

# Common Findings from Lift and Escalator Inspections and Incidents (Oct 22 – Sep 23)

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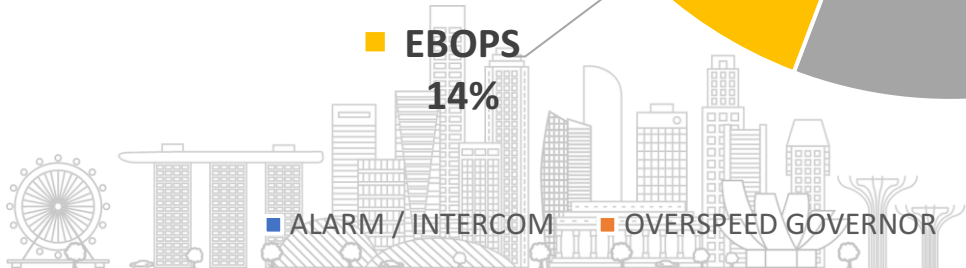
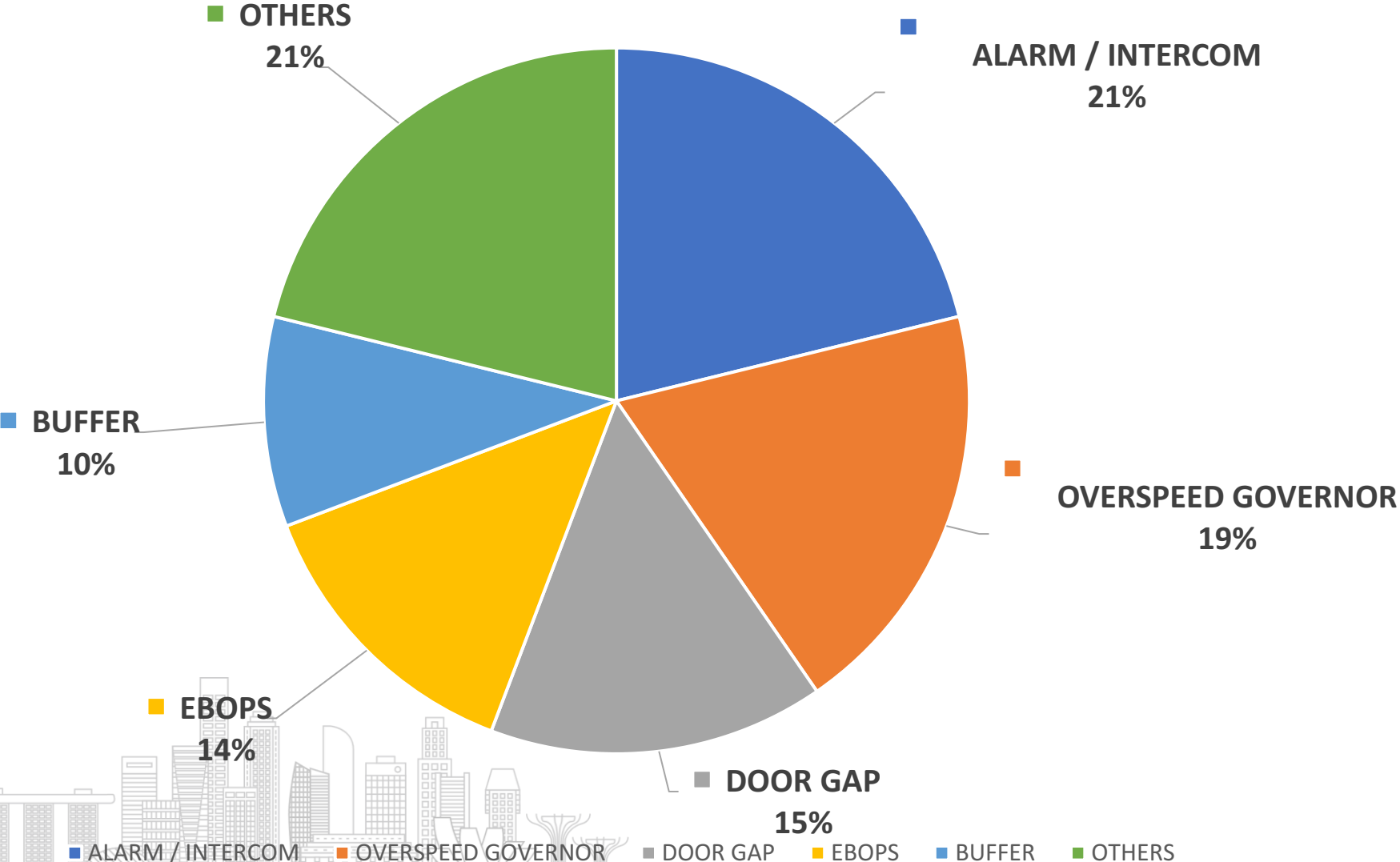
# Common Findings from Lift Maintenance Outcome Inspections

