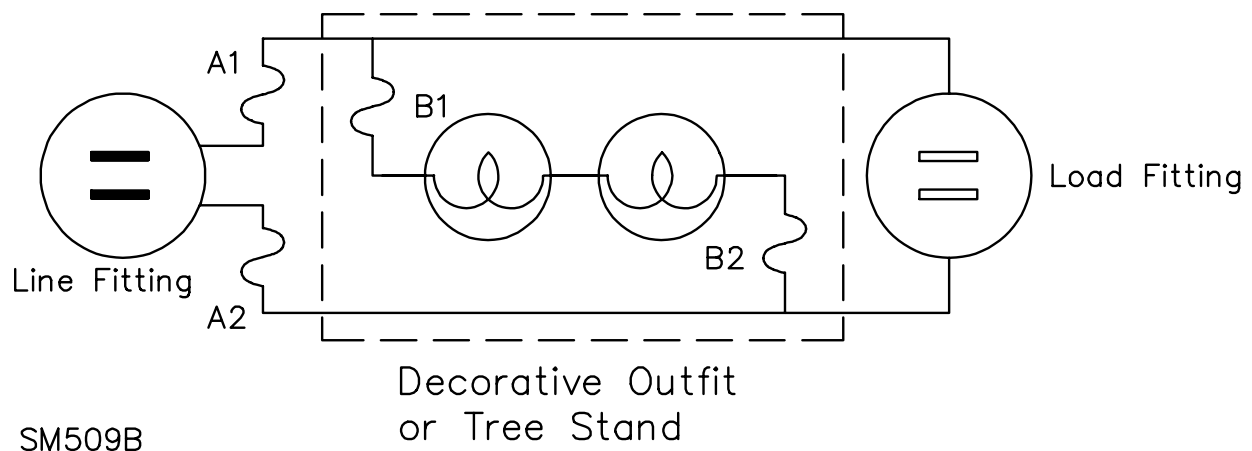
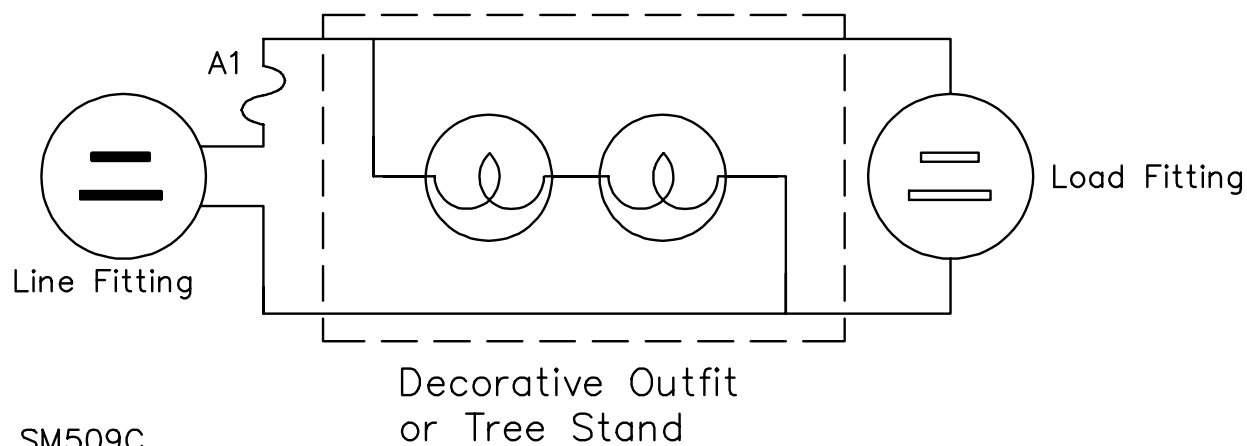


Figure 7.16

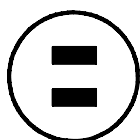
Decorative outfit or tree stand with a polarized line and load fitting
Series-connected string
 (See notes 1, 2, 3, 4, 6)



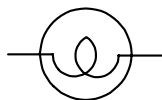
SM509C

Notes 1 – 6 for [Figure 7.1](#) to [Figure 7.16](#), applicable as indicated in each figure:

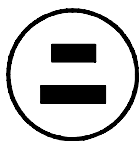
1. Represents overcurrent protection provided in accordance with this section.
2. If all wire is the same gauge size, fuse A1 or both fuses A1 and A2 may serve to protect the entire assembly.
3. If wire of varying gauge size is used, fuses B1 and B2 or C1 and C2 shall be provided and rated in accordance with [Table 6.1](#) and [Table 6.2](#).
4. This figure represents a decorative outfit or tree stand that may employ a motor.
5. See [Figure 7.7](#) for series-parallel combination without load fitting.
6. See [Figure 7.8](#) for series-parallel combination with load fitting.
7. The following is a key for [Figure 7.1](#) – [Figure 7.16](#):



