ANSI C136.11-1995
(Revision of ANSI C136.11-1988)

American National Standard for Roadway Lighting Equipment—Multiple Sockets

Sponsor

Accredited Standards Committee on Roadway Lighting Equipment, C136

accredited by the

American National Standards Institute

Secretariat

The Institute of Electrical and Electronics Engineers, Inc.

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Abstract: Medium and mogul multiple sockets as used in luminaires designed and intended for use in lighting roadways and other areas open to general use by the pubic are covered. This standard provides interchangeability of lamps, minimum safety standards for operating personnel, and minimum performance criteria.
Keywords: lamps, lighting equipment, luminaires, medium sockets, multiple sockets, mogul sockets, roadway lighting equipment, sockets

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Introduction

(This introduction is not a part of ANSI C136.11-1995, American National Standard for Roadway Lighting Equipment—Multiple Sockets.)

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Contents

American National Standard for Roadway Lighting Equipment—Multiple Sockets

1. Overview

1.1 Scope

This standard covers medium and mogul multiple sockets as used in luminaires designed and intended for use in lighting roadways and other areas open to general use by the public.

1.2 Purpose

The purpose of this standard is to provide interchangeability of lamps, minimum safety standards for operating personnel, and minimum performance criteria.

2. References

This standard shall be used in conjunction with the following publications. When these standards are superseded by an approved revision, the revision shall apply.

ANSI C78 Series, Electric Lamps.[1]

ANSI C81 Series, Electric Lamp Bases and Holders.

ANSI C81.62-1991, American National Standard Lampholders for Electric Lamps.

ANSI C81.63-1991, American National Standard Gauges for Electric Lamp Bases and Lampholders.

ANSI C136 Series, Roadway Lighting Equipment.

ANSI C136.2-1985, American National Standard for Roadway Lighting—Luminaires—Voltage Classification.

[1]ANSI publications are available from the Sales Department, American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036, USA.

ASTM E1150-7 (93), Definitions of Terms Relating to Fatigue.[2]

3. Classification

3.1 Voltage

Sockets, when mounted on their supports, shall conform to the requirements for the 250 V or 600 V classification given in ANSI C136.2-1985.

3.2 Pulse

Sockets, when used with high-pressure sodium lamps, shall have a minimum pulse voltage rating of

4 kV—All medium sockets
4 kV—Mogul sockets when used with lamps 400 W and below
5 kV—Mogul sockets when used with lamps above 400 W

4. Rated wattage

Medium sockets shall be rated 660 W, and mogul sockets shall be rated 1500 W.

5. Mechanical requirements

5.1 Guarded

Parts that may be electrically energized shall be guarded to prevent accidental contact with metal parts during their installation, removal, or adjustment.

5.2 Lamp insertion

Sockets shall be designed so as to allow full insertion of all lamps that meet the requirements given in the ANSI C78 Series.[3]

5.3 Insert and removal torque—mogul

Sockets shall be designed so as to maintain contact pressure and retain the lamp without loosening under normal conditions of vibration. The torque required to insert and remove mogul base lamps shall be in accordance with table 1. The torque test shall be performed with a plug gauge having the dimensions given in Standard Sheets 3-190, 3-195, and 3-196 of ANSI C81.63-1991 and its supplements and in accordance with Standard Sheet 2-185 of ANSI C81.62-1991 and its supplements.

[2]ASTM publications are available from the Customer Service Department, American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103, USA.
[3]Information on references can be found in clause 2.

Table 1—Insertion and removal torque*

Maximum insertion torque to test lamp	35 lbs-in (3.95 N·m)
Minimum removal torque	8 lbs-in (0.90 N·m)
Maximum removal torque	35 lbs-in (3.95 N·m)

*Applies to mogul sockets only.

5.4 Insert and removal torque—medium

Insertion and removal torque requirements for medium-base sockets are to be determined.

6. Screw shells

6.1 Conformance

Socket screw shells shall be in conformance with the applicable portions of ANSI C81.62-1991 and its supplements, except that threads may be deformed, cut, or partially replaced by springs to meet the removal torque requirements of 5.3. The screw-shell height and center contact placement shall be such as to ensure proper electrical contact with lamp bases meeting the requirements of Standard Sheets 2-157, 3-169, 3-170, and 3-171 for medium sockets and Standard Sheets 2-185, 2-190, 3-191, and 3-192 for mogul sockets of ANSI C81.62-1991, ANSI C81.63-1991, and their supplements.

6.2 Metal parts

Socket screw shells and other lamp-gripping metal parts shall be of copper or copper alloy and shall be plated with nickel or an equivalent corrosion-resistant metal. All other socket parts, except those of stainless steel, shall also be plated with nickel or an equivalent corrosion-resistant metal.

7. Terminals and leads

Socket terminals or permanently mounted leads shall be provided in accordance with the following:

a) Terminals for line connections shall be suitable for both copper and aluminum conductors from 14 AWG to 8 AWG, either solid or stranded.
b) Terminals, leads, and associated insulation for internal luminaire wiring (with a separate terminal block provided for line connections) shall be adequate for the wattage rating of the socket.

8. Operating temperature

The socket shall be capable of operating continuously when heated by a lamp whose operating base temperature is 210 °C for mogul sockets or 190 °C for medium sockets if electrical porcelain or other ceramic material is used. Other socket skirt materials may be used only if the operating temperature in the luminaire does not exceed the thermal limits of the material.

9. Insulating material

Sockets shall include a body of porcelain or other suitable insulating material that encloses the sides and bottom of the screw shell sufficiently to meet the requirements of 5.1 and that extends beyond the depressed center contact in accordance with the following table.

Type of socket	Minimum distance (in)
Mogul	1-5/8 (41.3 mm)
Medium	15/16 (23.8 mm)

10. Alignment

Sockets shall be so designed that a deviation from the lamp base axis in any direction from the centerline (measured perpendicular to the socket mounting surface) will not exceed 3 degrees. The deviation shall be checked in all directions immediately after applying and slowly releasing a minimum moment load of 100 lbs-in (11.3 N·m) to a fully inserted lamp-base screw-shell gauge meeting the requirements of ANSI C81.63-1991 and its supplements.

11. Fatigue tests

Sockets shall be so designed that, when used in conjunction with the maximum weight lamp (or dummy lamp) for which they are intended and when subjected to a 1 G (9.8 $m \cdot s^2$) vibration stress in all planes, the material used in the socket construction shall not exceed the fatigue limit stress values for those materials as determined by ASTM E1150-7 (93). Fatigue tests shall be run at or below the resonant frequency of the socket and lamp (or dummy lamp), but the frequency shall not exceed 25 Hz.