Past 12 months



# COMMON FINDINGS

Common Findings from BCA Lift Inspections (Oct 2022 – Sep 2023)



# COMMON FINDINGS

COMMON FINDINGS	DESCRIPTION
ALARM / INTERCOM	<ul style="list-style-type: none"><li>➤ Emergency Alarm / Intercom not functioning</li></ul>
OVERSPEED GOVERNOR	<ul style="list-style-type: none"><li>➤ Restricted movement of the parts in the governor</li><li>➤ Governor rope slack switch is faulty, damaged, contained missing parts, or misaligned</li></ul>
DOOR GAP	<ul style="list-style-type: none"><li>➤ Lift moved when there is a 25mm (or more) gap at lift car doorway.</li><li>➤ Clearance between lift car door panels and uprights, lintels or sills is in excess of 10mm.</li></ul>
EBOPS	<ul style="list-style-type: none"><li>➤ Lift car lighting or ventilation fan not functioning when normal power supply disrupted.</li></ul>
BUFFER	<ul style="list-style-type: none"><li>➤ Insufficient oil in the hydraulic buffer.</li><li>➤ Unsecured PU / spring buffer</li></ul>



# Learning Points from Lift and Escalator Incidents



# LIFT BELT BREAKAGE CASES



## CASE 1

1. Wrong replacement works resulted in lift traction belts subjected to abnormal wear and tear.
2. Lift was equipped with belt monitoring switches to stop lift operations upon detection of belt slack or breakage. However, it was not working properly and thus failed to capture any failure and stop lift operations.
3. All belts eventually broke undetected.
4. Lift was stopped by safety gear from plunging.



# LIFT BELT BREAKAGE CASES

## CASE 2

1. BCA received report of a lift belt breakage case.
2. Upon investigation, this is a lift equipped with 5 traction belts, where one lift belt have broken, while another two belts exhibits excessive wear and tear signs.
3. Lift belts breakage was not detected by the belt monitoring device, as it was not functioning properly.



# LEARNINGS FROM BELT BREAKAGE CASES (LIFT INCIDENTS)



## WHAT YOU SHOULD DO

1. Belt driven lifts must be equipped with 3 or more traction belts
2. Belt Monitoring Device must be monitoring the belts real time and installed / adjusted properly so that it is functioning as intended.
3. Belt Monitoring Device should stop a lift operation immediately upon detection of belt abnormalities.
4. Traction belts must be checked for any surface cracks, discoloration or any other abnormalities during maintenance.
5. Traction belts to be replaced according to replacement frequency recommended by manufacturer.



# ESCALATOR HANDRAIL INCIDENTS

## CASE 1

1. Elderly female pax lost balance when holding onto stalled handrail of an upriding escalator. She fell backward onto another male elderly pax causing both to fall together and suffered injuries.
2. Upon investigation, one of the handrail pressure tensioning rollers had ruptured, causing the handrail to stop moving.



# ESCALATOR HANDRAIL INCIDENTS

## CASE 2

1. An elderly female pax held onto a downriding escalator's handrail, before the handrail slipped under pressure and caused the her to fall and suffered injuries.
2. Upon investigation, 2 out of 6 rollers of the pressure roller assembly were not in contact with the handrail, likely caused the handrail to slip under pressure.



