(3) If the photoelectric sensor uses a reflector, this test is to be repeated with the lamp aimed at the reflector.

§ 1211.12 Requirements for edge sensors.

(a) *Normal operation test.* (1) When installed on a representative door edge, an edge sensor shall actuate upon the application of a 15 pounds (66.7 N) or less force in the direction of the application. For an edge sensor intended to be used on a sectional door, the force is to be applied by the longitudinal edge of a 1⅞ inch (47.6 mm) diameter cylinder placed across the switch so that the axis is perpendicular to the plane of the door. For an edge sensor intended to be used on a one piece door, the force is to be applied so that the axis is at an angle 30 degrees from the direction perpendicular to the plane of the door. See figure 6.

(2) With respect to the test of paragraph (a)(1) of this section, the test is to be repeated at various representative points of the edge sensor across the width of the door.

(3) Exception: The edge sensor need not be sensitive to actuation two inches (50.4 mm) or less from each end of the intended width of the door opening.

(b) *Endurance test.* An edge sensor system and associated components shall withstand 30,000 cycles of mechanical operation without failure. For this test, the edge sensor is to be cycled by the repetitive application of the force as described in paragraph (a)(1) of this section. The force is to be applied to the same location for the entire test. For an edge sensor system employing integral electric contact strips, this test shall be conducted with the contacts connected to a load no less severe than it controls in the operator. For the last 50 cycles of operation, the sensor shall function as intended when connected to an operator.

(c) *Elastomeric material conditioning test.* (1) An elastomeric material used as a functional part of an edge sensor shall function as intended when subjected to:

(i) Accelerated Aging Test of Gaskets, stated in paragraph (c)(3) of this section, and

(ii) Puncture Resistance Test, stated in paragraph (d) of this section.

(2) An elastomeric material used for a functional part that is exposed to outdoor weather conditions when the door is in the closed position shall have physical properties as specified in table 1 after being conditioned in accordance with the Ultraviolet Light Exposure Test described in the Standard for Safety for Polymeric Materials—Use in Electrical Equipment Evaluations, UL 746C, 4th ed., dated December 27, 1995. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, Telephone (800) 854–7179 or Global Engineering Documents, 7730 Carondelet Ave., Suite 470, Clayton, MO 63105, Telephone (800) 854–7179.

Table 1

PHYSICAL PROPERTIES OF GASKET-ACCELERATED AGING TEST

	Before Accelerated Aging	After Accelerated Aging
Recovery -- Maximum set when 2-inch (50.8-mm) gauge marks are stretched to 5 inches (127 mm), held for 2 minutes, and measured 2 minutes after release	1/2 inch (12.7 mm)	--
Elongation -- Minimum increase in distance between 2-inch gauge marks at break	250 percent [2 to 7 inches (50.8—178.8 mm)]	65 percent of original
Tensile Strength -- Minimum force at breaking point	850 pounds per square inch (59 mPa)	75 percent of original

Copies may be inspected at the Consumer Product Safety Commission, Office of the Secretary, 4330 East West Highway, Bethesda, Maryland or at the Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC.

(3) Rubber compounds forming gaskets that are depended upon for protection from rain shall have physical properties as specified in table 1, before and after conditioning for 168 hours in an air-circulating oven at 70 °C (158 °F).

(d) *Puncture resistance test.* (1) After being subjected to the test described in paragraph (d)(2) of this section, an elastomeric material that is a functional part of an edge sensor shall:

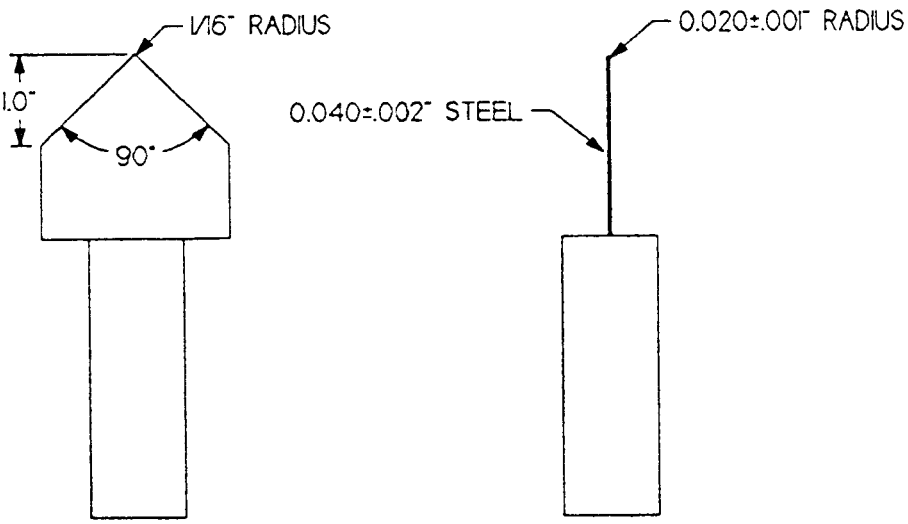
(i) Not be damaged in a manner that would adversely affect the intended operation of the edge sensor, and

(ii) Maintain enclosure integrity if it serves to reduce the likelihood of contamination of electrical contacts.

(2) A sample of the edge sensor is to be installed in the intended manner on a representative door edge. The probe described in figure 7 is to be applied with a 20 pound-force (89N) to any point on the sensor that is 3 inches or less above the floor is to be applied in the direction specified in the Edge Sensor Normal Operation Test, figure 6. The test is to be repeated on three locations on each surface of the sensor being tested.

Figure 7

PUNCTURE PROBE



[57 FR 60455, Dec. 21, 1992, as amended at 62 FR 46667, Sept. 4, 1997; 65 FR 70659, Nov. 27, 2000]

§ 1211.13 Inherent force activated secondary door sensors.

(a) *Normal operation test.* (1) A force activated door sensor of a door system installed according to the installation instructions shall actuate when the door applies a 15 pound (66.7 N) or less force in the down or closing direction and when the door applies a 25 pound (111.2 N) or less force in the up or opening direction. For a force activated door sensor intended to be used in an operator intended for use only on a sectional door, the force is to be applied by the door against the longitudinal edge of a 1⅞ (47.6 mm) diameter cylinder placed across the door so that the axis is perpendicular to the plane of the door. See Figure 6 of this part. The weight of the door is to be equal to the maximum weight rating of the operator.

(2) The test described in paragraph (a)(1) of this section is to be repeated and measurements made at various representative points across the width and height of the door. For this test, a