5.2.18 Switched GU24 Lampholder Test

5.2.18.1 The switching mechanism of a GU24 lampholder shall comply with the Screw Base Switched Lampholder test of Clause 5.2.5 or 5.2.6 with the following modifications for the switched AC/DC test of 5.2.5:

a) the load connection described in Clause 5.2.5.1.4 shall be made to the contacts of the GU24 holder. Figure 6 is not applicable.

b) referring to Clause 5.2.5.1.5, the switching mechanism shall be tested using a tungsten-filament lamp load or the equivalent. Clause 5.2.5.3.2 is not applicable.

c) the overload test shall be conducted as described in Clause 5.2.5.2.1 except that the switching mechanism shall make and break a circuit that results in 150 percent of the lampholder's rated wattage at rated voltage. Table 15 is not applicable.

d) the endurance test shall be conducted as described in Clause 5.2.5.3.1 except that the switching mechanism shall make and break a circuit that results in the lampholder's rated wattage at rated voltage. Table 16 is not applicable.

6 Ratings

6.1 Screw Lampholders

6.1.1 A screw lampholder shall be rated in accordance with Table 18.

6.1.2 A combination device employing a medium-screwshell (male or female) and parallel or tandem blades or slots shall be rated in accordance with Table 19.

6.1.3 A lampholder of the dimmer or regulating type shall be rated in watts and volts in accordance with test performance. See Clause 6.1.5.

6.1.4 A lampholder adapter consisting of parallel attachment plug blades assembled to a candelabra-screw lampholder may be marked with a wattage rating less than 75 W in conjunction with the 125 V rating. If the adapter employs a switching mechanism, the test circuit values for the overload and endurance tests shall be as indicated for candelabra-screw lampholders in Tables 15 and 16, respectively.

6.1.5 A medium-screw lampholder of the dimmer or regulating type shall be rated at not less than 150 W and not less than 120 V ac or 125 V dc.

6.2 Lampholders Other Than Screw-Type

6.2.1 The ratings of lampholders other than screw-type shall be in accordance with Table 20.

6.2.2 Single-based fluorescent lampholders not covered by Table 20 shall be rated 250 V or 600 V. The lampholder marked wattage rating shall not be less than the lamp it is intended to accommodate.

Note: For applicable lamp-base wattage rating see NEMA C78.901.

7 Markings

7.1 General

7.1.1 A lampholder shall be plainly and permanently marked with:

a) the manufacturer's name, trade name, trademark, or other distinctive marking by which the organization responsible for the product may be identified;

b) a distinctive catalog number or the equivalent; and

c) the electrical rating.

Note: When the catalog number is not marked on the lampholder, it should appear on the carton or other container in which the device is packaged.

7.1.2 For a screw lampholder, the electrical rating and other marking of the lampholder shall not appear on the extension plaster ears, whether separate pieces or integral with the mounting means, unless the marking and rating also appear elsewhere on the device.

7.1.3 The manufacturer's name, trade name, trademark, or other distinctive marking and, if practicable, the rating of a lampholder shall be visible after installation.

7.1.4 A lampholder that has an integral flush plate or outlet-box cover of insulating material may be marked on the inside of the plate or cover.

7.1.5 An open-rated EX26 or EX39 screw lampholder shall be marked "Type O", "Open Rated", or shall have another distinctive marking, shape, or color to differentiate it from a non-open-rated lampholder.

7.1.6 A surface-type lampholder may be marked on the inside of the insulating cover or on the side of the base that is exposed when the cover is removed.

7.1.7 The rating on a glazed porcelain lampholder may be located such that it can be made visible after installation by removing the body or shell without disconnecting any wires; if practicable, the marking shall be visible after installation without disassembling any parts of the device.

7.1.8 A lampholder for use in a luminaire canopy may be marked such that the marking will be readily visible upon removing the canopy.

7.1.9 A lampholder provided with push-in terminals shall be plainly and permanently marked with the proper strip length of conductors.

7.2 Permanence

7.2.1 Markings required by this standard shall be permanent and shall be molded, die-stamped, paint-stenciled, stamped, or etched metal that is permanently secured or indelibly stamped lettering on a pressure-sensitive label secured by an adhesive that, upon investigation, is found to be acceptable for the application. Ordinary usage, handling, storage, operating temperatures, and the like shall be considered in the determination of the permanence of a marking.