Non-polarized
Line Fitting



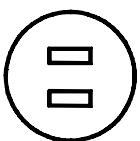
Lamp or Load



Polarized
Line Fitting



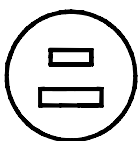
Used to Indicate Extended
Length or Repetition
of Like Construction



Non-polarized
Load Fitting



Overcurrent Protection



Polarized
Load Fitting

S3711

7.5 A product provided with a polarized line fitting shall employ one fuse which shall be connected to the ungrounded (narrow) blade of the attachment plug or current tap, and be replaceable.

Exception No. 1: Fuses provided with a series- or series-parallel lighting string provided with a polarized line fitting need not be replaceable.

Exception No. 2: A product that is not provided with a load fitting and with the overcurrent protection located inside the enclosure as described in [7.3](#), the overcurrent protection is permitted to be non-replaceable.

7.6 A product employing a replaceable fuse shall be provided with at least one spare fuse.

Exception: A decorative outfit without a load fitting need not be provided with a spare fuse if it does not employ:

- a) A series-connected string as described in [28.1](#), or*
- b) A parallel-connected string as described in [29.1](#).*

7.7 A product provided with a non-polarized line fitting shall employ two fuses, one connected to each conductor, which are not required to be replaceable.

Exception: A product that is not provided with a load fitting and with the overcurrent protection located inside the enclosure as described in [7.3](#), the overcurrent protection is permitted to be non-replaceable.

7.8 The supplementary protection used for the midget push-in series- or series-parallel connected lighting string employing self-shortening lampholder contacts shall be of the non-automatically re-settable type, and if provided in a lamp, shall be nonreplaceable and not be provided with a shunt. It may be in a glass lamp or otherwise suitably enclosed in a material that complies with Section [10](#), Enclosures. The protector shall comply with Calibration Test, Section [65](#), Fault Current Test, Section [66](#) and if provided in a lamp, the Cascading Lamp Temperature Test, Section [85](#).

Exception: It is acceptable to replace the supplementary protection provided in the lamp when it meets the following criteria:

- a) The lighting string is constructed such that the fused lamp cannot be replaced by another push-in lamp,*
- b) The lampholder is constructed such that the steady illuminating lamps cannot fit into the lampholder such that it makes an electrical connection with the lampholder intended for the fused lamp,*
- c) The fused lamp is permanently secured to the lamp adapter without relying on adhesive,*
- d) The lamp adapters are additionally secured to the lamp by an adhesive that complies with the requirements outlined in the Adhesive Test, Section [63](#),*
- e) The fused lamp and mating lampholders are uniquely identified, or otherwise coded to insure proper fused lamp replacement,*
- f) The additional user servicing instructions described in [131.9](#) are provided.*

8 Materials

8.1 A shade, diffuser, or decorative part employed in a seasonal lighting product shall be constructed of a material with a maximum vertical downward burning rate of 4 inches (102 mm) per minute as determined by the Downward Burning Rate Test, Section [50](#).

8.2 Simulated needles, leaves, small twigs, and other loose decorative parts shall be constructed of insulating material, as determined by compliance with the Conductivity of Decorative Parts Test, Section [51](#), if they are:

- a) Located within 2 inches (51 mm) of a lampholder employed in a seasonal product, or
- b) Employed in a seasonal product to which one or more lighting strings may be attached.

8.3 A polymeric material used to provide all or any part of an enclosure employed in a seasonal lighting product shall comply with the requirements for Enclosures, Section [10](#).

8.4 No edge, point, or burrs of an uninsulated live part shall contact the insulation of the wire or the insulation of the conductor of a cord that is connected at opposite polarity.

8.5 Insulation on which current-carrying parts are mounted shall be of cold-molded or phenolic composition or of an equivalent insulating material.

8.6 Hard fiber is acceptable for insulating bushings, washers, separators, and barriers, but not for the sole support of live parts.

9 Mechanical Assembly

9.1 A splice, a non-enclosed motor, a printed wiring board, a switch without enclosed terminals, and any wiring shall be located in an enclosure which complies with the requirements in Enclosures, Section [10](#).

Exception: Type CXTW, parallel conductor XTW, SPT-1, SPT-2, SJ, SJT, S, and ST wire of the minimum gauge specified in Supply Connections, Section [13](#), need not be enclosed.

