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

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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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OCTOBER 26, 2015
(Title Page Reprinted: December 5, 2024)

ANSI/UL 588-2024

UL 588

Standard for Seasonal and Holiday Decorative Products

The First through Seventeenth Editions were titled Christmas-Tree and Decorative-Lighting Outfits.

Thirteenth Edition – November, 1974
Fourteenth Edition – April, 1980
Fifteenth Edition – January, 1986
Sixteenth Edition – October, 1990
Seventeenth Edition – January, 1996
Eighteenth Edition – August, 2000

Nineteenth Edition

October 26, 2015

This ANSI/UL Standard for Safety consists of the Nineteenth Edition including revisions through December 5, 2024.

The most recent designation of ANSI/UL 588 as an American National Standard (ANSI) occurred on December 5, 2024. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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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.

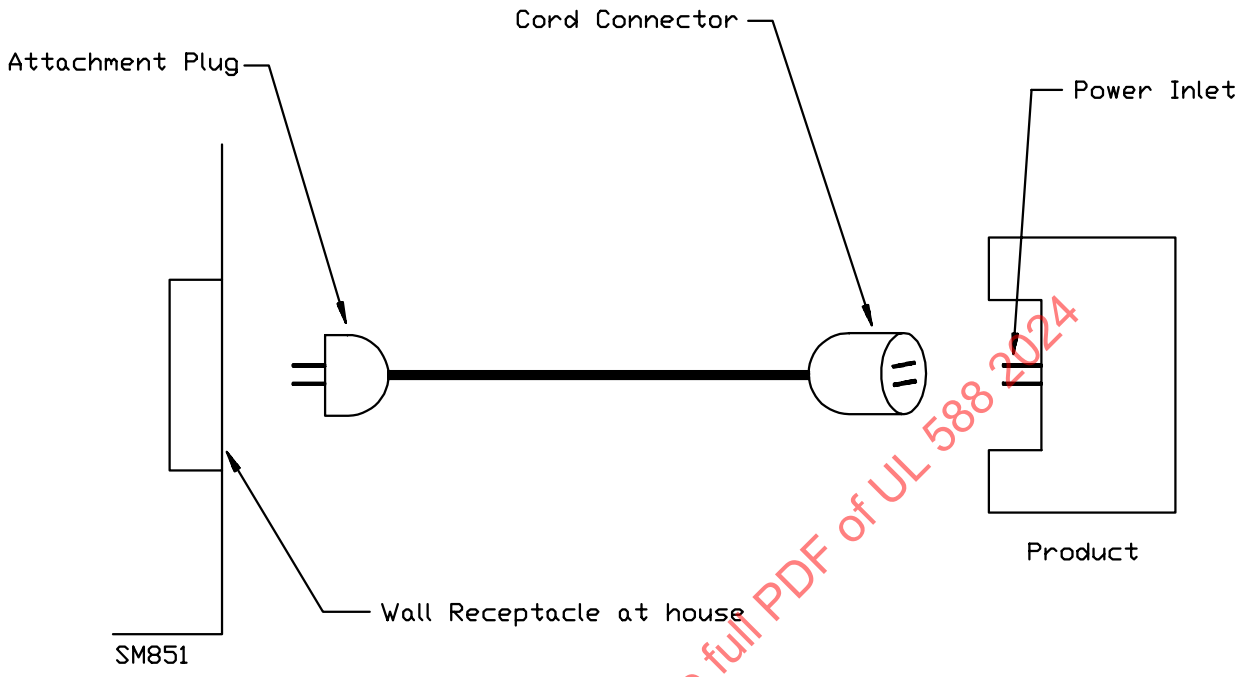
2 Glossary

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	
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 mm^2) 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 mm^2) 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)

