LIFT MAINTENANCE OUTCOME GUIDEBOOK

Version 1.2

October 2025

INTRODUCTION

The goal of this guidebook is to provide the reader with a clearer understanding of the lift maintenance requirements specified in Part 2 – Division 1 of the Fourth Schedule of the Building Control (Fixed Installations) Regulation 2025.

For the Lift Maintenance Outcome Guidebook, BCA would like to thank the Singapore Lift & Escalator Contractors & Manufacturers Association (SLECMA) for their contributions.

DISCLAIMER

This guide has been prepared by the Building and Construction Authority (BCA) to provide practical information on the various maintenance outcomes expected from proper lift maintenance only.

This guidebook is **not intended to be**:

- a legal interpretation of provisions in the Acts or Regulations; and/or
- a substitute for independent legal and technical advice.

Readers should seek professional legal advice if they need to determine specific legal rights and duties applicable to them. The Commissioner of Building Control, BCA or any agency stated in this guide is not responsible for any inaccurate and/or incomplete information in this guide.

COPYRIGHT

Important Notice: Readers must not rely on this guide for legal advice.

Table of contents

1. Door open control

Check

Ensure that when the door open button in the stationary **lift car** is pressed, the lift doors must **reopen and stay open.**

Door open button check - lift car

2. Door protective devices

Check

Ensure that upon activation of any door protective devices and sensors (e.g. lift curtain, door safety edge), the doors **must reopen**.

Light curtain

Door safety edge

Prevent

Faulty door protective devices and sensors could potentially hurt lift users if the doors do not reopen upon activation.

Faulty door protective device

3. Lift doors

Check

Lift Landing Door

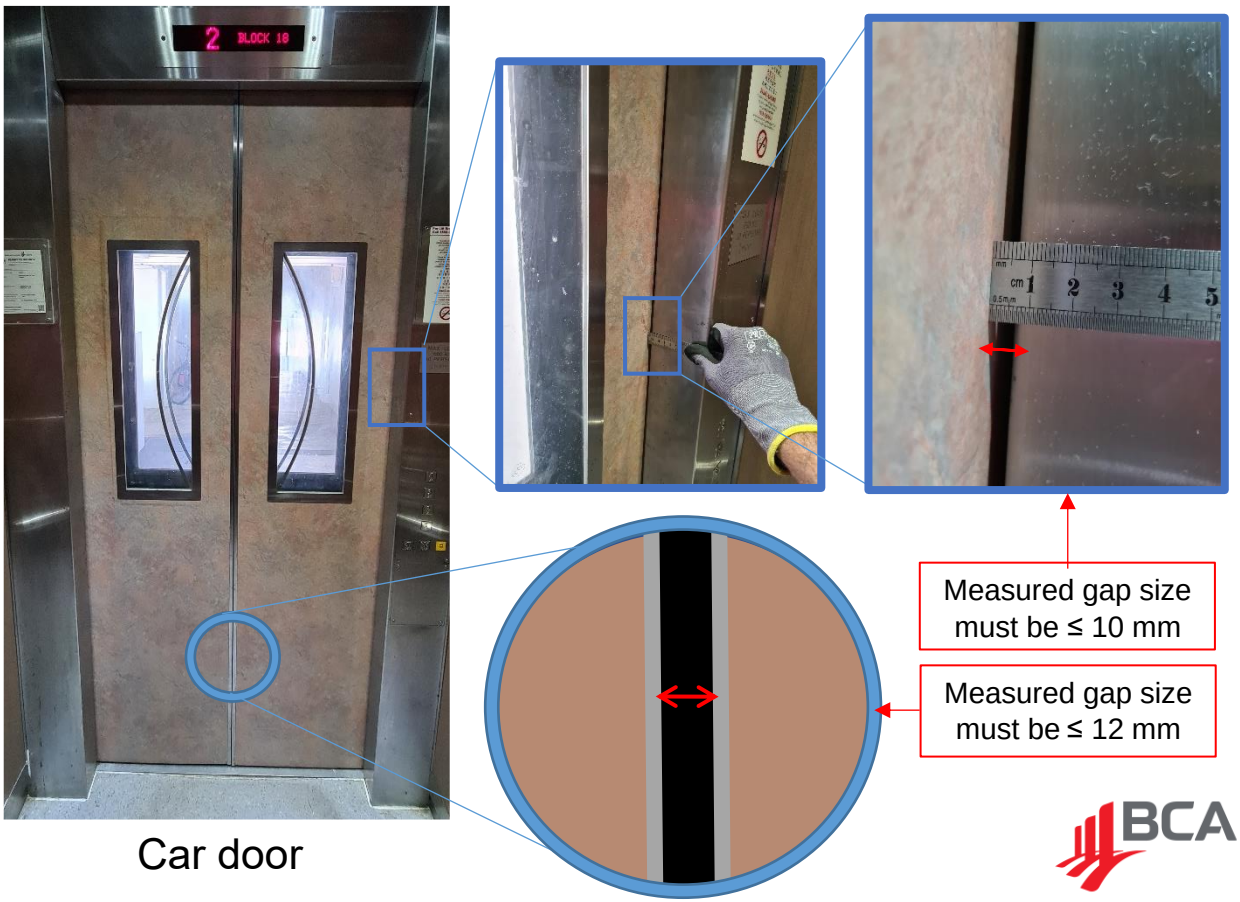
Check that the gap at lift landing doorway, the clearance between lift landing door panels and uprights, lintels or sills must **not be more than 10 mm**.

