

Common Findings from Lift and Escalator Inspections and Incidents



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No. of Slides: 32







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2019 Common Findings from Lift Inspections









2018 ~ 2019 Lift Industry Performance

NC/Audit

2018 ~ 2019 Industry Performance Trend





BMSM Regs 2016 - Maintenance Outcome (MO) under Part 1 of First Schedule

	MO	Part 1 of first schedule -Maintenance Outcome	MO	Part 1 of first schedule -Maintenance Outcome
	1.	Door open control	11.	Direct current machine
	2.	Door protective Devices	12.	Overspeed governor
	3.	Lift car doors and lift landing doors	13.	Main rope and compensation rope
	4.	Lift car emergency Alarm	14.	Compensation rope and compensation rope sheave tie-down and tensioning
1	5.	Lift car intercom	15.	Buffer
	6.	Emergency power supply for lift car lighting and Ventilation	16.	Controller and electrical system
	7.	Movement of lift car	17.	Guide shoes or rollers of lift car and counterweight
	8.	Housekeeping	18.	Safety gear
	9.	Lift machine and drive (including motor, gear box, drive sheave and motor generator set)	19.	All lift parts
	10.	Brakes of lift machine and drive	20.	Stopping or level accuracy 5







2019 Non-Compliances (NC) on Lift audits













MO 6. Emergency power supply for **Restricted** lighting and Ventilation

Medium Risk

Wrong/ Broken wire connection OR EBOPS Battery Flat











Advisory - BCA/EMEG/GEN/2020/039



• Ensure that ventilation fan is able to function as intended during power failure (especially during COVID Period).







MO 4 & 5. Lift car emergency Alarm, *Restricted* Intercom

Low Risk



No intercom was installed OR No connection of Intercom

Emergency alarm & Intercom not functioning or either of the device is not working

<u>CP2: 1979 – Clause 24.2</u> – A telephone, intercom system or other communication devices for communication with someone outside the lift shall be installed in every lift in all public buildings.

<u>CP2: 2000 – Clause 12.2.2</u> – Where required, a telephone, intercom system or other communication devices for communication with someone outside the lift shall be installed in every lift.

<u>SS550: 2009 – Clause 12.2.2</u> – A telephone, intercom system or other communication devices for communication with someone outside the lift shall be installed in every lift.



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IO 12. Overspeed governor



High Risk



44%

Electrical switch of governor is **misaligned, missing, tampered or bypassed** resulted in Overspeed governor was not able to activate the safety gear.

Governor switch misaligned/ bypass



<u>Video</u> Safety Device cannot be activated when triggered. Possible reason, Gov. Rope worn out.



MO 12. Overspeed governor

High Risk

Restricted

Restricted movement of the parts in the governor

Video – Overspeed Gov. with restricted parts, not sufficiently lubricated.





Video – Overspeed Governor with restricted parts, not sufficiently lubricated.







MO 12. Overspeed governor (tension pulley)

56%







estricted

Governor rope **slack switch** is faulty, damaged, **contains missing parts** or **misaligned** Under CP2:2000 & SS550:2009 – clause 8.1.5, The breakage or slackening of the governor rope shall cause the motor to stop by means of an electric safety device.

Medium Risk



No Switch installed.Fixed on Bracket. No Tensioning





MO 14. Compensation rope & compensation rope sheave tie-down and tensioning

Medium Risk

Compensation rope or chain too low & touching or rubbing the pit floor













MO 1. Door Open Control



Low Risk

Doors failed to stay open/ re-open when door open button in the car is pressed.



2019 Lift and Escalator Incident findings









2019 lift incident findings due to equipment failure

Equipment failure includes,

- Levelling of lift car (Drive or invertor failure etc.);
- Door protective Devices not functioning Multibeam/ Light curtain failure.
- Ceiling fixtures fell inside car;
- Drive or brake malfunction;









Ceiling fixtures to be mechanically fastened

BCA Advisory, APPBMSMA-2017-04

- Fixtures and fittings must be secured by appropriate mechanical fasteners, such as screws, bolts and rivets.
- Adhesive tapes, glue are not acceptable.









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Ceiling fixtures to be mechanically fastened









- The tape give way and dropped down and injured the lady.
- Rectification

sided tape

Case Study

- metal brackets were then secured to the acrylic sheet using bolts.

This metal bracket was used to support an acrylic sheet (false ceiling)

The center of the metal bracket was secured to the acrylic sheet using double













Drive or brake malfunction













Lift overrun in the up direction at the top terminal landing

Video – Brake pad worn off until scr









2019 escalator incident findings due to equipment failure

Equipment failure includes,

- Sharp edge on the skirt brush deflector.
- Handrail malfunction;











Sharp edges on the skirt brush deflector



Passenger heel suffered a cut with sharp edges sighted from the travellator skirt brush deflector.Supermarket trolley constant hitting the side of the skirting causing sharp edges to be formed.









Tell-Tale sign of Handrail Malfunction



Worn off Sheave affecting tension of the handrail. Refer to OEM recommendation of change.



Clean up the foreign particles under handrail.











Tell-Tale sign of Handrail Malfunction









"SOME" possible tell-tale sign of Handrail condition

Tell-tale signs that an escalator's handrail tensioning not improperly adjusted

- a. Handrail feels hot to touch during operation;
- b. Handrail speeds are not synchronised with the escalator steps;
- c. Handrail have visible wear marks.

Some of the maintenance checks you should cover

- a. Check handrail running speed using Tachometer etc.
- b. Check handrail tension

Ensure adjustments for pressure rollers/belt/chain are appropriate; Ensure that chain sag distance is within OEM's recommendation.







Lift & Escalator Incidents

- Equipment failure due to MO non-compliance could have been prevented by compliance with MO.
- <u>Safety means cannot be bypassed</u>. For safety reason, shut down the lift or escalator till the part(s) has been replaced.
- Fixtures and fittings must be secured by appropriate mechanical fasteners, such as screws, bolts and rivets.







Responsibility of registered L&E contractors

L & E Maintenance Scope of Work

Ensure the safe and proper operations of the L&E installation and should be carried out by a competent person.

Scope includes,

- a. Lubrication and cleaning of the L&E equipment;
- b. Inspection and check for the normal proper operation of the L&E equipment including all necessary settings and adjustments;







Responsibility of registered L&E contractors

- c. Repair or replacement of L&E components or parts that is required due to wear and tear.
 - I. Contractor to ensure proper documentation on parts replacement request to owner even it is under comprehensive maintenance, (eg. Service records).
 - II. Quotation must be promptly sent and promptly follow-up.

III. Documentation must be produce when requested.





Responsibility of SPEs

Building Control Act

Under the Building Control Act, for Temporary Occupation Permit (TOP)/ Certificate Of Statutory Completion (CSC) purposes, the Commissioner of Building Control requires the submission of a CSC04 pursuant to regulation 42(2)(g) or regulation 43(3)(d) of the Building Control Regulations, in which a SPE is required to declare that he has supervised the installation of the lift or escalator, and that the design and installation of the lift or escalator complies with the Code or standard indicated in the CSC04. If the lift or escalator does not comply, then it is a **potential offence** under section 43A of the Building Control Act (submission of declaration false in a material particular).



End

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