



Elevating and Amusement Devices Safety Division	Ref. No.: 269 / 17
DIRECTOR'S ORDER	Date: July 14, 2017

IN THE MATTER OF:

Technical Standards and Safety Act 2000, S.O. 2000, c. 16

- and -

Ontario Regulation 209/01 (Elevating Devices)

Re: Requirement for Passenger Elevators with Single Speed Controls

Applicable to: All Owners of Electric Passenger Elevators with Single Speed Controls
All Elevator Contractors

Under the authority of s. 31 of the Technical Standards and Safety Act, 2000, the Director under O. Reg. 209/01 (Elevating Devices) hereby orders that:

1. Director's Order 267/14 "Retroactive Levelling Requirement for Passenger Elevators with Single Speed Controls" dated May 15, 2014 is hereby revoked and replaced with the following;

2. ORDER to Owners

- 2.1. All Electric Passenger Elevators with Single Speed Control systems that;
 - (a) have a single speed AC drive motor,
 - (b) use an open loop motion control system, and
 - (c) stop using the brake, whether the brake is modulated or continuously applied,

shall have the elevator driving machine brake subjected to the maintenance requirements of **A17.1/B44** section **8.6.4.6 Brakes** and **8.6.4.16 Stopping Accuracy**, performed at a frequency **not exceeding every 2 months**.

As per 8.6.4.6.1, the driving-machine brake shall be maintained to ensure proper operations, including, but not limited to the following:

- (a) residual pads (antimagnetic pads)
- (b) lining and running clearances
- (c) pins and levers
- (d) springs
- (e) sleeves and guide bushings
- (f) discs and drums
- (g) brake coil and plunger

- 2.2. Where the requirements of 2.1 and 2.3 through 2.8 impact the existing Maintenance Control Program, the maintenance control program must be revised as required by A17.1/B44 requirement 8.6.1.2.1(b) as adopted in CAD Amendment 261/13-r1.
- 2.3. When performing the maintenance requirements of 8.6.4.6.1, those components that are not fully visible for maintenance (during the 2 month frequency specified in 2.1), shall at a frequency

not exceeding 12 months, have these components **disassembled**, examined and maintained to ensure proper operation & function.

- 2.4. If per 8.6.4.6.2, any part of the driving-machine brake is changed or adjusted, that can affect the holding capacity or decelerating capacity of the brake, the brake performance shall be checked by a test conforming to:
 - (a) 8.6.4.20.4(a), testing at 125% rated load, or
 - (b) 8.6.4.20.4(b), performing an alternative test with no load, provided a performance benchmark has been established to correlate the no load results with previously acquired loaded and no load results, and
 - (c) any repairs or replacements shall be documented as required by 8.6.1.4.1
- 2.5. Where alternative testing is used (as described in 2.4(b)), the procedure shall be part of the Maintenance Control Program as required by 8.6.11.10.3.
- 2.6. All details necessary to perform the maintenance functions of 8.6.4.6 shall be documented in the maintenance control program.
- 2.7. Per 8.6.4.16, the elevator shall be maintained to provide a stopping accuracy at the landings that is appropriate for the type of control.
- 2.8. With the exception of the two-month cap on inspection frequency specified in 2.1, the requirements specified in 2.1 to 2.7 are already a mandatory part of the Maintenance Control Program as adopted in CAD Amendment 261/13-r1.
- 2.9. **The order is effective August 1, 2017.**

3. CHANGE IN MOTION CONTROL PROVISION FOR SINGLE SPEED ELEVATORS (Optional)

The previous provision of Directors Safety Order 267/14, allowing a limited scope alteration for upgrading single speed motion control is still an available option. Owners of the above noted devices may still choose to implement requirement 8.7.2.27.5★1 as an alternative to the requirements of B44 Code section 8.7.2.27.5 (Change in the Type of Motion Control):

8.7.2.27.5★1 Change in type of motion control for single speed passenger elevators

Where there is a change in the type of motion control of a single speed elevator, the installation shall conform to the following:

- (a) The terminal stopping devices shall conform to 2.25
- (b) New and altered operating devices and control equipment shall conform to 2.26. The requirements of 2.26.4.2, 2.26.4.3, and 2.26.4.4 shall not apply to electrical equipment unchanged by the alteration.
- (c) Car overspeed protection and unintended movement protection shall conform to 2.19 as required by 8.7.2.20 or permitted by 8.7.2.20★1.

