Elevating and Amusement Devices Safety Division	Ref. No.: 271 / 18
DIRECTOR'S ORDER	Date: September 17, 2018

IN THE MATTER OF:

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

- and -

Ontario Regulation 209/01 (Elevating Devices)

Re: Requirements for B355 Vertical Platform Lifts that utilize Magnetic Reed Switches in Leveling and/or Anti-creep Circuits

Under the authority of s. 27 of the *Technical Standards and Safety Act, 2000*, the Director for the purposes of O. Reg. 209/01 (Elevating Devices) hereby orders that:

1. Application and Compliance Timeline

1.1 This order applies to:
(a) Vertical Platform Lifts as defined in Part 3 (Definitions) of B355 Lifts for person with physical disabilities,
(b) that were registered and installed using a CSA Standard prior to CSA-B355-00 Lifts for persons with physical disabilities Supplement No.1, September 2002 (Adopted June 1, 2004) (Installation number prior to 81653); and
(c) that utilize magnetic reed switches in the levelling and/or anti-creep circuits.

1.2 All Owners and licensees shall ensure that their Vertical Platform Lifts for Persons with physical disabilities are compliant with this order not later than **September 15, 2020.**

1.3 Devices not in conformance after this date shall be removed from service until the necessary upgrades are performed.

2. Assessment of Affected Devices and Timeline

2.1 All Owners of lifts for person with physical disabilities to which this order applies as per section 1.1 above shall engage the services of a registered elevating devices contractor whose scope of work includes lifts for person with physical disabilities to determine if the vertical platform lift has the potential for unexpected and/or uncontrolled movement of the platform with the doors open as a result of a single failure in an anti-creep or levelling circuit on devices that utilize magnetic reed switches in levelling and/or anti-creep circuits.

2.2 The assessment of affected devices shall be conducted not later than **July 15, 2019.**

2.3 For devices having the potential for unexpected and/or uncontrolled movement as described in paragraph 2.1 above, the elevating devices contractor shall

(a) place a note in the log book indicating "This device requires a modification to comply with Director's Order 271-18.";

(b) report to TSSA, the device which has been found to require modification, via a Notification to the Director within 7 days of the evaluation, identifying the elevating device installation number, address, control make and device model; and

(c) notify the owner that the device is required to be retrofitted, as required in part 3 of this order.

2.4 Devices that are assessed as compliant with this order shall be labeled as required in part 4.

2.5 Devices which have not been assessed after **July 15, 2019** may be subject to a TSSA shutdown.

3. Retrofitting

3.1 Where it is determined that a device has the potential to move as described in paragraph 2.1, the owner shall engage a registered elevating devices contractor whose scope of work includes lifts for person with physical disabilities, to alter the unit to prevent the situation described in 2.1 by modifying the anticreep/levelling function in one of the following ways:

(a) redundant devices (relays, contactors, and/or switches) shall be incorporated to prevent uncontrolled movement and
  (1) all reed switches, relays, contactors and devices in the leveling and/or anti-creep circuit shall be inspected and tested at 6 month intervals to ensure proper operation;
  (2) a written test procedure shall be developed for testing purposes and posted on the controller or at the location of the maintenance log; and
  (3) a record of successful testing shall be completed every 6 months and retained with the maintenance log book, or

(b) the anticreep and/or levelling circuit shall be upgraded to meet requirements of CSA-B355-09.

Note:
Compliance with 3.1(a) offers a redundant design, but verification and integrity of redundancy is via onsite testing by the maintenance provider. Testing and sign off is required every 6 months.
Compliance to 3.1(b) provides for a redundant and checked system. Refer to CSA-B355-09 clause 6.6.6 (Levelling device, anticreep) or clause 8.2.4 (Automatic levelling) and clause 8.4.2 (Protection in the case of failure) .