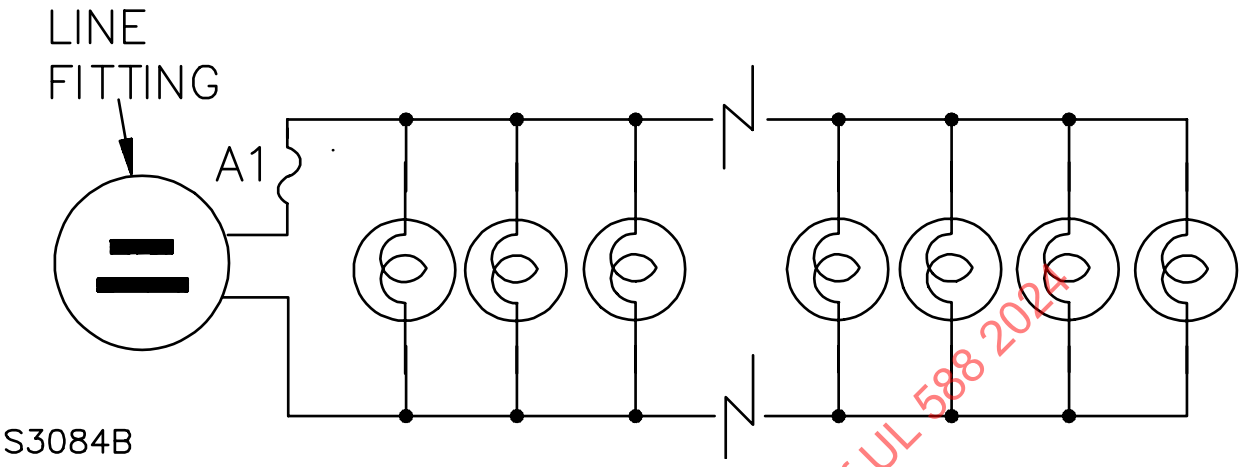


Figure 7.2

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

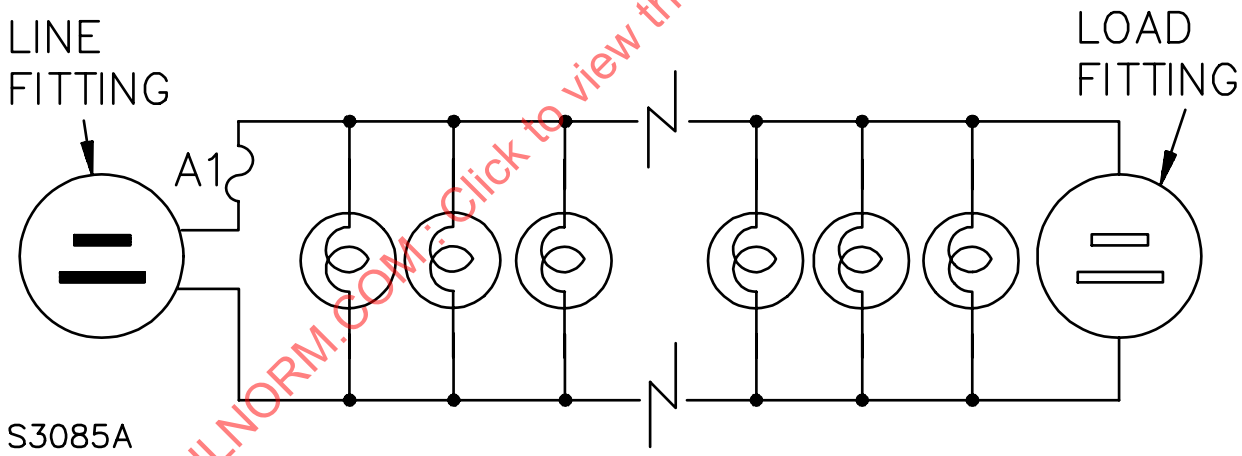


Figure 7.3

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

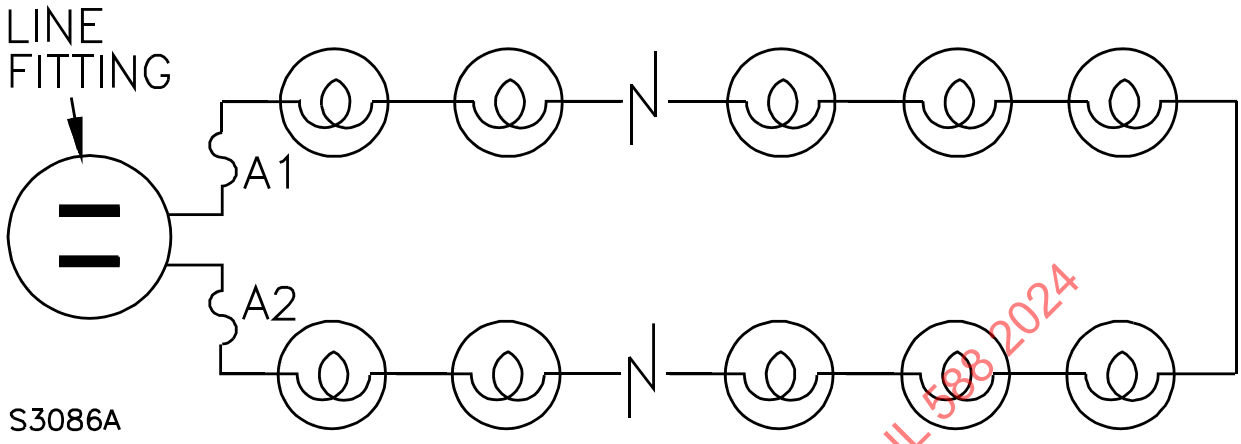


Figure 7.4

