

Common Findings from Lift and Escalator Inspections and Incidents (Oct 21 – Sep 22)

Presented by: Mr. Khoo Yih Perng

Executive Engineer

Electrical and Mechanical Engineering Group,
Building and Construction Authority (BCA)



CONTENT



1. COMMON FINDINGS FROM LIFT INSPECTIONS



2. LIFT INCIDENTS



3. ESCALATOR INCIDENTS

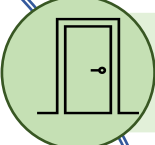



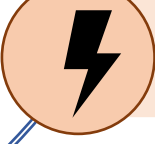


Common Findings from Lift Maintenance Outcome Inspections

Past 12 months (Oct 21 – Sep 22)



COMMON FINDINGS

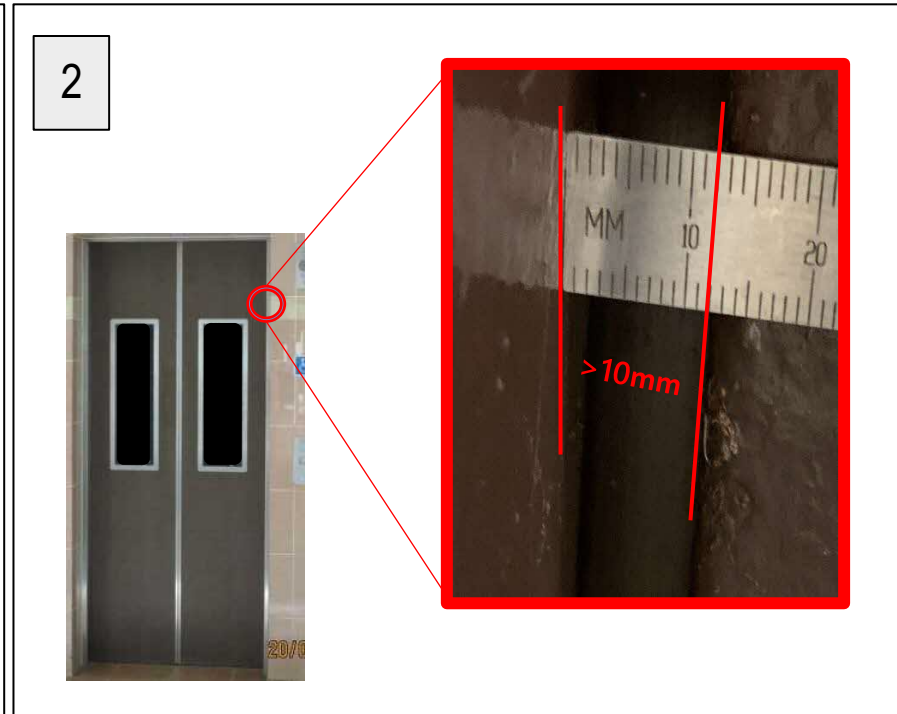
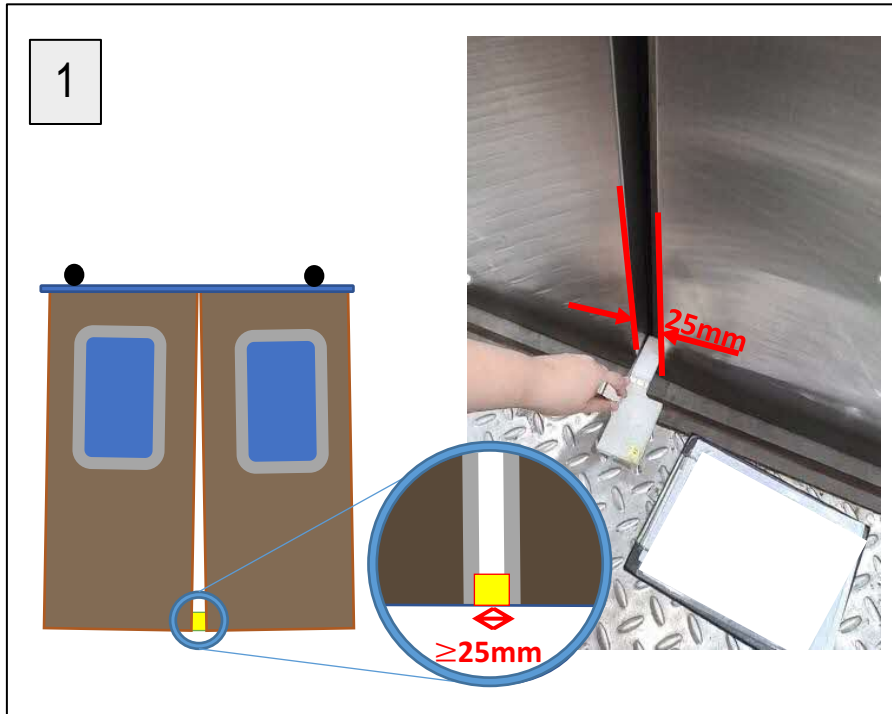
-  1. LIFT DOORS
-  2. EMERGENCY POWER SUPPLY
-  3. ALARM / INTERCOM
-  4. OVERSPEED GOVERNOR
-  5. CONTROLLER ELECTRICAL SYSTEM