Landing door

Check

Lift Car Door

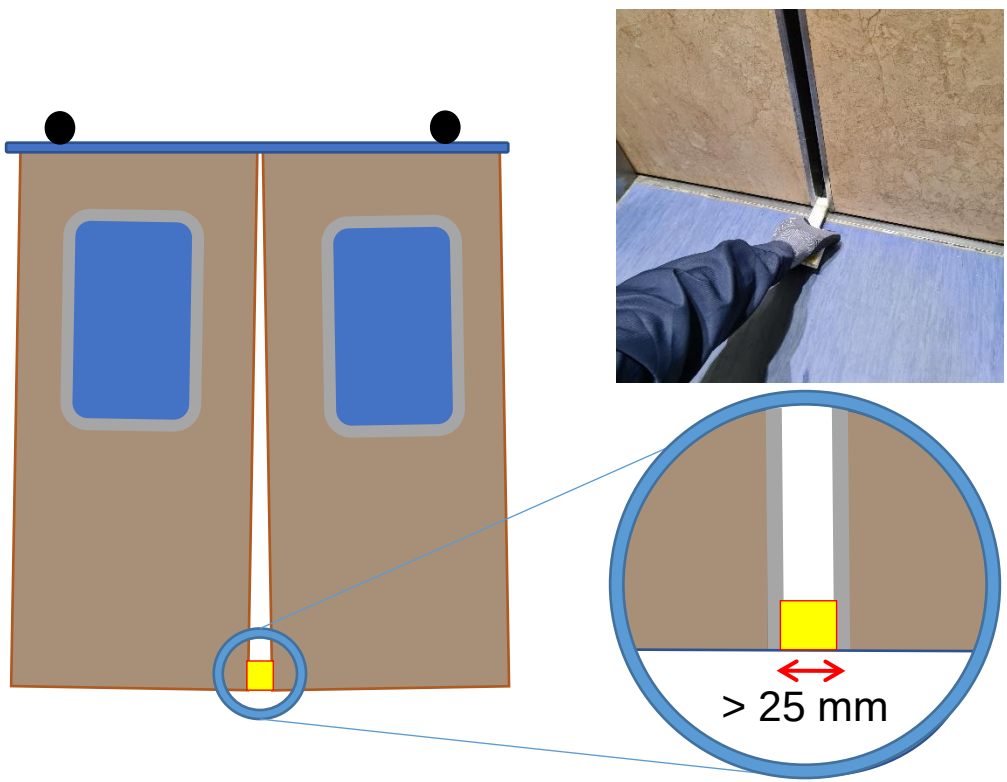
Check that the clearance between lift car door panels and uprights, lintels or sills must **not be more than 10 mm**. The gap at lift car doorway must **not be more than 12 mm.**



Car door

Check

Make sure that when an obstruction of more than **25 mm*** is placed at the car door sill level, with the landing doors in closed position, the **lift must not move.**



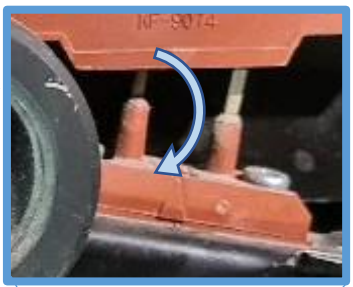
**Note: 25 mm obstruction is applicable for lift entrance height which is not more than 2.1 m (if lift entrance height is more than 2.1 m, for every 0.5 m increment in height, the obstruction at lift car doorway may be increased by 3 mm)*

Check

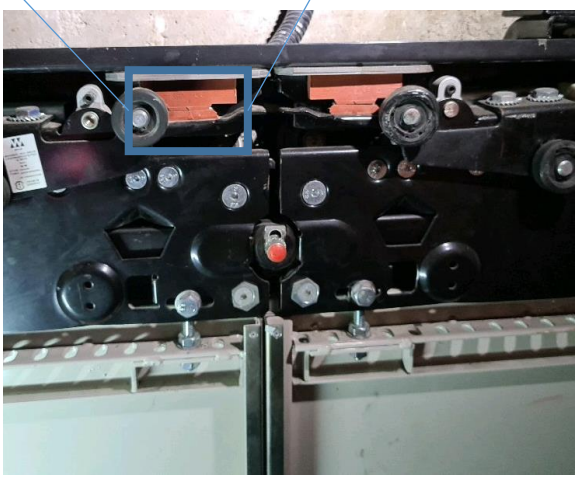
Make sure that the lift car can only move when the lift car door is closed, and the lift landing doors are closed and locked.

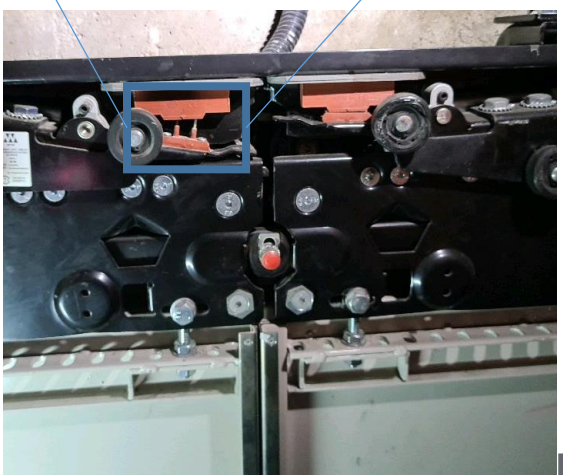
Check that when the door electrical contact switch is open, the lift car cannot move.

Open Switch



Lift car unable to move while switch open





Open door electrical contact switch

4. Lift car emergency alarm

Check

Press the lift car emergency alarm to check if it can be heard from outside the lift well and at the designated floor.

Alarm button check

5. Lift car intercom

Check

Test the intercom system to make sure that the voice communication can be heard both ways.

Intercom system

6. Lighting and ventilation fan

Check

Ensure the lighting and ventilation fan for the lift car are functioning properly.

Check for steady lighting and ventilation fan is operating at adequate strength

7. Emergency power supply for lift car

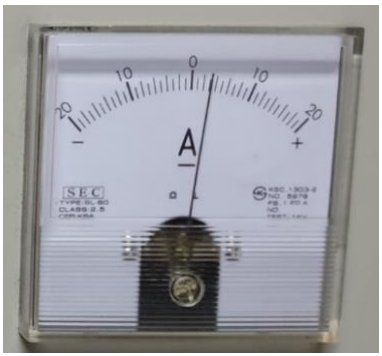
Check

Test that the Automatic Rechargeable Emergency Supply / Emergency Battery Operated Power Supply (ARES / EBOPS*) is working.

Test by pressing the test button on the ARES/EBOPS and see that the battery is discharging.

Step 1

Press the Test button on ARES/EBOPS



Step 2

Confirm that it is discharging

Check

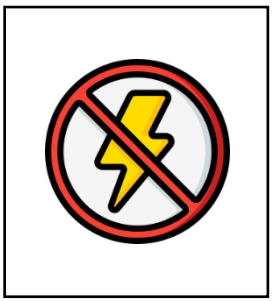
Test that the ARES / EBOPS is activated when single-phase power supply is turned off.

Step 2

Check if ARES / EBOPS has activated and discharging

Step1

Switch “OFF” Power supply



Verify that it is discharging

**Note: EBOPS (older code) and ARES (SS550:2020) refer to the same emergency power supply*

8. Emergency Lighting and ventilation fan

Check

Physically check to ensure that the **light and fan** in the lift car are working when single-phase power supply is turned off.