9.2 A controller, splice compartment, direct plug-in unit, or electronically-operated ornament shall employ an enclosure which complies with the requirements in Enclosures, Section [10](#).

9.3 A seasonal lighting product or accessory shall have all parts reliably secured in place.

9.4 An adhesive used to secure parts of the enclosure of a product shall comply with the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, and the Adhesive Test, Section [63](#).

Exception: An adhesive used to secure parts of the enclosure of an ornament need comply only with the Adhesive Test, Section [63](#).

9.5 If a seasonal lighting product or component employs an enclosure, the unit shall be constructed such that it is not necessary to open or remove the enclosure when the unit is used as intended. If the enclosure is held together by screws, then commonly removable fasteners, such as flathead or cross recessed, square recessed, or star recessed head screws or a combination thereof, or a standard bolt pattern, shall not be used unless the screws are covered by an insulating material determined suitable for the application.

9.6 Each switch, receptacle, lampholder, and similar device shall be mounted securely such that it is kept from turning. A means, other than friction alone, shall be provided to prevent the device from turning. This means may consist of a lockwasher for a device employing a single hole mounting means.

Exception No. 1: The turning of a switch, receptacle or other similar device is permitted if the turning of such a device is part of the design of the unit and introduces no additional risk of fire or electric shock, such as a reduction of spacings below the minimum acceptable values, or stress on a connection.

Exception No. 2: A lampholder need not be mounted such that it is kept from turning if it is likely to be held by hand during relamping.

9.7 A switch in the primary circuit or an overcurrent-protective device shall be located within an enclosure in such a manner as to not be accessible or exposed to tampering, or subject to damage during normal use. A switch shall also comply with Switches, Section [19](#).

9.8 The actuating means of a switch, such as a toggle, handle, or similar device, shall comply with the requirement in [9.7](#) if dislodging such a part results in the exposure of live parts (see [12.1](#)) or film-coated magnet wire as determined by contact with the probe illustrated in [Figure 9.1](#).

9.9 If the exterior part of the switch or control forms part of an enclosure, the part shall comply with the requirement in [10.3.4\(b\)](#) and shall be mechanically secured in place.

10 Enclosures

10.1 General

10.1.1 An enclosure employed in a seasonal lighting product shall be formed and assembled with the strength and rigidity necessary to resist the abuses to which it is likely to be subjected, without increasing the risk of fire, electric shock, or injury to persons due to total or partial collapse of the enclosure with a resulting reduction of spacings, loosening or displacement of parts, or other defects.

10.1.2 The enclosure of a controller, direct plug-in unit, or electronically-operated ornament shall be constructed of a polymeric material which complies with [10.3.1](#) – [10.3.10](#).

10.1.3 The enclosure of an open-winding motor or transformer, splices, or wiring other than the power-supply cord shall be constructed of metal or a polymeric material which complies with [10.2.1](#) – [10.3.10](#).

Exception: The enclosure of fixed internal wiring that does not include splices or taps need not be enclosed if it provides mechanical protection for the wiring, and if the wiring consists of CXTW, parallel-conductor XTW, SPT-1, SPT-2, or jacketed flexible cord. See Supply Connections, [13](#), for the minimum gauge required.

10.1.4 Means shall be provided to prevent external wires from being pushed into the enclosure of the product. Compliance shall be determined by the Wire Push-Back Relief Test, Section [47](#).

10.2 Metallic enclosures

10.2.1 An enclosure of sheet metal shall be constructed either of uncoated steel, whose thickness is not less than 0.032 inch (0.81 mm), or of another metal that provides strength and rigidity equivalent to that of 0.032 inch (0.81 mm) steel.

10.2.2 Sheet steel shall be coated with a corrosion-resistant material such as zinc, paint, enamel, or lacquer.

10.3 Polymeric enclosures

10.3.1 A thermoplastic or thermosetting material used to provide all or any part of the enclosure as specified in [10.1.1](#) and [12.1](#), or to provide structural support in the product, shall comply with the requirements in [10.3.4](#) – [10.3.10](#).

10.3.2 Polymeric materials employed in an attachment plug, current tap, power inlet, load fitting, or in-line fuseholder shall comply with the requirements in [10.3.4](#) – [10.3.10](#).

10.3.3 Lampholders constructed of polymeric materials shall comply with [10.3.10](#) in addition to the requirements in Lampholders, Section [22](#). When electronic circuitry is encapsulated in a polymeric material employed inside a lampholder the polymeric material shall also comply with [10.3.10](#).

