

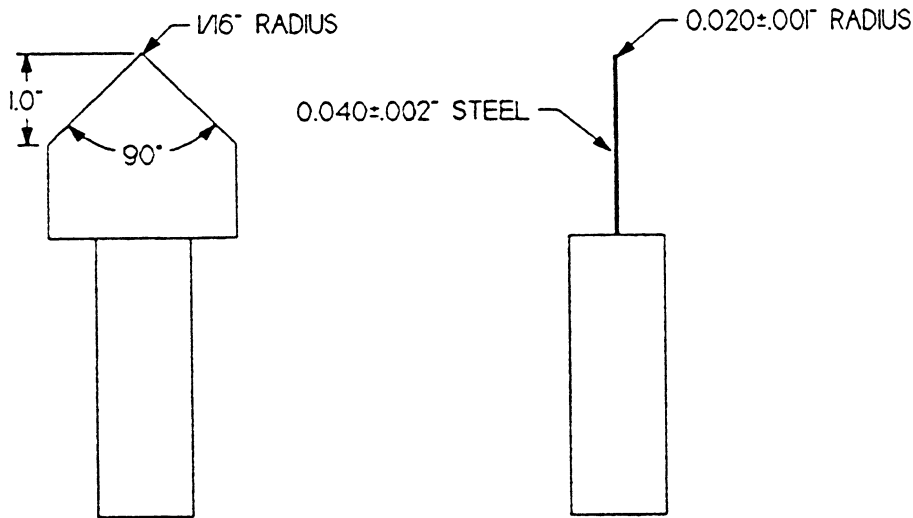
(d) *Puncture resistance test.* (1) After being subjected to the test described in paragraph (d)(2) of this section, an elastomeric material that is a functional part of an edge sensor shall:

- (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 open-

ing 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 1 7/8 (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

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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 door sensor system and associated components shall withstand a total of 9 cycles of mechanical operation without failure with the force applied as follows:

(i) At the center at points one, three, and five feet from the floor,

(ii) Within 1 foot of the end of the door, at points one, three, and five feet from the floor,

(iii) Within 1 foot of the other end of the door at points one, three, and five feet from the floor.

(3) The cycles are not required to be consecutive. Continuous operation of the motor without cooling is not required.

(b) *Adjustment of door weight.* (1) With the door at the point and at the weight determined by the tests of paragraphs (a)(2) and (b)(2) of this section to be the most severe, the door sensor and associated components shall withstand 50 cycles of operation without failure.

(2) At the point determined by the test in paragraphs (a)(1) and (a)(2) of this section to be the most severe, weight is to be added to the door in 5.0 pound (2.26 Kg) increments and the test repeated until a total of 15.0 pounds (66.72 N) has been added to the door. Before performing each test cycle, the door is to be cycled 2 times to update the profile. Similarly, starting from normal weight plus 15.0 pounds, the test is to be repeated by subtracting weight in 5.0 pound increments until a total of 15.0 pounds has been subtracted from the door.

(c) Obstruction test. For a door traveling in the downward direction, when an inherent secondary entrapment protection device senses an obstruction and initiates a reversal, a control activation shall not move the door downward until the operator reverses the door a minimum of 2 inches (50.8 mm). The test is to be performed as described in § 1211.7(b)(3).

[65 FR 70659, Nov. 27, 2000, as amended at 72 FR 54817, Sept. 27, 2007]

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§ 1211.14 Instruction manual.

(a) *General.* (1) A residential garage door operator shall be provided with an instruction manual. The instruction manual shall give complete instructions for the installation, operation, and user maintenance of the operator.

(2) Instructions that clearly detail installation and adjustment procedures required to effect proper operation of the safety means provided shall be provided with each door operator.

(3) A residential garage door or door operator shall be provided with complete and specific instructions for the correct adjustment of the control mechanism and the need for periodic checking and, if needed, adjustment of the control mechanism so as to maintain satisfactory operation of the door.

(4) The instruction manual shall include the important instructions specified in paragraphs (b)(1) and (2) of this section. All required text shall be legible and contrast with the background. Upper case letters of required text shall be no less than $\frac{5}{64}$ inch (2.0 mm) high and lower case letters shall be no less than $\frac{1}{16}$ inch (1.6 mm) high. Heading such as “Important Installation Instructions,” “Important Safety Instructions,” “Save These Instructions” and the words “Warning—To reduce the risk of severe injury or death to persons:” shall be in letters no less than $\frac{3}{16}$ inch (4.8 mm) high.

(5) The instructions listed in paragraphs 1211.13(b)(1) and (2) shall be in the exact words specified or shall be in equally definitive terminology to those specified. No substitutes shall be used for the word “Warning.” The items may be numbered. The first and last items specified in paragraph (b)(2) of this section shall be first and last respectively. Other important and precautionary items considered appropriate by the manufacturer may be inserted.

(6) The instructions listed in paragraph (b)(1) of this section shall be located immediately prior to the installation instructions. The instructions listed in paragraph (b)(2) of this section shall be located immediately prior to user operation and maintenance instructions. In each case, the instructions shall be separate in format from other detailed instructions related to