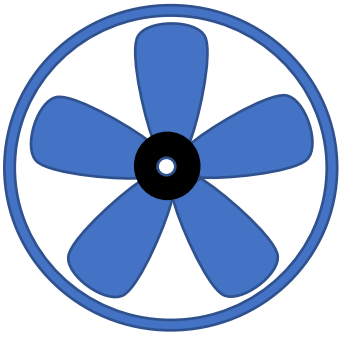
Step1

Switch “OFF” Power supply

Step 2

Check if **a light and a fan** in the lift car is working

Light



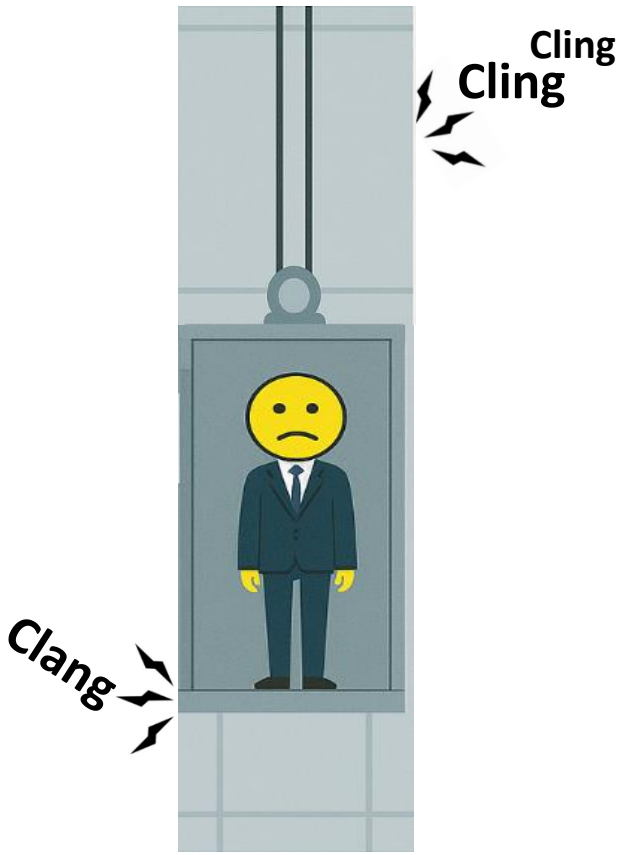
Fan

Note: The lift car emergency alarm and intercom (mentioned on pages 11 & 12) shall also be tested to ensure they function when single-phase power supply is turned-off.

9. Movement of lift car

Check

Check that lift car operates smoothly without unusual noises or vibrations.



Abnormal sound / vibration

Smooth

10a. Housekeeping - lift motor room and machinery space

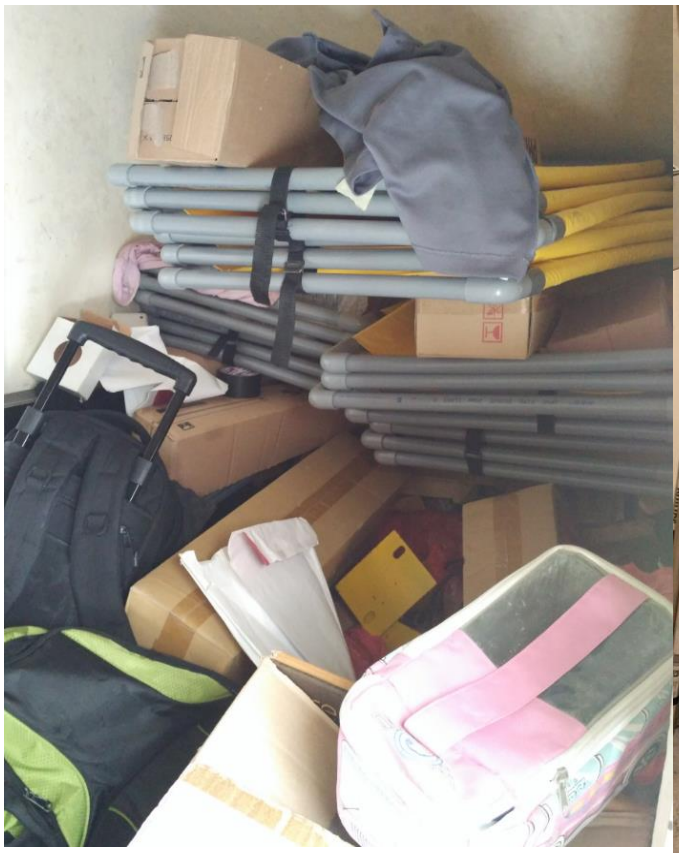
Check

Ensure that the machinery and lift motor room is clean and tidy.

Clean and tidy motor room

Prevent

Do not store unwanted or irrelevant material in machinery and lift motor room

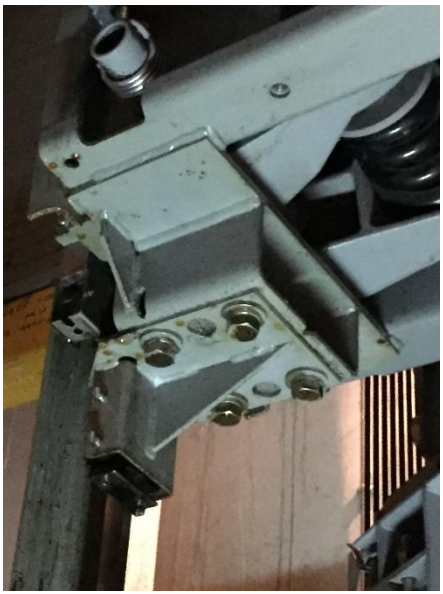


Poor housekeeping of motor room

10b. Housekeeping - lift pit and hoistway

Check

Ensure that the lift pit and hoistway is kept clean and tidy.



Clean and tidy lift pit and hoistway

Prevent

Do not store unwanted or irrelevant material in lift pit.

Do not let rubbish, debris or oil accumulate in the pit as it could lead to fire.

Poor housekeeping of lift pit and hoistway

10c. Housekeeping - lift car top

Check

Ensure proper housekeeping of lift car top and no rubbish or unnecessary items are stored on it.

Clean and tidy lift car top

Prevent

Rubbish and unauthorized items on lift car top can get in your way which can lead to accidents or damage equipment.