10.3.4 A material used to enclose or provide structural support for electrical live parts shall be considered acceptable if:

- a) The material has a minimum flammability rating as specified in [10.3.10](#),
- b) The enclosure complies with the Drop Test, Section [59](#), and the Impact Test, Section [60](#), and

c) The enclosure complies with the Enclosure Mold Stress Relief Test, Section [58](#).

10.3.5 The impact evaluation of a polymeric enclosure of outdoor units, described in [10.3.4\(b\)](#), shall be performed after low-temperature conditioning at minus 35°C (minus 31°F) as described in the Cold Impact Test, Section [61](#).

10.3.6 During either of the tests specified in [10.3.4\(b\)](#), snap fit parts of the enclosure shall not separate as a result of the impact if it exposes live parts.

10.3.7 In addition to the applicable requirements in this section, a polymeric enclosure employed in a product intended for outdoor use shall comply with the requirements for Outdoor-Use Products, Section [27](#).

10.3.8 The ultraviolet (UV) conditioning described in the Ultraviolet (UV) Light Exposure and Water Immersion Tests, Section [94](#), shall be conducted on outdoor units in which polymeric material is used as an enclosure or for structural support, and all other units subjected to ultraviolet radiation from integral fluorescent lamps.

Exception: An enclosure fabricated of material evaluated for resistance to ultraviolet light in accordance with the requirements specified in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, need not be further evaluated.

10.3.9 With regard to consideration of thermal endurance in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, the material shall possess a mechanical temperature index, with impact, as a result of long term aging or a generic temperature index of at least the measured temperature in the Temperature Test, Section [43](#).

10.3.10 Polymeric materials employed for an enclosure, attachment plug, current tap, load fitting, in-line fuseholder, or series-connected lampholder, or any device not mounted within an enclosure shall have a minimum flammability rating as indicated in [Table 10.1](#). The flammability rating is to be determined by the applicable tests in the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94.

Exception: Polymeric materials, other than those used in lampholders less than 0.15 inch³ (2500 mm³) in volume employed in series or series-parallel connected strings, may comply with either of the following end product flame tests if they have a minimum HWI (hot-wire resistance to ignition) Performance Level Category (PLC) of 3 and a minimum HAI (high-current arc resistance to ignition) PLC of 3:

a) If the component material is greater than 0.15 inch³ (2500 mm³) in volume, the flame tests contained in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, shall be performed. Specifically, products required to comply with the V-0 or V-1 flame rating shall be subjected to the 3/4-inch or 12-mm flame test as applicable. At the conclusion of the test there shall not be openings large enough to enable a 1/4-inch (6.4-mm) diameter rod to enter the hole in order to provide flame containment and there shall not be ignition of the cotton indicator. The indicator is to be absorbent, 100 percent cotton thinned to approximately 2 by 2 inches (50 by 50 mm) and a maximum thickness of 0.24 inches (6 mm). The cotton is to be placed horizontally 11.8 ± 0.39 inches (300 ± 10 mm) below the component material; or

b) If the component material is less than or equal to 0.15 inch³ (2500 mm³) in volume, it shall be subjected to the Flammability Test for Small Components specified in the Standard for Tests for Flammability of Small Polymeric Component Materials, UL 1694. Total consumption of the component or specimen or ignition of the cotton indicator by flaming particles or drops shall not be allowed.

Table 10.1
Material flammability requirements

Material and application ^a	Minimum required flammability rating ^b	Minimum HWI (PLC) ^d	Minimum HAI (PLC) ^d
Polymeric materials used as a non-decorative part of the enclosure for all products ^c	V-1 V-0	3 not required	3 not required
^a A decorative part of a product shall comply with the requirements in Materials, Section 8. ^b Alternative end product flammability tests may be performed in accordance with the Exception to 10.3.10. ^c Refer to Seasonal-Lighting Lampholders, Supplement SB, for parallel-connected lampholders. ^d The HWI and HAI performance level categories (PLC) are described in the Standard for Polymeric Materials – Short Term Property Evaluations, UL 746A.			

11 Enclosure Openings

11.1 There shall not be openings in the enclosure except for the passage of wiring, a rotating shaft, or a power-supply cord, if employed, or for ventilation. These openings shall not be larger than necessary and shall comply with 11.2. Any opening in the enclosure shall not permit accessibility of live parts as determined by contact with the probe illustrated in Figure 9.1. A ventilation opening shall also comply with 11.3 – 11.6.

Exception: A product or device which contains a replaceable fuse may employ an opening not larger than necessary to determine if the fuse is intact and shall comply with the Fault Current Test, Section 66.

11.2 If wiring passes through an opening in a metal wall, it shall be protected by a bushing, a grommet, or by rolling the edge of the metal at the opening not less than 120 degrees. The edges of an opening shall be free of burrs, fins, and other sharp edges. See 21.1.