Those who choose to do the limited scope alteration of 8.7.2.27.5★1 above, may do so in place of the requirements specified in 2 above.

4. NON-MANDATORY RECOMMENDED MITIGATION STRATEGIES

- 4.1. Single speed elevators use old technology solutions to arrive and stop level at a floor. Aside from updating the levelling control system to a more current and accurate form of levelling, single speed AC drive motion controls will always be susceptible to levelling inaccuracies. Despite having a good maintenance program, there are other mitigation strategies, which range in cost and effectiveness that owners may consider, however these are not mandated under this order. Some of these options are outlined below:

8.6.11.10.3 Alternative Test Method Procedure

The alternative test method shall;

- (a) include requirements to obtain and verify car and counterweight masses if necessary for the test,
- (b) have a procedure document that;
 - i) defines the permissible equipment range and limitations regarding use,
 - ii) establishes monitoring and calibration criteria for tools or measuring devices as appropriate,
 - iii) defines the test set-up procedure,
 - iv) provides instructions on how to interpret results and correlate the results to pass fail criteria,
- (c) describe how to correlate no load test results with previously acquired full load and no load results,
- (d) be included in the maintenance control program (see 8.6.1.2.1(a)),
- (e) include the information required by 8.6.1.2.1(f) where applicable, and
- (f) require a report conforming to 8.6.11.10.4

8.6.11.10.4 Alternative Test Method Report

The alternative test method report shall;

- (a) identify the alternative test tool (make / model) used to perform the test,
- (b) identify of the company performing the tests, names of personnel conducting and witnessing the tests, and testing dates,
- (c) contain all required print outs or record of tests required to demonstrate compliance to the testing requirement that were gathered during an acceptance test,
- (d) identify which results from the baseline test are to be used for future compliance evaluation,
- (e) record the car and counterweight masses that were obtained per 8.6.11.10.3(a) during the acceptance test and during any subsequent category 5 test if required by test method,
- (f) contain all subsequent category 5 results with pass-fail conclusions regarding code compliance, and
- (g) remain on site or shall be available to elevator personnel and the authority having jurisdiction.

- (a) An elevator modernization with the primary focus on update to motion control. See 8.7.2.27.5
- (b) The elevator modernization scope is that which was originally proposed by Director's Safety Order 267/14 and is retained as 8.7.2.27.5★1, as reflected in section 3 above.
- (c) Adding a means to determine if the car is more 13mm (1/2 in.) off floor level and proactively warning riders via an audible announcement that the car is not level and riders should mind their step when entering or existing the elevator.
- (d) Providing signage to tenants advising that this vintage of elevator control system has limitation for precise levelling and that riders should always mind their step when entering or existing the elevator.

Background

TSSA formed a Risk Reduction Group (RRG) in 2010 to review the risks associated with aging elevators. The RRG, called the "Elevator Overspeed and Unintended Movement RRG", was tasked with examining the risks associated with devices having no emergency brakes and devices with leveling accuracy problems, and to make recommendations on how these risks could be reduced. The group consisted of members representing TSSA, the elevator industry and elevating device owners.

In early 2014, the RRG data analysis indicated that the primary risk with aging elevators was with the leveling accuracy of single speed devices and incident data determined that the threshold of unacceptable public risk would grow over time. Consequently, Directors Order 267/14 proposed to manage these aging devices over a five-year period from 2018 to 2022.

Since the release of 267/14 in 2014, TSSA has continued to monitor and review incident, maintenance and inspection order data. The outcome is that the data trends do not support the mandatory upgrade of single speed elevator motion controls to the magnitude required in 267/14.

This order removes previous modernization obligations and aligns better with the current level of observed risk posed by single speed motion controls.

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DATED this 14th day of July, 2017

Roger Neate
Director, O. Reg. 209/01