

**ASME A17.1-2019 / CSA B44-19 ‘Safety Code for Elevators and Escalators’****2.13 Power Operation of Hoistway Doors and Car Doors****2.13.5 Reopening Device(s) for Power-Operated Horizontally Sliding Doors and Gates**

Reopening device(s) for power-operated horizontally sliding doors or gates shall conform to the requirements of 2.13.5.1 through 2.13.5.6. Where the term “door(s)” is used, the requirement shall apply to “gate(s)” as well.

**2.13.5.1 Where Required and Function**

Where required by 2.13.4, power-operated doors shall be provided with a reopening device(s) that operates as follows:

- a) If an object has been detected in accordance with 2.13.5.3 or 2.13.5.4 when the doors are fully open, the hoistway door and car door shall not close or, when the doors are closing, the car door and hoistway door at the landing shall initiate a reversal without intentional delay beyond system response time, and shall fully reopen or reopen a minimum of 915 mm (36 in.).
- b) If the doors fail to fully close [see 2.12.2.2(a)] within 10 s in addition to the door close data plate value, the doors shall fully reopen.

**2.13.5.2 Rendering Inoperative**

- a) The reopening device(s) shall be permitted to be rendered inoperative
  - 1) when the closing kinetic energy is reduced in accordance with 2.13.4.2.1(c)(1) and 2.13.4.2.1(c)(2)
  - 2) for detection of approaching objects
    - a) within 450 mm (18 in.) of the point at which the leading edge of the leading door panel contacts the door jamb or opposing door panel.
    - b) when 20 s have transpired after the detection means of approaching objects first detects an object. When an object is detected in the path of the doors, the 20 s duration shall reset.
  - 3) for detection of objects in the door path, within 20 mm (0.75 in.) of the point at which the leading edge of the leading door panel contacts the door jamb or opposing door panel
- b) Where Phase I Emergency Recall Operation by a fire alarm initiating device (see 2.27.3.2) is not provided, door reopening devices that can be affected by smoke or flame shall be rendered inoperative after the doors have been held open for 20 s after a door close signal has been initiated. Door closing for power-operated doors shall conform to 2.13.4.
- c) When the reopening device(s) has been rendered inoperative per (a)(1), a continuously sounding audible signal shall be provided with a sound level of 10 dBA minimum above ambient and shall not exceed 80 dBA. The sound level shall be measured 1 m (40 in.) above the landing floor, 500 mm (20 in.) from the door face, along the center line of the entrance opening, with the doors open. The signal shall sound during door closing until the doors are fully closed. In no case shall the sound level exceed 85 dBA inside the cab and within 300 mm (12 in.) from the center line of the entrance and 1 m (40 in.) above the floor.

**2.13.5.3 Detection of Approaching Objects**

The reopening device(s) shall be designed to detect a cylindrical target(s) approaching the entrance opening of the landing-side doors as required by 2.13.5.3.1. The cylindrical target(s) shall be oriented with the base parallel to the floor, the height perpendicular to the floor, and properties conforming to the following:

- a) diameter of 200 mm (8 in.), height of 1 000 mm (40 in.), and painted flat black per FED-STD-595C in the color range from 37005 through 37050.
- b) diameter of 200 mm (8 in.), height of 1 000 mm (40 in.), and painted glossy white per FED-STD-595C in the color range from 17800 through 17999 NOTE (2.13.5.3): See Nonmandatory Appendix S, Figure S-13.

**2.13.5.3.1** Each cylindrical target shall be moved toward the entrance, perpendicular to the plane of the landing door, at any speed up to 1 m/s (3 ft/s). The cylindrical target shall be detected while moving toward the entrance anywhere between 500 mm (20 in.) and 225 mm (9 in.) from the landing-side face of the hoistway door and 225 mm (9 in.) ahead of the leading edge (see Nonmandatory Appendix S, Figure S-16 for moving line of detection). The cylindrical target shall be permitted to be detected prior to the position defined above. The approaching object detection means shall be effective until the leading edge of the doors is within 450 mm (18 in.) of the fully closed position and shall be permitted to be effective up to the fully closed position.

## **2.13.5.4 Detection of Objects in the Door Path**

The reopening device(s) shall be designed to detect rectangular prisms positioned as required by 2.13.5.4.1 and 2.13.5.4.2 with properties conforming to the following:

- a) 80 mm (3.15 in.) by 50 mm (2 in.) by 150 mm (6 in.), painted flat black per FED-STD-595C in the color range from 37005 through 37050.
- b) 80 mm (3.15 in.) by 50 mm (2 in.) by 150 mm (6 in.), painted glossy white per FED-STD-595C in the color range from 17800 through 17999 NOTE (2.13.5.4): See Nonmandatory Appendix S, Figures S-14 and S-15.

**2.13.5.4.1** The device(s) shall be designed to detect prisms positioned anywhere within the opening width of the entrance vertically between two horizontal planes located 25 mm (1 in.) and 1 525 mm (60 in.), respectively, above the floor and oriented with the 50 mm (2 in.) dimension parallel to the floor, the 150 mm (6 in.) dimension perpendicular to the door, and the 80 mm (3.15 in.) dimension perpendicular to the floor

- a) wholly located between the vertical planes established by the landing-side face of the hoistway door and the car-side face of the car door or
- b) centered between the two vertical planes described in (a) if the distance between the two planes is less than 150 mm (6 in.).

**2.13.5.4.2** The device(s) shall be designed to detect prisms positioned anywhere within the opening width of the entrance on the floor and oriented with the 80 mm (3.15 in.) dimension parallel to the floor, the 150 mm (6 in.) dimension perpendicular to the door, and the 50 mm (2 in.) dimension perpendicular to the floor

- a) wholly located between the vertical planes established by the landing-side face of the hoistway door and the car-side face of the car door or
- b) centered between the two planes if the distance between the two planes is less than 150 mm (6 in.).

## **2.13.5.5 Self-Monitoring of Detection Means**

The system shall be designed to be self-monitoring. After the door has reached its fully opened position and before door closing is initiated, the detection means shall be self-checked to verify the detection means is operational. If the self-check outcome is unsuccessful, power closing of the door(s) shall be at reduced kinetic energy conforming to 2.13.4.2.1(c)(2).

## **2.13.5.6 Maintenance and On-Site Testing of Detection Means**

The maintenance and method of on-site testing of the detection means shall be provided in the Maintenance Control Program on-site documentation (see 8.6.4.19.18).