# LEARNINGS FROM ESCALATOR HANDRAIL INCIDENTS

## WHAT YOU SHOULD DO

1. To check for Handrail Drive Sheave thickness (diameter), Handrail inner canvas conditions, Tensioning of Handrail (spring length). Handrail Drive Chain conditions, Handrail Drive Belt conditions and Handrail Pressure Rollers' condition (based on diameter) during maintenance.
2. To conduct handrail pull test to verify that handrail was functioning as intended.
3. To recommend for parts replacement if necessary.
4. To install handrail speed monitoring device (if possible). Otherwise, escalator owner must conduct daily checks on handrail movement.



# SAMPLE HANDRAIL INCIDENTS PHOTOS



Excessive Wear and Tear

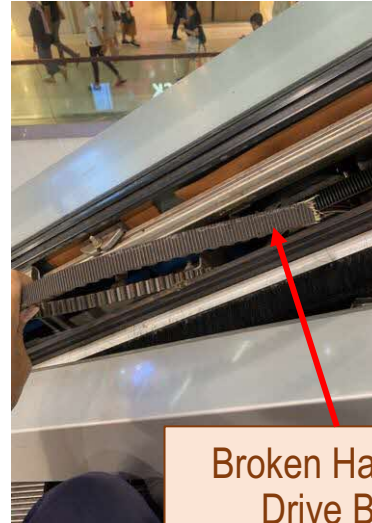


Improper Tension



## HANDRAIL PRESSURE ROLLERS

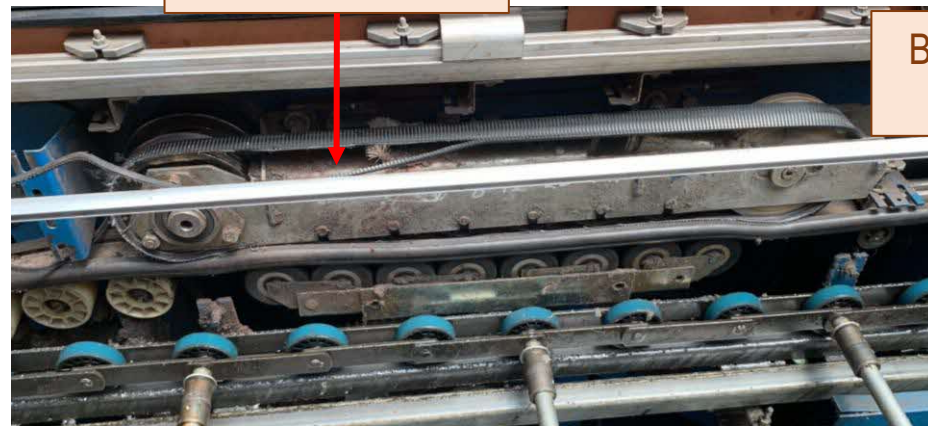
## HANDRAIL DRIVE CHAIN / BELT



Broken Handrail Drive Belt



Broken Handrail Drive Chain



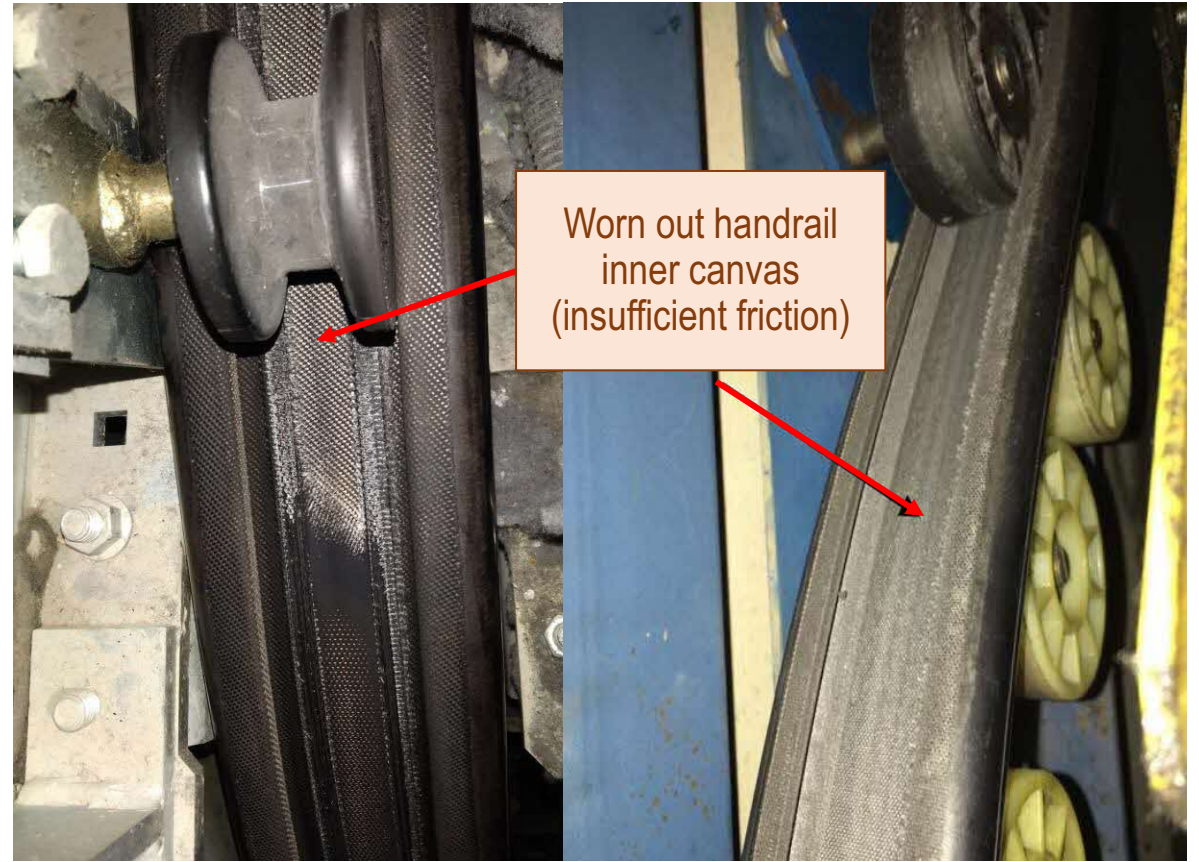
# SAMPLE HANDRAIL INCIDENTS PHOTOS



Worn out Handrail Sheave

HANDRAIL DRIVE SHEAVE

HANDRAIL INNER CANVAS



Worn out handrail inner canvas (insufficient friction)

# Others



# POINTS TO NOTE

## INADEQUATE ESCALATOR MISSING STEP SENSOR PRACTICE

1. BCA noted some escalator contractors practise testing of missing escalator sensors via reading of error code from controller under the assumption that the missing step sensor was installed and functioning properly.

## WHAT YOU SHOULD DO

1. Instead of the practice above, contractor should conduct functional checks, (eg: an escalator step should be removed and escalator to be cycled for testing of missing step sensor.)