11.3 A ventilation opening employed in the enclosure of a product shall be of such size and shape that the opening does not exceed a major dimension of 0.15 inches (3.8 mm).

11.4 A ventilation opening employed in the enclosure of a product shall be provided with a barrier between the opening and any live part or possible source of arcing, such as a switch, fuse, printed wiring board, splice, or similar device. A ventilation opening shall comply with 11.5 and 11.6.

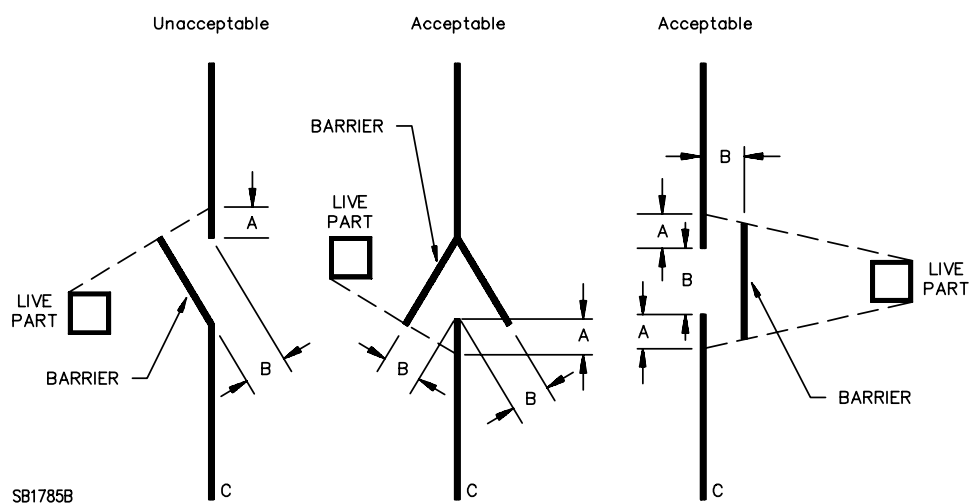
Exception: A ventilation opening with a major dimension of 0.02 inches (0.5 mm) or less need not be provided with a barrier.

11.5 A ventilation opening shall not be located in any horizontal surface of the product. A horizontal surface is considered to be any surface in which the included angle is less than 45 degrees as measured between the inside surface of the enclosure containing the ventilation opening and the horizontal.

11.6 The barrier specified in 11.4 shall be of such dimensions and located such that a straight line drawn from any live part or arcing part, past the edge of the barrier, will intersect the enclosure a minimum of 0.25 inch (6.4 mm) from the edge of the opening. A live part shall not be located below the opening. Examples of both unacceptable and acceptable constructions are illustrated in Figure 11.1.

Exception: For a ventilation opening with a major dimension between 0.04 inches (1 mm) and 0.02 inches (0.5 mm), the 0.25 inch distance may be reduced proportional to the maximum major dimension of 0.15 inches (3.8 mm).

Figure 11.1
Ventilation openings



Notes:

A = The minimum 0.25 inch (6.4 mm) distance specified in [11.6](#)

B = The opening sized in accordance with [11.3](#)

C = The enclosure wall

12 Accessibility of Live Parts

12.1 Electric parts shall be located or enclosed so as to reduce the likelihood of unintentional contact with an uninsulated live part or any current-carrying live part, other than a class 2 circuit, considered to be a potential risk of electric shock. An uninsulated live part is considered to exist if the open-circuit potential between uninsulated live parts and ground is greater than 42.4 volts peak (30 V rms) and the available current through a 1500-ohm resistance, shunted by a capacitance of 0.15 μ F, is more than 0.5 mA.

12.2 Accessibility of uninsulated live parts is to be determined by contact with the probe illustrated in [Figure 9.1](#). The probe is to be applied to the area being investigated and rotated, changed in configuration, or angled to any position before, during, and after application. The probe is to be applied with a force of 1 lb (4.4 N).

12.3 The grounded (neutral) conductor shall not be accessible except during relamping of a parallel-connected, screw-base lamp.

13 Supply Connections

13.1 General

13.1.1 A seasonal lighting product shall be provided with a means for connection to the supply circuit. This means shall consist of one of the following:

- a) An attachment plug or current tap provided as part of the product, such as for a lighting string,
- b) An integral power-supply cord consisting of a length of flexible cord and an attachment plug or current tap,
- c) A blade assembly located on the enclosure of the product for direct connection to the supply circuit, or
- d) A power inlet intended for use with a cord set or detachable power-supply cord if the manufacturer:
 - 1) Recommends the use of a cord set which complies with the Standard for Cord Sets and Power-Supply Cords, UL 817, and if a statement indicating the availability of such a cord set is marked on the product or is included in the instruction manual provided with the product, or
 - 2) Provides a detachable power-supply cord with the product which complies with UL 817 and [13.1.3](#).

