

(i) The location of each intercom intended for passenger use shall be conspicuously marked with luminescent material; and

(ii) Legible and understandable operating instructions shall be posted at or near each such intercom.

(c) *Back-up power.* PA and intercom systems shall have a back-up power system capable of—

(1) Operating in all equipment orientations within 45 degrees of vertical;

(2) Operating after the initial shock of a collision or derailment resulting in the following individually applied accelerations:

(i) Longitudinal: 8g;

(ii) Lateral: 4g; and

(iii) Vertical: 4g; and

(3) Powering each system to allow intermittent emergency communication for a minimum period of 90 minutes. Intermittent communication shall be considered equivalent to continuous communication during the last 15 minutes of the 90-minute minimum period.

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§ 238.123 Emergency roof access.

Except as provided in § 238.441 of this chapter—

(a) *Number and dimensions.* Each passenger car ordered on or after April 1, 2009, or placed in service for the first time on or after April 1, 2011, shall have a minimum of two emergency roof access locations, each with a minimum opening of 26 inches longitudinally (*i.e.*, parallel to the longitudinal axis of the car) by 24 inches laterally.

(b) *Means of access.* Emergency roof access shall be provided by means of a hatch, or a conspicuously marked structural weak point in the roof for access by properly equipped emergency response personnel.

(c) *Location.* Emergency roof access locations shall be situated as practical so that when a car is on its side—

(1) One emergency access location is wholly within each half of the roof as divided top from bottom; and

(2) One emergency access location is wholly within each half of the roof as divided left from right. (*See* Figure 3 to this subpart.)

(d) *Obstructions.* The ceiling space below each emergency roof access location shall be free from wire, cabling, conduit, and piping. This space shall also be free of any rigid secondary structure (*e.g.*, a diffuser or diffuser support, lighting back fixture, mounted PA equipment, or luggage rack) where practicable. If emergency roof access is provided by means of a hatch, it shall be possible to push interior panels or liners out of their retention devices and into the interior of the vehicle after removing the hatch. If emergency roof access is provided by means of a structural weak point, it shall be permissible to cut through interior panels, liners, or other non-rigid secondary structures after making the cutout hole in the roof, provided any such additional cutting necessary to access the interior of the vehicle permits a minimum opening of the dimensions specified in paragraph (a) to be maintained.

(e) *Marking and instructions.* Each emergency roof access location shall be conspicuously marked with retroreflective material of contrasting color. As further specified, legible and understandable instructions shall be posted at or near each such location. If emergency roof access is provided by means of a structural weak point—

(1) The retroreflective material shall conspicuously mark the line along which the roof skin shall be cut; and

(2) A sign plate with a retroreflective border shall also state as follows:

CAUTION—DO NOT USE FLAME CUTTING DEVICES

CAUTION—WARN PASSENGERS BEFORE CUTTING

CUT ALONG DASHED LINE TO GAIN ACCESS

ROOF CONSTRUCTION—[STATE RELEVANT DETAILS]

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