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

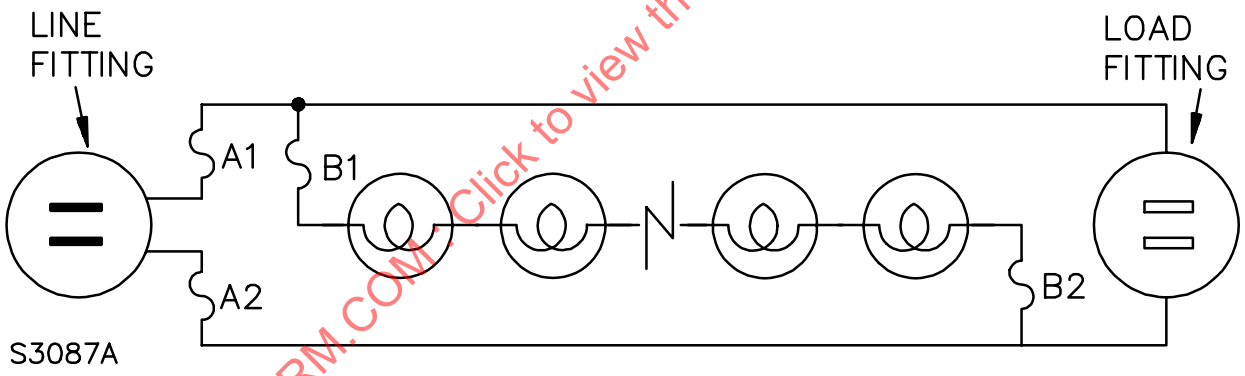


Figure 7.5

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

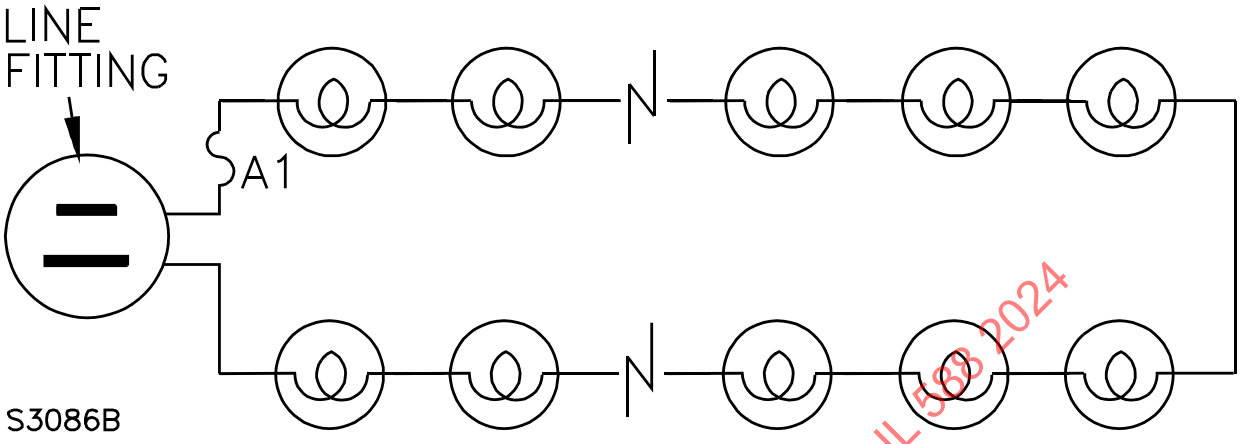


Figure 7.6

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

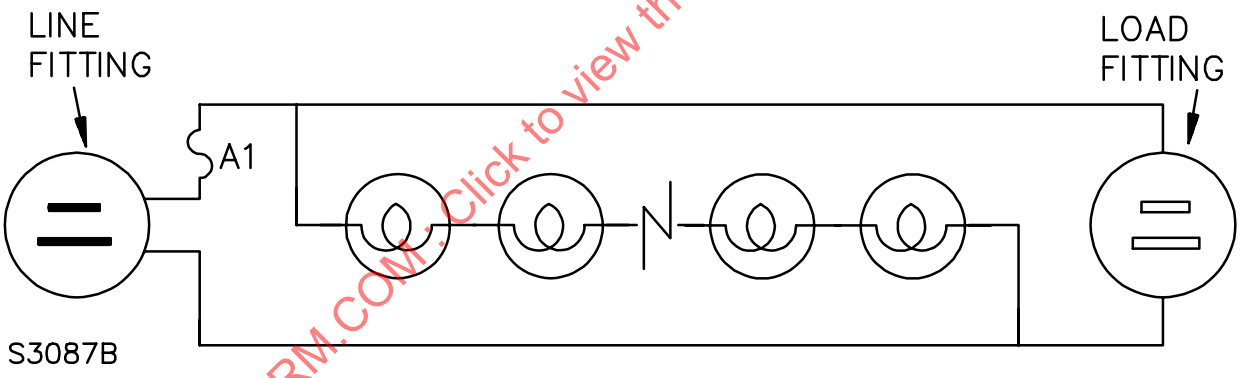


Figure 7.7

