Alterations of Door Reopening Devices

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Installation of door reopening devices requires an alteration permit. ASME A17.1 Rule 8.7.2.13 refers you to the rules you must comply with.
(If you do not know the process for permits see Alterations Process for Elevator Companies dated 8/11)

When new electronic devices are installed you will have to meet the requirement for kinetic energy. (See attachment for rule 2.13.4)

You must meet the rule 2.13.4.2.1 & 2.13.4.2 for closing speeds(kinetic energy)
(See attachment for rules, rule 2.13.4.2 describes the code zone distance)

You must meet rule 2.13.4.2.3 door force 30lbf.
(See attachment for rule)

<u>If there is no</u> code data tag for minimum door closing time in seconds, corresponding to the kinetic energy limits or you have changed closing time and kinetic energy then <u>you must install a data plate to the door operator or car crosshead.</u>

When must nudging function ?

1. If you have fire service Phase I then the doors must go into nudging when closing after the Phase I is initiated and the door detector have been rendered inoperative.
2. If you have fire service Phase I and the above nudging is functioning properly, then the doors are not required to time out during normal service.
3. If you do not have fire service Phase I, then during normal operation door are required to time out within 20 seconds (longer for hospital cars) and then go into nudging, meaning the closing kinetic energy is reduced to 2.5 ft-lb.
   (See attachment for rules 2.13.5)

Code data tags must also be installed on the controller for all alterations.

Before calling for an inspection make sure all data tags are installed and a permit is posted. You may not return the car to service unless an inspector grants permission.

Code References for Installation of Door Reopening Devices

8.6.3.8 Replacement of Door Reopening Device.
Where a reopening device for power-operated car doors or gates is replaced, it shall conform to 8.7.2.13.

8.7.2.13 Door Reopening Device.
Where a reopening device for power-operated car doors or gates is altered or added, the following requirements shall apply:
(a) requirement 2.13.4
(b) Requirement 2.13.5
(c) When firefighters' emergency operation is provided, door reopening devices and door closing on Phase I and Phase II shall comply with the requirements applicable at the time of installation of the firefighters' emergency operation

2.13.4 Closing Limitations for Power-Operated Horizontally Sliding Hoistway Doors and Horizontally Sliding Car Doors or Gates

2.13.4.1 Where Required.
Where a power-operated horizontally sliding hoistway door or car door/gate or both is closed by momentary pressure or by automatic means (see 2.13.3.3), or is closed simultaneously with another door or car door/gate or both from one continuous- pressure means (see 2.13.3.2.3 and 2.13.3.2.4), the closing mechanism shall be designed and installed to conform to 2.13.4.2 and the reopening device shall be designed and installed to conform to 2.13.5.

2.13.4.2 Closing Mechanism

2.13.4.2.1 Kinetic Energy
(a) Where the hoistway door and the car door/gate are closed in such a manner that stopping either one manually will stop both, the kinetic energy of the closing door system shall be based upon the sum of the hoistway and the car door weights, as well as all parts rigidly connected thereto, including the rotational inertia effects of the door operator and the connecting transmission to the door panels.
(b) Where a reopening device conforming to 2.13.5 is used, the closing door system shall conform to the following requirements:

> ***(1)*** The kinetic energy computed for the actual closing speed at any point in the Code zone distance defined by 2.13.4.2.2 shall not exceed 23 J (17 ft-lbf).
> ***(2)*** The kinetic energy computed for the average closing speed as determined in accordance with 2.13.4.2.2 shall not exceed 10 J (7.37 ft-lbf).

(c) Where a reopening device is not used, or has been rendered inoperative (see 2.13.5), the closing door system shall conform to the following requirements:

> ***(1)*** The kinetic energy computed for the actual closing speed at any point in the Code zone distance defined by 2.13.4.2.2 shall not exceed 8 J (6 ft-lbf).
> ***(2)*** The kinetic energy computed for the average closing speed within the Code zone distance (see 2.13.4.2.2), or in any exposed opening width, including the last increment of door travel, shall not exceed 3.5 J (2.5 ft-lbf).

2.13.4.2.2 Door Travel in the Code Zone Distance
(a) For all side sliding doors using single or multiple speed panels, the Code zone distance shall be taken as the horizontal distance from a point 50 mm (2 in.) away from the open jamb to a point 50 mm (2 in.) away from the opposite jamb.
(b) For all center-opening sliding doors using single or multiple speed panels, the Code zone distance shall be taken as the horizontal distance from a point 25 mm (1 in.) away from the open jamb to a point 25 mm (1 in.) from the center meeting point of the doors.
(c) The average closing speed shall be determined by measuring the time required for the leading edge of the door to travel the Code zone distance.
2.13.4.2.3 Door Force.
The force necessary to prevent closing of the hoistway door (or the car door or gate if power operated) from rest shall not exceed 135 N (30 lbf) (see 2.13.3.1). This force shall be measured on the leading edge of the door with the door at any point between one third and two thirds of its travel.
2.13.4.2.4 Data Plate.
A data plate conforming to 2.16.3.3 shall be attached to the power door operator or to the car crosshead and shall contain the following information:
(a) minimum door closing time in seconds for the doors to travel the Code zone distance as specified in 2.13.4.2.2 corresponding to the kinetic energy limits specified in 2.13.4.2.1(b)(2)
(b) minimum door closing time in seconds for the doors to travel the Code zone distance as specified in 2.13.4.2.2 corresponding to the kinetic energy limits specified in 2.13.4.2.1(c)(2), if applicable [see 2.27.3.1.6(e)]
(c) where heavier hoistway doors are used at certain floors, the minimum door closing time in seconds corresponding to the kinetic energy limits specified in 2.13.4.2.1(b)(2) and 2.13.4.2.1(c)(2), if applicable, for the corresponding floors shall be included on the data plate
2.13.5 Reopening Device for Power-Operated Car Doors or Gates
2.13.5.1 Where required by 2.13.3.4 or 2.13.4, a power-operated car door shall be provided with a reopening device that will function to stop and reopen a car door and the adjacent landing door sufficiently to permit passenger transfer in the event that the car door or gate is obstructed while closing. If the closing kinetic energy is reduced to 3.5 J (2.5 ft-lb) or less, the reopening device shall be permitted to be rendered inoperative. The reopening device used shall be effective for substantially the full vertical opening of the door (see 2.13.4.2).
2.13.5.2 For center-opening doors, the reopening device shall be so designed and installed that the obstruction of either door panel when closing will cause the reopening device to function.
2.13.5.3 For vertically sliding doors or gates, reopening devices shall respond to any obstruction within the width of the opening to a point 125mm(5 in.) maximum from each side of the opening.
2.13.5.4 Where Phase I Emergency Recall Operation by a fire alarm initiating device (see 2.27.3.2.3) 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. Door closing for power-operated doors shall conform to 2.13.5.