

SECTION 2.19 ASCENDING CAR OVERSPEED AND UNINTENDED CAR MOVEMENT PROTECTION

2.19.1 Ascending Car Overspeed Protection

2.19.1.1 Purpose. Ascending car overspeed protection shall be provided to prevent the car from striking the hoistway overhead structure as a result of a failure in

- (a) the electric driving-machine motor, brake, coupling, shaft, or gearing
- (b) the control system
- (c) any other component upon which the speed of the car depends, except the suspension ropes and the drive sheave of the traction machine

2.19.1.2 Where Required and Function. All electric traction elevators, except those whose empty car weight exceeds the total weight of the suspension ropes and counterweight, shall be provided with a device to prevent an ascending elevator from striking the hoistway overhead structure. This device (see 2.26.2.29) shall

(a) detect an ascending car overspeed condition at a speed not greater than 10% higher than the speed at which the car governor is set to trip (see 2.18.2.1).

(1) If the overspeed detection means requires electrical power for its functioning

(a) a loss of electrical power to the ascending car overspeed detection and control means shall cause the immediate activation of the emergency brake as required in 2.19.1.2(b)

(b) the occurrence of a single ground, or the failure of any mechanically operated switch that does not meet the requirements of 2.26.4.3.1, any single magnetically operated switch, contactor, or relay, or any single solid-state device, or a failure of a software system not conforming to 2.26.4.3.2, shall not render the detection means inoperative

(2) The failure of any single mechanically operated switch that does not meet the requirements of 2.26.4.3 shall not render the detection means inoperative.

(3) When a fault specified in 2.19.1.2(a)(1)(b) or 2.19.1.2(a)(2) is detected, the car shall stop at or before the next landing for which a demand was registered, and shall not be permitted to restart.

(4) Once actuated by overspeed, the overspeed detection means shall remain actuated until manually reset, and the car shall not start or run unless the detection means is reset.

(b) decelerate the car when loaded with any load up to its rated load [see 2.16.8(h)] by applying an emergency brake conforming to 2.19.3. The car shall not start or run unless the emergency brake is reset.

(a) 2.19.2 Unintended Car Movement Protection

2.19.2.1 Purpose. Protection shall be provided with a means to detect unintended car movement (see 1.3) and stop the car movement, as a result of failure in any of the following:

- (a) electric driving-machine motor, brake, coupling, shaft, or gearing

(b) control system

(c) any other component upon which intended car movement depends, except suspension means and drive sheave of the traction machine

2.19.2.2 Where Required and Function. All electric traction elevators shall be provided with a means (see 2.26.2.30) that shall

(a) detect unintended car movement in either direction away from the landing with the hoistway door not in the locked position and the car door or gate not in the closed position.

NOTE [2.19.2.2(a)]: Freight elevators provided with combination mechanical locks and contacts on the hoistway door shall detect the closed position of the hoistway door and the closed position of the car door or gate.

(1) If the detection means requires electrical power for its functioning, then

(a) a loss of electrical power to the unintended movement detection and control means shall cause the immediate activation of the emergency brake as required in 2.19.2.2(b)

(b) the occurrence of a single ground, or the failure of any mechanically operated switch that does not meet the requirements of 2.26.4.3, any single magnetically operated switch, contactor, or relay, or any single solid-state device, or software system failure, shall not render the detection means inoperative

(2) The failure of any single mechanically operated switch that does not meet the requirements of 2.26.4.3, shall not render the detection means inoperative.

(3) When a fault specified in 2.19.2.2(a)(1)(b) or 2.19.2.2(a)(2) is detected, the car shall stop at or before the next landing for which a demand was registered, and shall not be permitted to restart.

(4) Once actuated by unintended movement, the detection means shall remain actuated until manually reset, and the car shall not start or run unless the detection means is reset.

(b) upon detection of unintended car movement, stop and hold the car, with any load up to rated load [see also 2.16.8(h)], by applying an emergency brake conforming to 2.19.3. The stopped position of the car shall be limited in both directions, to a maximum of 1 220 mm (48 in.) as measured from the landing sill to the car sill. The car shall not start or run unless the emergency brake provided for the unintended movement protection is reset.

2.19.3 Emergency Brake (See Nonmandatory Appendix F)

2.19.3.1 Where Required

2.19.3.1.1 When required by 2.19.1 for protection against ascending car overspeed, an emergency brake (see 1.3) conforming to 2.19.3.2 shall be provided.