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

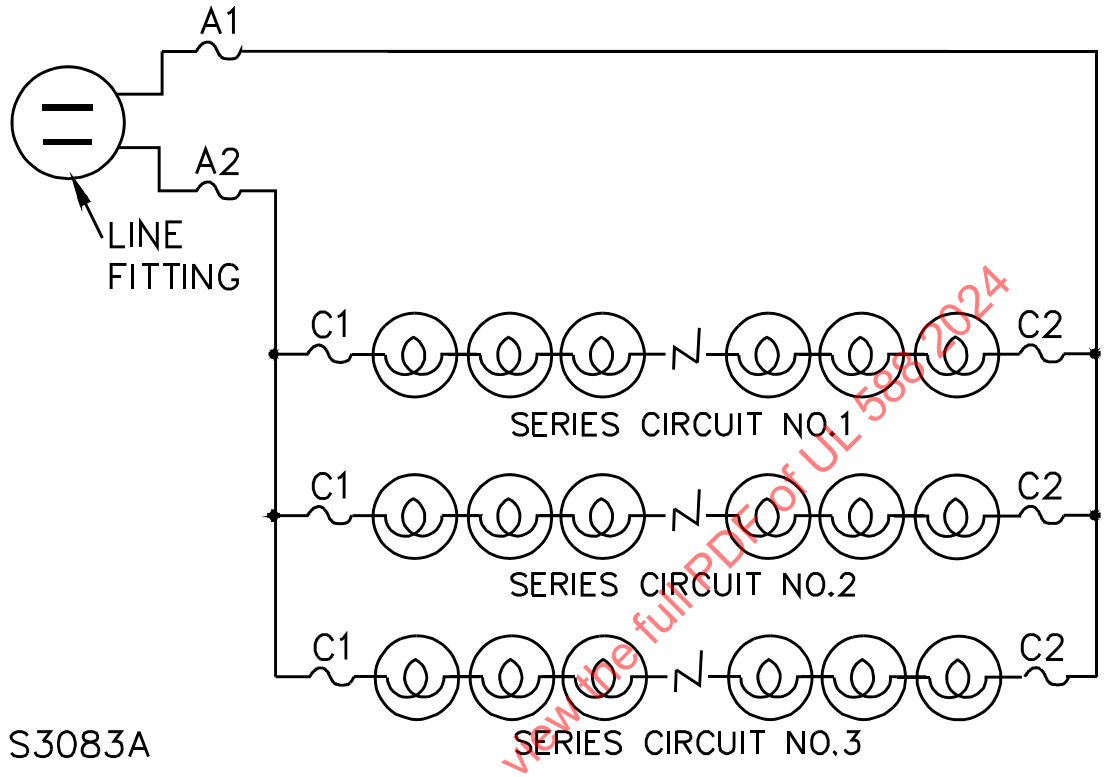


Figure 7.8

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

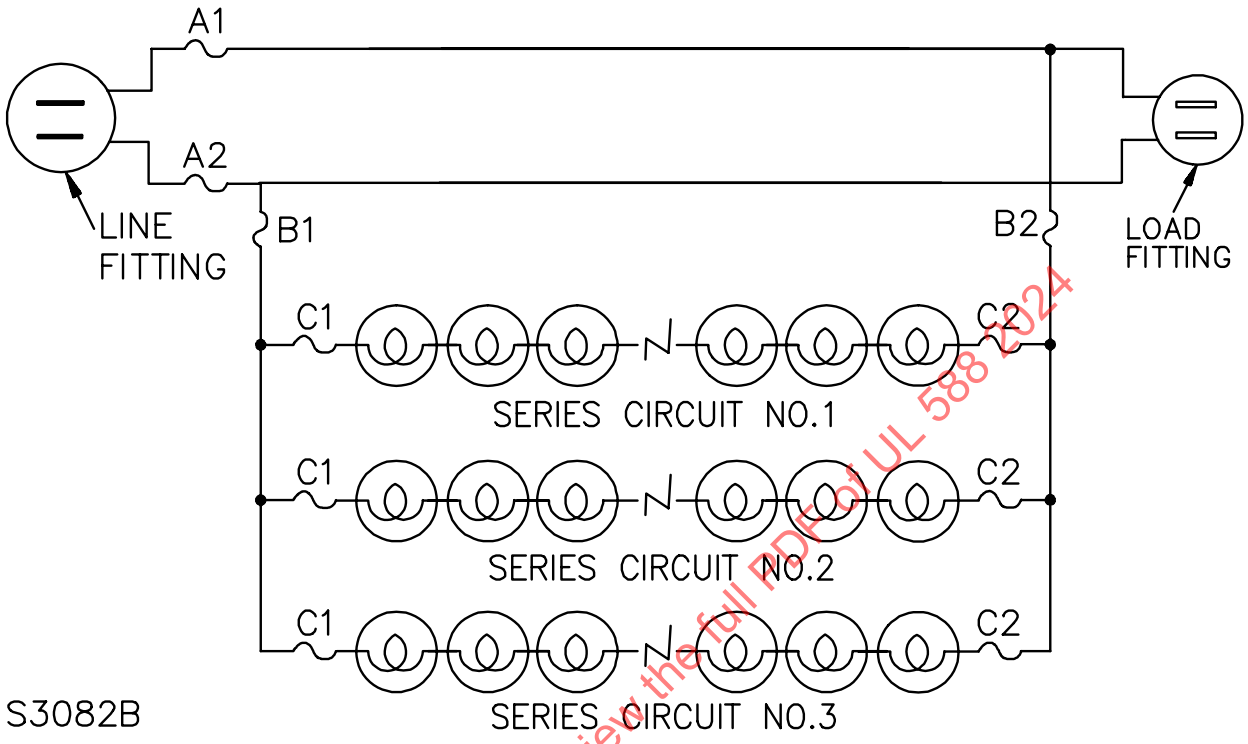


Figure 7.9

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

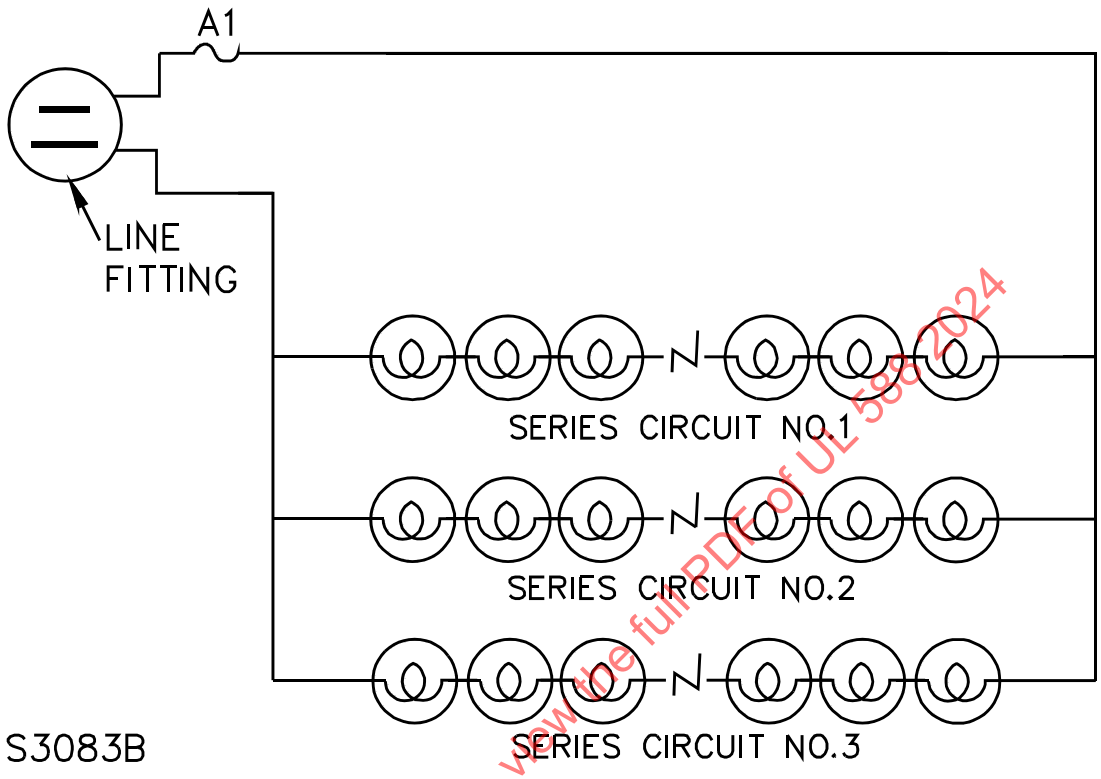