TOP 5 COMMON FINDINGS (1)



1. LIFT DOORS



FINDINGS

- (1) Lift moved when there is a 25mm (or more) gap at lift car doorway.
- (2) Clearance between lift car door panels and uprights, lintels or sills is in excess of 10mm.

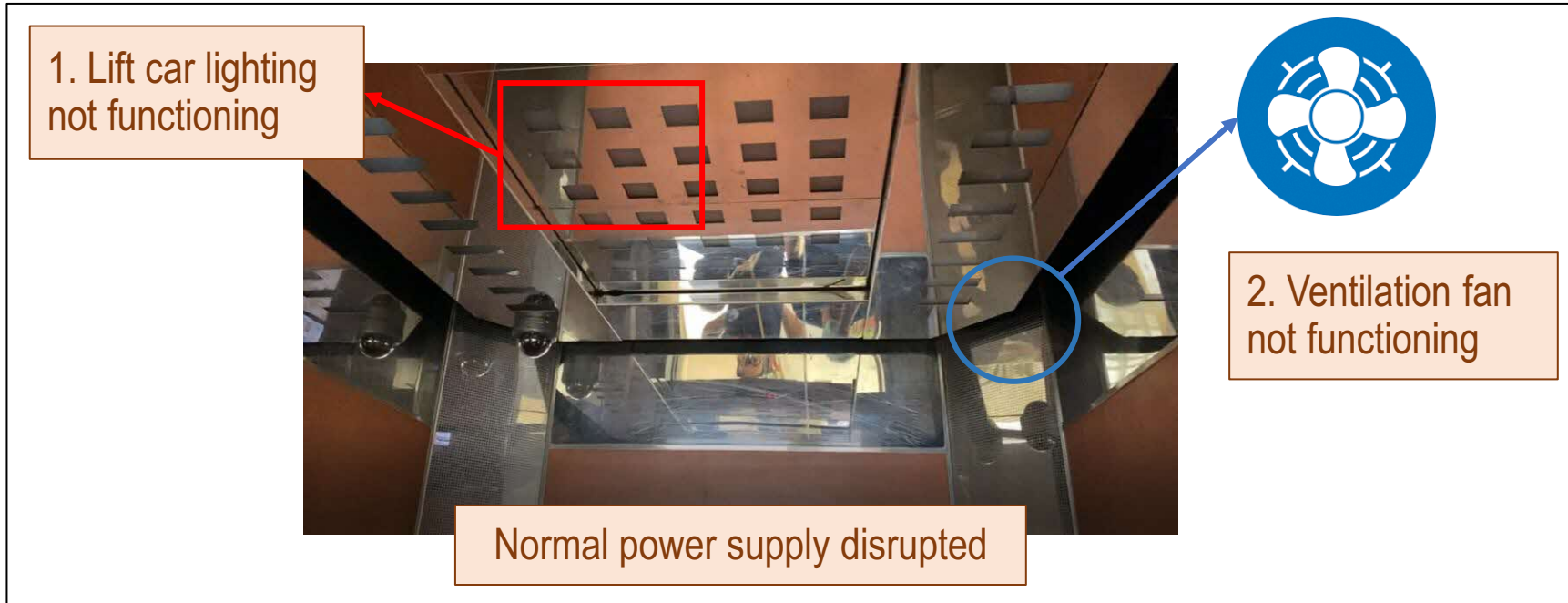
RECOMMENDATION

1. To conduct door gap test and make proper adjustments if necessary.



TOP 5 COMMON FINDINGS (2)

2. EMERGENCY POWER SUPPLY



FINDINGS

Lift car lighting or ventilation fan not functioning when normal power supply disrupted.