13.1.2 An ornament shall be provided with a means for connection to the push-in lampholder of a series-connected string or decorative outfit, such as a lampholder adapter or input leads and an adapter.

13.1.3 The length of a detachable power-supply cord provided with a product shall not be less than 8 inches (203 mm).

13.1.4 The conductor employed in a decorative lighting string shall be continuous, without a splice or tap, from fitting to fitting. A decorative outfit, or similar decorative products, may employ splices in accordance with Splices, Section [17](#).

13.1.5 The maximum current flow permitted in a fully loaded conductor of a seasonal product shall be in accordance with [Table 13.1](#).

Table 13.1
Maximum conductor current and overcurrent protection

Wire size, AWG (mm ²)	Maximum conductor current / wattage amperes / watts	Overcurrent protection amperes
12 (3.31)	12 / 1440	N/A
14 (2.08)	12 / 1440	N/A
16 (1.31)	10 / 1200	10 ^b
18 (0.82)	8 ^a / 960	8 ^a
20 (0.52)	3.6 / 432	5
22 (0.32)	1.8 / 216	3
^a When an 8 A fuse is employed, the maximum current shall not exceed 8 A. When a 5 A fuse is employed, the maximum current shall not exceed 3.6 A. ^b Overcurrent is required only when more than 3 load fittings are employed. A maximum of 6 load fittings are permitted when overcurrent protection is provided.		

13.1.6 The conductors of the flexible cord or wire shall be fastened securely and in a workmanlike manner to the terminals of the attachment plug, current tap, or load fitting as determined by the Reliability of Conductor Connections Test, Section [72](#).

13.1.7 The supply connection requirements for a seasonal product are outlined in [Table 6.1](#) and [Table 6.2](#).

13.1.8 A seasonal product shall not employ wire positioning devices on non-enclosed flexible cord, wires, or conductors.

Exception: Products provided with a rigid frame employing wire positioning devices that do not deform the insulation of the flexible cord, wires, or conductors, need not comply with this requirement.

13.1.9 *Deleted*

13.1.10 A series-connected LED lighting string is permitted to be provided with a candelabra-base (E12) or intermediate-base (E17) male screw base for connection to the lampholders of a parallel-connected lighting string.

13.2 Cords

13.2.1 Cords employed in a seasonal product shall comply with the Standard for Flexible Cords and Cables, UL 62 or the Standard for Decorative Lighting Cords, UL 6288. All wire and cord shall have a minimum flame rating of VW-1.

Exception: Deleted

13.2.2 In a decorative outfit with one or more medium-screw lampholders, the minimum cord size shall be 20 AWG (0.52 mm²).

13.2.3 The flexible cord employed in an indoor-use parallel-connected seasonal product shall be a minimum 20 AWG (0.52 mm²), Type XTW, parallel conductor cord or a minimum 18 AWG (0.82 mm²) Type SPT-1 or SPT-2, all wire with a minimum insulation temperature of 105°C (221°F). Types SPT-1 and SPT-2 are suitable for both indoor and outdoor use when the cord type designation ends with the letter "W".

13.2.4 The wire employed in a series-connected seasonal product shall have a minimum insulation temperature of 105°C (221°F) and in accordance with the following:

- a) Type CXTW, twisted conductor, minimum 22 AWG (0.32 mm²);
- b) Type XTW, 22 AWG (0.32 mm²); or
- c) Type CXTW-ES, CXTW-IS or CXTW-S, single conductor, a minimum 22 AWG (0.32 mm²), when connected to attachment plugs/current taps/load fittings and for other power connectors, those connections shall meet the requirements in [43.14.1](#).

Type CXTW, CXTW-ES, CXTW-IS, CXTW-S and XTW wire are suitable for both indoor and outdoor use.

Exception No. 1: A decorative outfit is able to employ single-conductor Type CXTW wire as indicated in [31.7](#) provided that the lampholders or the wire or both are secured to and supported by a rigid frame.

Exception No. 2: When a net lighting string employs single conductor Type CXTW flexible cord, it shall be a minimum 18 AWG (0.82 mm²).

Exception No. 3: When a series-connected seasonal product employs a polarized line and load fitting, it shall employ a minimum 20 AWG (0.52 mm²) Type CXTW twisted conductor wire or 20 AWG (0.52 mm²) XTW wire.