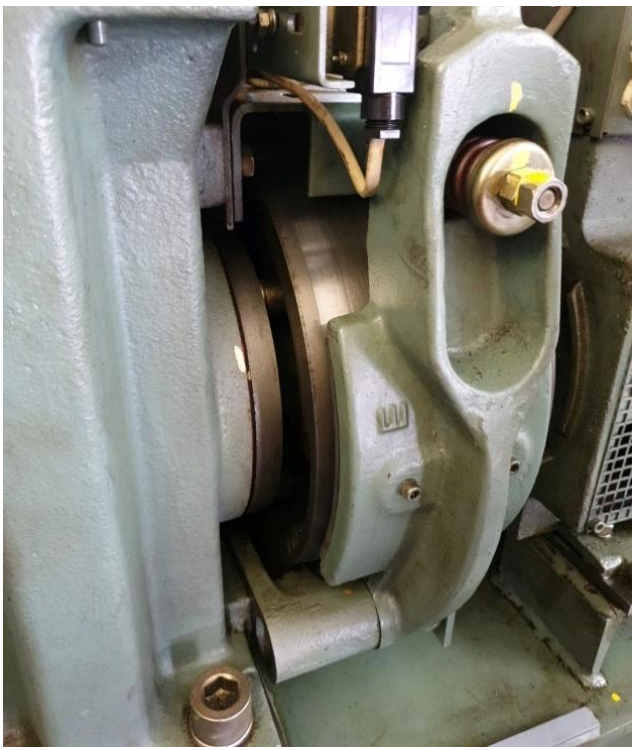
Poor housekeeping of lift car top

11. Lift machine and drive

Check

Ensure that the lift machine and drive are **securely mounted.**

Ensure that the moveable parts, joints and gear box are **well lubricated**.



Securely mounted lift machine and drive

Prevent

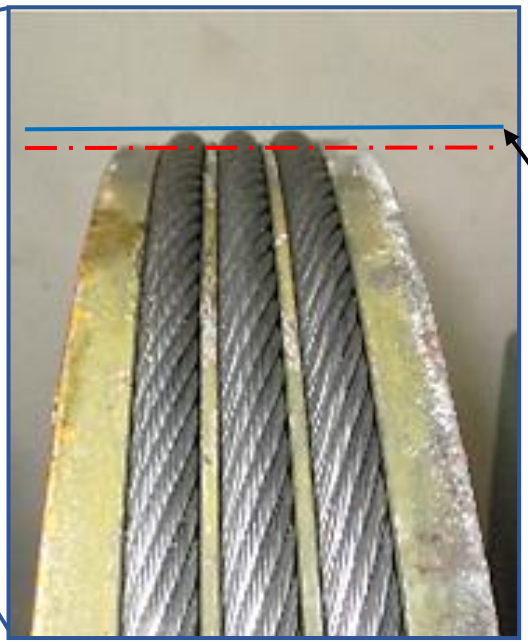
Oil leakage must not occur at the lift machine and drive.

Oil leakage at lift machine and drive

Check

Sheave wear can be detected by looking at the level of depression of the rope on the sheave grooves.

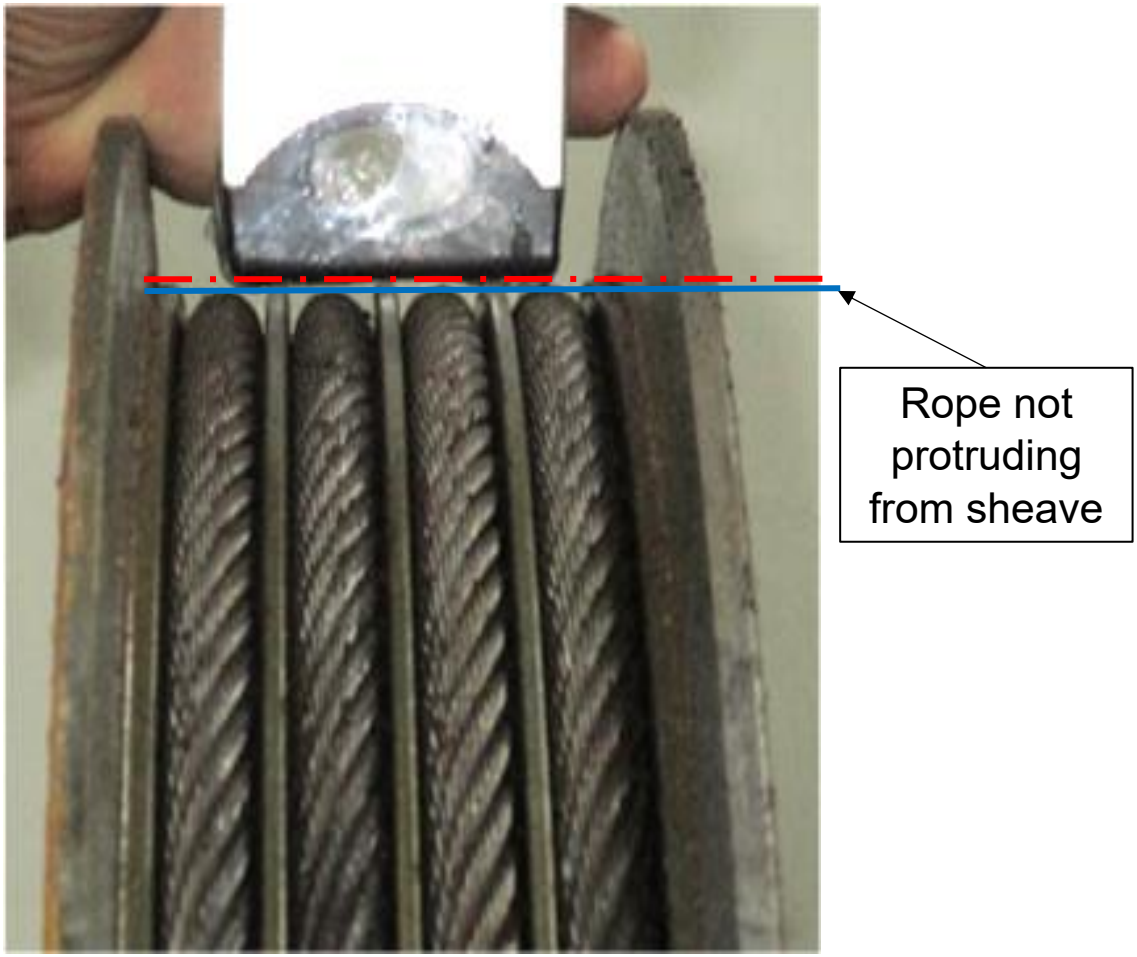
Lift drive machine



Rope on sheave

Prevent

Excessive wear of the sheave can affect the grip and lifespan of the ropes. It could also produce undesirable noise and vibration.



Worn-out sheave

12. Brakes of lift machine and drive

Check

Make sure brakes are not contaminated or at risk of being contaminated with **oil or grease**.

Brakes, when activated, must cause lift car to slow down, stop and stay at stopping position.

