Consumer Product Safety Commission

§ 1211.6 General entrapment protection requirements.

(a) A residential garage door operator system shall be provided with primary inherent entrapment protection that complies with the requirements as specified in §1211.7.

(b) In addition to the primary inherent entrapment protection as required by paragraph (a) of this section, a residential garage door operator shall comply with one of the following:

(1) Shall be constructed to:
   (i) Require constant pressure on a control to lower the door,
   (ii) Reverse direction and open the door to the upmost position when constant pressure on a control is removed prior to operator reaching its lower limit, and

(2) To conduct a failure-mode and effect analysis (FMEA);

(3) In investigating the performance during the Environmental Stress Tests; and

(4) During the Power Cycling Safety for Tests in accordance with the Standard for Safety for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991, second edition, dated June 23, 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. Copies may be inspected at the Consumer Product Safety Commission, Office of the Secretary, 4330 East West Highway, Bethesda, Maryland or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

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(iii) Limit a portable transmitter, when supplied, to function only to cause the operator to open the door;

(2) Shall be provided with a means for connection of an external secondary entrapment protection device as described in §§ 1211.8, 1211.10, and 1211.11; or

(3) Shall be provided with an inherent secondary entrapment protection device as described in §§ 1211.8, 1211.10, and 1211.12.

c) A mechanical switch or a relay used in an entrapment protection circuit of an operator shall withstand 100,000 cycles of operation controlling a load no less severe (voltage, current, power factor, inrush and similar ratings) than it controls in the operator, and shall function normally upon completion of the test.

d) In the event malfunction of a switch or relay (open or short) described in paragraph (c) of this section results in loss of any entrapment protection required by §§ 1211.7(a), 1211.7(f), or 1211.8(a), the door operator shall become inoperative at the end of the opening or closing operation, the door operator shall move the door to, and stay within, 1 foot (305 mm) of the uppermost position.

§ 1211.7 Inherent entrapment protection requirements.

(a)(1) Other than for the first 1 foot (305mm) of door travel from the full upmost position both with and without any external entrapment protection device functional, the operator of a downward moving residential garage door shall initiate reversal of the door within 2 seconds of contact with the obstruction as specified in paragraph (b) of this section. After reversing the door, the operator shall return the door to, and stop at, the full upmost position. Compliance shall be determined in accordance with paragraphs (b) through (i) of this section.

(2) The door operator is not required to return the door to, and stop the door at, the full upmost position when a control is actuated to stop the door during the upward travel—but the door can not be moved downward until the operator reverses the door a minimum of 2 inches (50.8 mm).

(b)(1) A solid object is to be placed on the floor of the test installation and at various heights under the edge of the door and located in line with the driving point of the operator. When tested on the floor, the object shall be 1 inch (25.4 mm) high. In the test installation, the bottom edge of the door under the driving force of the operator is to be against the floor when the door is fully closed.

(2) For operators other than those attached to the door, a solid object is not required to be located in line with the driving point of the operator. The solid object is to be located at points at the center, and within 1 foot of each end of the door.

(3) To test operators for compliance with requirements in paragraphs (a)(3), (f)(3), and (g)(3) of this section, §1211.10(a)(6)(iii), and §1211.13(c), a solid rectangular object measuring 4 inches (102 mm) high by 6 inches (152 mm) wide by a minimum of 6 inches (152 mm) long is to be placed on the floor of the test installation to provide a 4-inch (102 mm) high obstruction when operated from a partially open position.

(c) An operator is to be tested for compliance with paragraph (a) of this section for 50 open-and-close cycles of operation while the operator is connected to the type of residential garage door with which it is intended to be used or with the doors specified in paragraph (e) of this section. For an operator having a force adjustment on the operator, the force is to be adjusted to the maximum setting or at the setting that represents the most severe operating condition. Any accessories having an effect on the intended operation of entrapment protection functions that are intended for use with the operator, are to be attached and the test is to be repeated for one additional cycle.

(d) For an operator that is to be adjusted (limit and force) according to instructions supplied with the operator, the operator is to be tested for 10 additional obstruction cycles using the