4. Labelling of Compliant Devices

4.1 Once a vertical platform lift identified in paragraph 2.1 has been assessed and found to be compliant with this order or altered to be compliant with this order, a label shall be applied to the front of the controller, by the elevating devices contractor, stating:

(a) **"This Device Complies with Directors Order 271-18 and requires assessment of the redundant anticreep/leveling devices every 6 months. Refer to the Onsite Testing Procedure"**, if the vertical platform lift control meets 3.1(a), or

(b) **"This Device has anti-creep and/or leveling circuits meeting CSA- B355-09",** if the vertical platform lift control meets 3.1(b).

4.2 Labelling shall:

(a) include the name of the registered contractor that performed the assessment;
(b) be made of a durable material; and
(c) be securely attached to the controller.

5 Alteration Scope and Design Submission

5.1 An alteration as referenced in 3.1(a) or 3.1(b) of this order that is limited to the addition/replacement of switches, contactors, relays, or other individual devices shall be considered a Minor Alteration (see O. Reg. 209/01, s. 19).

5.2 An alteration as referenced in 3.1(b) that involves a change of the controller shall be considered a Major Alteration.

5.3 A Contractor who undertakes an alteration to facilitate compliance with this order shall submit to TSSA, on the owner's behalf, a Design Submission complete with a revised electrical schematic and testing procedures.

5.4 All individual documents comprising a design submission shall bear the signature and seal, or the electronic equivalent, of the professional engineer who prepared or approved the design submission. (see O.Reg. 209/01 for complete requirements regarding Alterations).

5.5 A copy of the revised electrical schematic shall be available at the controller location.

5.6 The contractor who performed the alteration shall also request an inspection within the timelines defined in the regulation (O.Reg. 209/01).

Note: Copies of registered design submissions and electrical schematics should reside with the device and/or device owner.

Any person involved in an activity, process or procedure to which this document applies shall comply with this document.

This order is effective immediately.

DATED this 17th day of September 2018

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Roger Neate
Director, O.Reg 209/01 (Elevating Devices)

BACKGROUND

- Vertical platform lifts with installation number 81653 and higher were submitted under CSA-B355-00 Lifts for persons with physical disabilities Supplement No.1, September 2002 (Adopted June 1, 2004) or later editions.
- There is an estimated 3700 Vertical Platform Lifts requiring assessment.
- There have been incidents where the failure of an anti-creep or levelling switch has caused a lift to move unexpectedly and uncontrolled from a landing
- One type of switch that has been identified as a problem is a glass reed switch SPDT (Single Pole, Double Throw) design. When the glass breaks, the reeds short together and because there is no redundant device, the lift moves unexpectedly and uncontrolled from the landing with or without the doors closed.
- Protection in the case of failure of magnetically operated switches, contactors, or relays was first introduced on July 1, 1980 and required that the failure to release in the intended manner was not permitted to prevent a lift from stopping in response to any electrical protective switch (allow the lift to move away from a landing with the door open).
- Specific requirements for the Anti-creep Device where introduced in March 1, 1987. The requirement for the anti-creep device in B355 has changed over time, first requiring positive mechanical separation and then redundant switches required regardless of the type of switch in the 1994 edition.
- Starting in the 1994 edition of B355, redundant switches were required to be checked for failures and the lift prevented from restarting when the first failure occurred in order to prevent cascading failures from occurring and allowing the lift to move away from the landing with the door open.
- In Supplement 1 of the 2002 edition of B355, the requirement for the Anti-Creep Device to have positive mechanical separation was removed, mainly because redundant switches were already required, and secondly because of the difficulty in designing a switch to function this way.
- This order has been created to ensure, that as a minimum, all glass reed type anti-creep or levelling switches have a redundant device that will prevent the movement of the device if one of the switches were to fail.

Effective in June 1, 2004 CSA-B355-00 Supplement No. 1, September 2002 was adopted including Maintenance of B355 devices per Appendix B. B355 Appendix B required:

B4.3 Other Tests
B4.3.1 Failure Protection

All circuits and/or parts relating to protection in the event of failure shall be tested to determine that they function in accordance with the requirements of Clause 8.4.2.

