

## STANDARD FOR LUMINAIRE SUPPORTS

### A. Scope

1. The requirements of this standard apply to stems, canopies, swivels and accessory fittings for the support of luminaires which use more than one point of support.
2. These requirements do not apply to supports for:
  - a. Individually hung luminaires weighing 18 pounds or less; or
  - b. Luminaires which are rigidly supported by suitable means to the ceiling and separated therefrom by not more than two inches by suitable spacers; or
  - c. Industrial type luminaires in industrial occupancies which are suspended by suitable chains or cables or by suitable rods not less than three feet in length.

### B. General

Luminaire supports shall employ materials which are suitable for the purpose. Cast metal parts of other than malleable iron and cast or rolled threads shall be subject to special investigation.

### C. Design and Construction

1. Canopies shall be constructed of sheet metal of not less than No. 26 MSG (0.016-inch) or of sheet copper, brass or aluminum of not less than No. 24 AWG (0.020-inch).
2. Stems shall have a wall thickness of not less than 0.050 inches.
3. A supporting assembly which is intended to mount on an outlet box shall be designed to accommodate mounting on four-inch boxes, three-inch plaster ring openings and luminaire studs.
4. A canopy and stem assembly which is intended to enclose luminaire supply conductors shall be free of burrs and sharp edges. The motion of swivels or hinged joints shall not cause sharp bends in conductors or damage insulation.

**NOTE:** There are no specific requirements as to the use of swivels at the ceiling canopy or at the luminaire. It has been found, however, that swivels which restrict the swing to less than 45 degrees from the vertical generally fail during testing.

**D. Test Equipment**

1. The earthquake test apparatus consists of a carriage suspended on rollers from an overhead track. A gear motor and crank assembly is linked to the carriage to provide an oscillatory motion of approximately one cycle per second. The underside of the carriage is used as a mounting surface for the luminaires and supports to be tested.
2. The crank arm is adjustable to provide various stroke lengths for special tests. The normal crank arm is two inches, resulting in a four-inch stroke. This produces an acceleration of approximately 0.2 of gravity when operated at one revolution per second.
3. The mounting surface is ten feet long and will accommodate one eight-foot luminaire or two four-foot luminaires connected end to end.
4. The mounting surface may be rotated in a horizontal plane and locked in various positions from parallel to the line of traverse up to 90 degrees to the line of traverse.

**E. Test Requirements**

1. The earthquake machine shall be set for a frequency of one cycle per second and a stroke (total travel) of four inches.
2. Two luminaires, coupled together in the intended manner, shall be attached to the mounting surface of the machine using the supports to be tested.  
  
EXCEPTION: Supports intended only for individually hung luminaires may be tested with a single luminaire.
3. Supports intended for luminaires which exceed four feet in length and intended for end-to-end connection shall be tested with four-foot luminaires of equivalent weight.
4. All tests are to be conducted with the shortest stems and maximum weight for which approval is desired.
5. The machine shall be operated for one minute with the mounting surface in line with the line of traverse, one minute at 45 degrees to the line of traverse and one minute at 90 degrees to the line of traverse.
6. After the three one-minute test periods, the luminaires shall still be reliably secured in place. There shall be no undue damage to the luminaire or support.
7. In addition, a sample of the complete assembly from the above tests shall be subjected to a tensile strength test. The sample shall withstand a force of not less than four times the weight it is intended to support without failure.

**F. Samples Required for Test**

1. Two luminaires and two complete sets of hangers shall be provided for the test. This would normally consist of six complete supports including all components necessary for securing the luminaire to the mounting surface.
2. The luminaires supplied for the test shall provide the maximum load on the supports for which approval is desired. Additional ballasts or weights may be added to obtain the desired loading.
3. No components will be accepted by themselves nor will approval be granted on an individual component. The luminaire support must be complete to receive approval.

**G. Identification Marking**

1. Each luminaire support shall be plainly and permanently marked with the following information:
  - a. The name of the manufacturer.
  - b. A distinctive model or catalog designation.
  - c. The maximum weight to be supported by each stem.
  - d. The minimum stem length to be used.
2. Where proper assembly of the approved luminaire supports is not readily apparent, a printed brochure showing the proper assembly shall be included with each support. A copy of this brochure shall be submitted to be included with the test report.