7.2.2 Unless it has been investigated and found to be acceptable for the application, a pressure-sensitive label or a label that is secured by an adhesive and that is required to be permanent shall comply with UL 969 and CSA C22.2 No. 0.15.

7.3 Lampholders for Factory Assembly

7.3.1 A lampholder provided with solder terminals that are intended for factory assembly into overall equipment shall contain the following information on each carton:

a) “For factory assembly into portable luminaires or appliances only”;

b) the appropriate conductor sizes; and

c) the proper strip length of conductors.

7.3.2 A screw lampholder employing insulation-piercing terminals intended for use with Type SP, SPE, or SPT flexible cord (see Clause 4.8.3) shall have the smallest unit shipping container or a stuffer sheet provided with the container marked with the following information:

a) “For factory assembly into portable luminaires”;

b) the appropriate conductor size and flexible cord-type, and that a minimum 105 °C (221 °F) flexible cord is required;

c) whether supplemental strain relief is required, in accordance with Clause 5.2.15.3.3; and

d) all necessary instructions for assembly, including polarization.

7.3.3 A lampholder provided with push-in terminals shall contain the following information on each carton:

a) “For factory assembly into portable luminaires”;

b) the appropriate conductor sizes and types;

c) the proper strip length of conductors; and

d) “Use copper conductors only”.

7.4 Details

7.4.1 A lampholder that complies with the requirements of Clause 4.11 shall be marked with either of the following, as applicable:

a) "FOR USE IN DRY OR DAMP LOCATIONS" for a lampholder that complies with the requirements for lampholders intended for use in damp locations; or

b) "FOR USE IN DRY, DAMP OR WET LOCATIONS" for a lampholder that complies with the requirements for lampholders intended for use in damp or wet locations.

7.4.2 A medium-screw lampholder rated 660 W or less that is not marked "CO/ALR" and that has provisions for mounting to a standard outlet-box shall be marked as indicated in Clause 7.4.3. This requirement applies only to devices intended for installation in a branch circuit that employ one or more of the following means for wire securement:

a) wire-binding screws;

b) back-wired pressure plates; or

c) push-in terminals.

7.4.3 The devices mentioned in Clause 7.4.2 shall be marked with one of the following, or its equivalent:

a) "Notice – Use only copper or copper-clad wire with this device";

b) "Notice – Use only devices marked CO/ALR with aluminum wire"; or

c) the symbols illustrated in Figure 12.

7.4.4 The marking in Clause 7.4.3 shall be located as follows:

a) For individually packaged devices, the marking shall appear on one of the following:

1) the device;

2) a stuffer sheet; or

3) the device carton.

b) For devices intended for factory assembly, the marking shall be on the device.

7.4.5 If the marking required in Clause 7.4.2 appears on the device, one of the abbreviated markings shown below may be used to indicate that the lampholder is for use with either copper or copper-clad wire. The marking shall be legible, with letters at least 1.6 mm (1/16 in) high:

a) "Use copper wire only";

b) "Cu wire only";

c) "Use copper or copper-clad wire only"; or

d) "Cu and Cu-clad wire only".

7.4.6 A metal-shell lampholder not intended for factory assembly and employing an insulating liner shall be provided with wiring and assembly instructions. These instructions shall include the appropriate conductor sizes, proper preparation of leads (including strip gauge), method of securing conductors to terminals, assembly of outer shell to cap, and other information necessary to make a proper assembly. The instructions shall be provided in one of the following locations:

a) on an individual package or blister-package device; or

b) on a sheet, the number which is equal to the number of devices in the carton, for over-the-counter sales.

7.4.7 A mogul-screw lampholder rated 1500 W or 2000 W and employing leads having an ampacity of 8 A or 11 A, respectively, in accordance with Notes 1 and 2 of Clause 4.8.6.4 shall be marked “Not For Use With Incandescent Lamps” or an equivalent wording.

7.4.8 A pulse-rated lampholder that meets the construction requirements in Clause 4.12, and complies with Clause 5.2.13, shall be marked with the statement “Pulse Rating ___ kV” or equivalent, where the numeric pulse rating of the device, in kilovolts, is filled in.

7.4.9 A lampholder of the type described in Clause 4.5.2.3 shall be marked “Not for residential use” or with an equivalent statement. The marking shall be in letters at least 3.2 mm (1/8 in) high.

7.4.10 An insulating link shall be marked with the manufacturer’s name or trademark and, if practicable, with the catalog number or the equivalent.