Figure 7.10

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

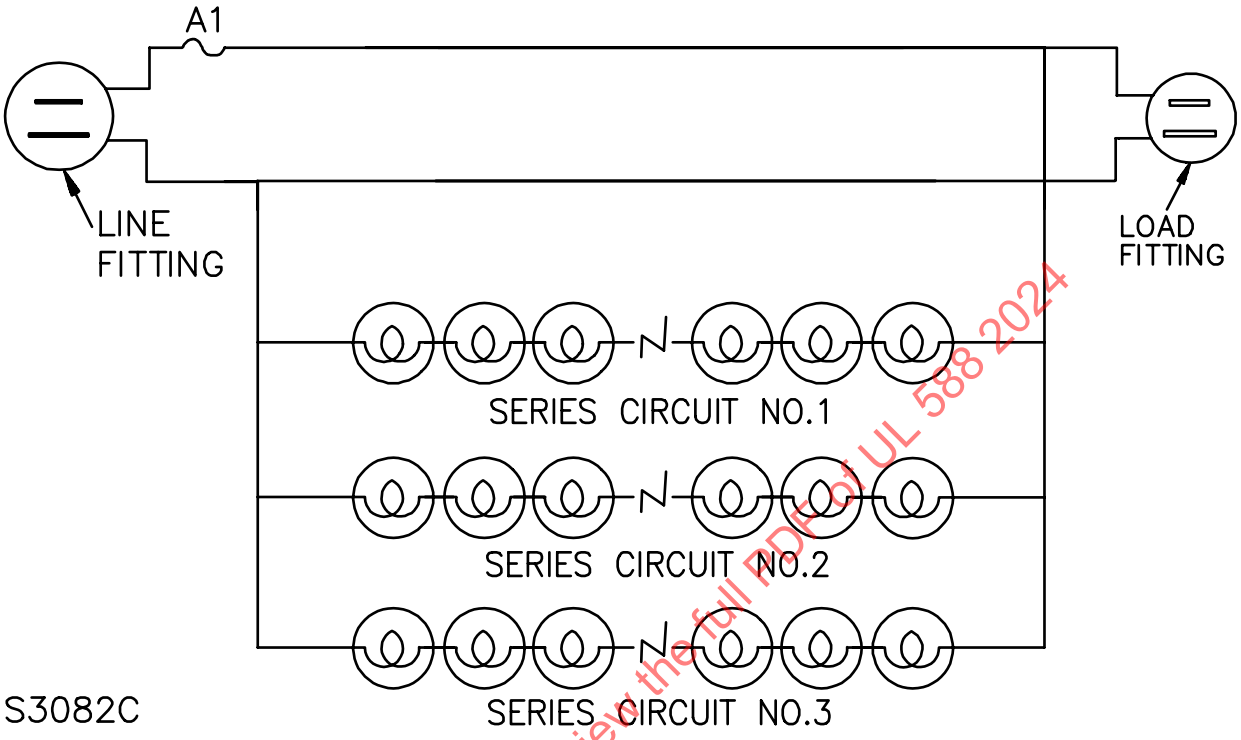


Figure 7.11

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

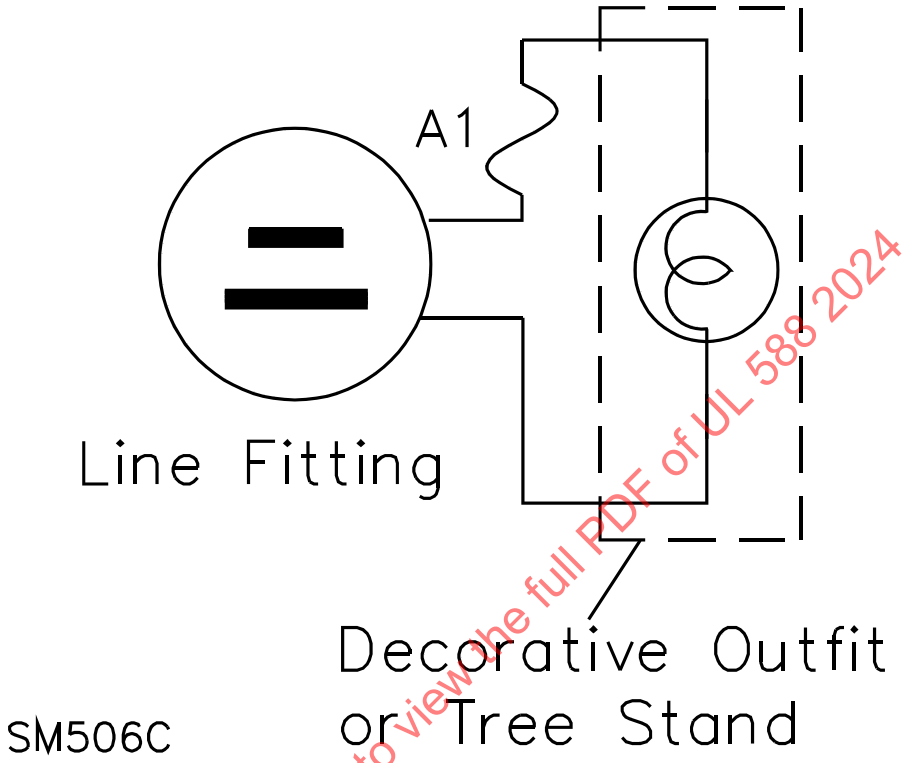


Figure 7.12

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