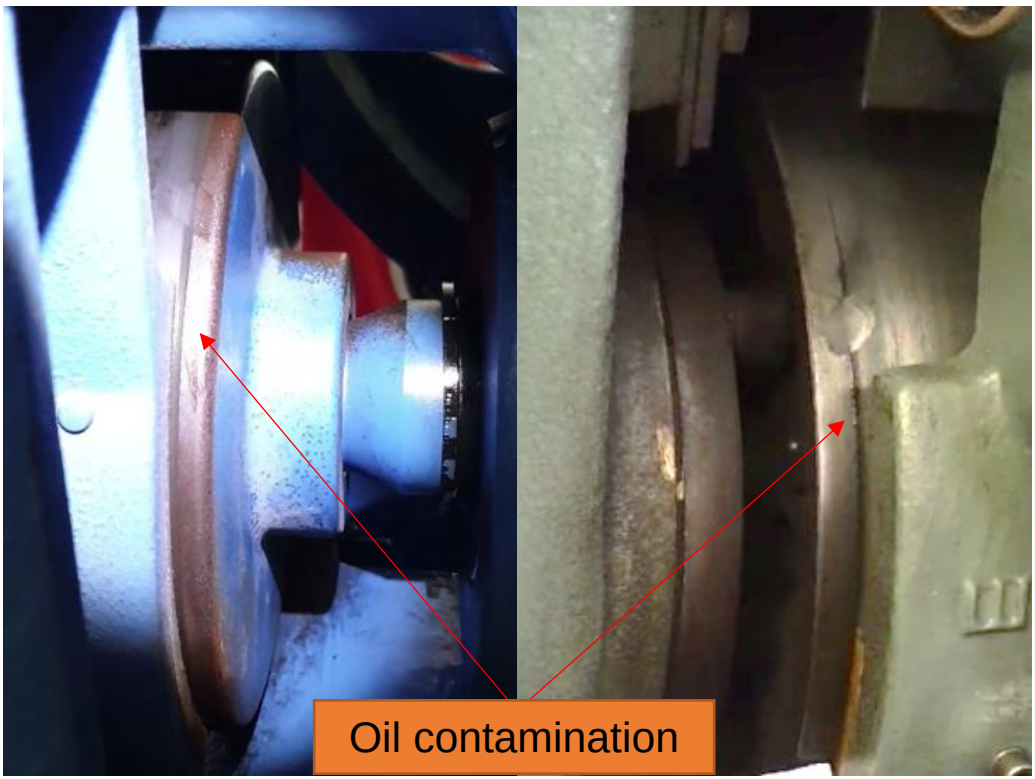
Free of oil and grease

The braking surface is free of oil and grease contamination

Prevent

Oil or grease contamination of brakes would reduce braking power which could lead to unsafe lift operation.

Therefore, any brake surfaces must be completely free from oil and grease contamination.



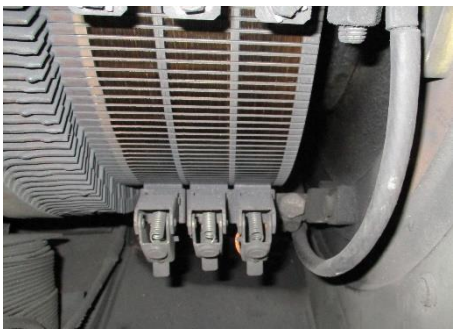
Oil contamination on edge of brake drum

13. Direct current machine

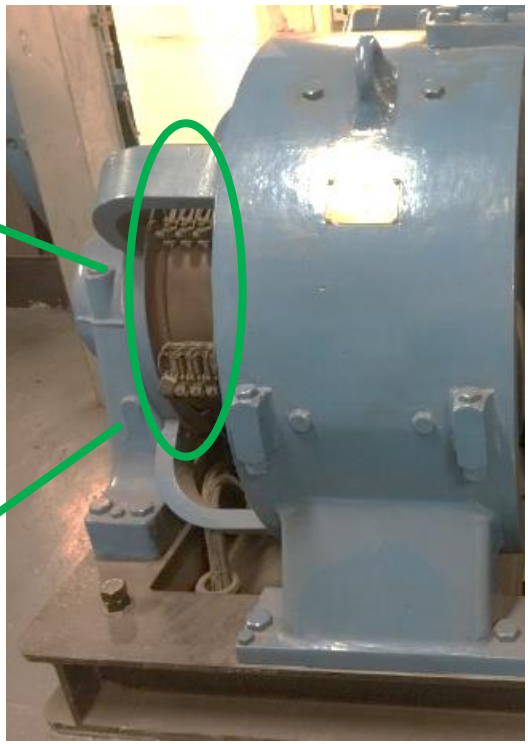
Check

Inspect carbon brush length meets manufacturer's recommended tolerance.

Ensure brush holders are free from carbon deposits, and verify commutator is clean and operates without sparking.



Brush holders



DC Machine - commutator

14. Overspeed governor

Check

Ensure that the overspeed governor can activate the lift safety gear.

Examine the governor by mechanically tripping it. Movement of components should be fast and smooth and be able to grip the governor rope.

Also test by tripping the electrical switch. Upon tripping the electrical switch, lift must stop and remain stationary.

Overspeed governor

Check

The rope slack switch must be triggered before the tensioning sheave contacts the ground.

Using a gauge (e.g. Vernier Caliper) take the average of at least three measurements of the rope diameter to check that it is within manufacturer's specifications.

Governor rope tensioning sheave

Governor rope diameter measurement

15. Main ropes and compensation ropes

Prevent

Main rope and compensation ropes must not show signs of corrosion or excessive wear and tear.

Rusty ropes

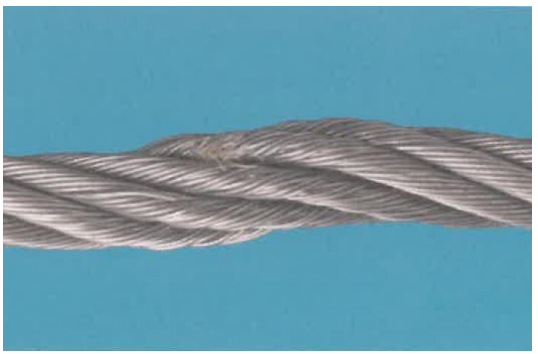
Worn-out belt

Prevent

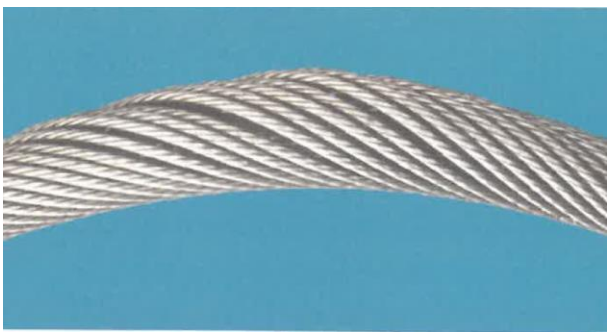
All ropes must not show signs of damage or deterioration.