Exception No. 4: Single conductor CXTW wire is permitted to be employed if the wire is twisted with a non-current carrying polymeric supporting rope which is rated for at least 105°C and:

- a) Complies with [82.1](#) when the support rope has a minimum diameter equivalent to the CXTW wire, or*
- b) Complies with [82.2](#) when the diameter of support rope is less than that of the CXTW wire.*

When the seasonal product is for outdoor-use, then the non-current carrying polymeric rope shall also comply with the requirements in [94.2](#).

Exception No. 5: A lighting string that complies with [82.2](#) is permitted to be provided with a single CXTW conductor with integral parallel construction.

13.2.5 The maximum length of lay of CXTW twisted conductors shall not exceed an average, between any two fittings, of 15 times the sum of the outside diameters of the wires which are twisted together.

13.2.6 A detachable power-supply cord provided with a seasonal lighting product which employs a power inlet shall be Type SPT-2, or the equivalent.

13.2.7 The power-supply cord of a motorized product shall be minimum 20 AWG (0.52 mm²), Type SPT-2, SJ, SJT, SJE, SJO, SJOO, S, ST, SE, SO, SOO, or S cord.

13.2.8 The power-supply cord of either a splice compartment or a controller, that is provided with an integrally-attached lighting string, shall be at least the same gauge and equivalent type of wire as the lighting string and shall be within the ampacity of the wire gauge as indicated in [Table 13.1](#). The power-supply cord of a controller or splice compartment not provided with an integrally-attached lighting string, but provided with a dedicated receptacle, shall be suitable for the ampacity of the wire, but not smaller than 18 AWG (0.82 mm²), and not lighter than Type SP-2 or SPT-2.

13.2.9 Non-exposed internal wiring in an enclosure may be appliance wiring material (AWM), with temperature, current, and voltage ratings suitable for the intended application.

13.2.10 Deleted

13.2.11 A flexible cord provided with an additional decorative insulated covering over the insulation of the cord shall have a minimum flame rating of VW-1 for the combination of the decorative covering and flexible cord insulation. The combination shall not affect the integrity of the wire connections as determined by performing the appropriate conductor secureness or strain relief testing.

13.3 Wiring devices

13.3.1 In addition to the applicable requirements in this standard, an attachment plug, cord connector, current tap, power inlet, or other wiring device employed in a seasonal lighting product shall comply with the applicable requirements in the Standard for Attachment Plugs and Receptacles, UL 498, or the Standard for Cord Sets and Power-Supply Cords, UL 817.

Exception No. 1: Series-connected lighting strings or decorative outfits consisting of a series-connected lighting string with decorative covers, with a non-polarized fitting employing an integral controller and a nonstandard multi-pin connector shall comply with the following:

- a) A minimum of 2 pins shall be provided.*
- b) The applicable requirements of the Standard for Attachment Plugs and Receptacles, UL 498, or the Standard for Cord Sets and Power Supply Cords, UL 817, and be suitable for making and breaking under load with respect to the Overload, Temperature, and Resistance to Arcing tests described in the Standard for Attachment Plugs and Receptacles, UL 498.*
- c) The pins shall be recessed such that the male and female connectors are mechanically secured prior to any electrical connection.*
- d) The connectors shall be subjected to the Rain Test, Section [89](#), in any position where the pins initially make an electrical connection.*
- e) The connector shall be keyed so that the wires are connected to the correct circuit.*
- f) The nonstandard multi-pin connector shall not be between the attachment plug and a controller, nor between the attachment plug and the first lampholder.*

Exception No. 2: Deleted

Exception No. 3: Series-connected LED lighting strings provided with a candelabra-base (E12) or intermediate-base (E17) male screw base shall comply the applicable requirements described in Enclosures, Section [10](#), the applicable requirements for male screw bases described in Supplement [SA](#), and with the following:

- a) A hanging means shall be provided and secured near the first lampholder.*
- b) The maximum weight of the lighting string shall not exceed 7.4 lb when provided with an E12 male screw-base and 10.5 lb when provided with an E17 male screw-base.*
- c) The maximum total wattage of the lighting string shall not exceed 7 Watts.*
- d) A cord connector or other female fitting shall not be provided.*
- e) Overcurrent protection shall be provided in the male screw base for the following wire gauges used in the light string:*

- 1) 3 Amp overcurrent protection for 22 AWG*

2) 5 Amp overcurrent protection for 20 AWG

13.3.2 An attachment plug, current tap, or load fitting provided with a seasonal product shall be of a 2-pole, 2-wire, non-grounding configuration.

Exception: A 2-pole, 3-wire, grounding-type configuration is permitted to be used in a decorative outfit accessory employing minimum 14 AWG (2.08 mm²) flexible cord.