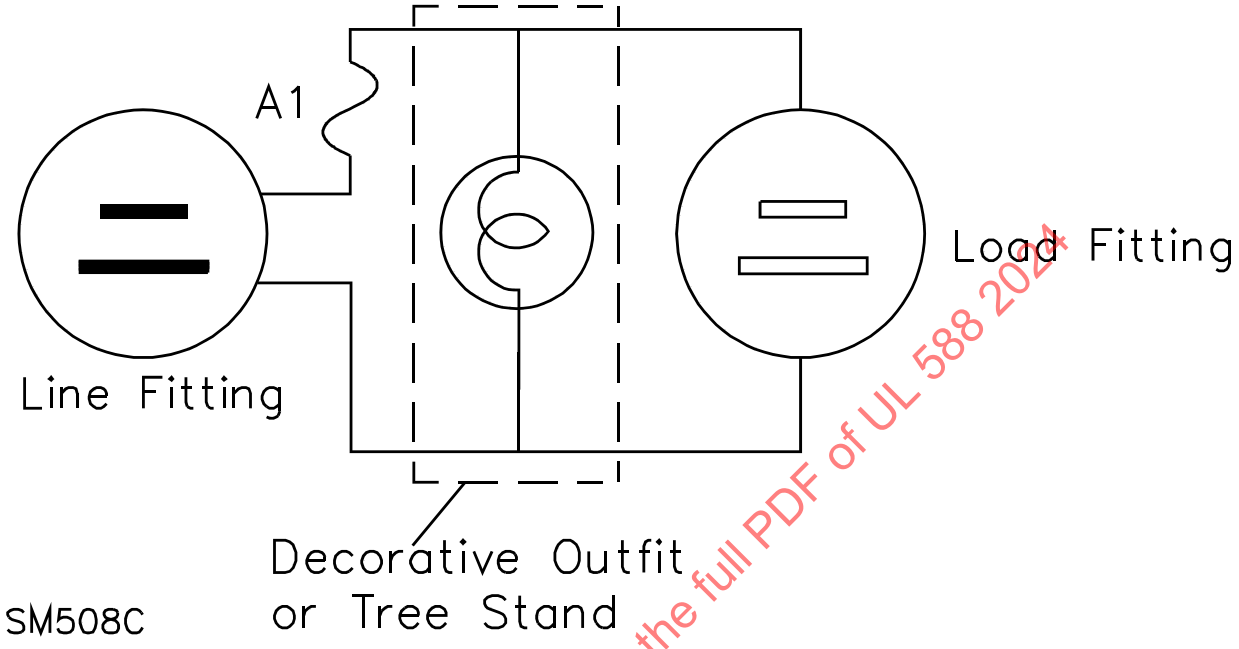


Figure 7.13

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

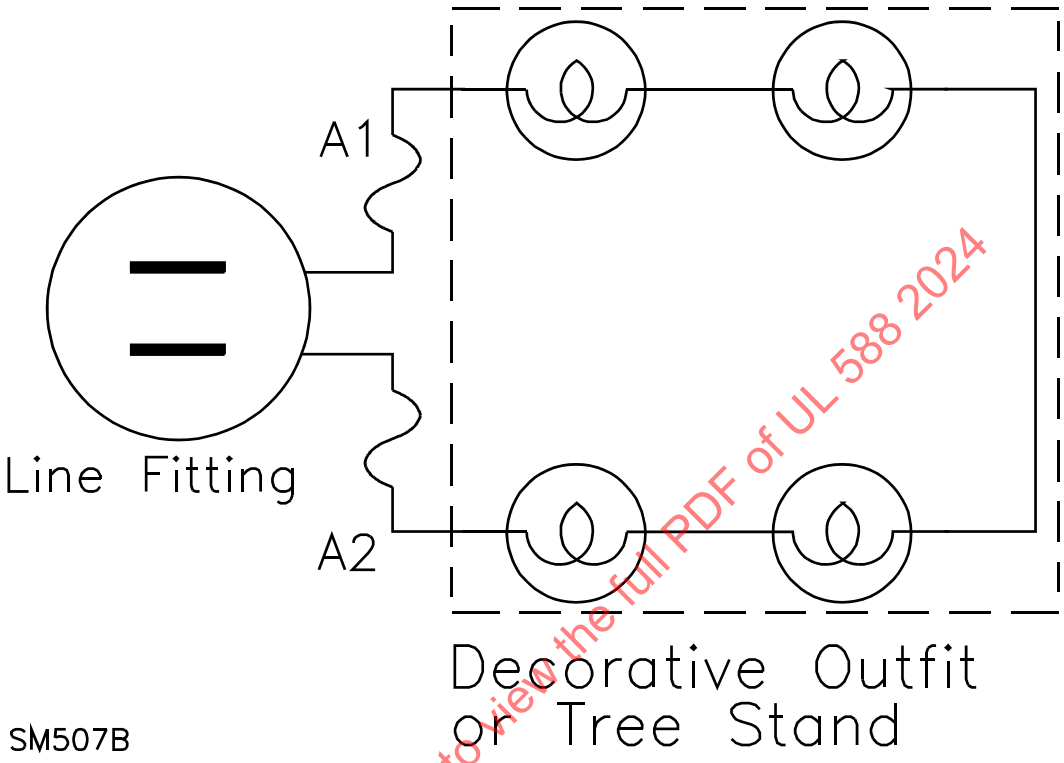


Figure 7.14

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

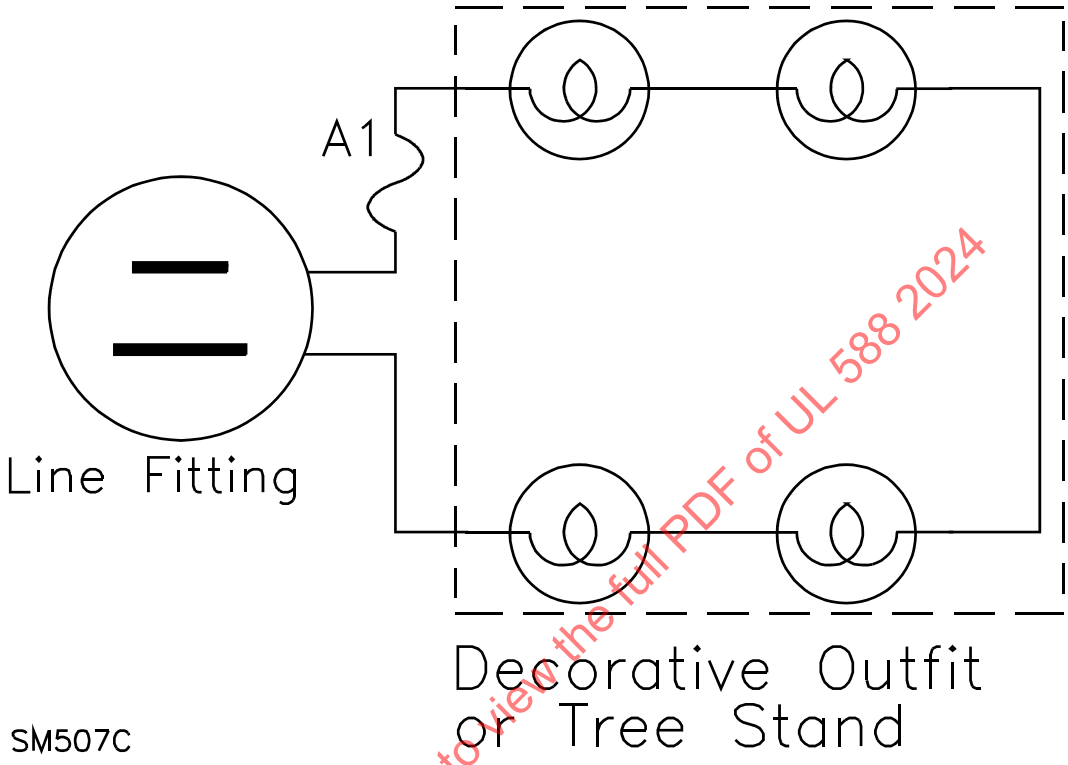


Figure 7.15