Typical modes of deterioration*:

Wire protrusion



Kink



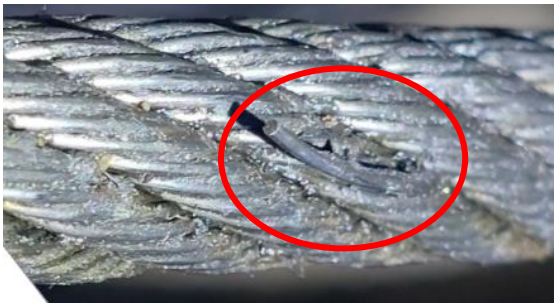
Birdcage

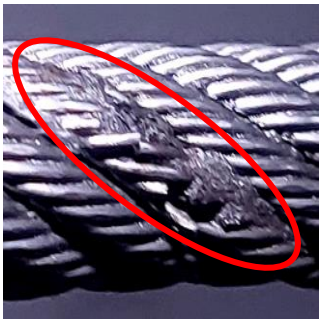
Waviness

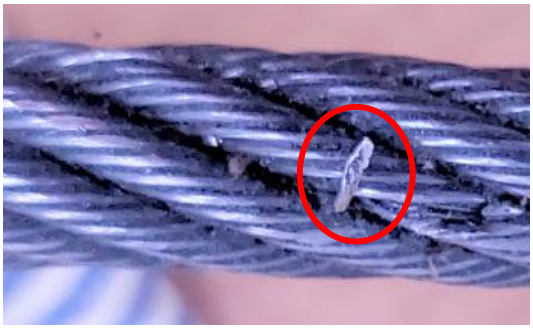
Prevent

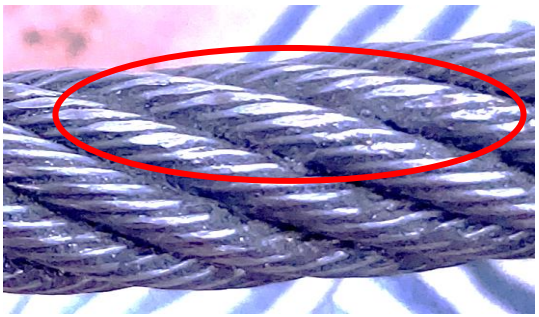
All ropes must not show signs of damage or deterioration.

Examples of damaged/deteriorated ropes:









Prevent

Inadequate rope lubrication can lead to rope rouging, causing premature rope wear and potentially reducing the strength of the rope.

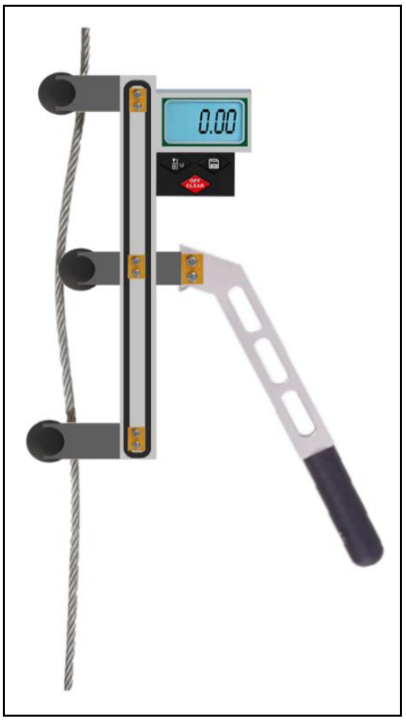
Early signs of rouging

Severe rouging

Check

Ensure that the main ropes are in good condition and that they are properly and equally tensioned.

Use a wire rope tension measurement device to check if wire ropes are equally tensioned.



Rope tension measurement device

Check

A good indication of uniform rope tensioning is by checking that the amount of spring compression is comparable.

Note: This may not be a good test method for very stiff springs.

Even spring compression

Prevent

Uneven spring compression is an indication of uneven rope tensioning.

Uneven spring compression

16. Compensation rope and compensation rope sheave tie-down and tensioning

Check

When the lift is in operation, compensation rope and compensation rope sheave tie-down must always be properly tensioned and guided.

Compensation rope sheave tie-down

Check

For lifts without compensation rope sheave tie-down, check that compensation ropes or chains do not come into contact with shaft walls, pit, guide rails, and buffers.

Compensation chains hang freely, not in contact with any surfaces

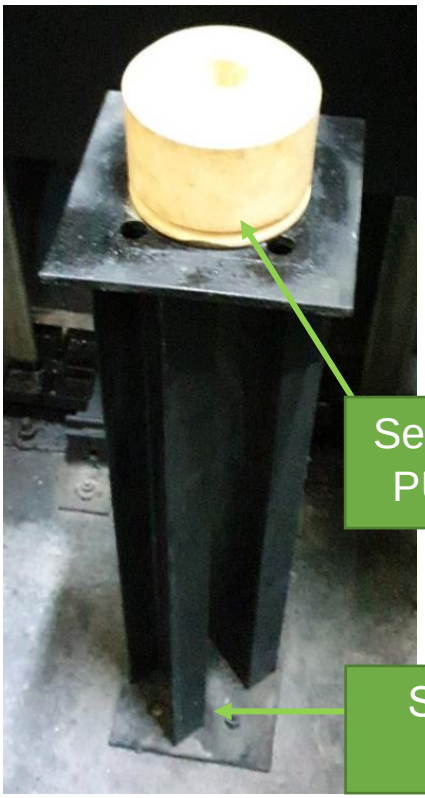
17. Buffer

Check

Make sure the buffer is securely attached and in a good condition.

For hydraulic buffer, ensure that there is enough hydraulic oil in buffer, as indicated by oil level gauge.

For polyurethane (PU) buffers, ensure that it is in a serviceable condition and within the stated life span.



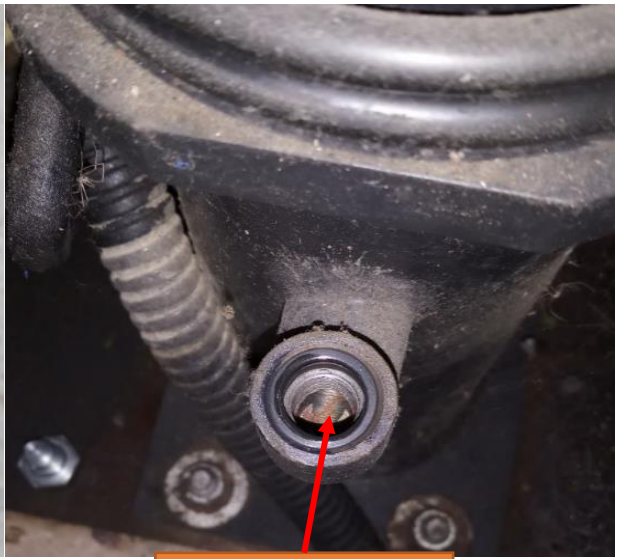
Prevent

The buffers must not be shaky or unstable.

