

UL 542

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Lampholders, Starters, and Starter Holders for Fluorescent Lamps





Underwriters Laboratories Inc.®

A not-for-profit organization dedicated to public safety
and committed to quality service

September 28, 1994

Standard for

Lampholders, Starters, and Starter Holders for Fluorescent Lamps

UL 542, Seventh Edition

Accompanying this transmittal notice is a copy of the Seventh edition of UL 542.

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1

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CONTENTS**FOREWORD****INTRODUCTION**

1 Scope	7
2 Components	7
3 References	7
4 Units of Measurement	7

AUTOMATIC STARTERS**CONSTRUCTION**

5 General	8
6 Mechanical Assembly	8
7 Enclosure	8
8 Electrical Assembly	8
9 Spacings	9

PERFORMANCE

10 Endurance Test	9
11 Deactivated-Lamp Test	10
12 Dielectric Voltage-Withstand Test	10

MARKINGS

13 Details	11
------------------	----

MANUAL STARTERS**CONSTRUCTION**

14 General	11
15 Enclosure	11
16 Bases and Bodies	13
17 Sealing	13
18 Live Parts	13
19 Actuating Members	15
20 Assembly	15

PERFORMANCE

21 General	15
22 Endurance Test	16
23 Dielectric Voltage-Withstand Test	16

RATINGS

24 Details	16
------------------	----

MARKINGS

25 Details	16
------------------	----

LAMPHOLDERS AND STARTER HOLDERS**CONSTRUCTION**

26 General	17
27 Enclosure and Insulating Materials	17
28 Electrical Assembly and Spacings	19

PERFORMANCE

29 Dielectric Voltage-Withstand Test	21
--	----

RATINGS

30 Details	21
------------------	----

MARKINGS

31 Details	22
------------------	----

MANUFACTURING AND PRODUCTION TESTS

32 Production-Line Dielectric Voltage-Withstand Test	22
--	----

MARKINGS

33 All Devices	23
----------------------	----

**SUPPLEMENT SA – NAVAL USE LAMPHOLDERS AND STARTER HOLDERS FOR
FLUORESCENT LAMPS****INTRODUCTION**

SA1 Scope	SA1
-----------------	-----

CONSTRUCTION

SA2 General	SA1
SA3 Materials	SA1

PERFORMANCE

SA4 High Temperature Test	SA6
SA5 Dielectric Voltage-Withstand Test	SA6
SA6 Pull Test—Leads	SA6

MARKING

SA7 General	SA6
-------------------	-----



Documents

Document Sharing Hub

FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements cover starters, starter holders, and lampholders intended for use with fluorescent lamps in accordance with the National Electrical Code. Starters for use with simple reactance-type fluorescent-lamp ballasts are intended for use in circuits involving a potential of 125 V maximum. Manual starters incorporating a line switch are rated either 125 or 250 V. Starter holders are for use in circuits involving a maximum of 250 V. Lampholders are intended for use with fluorescent lamps involving a potential of 2500 V or less during either starting or operating conditions.

1.2 These requirements also cover lampholders intended for use with low-pressure sodium lamps.

1.3 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this Standard, and that involves a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this Standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this Standard cannot be judged to comply with this Standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Standard.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.2 A component need not comply with a specific requirement that:

- a) Involves a feature or characteristic not needed in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

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

2.4 Specific components are recognized as being 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 for which they have been recognized.

3 References

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

4 Units of Measurement

4.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

AUTOMATIC STARTERS

CONSTRUCTION

5 General

5.1 An automatic starter is a device that completes the circuit through the lamp filaments and the ballast when the line switch is closed to energize the circuit, and then opens this circuit automatically, after a time delay, to impress voltage across the lamp.

6 Mechanical Assembly

6.1 An automatic starter shall be enclosed so that no live parts are exposed for persons to contact while the starter is installed as intended in a holder, and shall have the strength and rigidity necessary to withstand the abuses to which it is likely to be subjected.

7 Enclosure

7.1 An automatic starter shall be enclosed in a housing that, as measured on the flat surface, shall not be less than 0.010 inch (0.25 mm) thick if of steel, not less than 0.015 inch (0.38 mm) thick if of other metal, and not less than 1/32 inch (0.8 mm) thick if of phenolic composition.

7.2 An enclosure of iron or steel shall be protected against corrosion.

7.3 A metal enclosure shall be lined with insulating material. Fibrous material shall not be less than 0.008 inch (0.20 mm) thick, and mica shall not be less than 0.004 inch (0.10 mm) thick.

Exception: Where permanent spacings of not less than 3/64 inch (1.2 mm) are maintained between uninsulated live parts and a metal enclosure, the liner need not be provided.

7.4 The enclosure may be formed with either:

- a) One hole not more than 1/8 inch (3.2 mm) in diameter or more than 1/8 inch wide if slotted, provided that a lining such as described in 7.3 covers the opening, is securely held in place, and extends at least 1/8 inch beyond the edges of the opening on all sides; or
- b) One hole that is not larger than 1/8 inch in diameter, provided that only a glass-enclosed glow switch, either with or without a parallel-connected capacitor, is housed.

8 Electrical Assembly

8.1 A current-carrying part shall be of brass, copper, or other metal acceptable for the particular application.

8.2 The requirement in 8.1 does not preclude the use of iron or steel in bimetallic parts and otherwise if such parts are necessary for the proper operation of an automatic starter in accordance with its intended use.

8.3 An uninsulated live part shall be permanently mounted and secured in place so that there can be no turning or shifting in position that would result in any reduction of the spacing required in 9.1.

8.4 Phenolic composition or the equivalent not less than 1/32 inch (0.8 mm) thick may be used for the mounting of live parts; but fiber is not acceptable.

9 Spacings

9.1 A spacing of not less than 3/64 inch (1.2 mm) shall be maintained between live parts and a metal enclosure.

PERFORMANCE

10 Endurance Test

10.1 An automatic starter shall control a circuit that consists of ballasts and lamps of the type for which the starter is intended when subjected to an endurance test of 6000 cycles of operation.

10.2 The lamp and ballast are to have characteristics that result in the preheat current and the ballast output voltage shown in Table 10.1.

Table 10.1
Ballast output voltage and preheat current

Rating of lamp in watts	Nominal diameter of lamp	Nominal length of lamp	Minimum output voltage of ballast in volts	Minimum and maximum preheat current in amperes
	Inches (mm)	Inches (mm)		
4	5/8 (16)	6 (150)	118	0.16–0.25
6	5/8 (16)	9 (230)	118	0.16–0.25
8	5/8 (16)	12 (305)	118	0.16–0.25
14	1-1/2 (38)	15 (380)	118	0.44–0.65
15	1 (25)	18 (460)	118	0.44–0.65
15	1-1/2 (38)	18 (460)	118	0.44–0.65
20	1-1/2 (38)	24 (610)	118	0.44–0.65
22	1-1/8 (29)	8-1/4 ^a (210)	118	0.50–0.70
25	1-1/2 (38)	33 (840)	118	0.45–0.85
30	1 (25)	36 (915)	200	0.40–0.65
32	1-1/4 (32)	12 ^a (305)	150	0.55–0.75
40	1-1/2 (38)	48 (1220)	200	0.55–0.75
90	2-1/8 (54)	60 (1520)	150	1.45–2.20

^a For a circular lamp consider this dimension to be the outside diameter.

10.3 To determine whether an automatic starter switch complies with the requirement in 10.1, six samples are to be tested with lamps as specified, and using two-lamp, high-power-factor ballasts if commercially available. A starting compensator is to be used if and as specified by the manufacturer of the ballasts.