# POINTS TO NOTE

## HANDLING OF NON-COMPLIANCE OBSERVATIONS

1. In event of any non-compliances observed during maintenance or inspection sessions (non-incidents), lift / escalator contractor should try to rectify the non-compliances immediately if possible.
2. For cases where the non-compliances cannot be rectified immediately and exhibit high safety risk to user, contractor should recommend suspension of lift / escalator operations. For cases where lift / escalator continues to operate despite the high safety risk, lift / escalator contractor should inform BCA .
3. For cases where rectification requires approval of quotation from owner, lift / escalator contractor should inform owner as soon as practicable and follow up when necessary.
4. Owner should respond to contractor's recommendation in a timely manner as it is owner's duty to ensure that the lift/escalators are operating in a safe manner.



# POINTS TO NOTE

## EXAMINATION, INSPECTION AND TESTING OF LIFT FOR RENEWAL OF PERMIT TO OPERATE (PTO)

1. Through recent audits of PTO renewal inspections, BCA noted that a number of PTO renewal inspections were carried out without the presence of a Specialist Professional Engineer (SPE) nor a Lift and Escalator Inspector (LEI). These inspections were required to be redone in the presence of an SPE/LEI.
2. Under Regulation 7(3) of Building Maintenance and Strata Management (Lift, Escalator and Building Maintenance) Regulations 2016, it is a Lift Service Contractor's duty to ensure that the PTO renewal inspection was carried out in the presence of an SPE.
3. Under Regulation 8(5) of Building Maintenance and Strata Management (Lift, Escalator and Building Maintenance) Regulations 2016, it is an offence for an SPE to make false declarations in the PTO renewal application to Commissioner of Buildings.



# Thank You



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