RECOMMENDATION

1. To test during maintenance and ensure that emergency light and fan remain functioning when normal power supply was disrupted.
2. To replace the EBOPS battery if battery flat.

TOP 5 COMMON FINDINGS (3)



3. ALARM / INTERCOM



FINDINGS

Emergency alarm / Intercom not functioning when tested.

RECOMMENDATION

1. To test during maintenance and ensure that alarm and Intercom are functioning properly.



TOP 5 COMMON FINDINGS (4)



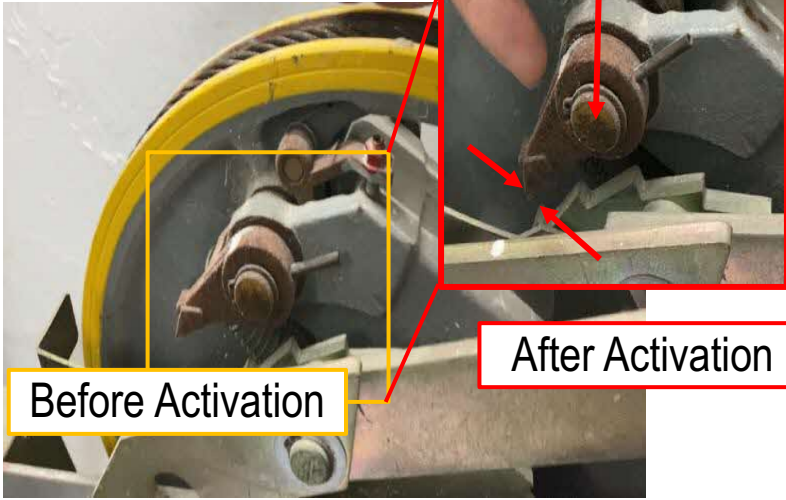
4. OVERSPEED GOVERNOR

1

Rusted Parts

After Activation

Before Activation



2



Misaligned governor tensioning switch

FINDINGS

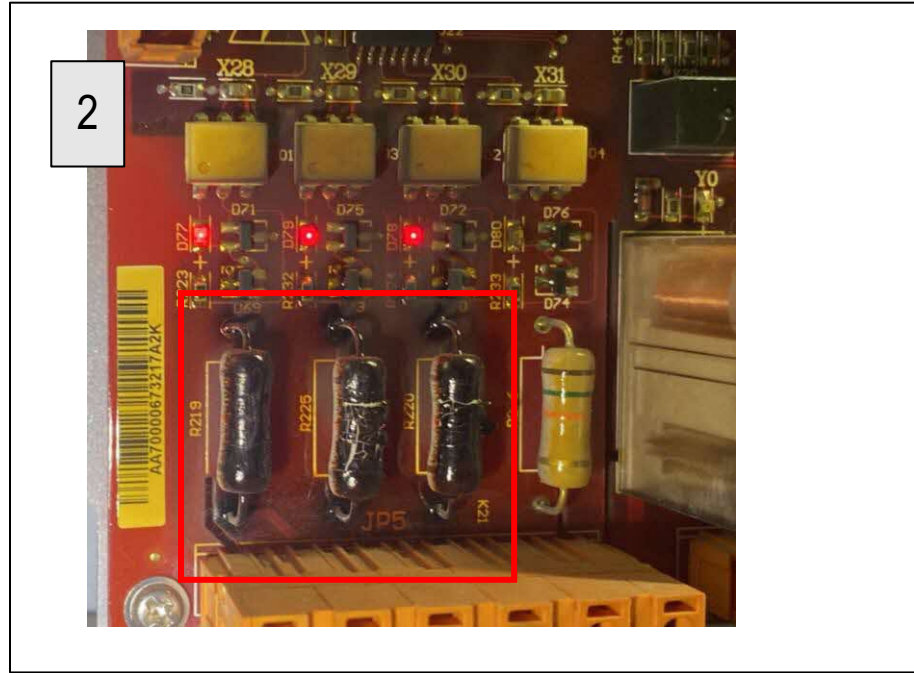
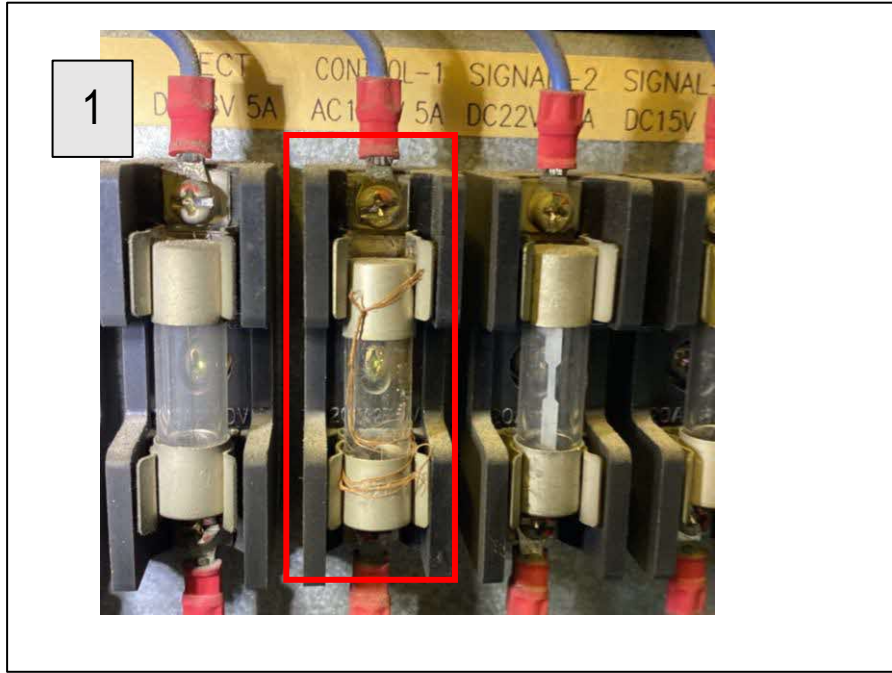
- (1) Restricted movement of the parts in the governor (pawl not able to engage the ratchet wheel).
- (2) Governor rope slack switch is faulty, damaged, contained missing parts, or misaligned.