8.4.2 Protection in the Case of Failure

The design and installation of the control and operating circuits shall conform to the following:

(a) The occurrence of a single ground fault; the failure of any single magnetically operated switch, contactor, relay, or any static control device; or the failure of any levelling switch or any anti-creep switch shall not

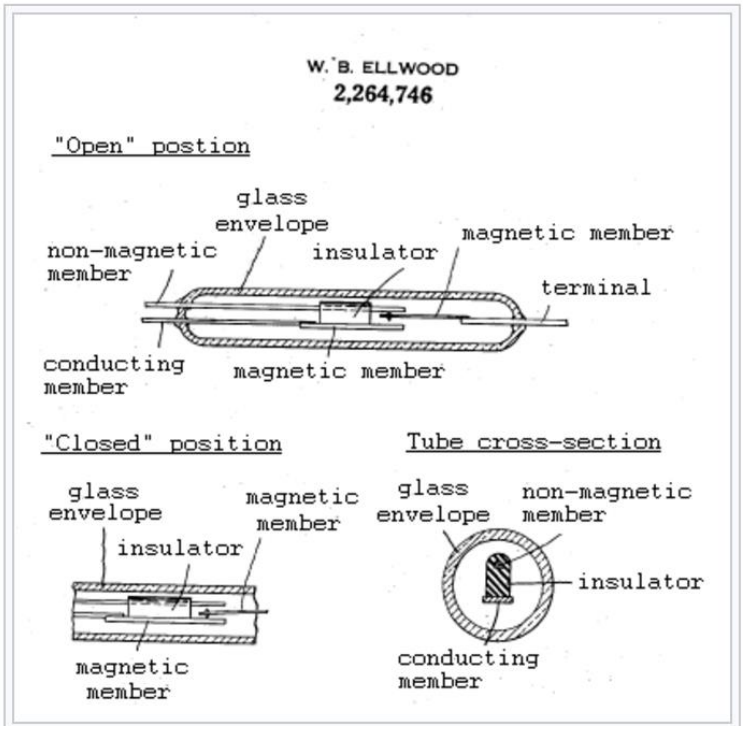
(i) render any electrical protective device ineffective (see Clause 8.5); and

(ii) permit the carriage to move beyond the automatic or anti-creep levelling zone, whichever applies.

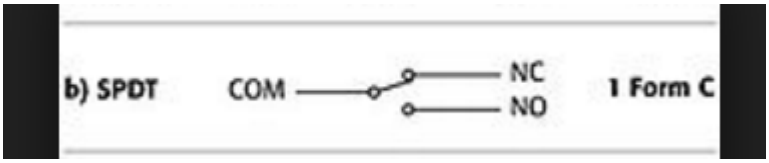
(b) When a single ground failure as specified in Item (a) occurs, the carriage shall not be permitted to restart.

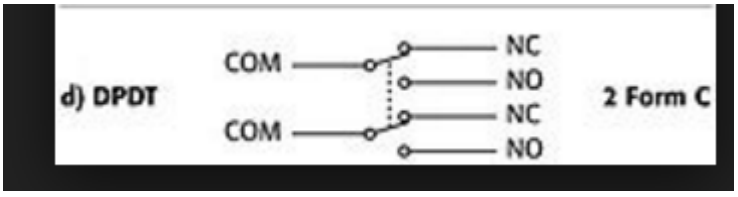
Compliance Note:
Contractors updating circuits per this order may discover other circuits not in compliance with single failure requirements per the code at the time of the original design and should take appropriate measures to address. Such difficiencies if found during a design review may prevent registration until relevant single failure issues are addressed.

Example: Magnetically Operated Reed Switch (Single Pole double throw – C Form contact)
Drawing 0 – Magnetically Operated SPDT Glass reed switch.