Replace PU buffers when they are expired, damaged or have turned brittle.

Poor condition of buffer will prevent cushioning of lift car in case of an impact, increasing the risk of injury.

PU Buffer in Deteriorating Condition

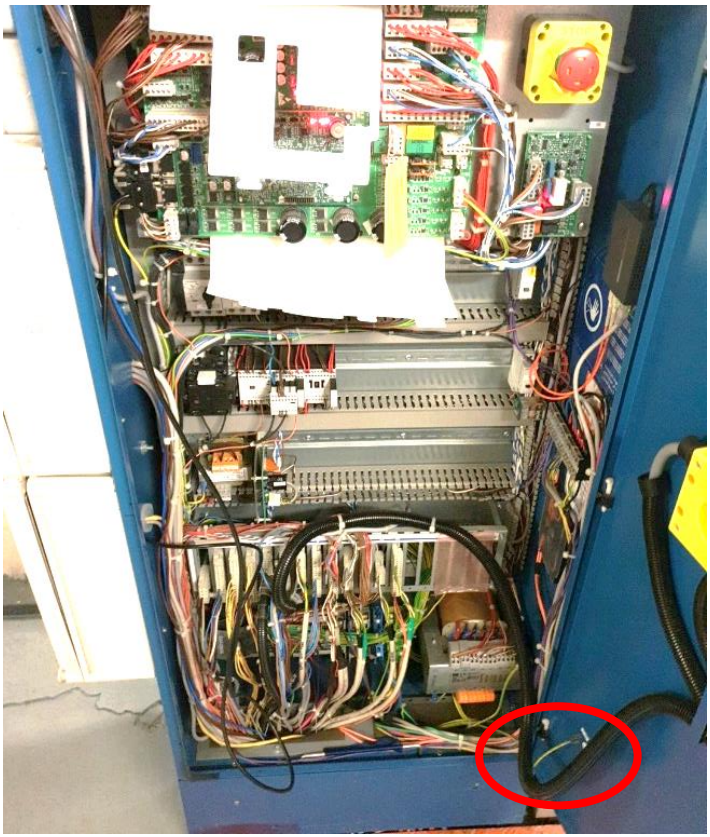


Insufficient Hydraulic Oil

18. Controller and electrical system

Check

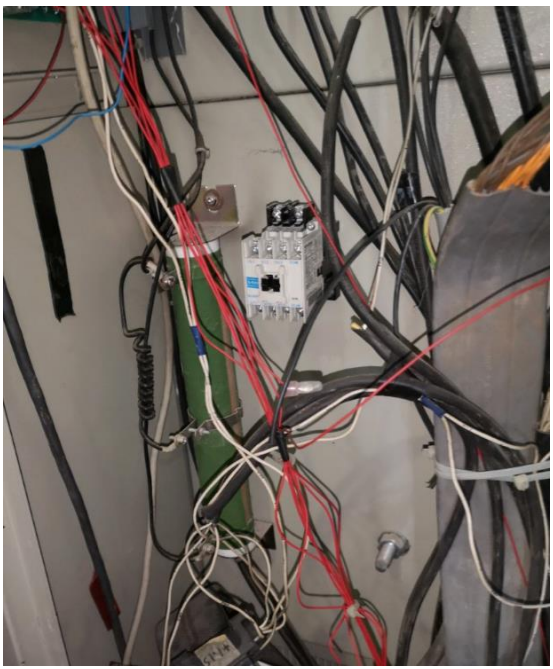
Ground and earth of controller, electronic and electrical systems and circuit boards must be firmly secured and well maintained.

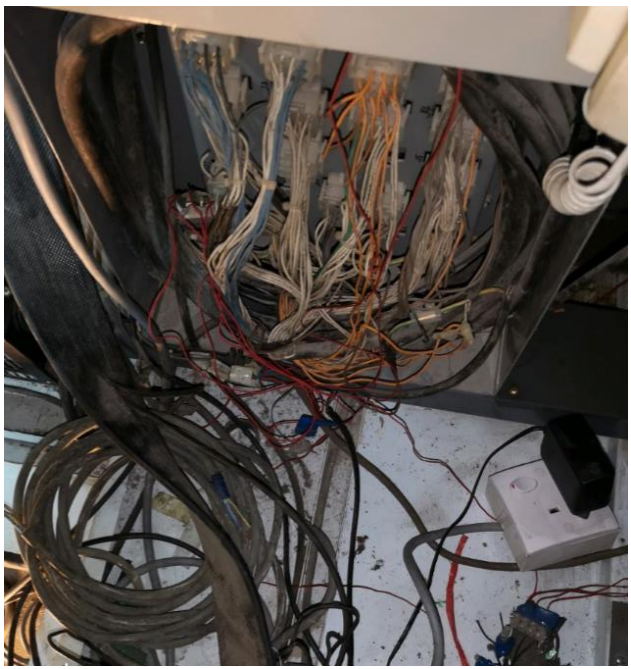


Well secured electrical system with earth

Prevent

Controller and electrical system must not show exposed conducting element and poor wiring such as loose wires.

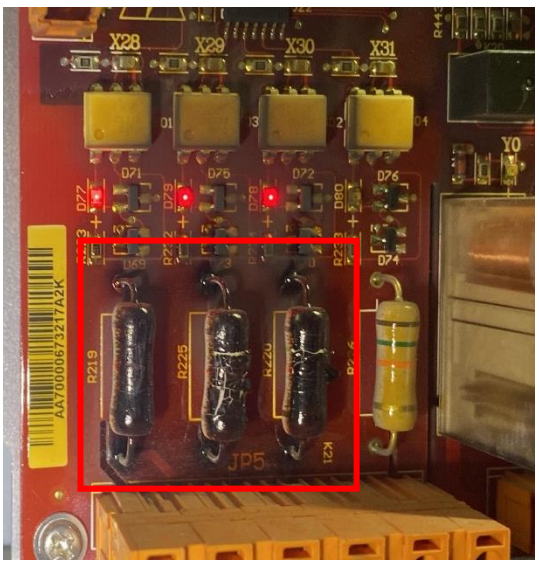




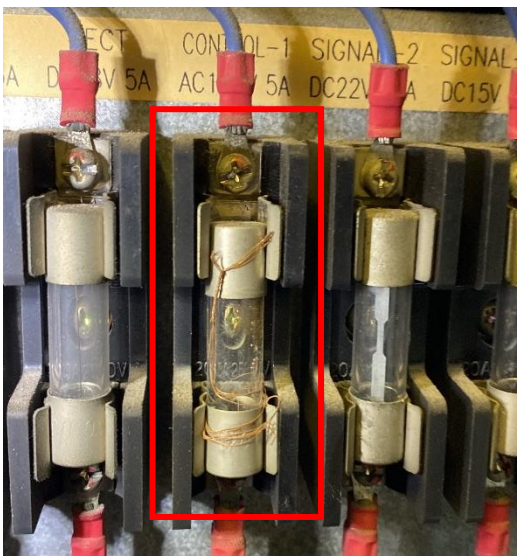
Untidy electrical system

Prevent

Controller and electrical system must not show heat marks and connection shall not be bypassed.