13.3.3 A seasonal product shall not employ more than 3 loads or load fittings. For this requirement, a load or load fitting is considered to be a cord connector, a dedicated receptacle, the female contacts of a current tap, or a string or decorative outfit which is an integral part of the product.

Exception No. 1: A decorative outfit accessory is permitted to employ a maximum of 6 load fittings when a minimum 14 AWG (2.08 mm²) flexible cord is provided or minimum 16 AWG (1.31 mm²) when overcurrent protection as shown in [Table 13.1](#) is provided.

Exception No. 2: A tree pole that employs a seasonal use cord set that complies with the requirements of the Standard for Cord Sets and Power-Supply Cords, UL 817, and is either attached or integrally installed, is permitted to employ a maximum of 9 load fittings.

13.3.4 A current tap employed in a seasonal lighting product shall be other than the screw shell type and shall not provide more than 3 loads or load fittings, including the string or outfit to which it is attached.

13.3.5 The face of a cord connector, current tap, or dedicated receptacle employed in a seasonal lighting product shall be:

a) Circular with a minimum area equal to the area of a 9/16-inch (14.2-mm) radius circle, the center point of which is coincident with the intersection of a center line drawn through the center of the slots. See [Figure 13.1](#) for details; or

b) Rectangular with a minimum area equal to the area of a 1- by 3/4-inch (25.4- by 19.0-mm) rectangle with a 7/32-inch (5.6-mm) radius at the corners and provided with a 3/16-inch (4.8-mm) radius half-circle projection from the center of each of the 1-inch (25.4-mm) sides. See [Figure 13.2](#) for minimum dimensions.

Exception No. 1: The projections need not be in the shape of a half-circle if they are located as shown in [Figure 13.2](#), provide a minimum overall dimension of 1-1/4 inches along the center line between the contact slots, and occupy an area equal to or greater than that indicated by the shading in the figure.

Exception No. 2: The half-circle projections need not be provided if the face is sized such that the dimension along the center line between the contact slots is a minimum of 1-1/4 inches so that the face provides the obstruction that would have been provided by the half-circle projections. See [Figure 13.2](#).

Figure 13.1
Slot location and face size

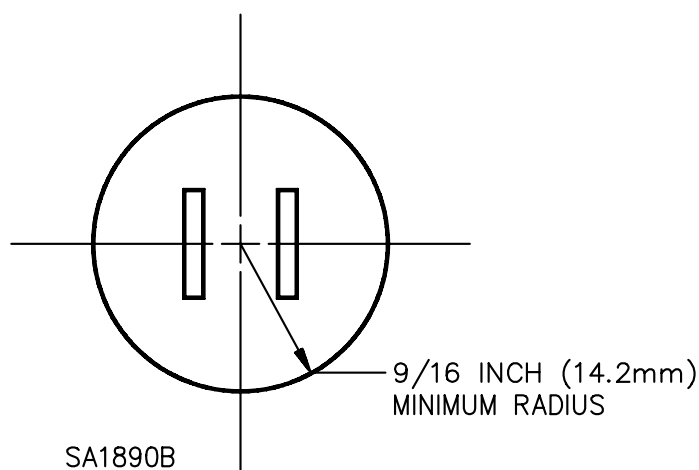
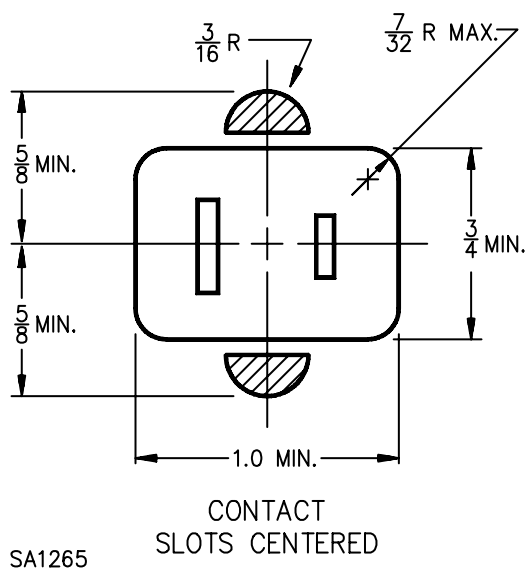


Figure 13.2
Face dimensions
All dimensions are in inches



inch	3/16	7/32	5/8	3/4	1
mm	4.8	5.6	15.9	19.0	25.4

13.3.6 An attachment plug, a power inlet, or a load fitting employed in a seasonal product shall be rated in accordance with [Table 13.2](#). A current tap shall be rated 15 A.