

## STANDARD INFORMATION

**Standard Number:** UL 1993  
**Standard Name:** Self-Ballasted Lamps and Lamp Adapters  
**Standard Edition and Issue Date:** 5<sup>th</sup> Edition Dated January 27, 2017  
**Date of Revision:** August 6, 2018  
**Date of Previous Revision of Standard:** May 10, 2017

## EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

**Effective Date:** **April 30, 2019**

## IMPACT, OVERVIEW, AND ACTION REQUIRED

**Impact Statement:** A review of all Listing Reports listed to the 5<sup>th</sup> edition is necessary to determine which products comply with new/revise requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revise requirements.

**Overview of Changes:** Addition of Risk of Electric Shock Re-Lamping Test To Supplement SC. Specific details of new/revise requirements are found in table below.

**If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).**

### Client Action Required:

**Information** – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revise paragraphs noted in the attached or explain why these new/revise requirements do not apply to your product (s).

***Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.***



## STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
<p><i>Additions to existing requirements are <u>underlined</u> and deletions are shown <del>lined out</del> below.</i></p>		
Supplement SA	Info	<b>SUPPLEMENTAL REQUIREMENTS FOR LIGHT-EMITTING DIODES (LED)</b>
SA8	Info	<b>Tests</b>
SA 8.19	Info	<b>Risk of electric shock – relamping</b>
SA8.19.1		<p><u>Devices substituting for double-ended or U-bend</u> <del>As specified in Clause 6.13.2, Devices substituting for linear</del> fluorescent lamps shall be evaluated for a possible risk of electric shock while installing, removing, or replacing the LED lamp device.</p> <p><u>NOTE: LED lamps replacing U-bend T8 - T12 fluorescent lamps are included here because, due to the distance between their lamp bases, one base can be seated in a lampholder while the other base is accessible to contact.</u></p>
SA8.19.2		<p>One end (lamp base) of the device under test shall be connected to its intended source of supply while the other end (lamp base) of the device shall be considered accessible and shall be connected to the shock hazard measurement meter circuit and, in turn, to earth ground as shown in Figure SA8.1. <u>The test shall be conducted using two methods, in turn, that simulate likely contact scenarios. Each lamp device end (base) shall also be tested in turn. In all cases, the highest measurement shall <del>current shall</del> not exceed 5 M.I.U. RMS:MIU (7.07 peak M.I.U.).</u></p> <p>a) <u>Method A - Contact during insertion into a live circuit. The supply source shall be energized with no lamp in the circuit. One end (base) of the device shall then be connected to the supply source while the other end (base) is connected to the shock hazard measurement meter circuit. Readings shall be monitored for 30 seconds, starting immediately after device connection (insertion). The highest reading shall be recorded.</u></p> <p>b) <u>Method B - Contact during removal from a live circuit. The supply source shall be energized with the device in the circuit. One end (base) of the device shall then be disconnected from its lampholder and connected to the shock hazard measurement meter circuit. Readings shall be monitored for 30 seconds, starting at 1 second after disconnection (removal) from the lampholder. The highest reading shall be recorded.</u></p> <p><u>NOTE: A test may be terminated before 30 seconds if non-compliant measurements are recorded.</u></p>

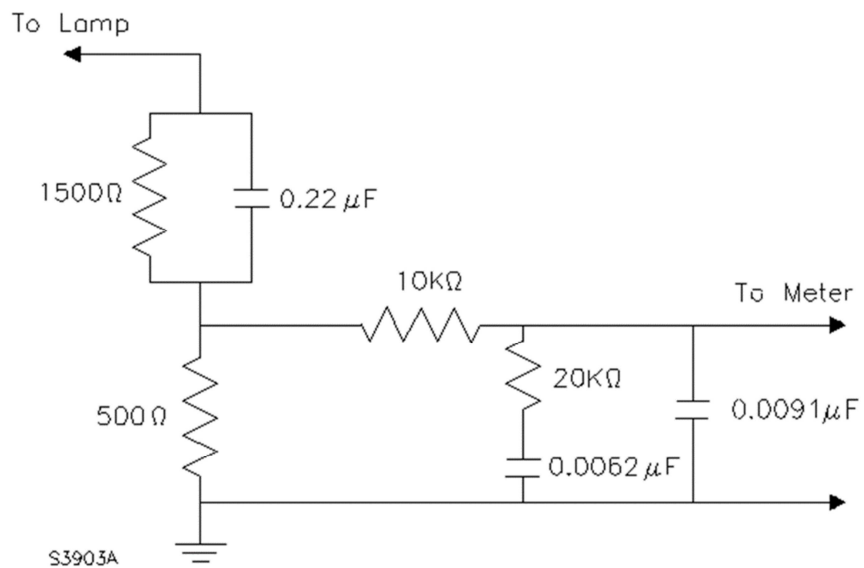


CLAUSE	VERDICT	COMMENT
SA8.19.3		The construction of the shock hazard measurement meter circuit, meter, and the explanation of M.I.U. measurement unit are described in UL 935. <u>The shock hazard measurement meter circuit is the let-go response network shown in Figure SA8.1.1.</u>