RECOMMENDATION

1. To check for restricted movement of the components of the governor, and lubricate / replace if necessary.
2. To check for any misalignment of switches and adjust its location accordingly.

TOP 5 COMMON FINDINGS (5)

5. CONTROLLER ELECTRICAL SYSTEM



FINDINGS

- 1) Burnt fuses bypassed instead of being replaced.
- 2) Overheating signs observed on PCB Board

RECOMMENDATION

1. To replace / repair any defects observed on electrical components.

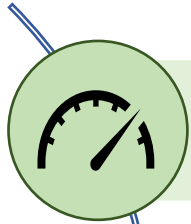


Lift Incidents

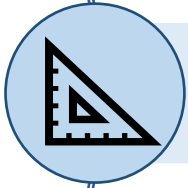
Past 24 months (Oct 20 – Sep 22)



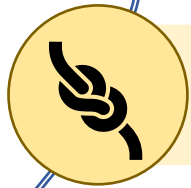
COMMON CAUSES OF LIFT INCIDENTS DUE TO EQUIPMENT FAILURE



1. LIFT BRAKE FAILURE



2. STOPPING ACCURACY



3. MAIN ROPE / SUSPENSION BELT BREAKAGE



COMMON CAUSES OF BRAKE FAILURES

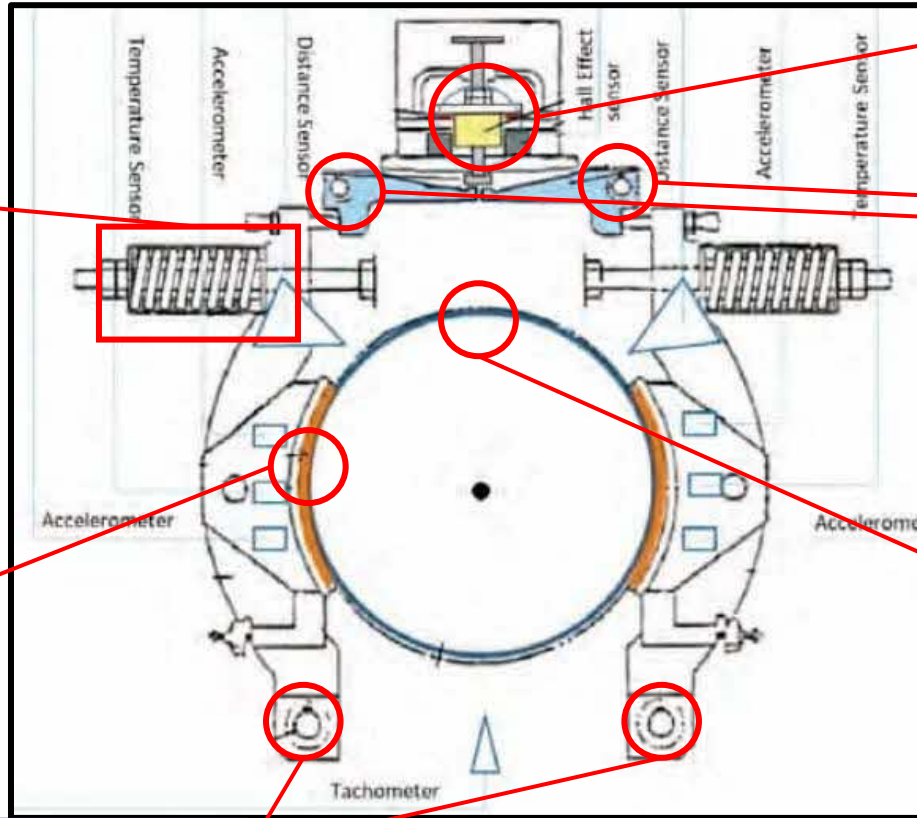
1. Improper Spring Length adjustment



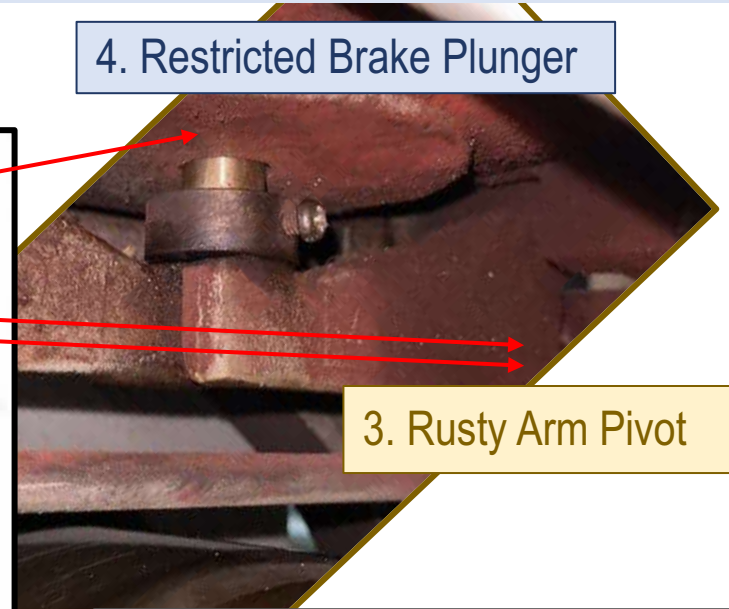
2. Contaminated Brake Pad / Drum (Scratch Mark)



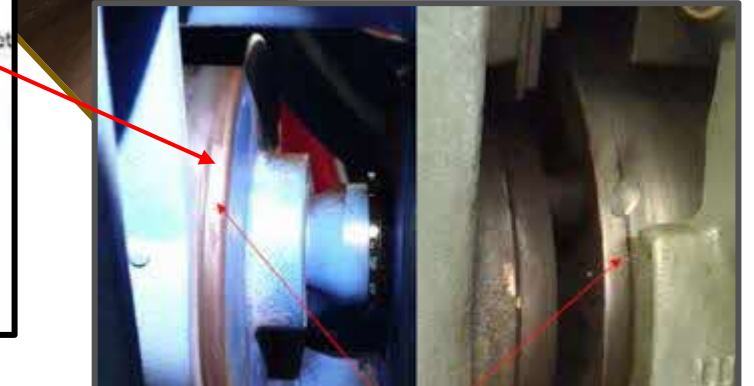
3. Rusty Arm Pivot



4. Restricted Brake Plunger



3. Rusty Arm Pivot



5. Contaminated Brake Drum (Oil Stain)



RECOMMENDATIONS

BRAKE FAILURE INCIDENTS

- Lift brake failure incidents are safety critical and should be prevented at all cost.
- Increased number of brake failure incidents in Singapore, esp among the older single plunger lifts.