7.4.11 Ceiling outlet-box lampholders shall be marked “Min 90 °C supply conductors” on the device or the smallest unit package.

7.5 Temperature Rating

7.5.1 A lampholder that has thermoplastic materials rated greater than the relative thermal index (RTI) as specified in Clause 4.2.2.4.1 may be plainly and permanently marked with a rated operating temperature in the form “HT#”, where # equals the temperature rating in increments of 10 °C (18 °F).

7.5.2 If a lampholder is constructed of more than one thermoplastic material, the marking in Clause 7.5.1 shall not exceed the lowest RTI value of any material used.

Table 1
Pitch of threads
(Clause 4.4.8.1)

Nominal pipe size in inches	Threads per inch (25.4 mm)
1/8	27
1/4	18
3/8	18
1/2	14
3/4	14

Table 2
Probes
(Clause 4.5.1.2 and Figures 1 – 3)

Lampholder types	Probe type	Probe figure no.
Fluorescent lampholders	Rod probe	2 and 3
All other lampholders	Articulate probe	1

Table 3
Minimum screw size and maximum pitch
(Clause 4.8.2.9)

Size of lampholder	Minimum acceptable size of screw	Maximum acceptable number of threads 25.4 mm (1 in)
E39 (mogul)	M4 (8)	32
E29 (Admedium)	M3.5 (6)	36
E26 (Medium)	M3.5 (6)	36
E17 (Intermediate)	M3 (4)	40
E12 (Candelabra)	M2.5 (3)	48
E11 (Mini-can)	M2.5 (3)	48
E10 (Miniature)	M2.5 (3)	48

Table 4
Polarity identification of single-conductor lampholder leads
(Clause 4.8.8.6)

Acceptable combinations		
Identification obtained by	**Wire connected to the screwshells of lampholders (identified wire)**	**All other wires**
Color of braid	A. Solid white or grey (without tracer)	White or grey with tracer in braid or Solid color other than white, grey, or green (without tracer)
	B. Color other than white, grey, or green (with tracer in braid)	Solid color other than white, grey or green (without tracer)
Color of insulation[a]	C. White or grey stripe on contrasting color other than green or solid white or grey (with no stripe)	Solid color other than white, grey or green
Color of separation[a]	D. Solid white or grey	Solid color other than white, grey or green

Table 4 Continued on Next Page

Table 4 Continued

Acceptable combinations		
Identification obtained by	**Wire connected to the screwshells of lampholders (identified wire)**	**All other wires**
Metal coating on conductor[b]	E. Tin or other acceptable metal on all strands of the conductor	No tin or other metal on the strands of the conductor

[a] If color of braid, insulation, or separator is used for identification, all conductors shall be either acceptably metal-coated or not metal-coated.

[b] If an acceptable metal coating is used for identification, all braids and/or insulation shall have the same color and shape.

Table 5
Polarity identification of flexible-cord lampholder leads
(Clause 4.8.8.6)

Acceptable combinations		
Identification obtained by	**Wire connected to the screwshells of lampholders (identified wire)**	**All other wires**
Color of braids on individual conductors	A. Solid white or grey (without tracer) or green (without tracer)	Solid color other than white, grey
	B. Solid white or grey (without tracer)[a]	White or grey with tracer in braid[a]
	C. Color other than white, grey, or green (with tracer in braid)	Solid color other than white, grey, or green (without tracer)
Color of insulation on individual conductors	D. Solid white or grey[b]	Solid color other than white, grey, or green[b]
Color of separators on individual conductors	E. White or grey[c]	Color other than white, grey, green[c]
	F. Tin or other acceptable metal on all strands of the conductor[d]	No tin or other white metal on the strands of the conductor[d]
Other means	G. A stripe, ridge, or groove on the exterior surface of the cord[c]	

[a] Only for Types C and PD cords.

[b] Only for cords (other than Types SP-1, SP-2, and SPT-1, and SPT-2) having no braid on any individual conductor.

[c] Only for Types SP-1, SP-2, and SPT-1, and SPT-2 cords.

[d] Only for Types SPT-1 and SPT-2 cords.