***New figure added;***

**Let-go Response Network**

Figure SA8.1.1



During the measurement, any externally accessible mechanical interlock mechanism intended to prevent current from flowing through the lamp during its insertion or removal shall be defeated. However, an interlock mechanism located on the free end of the lamp under test is allowed to operate normally if it meets all the following criteria:

SA8.19.4

- a) Actuators shall be located only on the face of the lamp bases and have a normally-open, momentary-type action so that they automatically engage and disengage when the lamp is inserted or removed from the luminaire, respectively;
- b) Actuators shall require a force of no more than 4.45 N (1 lbf) to recess completely into the lamp base so that they are flush with the lamp base surface;
- c) The actuator shall be made from or externally encapsulated by an insulating material that complies with the requirements for at least basic insulation;
- d) The actuator shall be shaped and located to reduce the likelihood of accidental engagement by an end user during lamp insertion into or removal from an energized luminaire. The actuator is considered to comply with this requirement if it cannot be engaged by a 50.8 mm (2 inch) diameter rigid sphere regardless of how it contacts the lamp, see Figure SA8.2; and
- e) The interlock mechanism shall endure 500 actuation cycles under its intended electrical load without resulting in mechanical or electrical damage to the lamp or mechanism.



CLAUSE	VERDICT	COMMENT
Supplement SC	Info	<b>ADDITIONAL REQUIREMENTS FOR LED LAMPS AND FLUORESCENT LAMP ADAPTERS INTENDED AS DIRECT REPLACEMENTS FOR FLUORESCENT LAMPS</b>
SC4	Info	<b>Tests</b>

**Test plan summary**

Test description	Reference	Number and description of samples <sup>a</sup>
Risk of Shock Relamping – Type A lamps	SC4.5	One sample of each double-ended or U-bend lamp.

<sup>a</sup> This table is a summary of test samples typically needed. Actual number of samples may vary where agreeable to all parties concerned.  
<sup>b</sup> The sample shall be powered from a reference ballast, see Clauses SC4.1.2 and SC4.1.3.  
<sup>c</sup> The reference ballast shall be powered from a supply source isolated from both the branch circuit and ground.  
<sup>d</sup> Since this device is intended to operate separately from the existing fluorescent ballast, this abnormal test applies to both LED lamps and fluorescent lamp adapters.

Table SC4.1

***New section added;***

SC4.5

**Risk of electric shock – Relamping – Type A lamps**

SC4.5.1

The test described in clause SA8.19 shall be conducted on all devices intended as direct replacements for double-ended or U-bend fluorescent lamps, as modified by this clause. The mechanical interlock requirements in SA8.19.4 are applicable to this test.

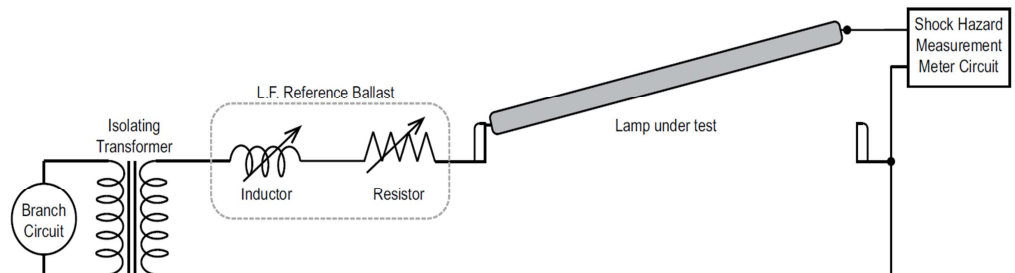
SC4.5.2

When testing direct replacement (e.g.: Type A) lamps, the supply source shall be a 60 Hz reference ballast that is compliant with all pertinent requirements of ANSI/NEMA C82.3, the Standard for Reference Ballasts for Fluorescent Lamps. The reference ballast shall be powered from an isolated supply source. Prior to testing, the reference ballast shall be adjusted for the voltage, current and power characteristics of the target lamp. For double-ended fluorescent lamps, these characteristics can be found in ANSI\_ANSLG C78.81 or IEC 60081. Refer to Figure SC4.5.2 for the test setup.

***New figure added;***

**Risk of electric shock measurements-Direct Replacement Lamps**

Figure SC4.5.2





CLAUSE	VERDICT	COMMENT
		CUSTOMERS PLEASE NOTE: This Table and column “Verdict” can be used in determining how your current or future production is or will be in compliance with new/revised requirements.