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

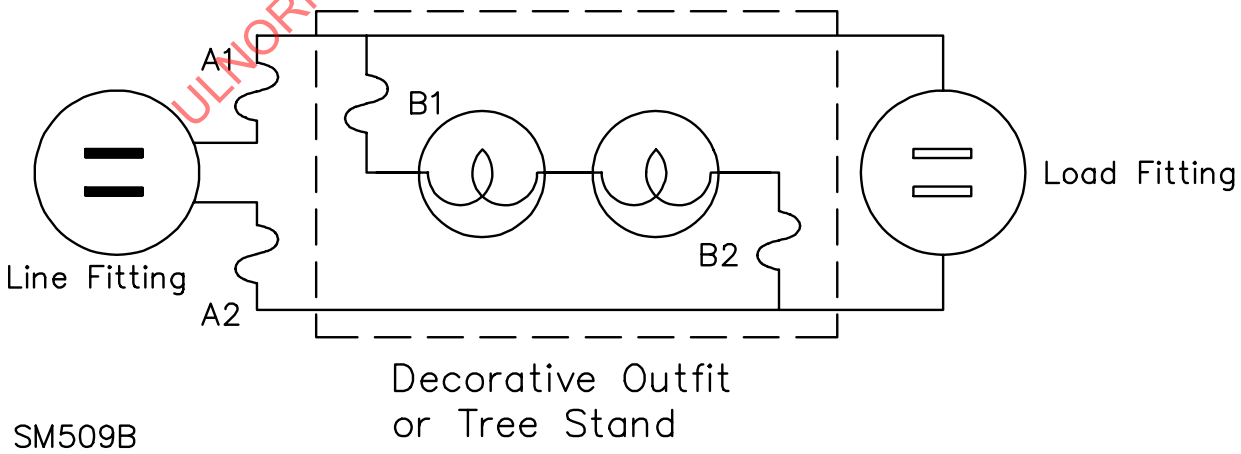
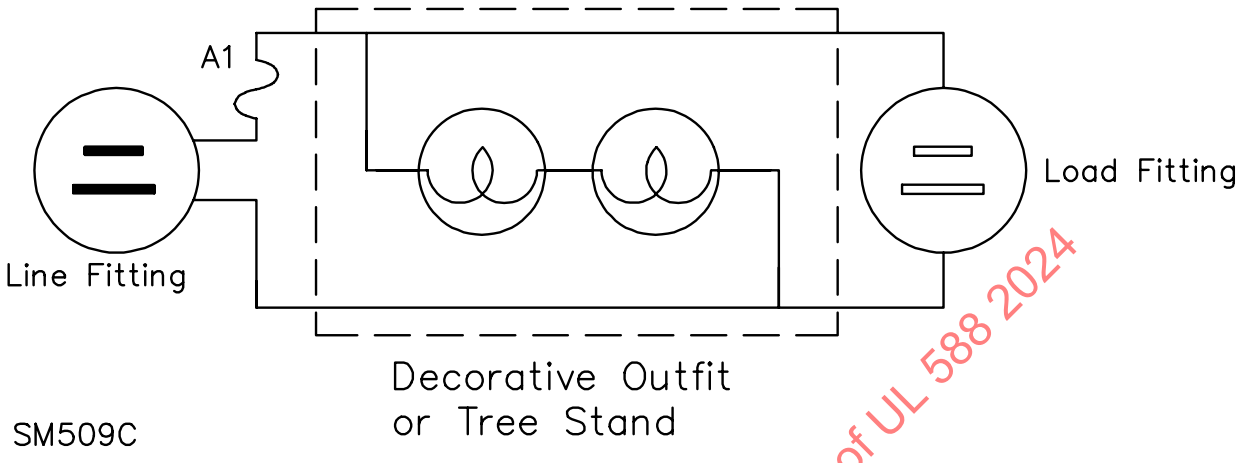


Figure 7.16

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



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.

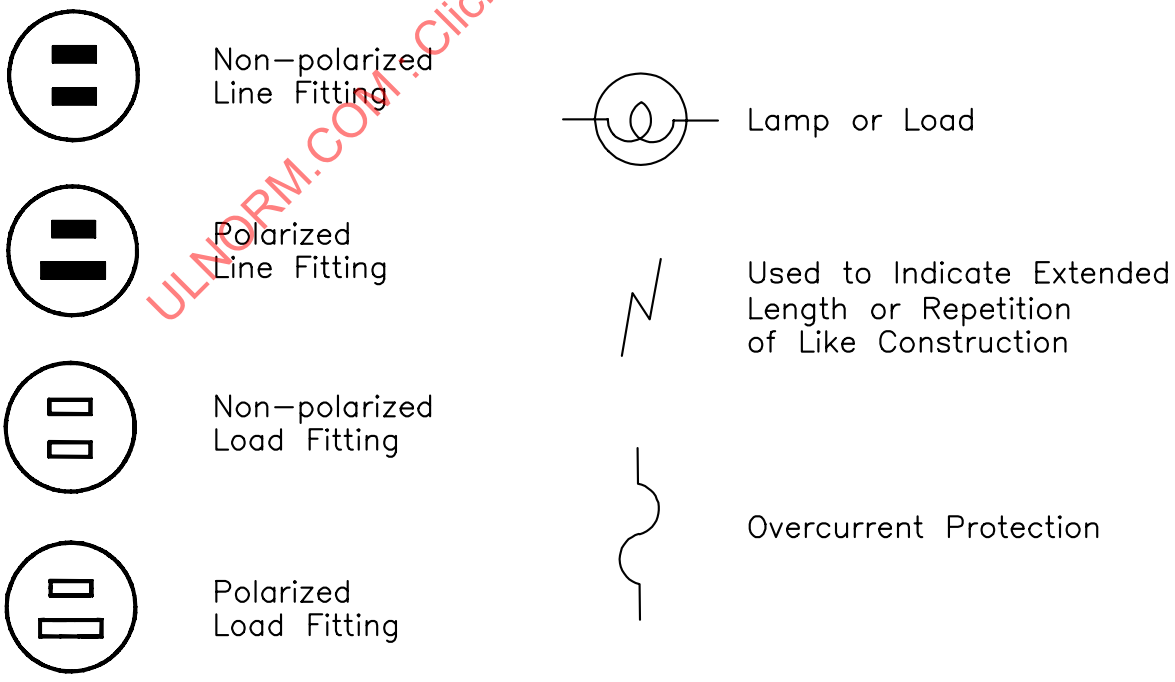
3. If wire of varying gauge size is used, fuses B1 and B2 or C1 and C2 shall be provided and rated in accordance with Table 6.1 and Table 6.2.

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:



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-shorting 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.