Table 6
Minimum creepage distances and clearances in mm (in)
(Clauses 4.9.9 and 5.1.4.1)

Rating of holder in volts	Holder for wet location use				Holder for dry and damp location use			
	At wiring terminals		At points other than wiring terminals		At wiring terminals		At points other than wiring terminals	
	Clearance through air	Creepage over surface	Clearance through air	Creepage over surface	Clearance through air	Creepage over surface	Clearance through air	Creepage over surface
250	9.5 (3/8)	12.7 (1/2)	9.5 (3/8)	12.7 (1/2)	6.4 (1/4)	6.4 (1/4)	1.2 (3/64)	1.2 (3/64)
300	9.5 (3/8)	12.7 (1/2)	9.5 (3/8)	12.7 (1/2)	6.4 (1/4)	6.4 (1/4)	1.6 (1/16)	1.6 (1/16)
600	9.5 (3/8)	12.7 (1/2)	9.5 (3/8[b])	12.7 (1/2[b])	6.4 (1/4)	6.4 (1/4)	3.2 (1/8)	3.2 (1/8)
1000	9.5 (3/8)	12.7 (1/2)	9.5 (3/8[b])	12.7 (1/2[b])	9.5 (3/8)	12.7 (1/2[a])	9.5 (3/8)	12.7 (1/2)
5000	19.0 (3/4)	19.0 (3/4)	19.0 (3/4)	19.0 (3/4)	19.0 (3/4)	19.0 (3/4)	19.0 (3/4)	19.0 (3/4)
10,000	28 (1-1/32)	28 (1-1/32)	28 (1-1/32)	28 (1-1/32)	28 (1-1/32)	28 (1-1/32)	28 (1-1/32)	28 (1-1/32)
15,000	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)	38 (1-1/2)

Table 6 Continued on Next Page

Table 6 Continued

Rating of holder in volts	Holder for wet location use				Holder for dry and damp location use			
	At wiring terminals		At points other than wiring terminals		At wiring terminals		At points other than wiring terminals	
	Clearance through air	Creepage over surface	Clearance through air	Creepage over surface	Clearance through air	Creepage over surface	Clearance through air	Creepage over surface

[a] This spacing shall not be less than 9.5 mm (3/8 in) if the insulating material involved is porcelain, glass, urea formaldehyde, or other material that is not readily carbonized.

[b] This spacing shall not be less than 4.8 mm (3/16 in) for lampholders for use with pulse-rated lamps.

NOTES:

1. In the case of spacings between live parts and non-current-carrying metal parts that are exposed to contact, but that are not liable to be grounded in service, except at wiring terminals, if the spacing shown in the table is 6.4 mm (1/4 in) or more, it may be reduced to one-half of the value shown or 4.8 mm (3/16 in), whichever is larger, for voltage ratings of 1000 V or less.

2. This reduction in spacings mentioned in Note 1 may also apply to a lampholder rated at more than 1000 V, provided that the lampholder complies with Clause 5.1.4.

3. A lampholder rated 2500 V that complies with the requirements in Clause 4.9.3.

4. For a miniature bipin lampholder rated 75 W, 600 V, the spacing through air and over surface between an uninsulated live part and a dead-metal part shall be measured while a lamp is in place in the holder. The spacing shall also be measured without a lamp in place, unless the lampholder is of a type for which all parts are de-energized in absence of the lamp.

5. A screw lampholder for wet location use need only comply with the creepages and clearances shown for dry and damp locations use, which complies with Clause 5.2.14.5.

6. For a fluorescent lampholder, the spacing between an uninsulated live part, other than a wiring terminal, and a non-current-carrying metal part that is exposed to contact but is not likely to be grounded when the lampholder is installed may be half the value, but not less than 2.4 mm (3/32 in).

7. The 300 V rating applies to GU24 holders (see Table 20).

Table 7
Depth of lamp cavity
(Clause 4.10.2.2 and SA3.5)

Trade size of lampholder	Minimum	Maximum
	mm (in)	mm (in)
E39 (mogul)	41.3 (1-5/8)	42.9 (1-11/16)
E29 (Admedium)	28.6 (1-1/8)	30.2 (1-3/16)
E26 (Medium)	23.8 (15/16)	25.4 (1)
E17 (Intermediate)	19.8 (25/32)	21.4 (27/32)
E12 (Candelabra)	15.9 (5/8)	17.5 (11/16)
E11 (Mini-can)	13.9 (35/64)	15.9 (5/8)
E10 (Miniature)	11.9 (15/32)	13.5 (17/32)

Table 8
Minimum metal thickness of lampholder screwshell
(Clause 4.10.3.5)