RECOMMENDATIONS

1. To recommend for modernisation works to replace the single plunger brakes.
2. To recommend for installation of ACOP or UCMP.


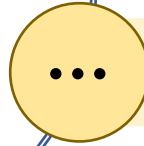


Escalator Incidents

Past 24 months (Oct 20 – Sep 22)



COMMON CAUSES OF ESCALATOR INCIDENTS DUE TO EQUIPMENT FAILURES

-  1. HANDRAIL ISSUES
-  2. OTHERS



ESCALATOR INCIDENTS

ESCALATOR INCIDENTS DUE TO EQUIPMENT FAILURES

1. Handrail Slippage
2. Handrail Stoppage

CAUSES OF HANDRAIL SLIPPAGE

1. Wear & Tear of Handrail / Handrail Drive Sheave.
2. Improper tensioning of Handrail.

RECOMMENDATIONS

1. To check for overall effectiveness of handrail systems. Parts to be checked include Handrail Sheave thickness, Handrail inner canvas conditions.
2. To check for tensioning of handrail during maintenance.
3. To recommend for parts replacement if necessary.



Worn out Handrail Sheave.



New Handrail Sheave.

ESCALATOR INCIDENTS

ESCALATOR INCIDENTS DUE TO EQUIPMENT FAILURES

1. Handrail Slippage
2. Handrail Stoppage

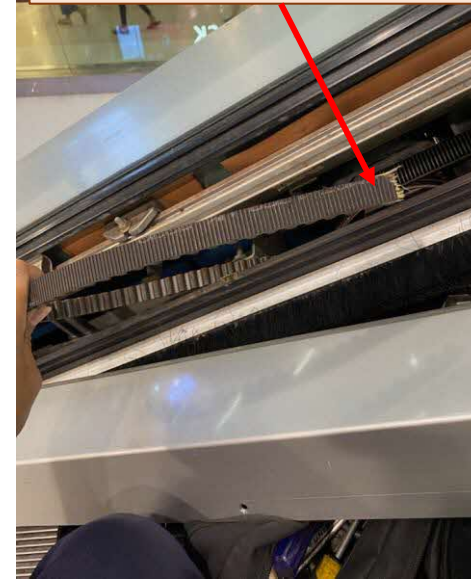
CAUSES OF HANDRAIL STOPPAGE

1. Excessive wear & tear and broken components, ran till failure occurred.

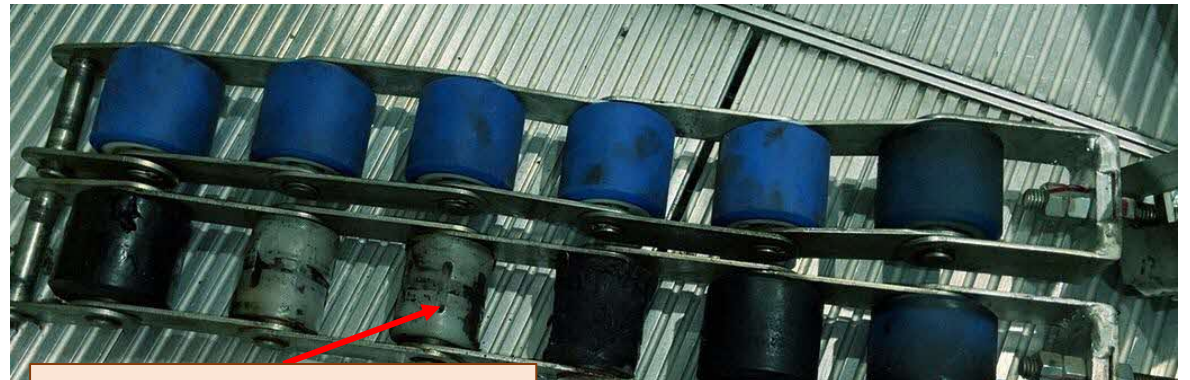
RECOMMENDATIONS

1. To check for elongation, slack, general conditions, recommend for replacement if necessary
2. Installation of handrail speed monitoring (if possible)

Broken Handrail Drive Belt



Broken Handrail Chain



Excessive Wear and Tear

LIFT MAINTENANCE GUIDE



<https://go.gov.sg/maintguide>

Scan the QR Code to download the Lift Maintenance Guidebook.



Thank You



@BCASingapore