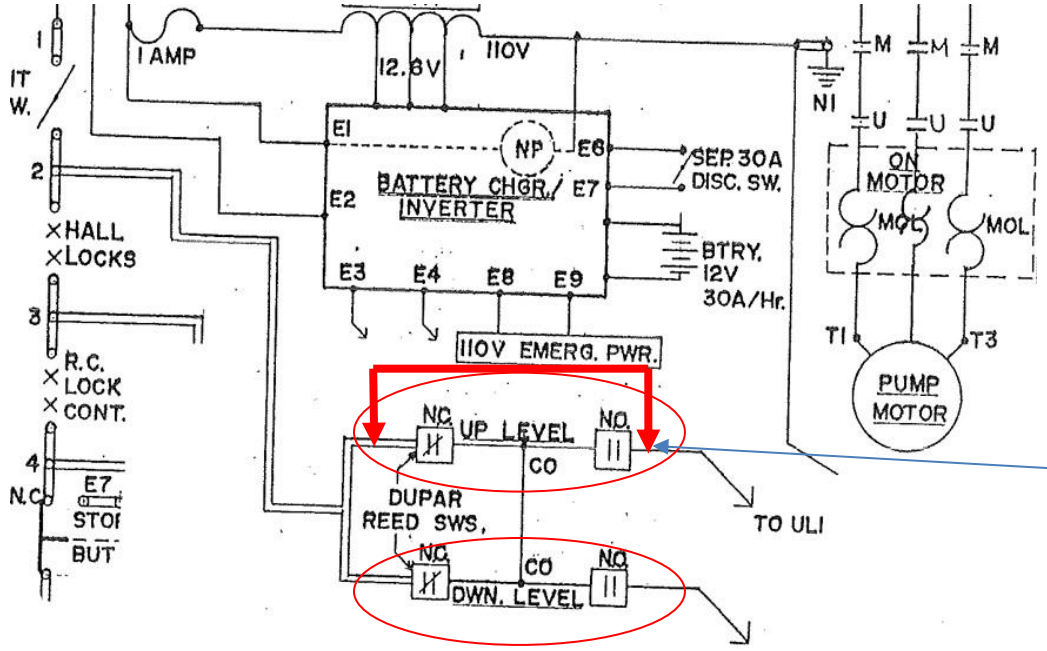


C Form Contact Electrical Representation (Single and Double pole shown): A switch with one common point (single pole) and two possible positions (Double throw). Easily distinguishable in the field as a three terminal switch (per pole).

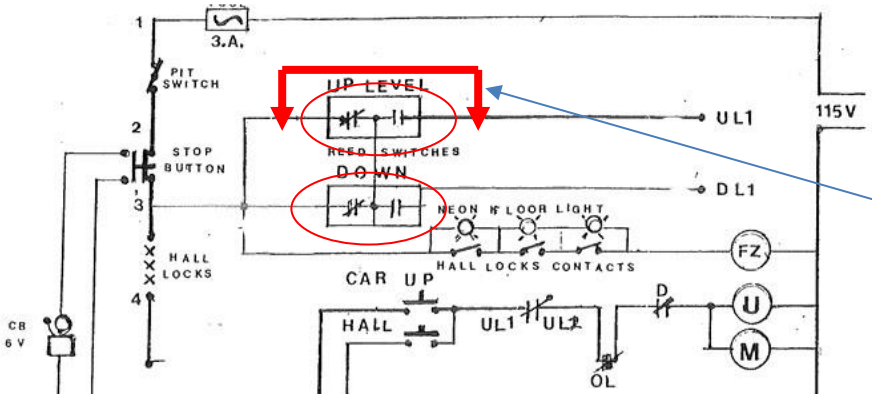




Drawing 1: SPDT Reed switch design: When glass reed breaks, short occurs across both sets of contacts and shorts out door lock circuit, moving the lift with the door open. This can occur in both the up or down levelling circuit.



Drawing 2: SPDT Reed switch design: When glass reed breaks, short occurs across both sets of contacts and shorts out door lock circuit, moving the lift with the door open. This can occur in both the up or down levelling circuit.



Drawing 3: Single reed anti-creep switch a. Failure allows lift to move with doors open.