Trade size of lampholder and nominal diameter	Copper or copper-alloy screwshell		Aluminum or aluminum-alloy screwshell		Corrosion-resistant steel (stainless) screwshell
	mm	(in)	mm	(in)	
E39 (mogul) 38.1 mm (1-1/2 in)	0.51	(0.020)	0.51	(0.020)	a
E29 (Admedium) 28.6 mm (1-1/8 in)	0.30	(0.012)	0.30	(0.012)	a
E26 (Medium) 25.4 mm (1 in)	0.30	(0.012)	0.38	(0.015)	a
E17 (Intermediate) 16.7 mm (21/32 in)	0.25	(0.010)	0.33	(0.013)	a
E12 (Candelabra) 12.7 mm (1/2 in)	0.25	(0.010)	0.33	(0.013)	a
E11 (Mini-can) 11.1 mm (7/16 in)	0.20	(0.008)	0.28	(0.011)	a
E10 (Miniature) 9.5 mm (3/8 in)	0.20	(0.008)	0.28	(0.011)	a

[a] The minimum thickness of corrosion-resistant steel (stainless) shall be such that the screwshell complies with the remainder of the requirements in this standard.

Table 9
Minimum metal thickness of screw base
(Clause 4.10.3.5)

Base size	Copper-alloy		Aluminum or aluminum-alloy		Corrosion-resistant steel
	mm	(in)	mm	(in)	
E39 (mogul)	0.51	(0.020)	0.51	(0.020)	a
E26 (Medium)	0.20	(0.008)	0.28	(0.011)	a
E17 (Intermediate)	0.20	(0.008)	0.28	(0.011)	a
E12 (Candelabra)	0.20	(0.008)	0.28	(0.011)	a
E11 (Mini-can)	0.20	(0.008)	0.28	(0.011)	a
E10 (Miniature)	0.20	(0.008)	0.28	(0.011)	a

[a] The minimum thickness of corrosion-resistant steel (stainless) shall be such that the screwshell complies with the remainder of the requirements in this standard.

Table 10
Dimensions of center contacts of lampholders
(Clause 4.10.4.1)

Size of lampholder	Minimum diameter of area at tip of center contact, mm (in)
E39 (mogul)	12.7 (1/2)[a]
E26 (Medium)	5.4 (7/32)
E17 (Intermediate)	4.0 (5/32)
E12 (Candelabra)	3.2 (1/8)
E11 (Mini-can)	3.2 (1/8)
E10 (Miniature)	3.2 (1/8)

[a] Does not apply to EP39 (position-oriented) and EX39 (exclusionary) mogul screw lampholders.

Table 11
Minimum thickness of cap metal or shell metal in mm (in)
(Clause 4.10.5.1.3)

Size of lampholder	Sheet brass	Sheet aluminum	Other metal
E39 (mogul)	0.64 (0.025)	0.81 (0.032)	Mechanical strength and rigidity not less than brass
Smaller than mogul	0.33 (0.013)	0.46 (0.018)	

Table 12
Torque test
(Clause 5.2.3.3)

Mogul	Medium	Adapter	
		Male medium	Female candelabra
3.39 N·m (30 lb-in)	2.25 N·m (20 lb-in)	2.25 N·m (20 lb-in)	1.13 N·m (10 lb-in)

Table 13
Screwshell conformity gauges
(Clause 5.2.4.1)

Screw-type	Gauge name	Standard sheet number
E39 (mogul)	Threaded “Go” gauge for E39 mogul-screw lampholders	7006-24E-1
	“Not go” plug gauge for E39 mogul-screw lampholders	7006-26-4
EX39 (mogul)	Threaded “Go” gauge for single contact mogul-screw lampholders	3-210-1
	“Not go” plug gauge for single contact mogul-screw lampholders	3-191-3
	Threaded gauge for testing contact making	3-211-1
	Protection against bulb-neck damage and testing contact making	7006-24D-1
	Maximum insertion torque gauge	3-213-1
	Minimum torsion gauge	3-212-1
E26d (Medium)	Threaded “Go” gauge for double-contact E26d medium-screw lampholders	7006-29K-1
	Gauges for checking radial position of intermediate contact of double-contact E26d medium-screw lampholder	7006-29E-1
	Unacceptable contact making gauge for double-contact E26d medium-screw lampholders	7006-29M-1
E26 (Medium)	Threaded “Go” gauge for E26 medium-screw lampholders	7006-25B-1
	“Not go” plug gauge for E26 medium-screw lampholders	7006-26A-1

Table 13 Continued on Next Page