Burnt mark on PCB



Fuses bypassed

19. Guide shoes or rollers of lift car and counterweight

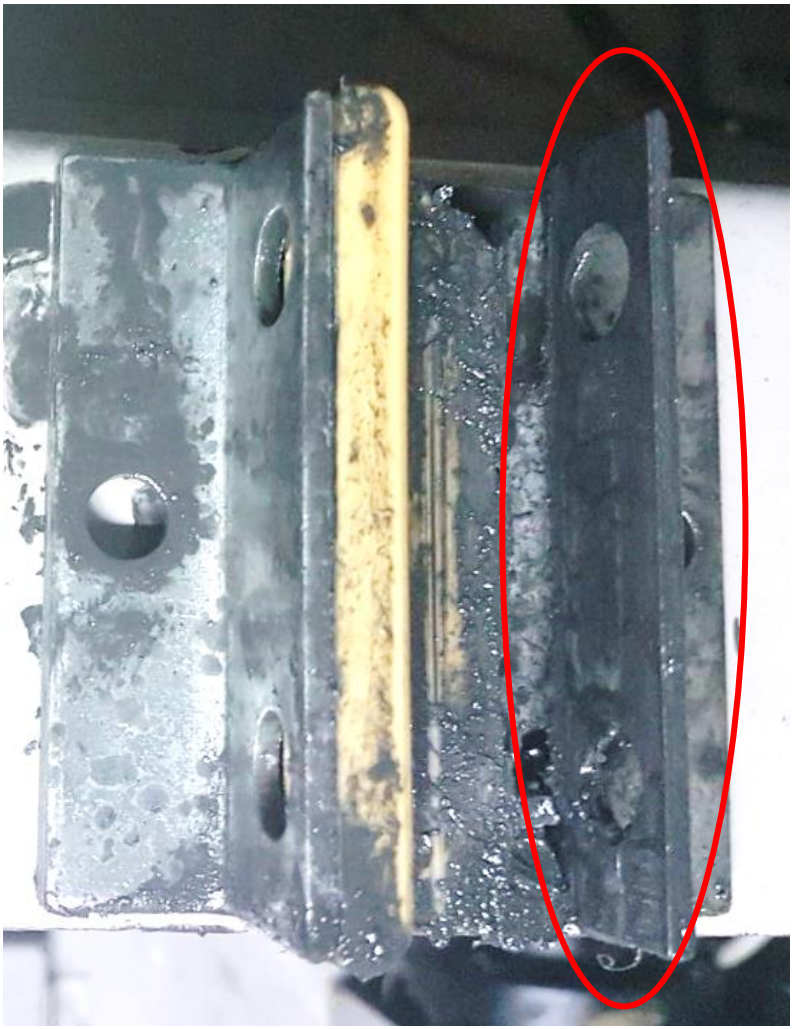
Check

Make sure that the lift car and counterweight must always be guided by guide shoes or rollers.

Guide shoe

Prevent

Guide shoe linings or rollers must not be missing, worn out or out of alignment.



Missing guide shoe linings

20. Guide rail for lift car and counterweight

Check

The guide rail is not worn out or out of alignment so as to affect the operation of the lift.

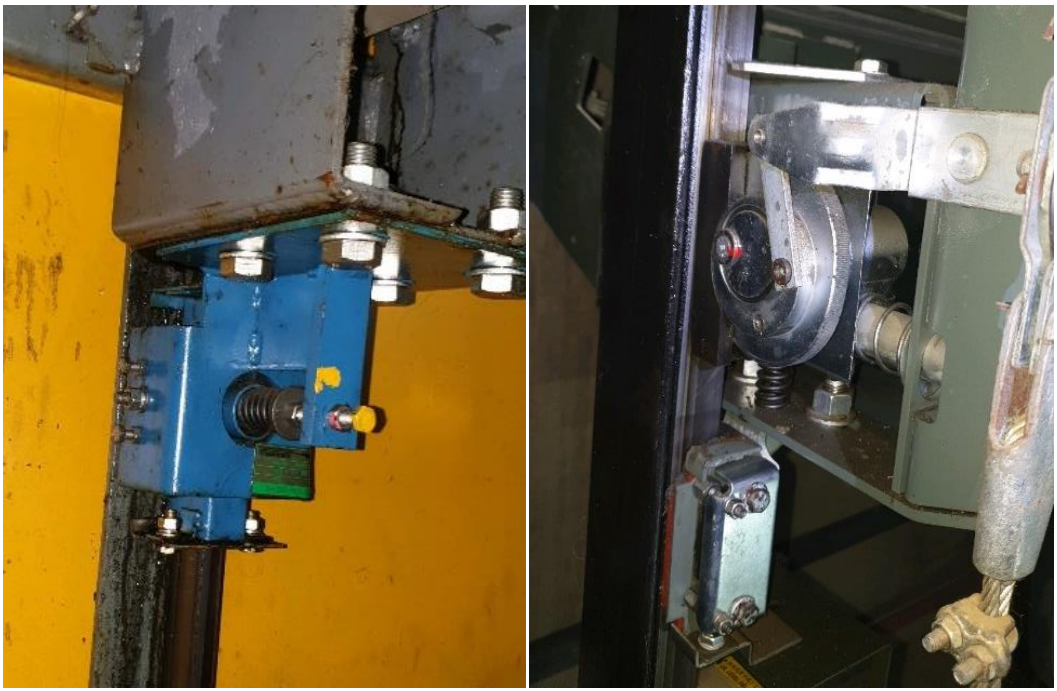
21. Safety gear

Check

Ensure that the safety gear is always maintained and functioning.

When activated, it must be able to **stop and hold** the lift car and the counterweight within the allowable distance.

Conduct visual checks and test the free play of device.



Safety gear components

22. All lift parts

Prevent

Ensure that the level of corrosion, wear and tear of all parts of lift must not affect the safe operation of the lift.

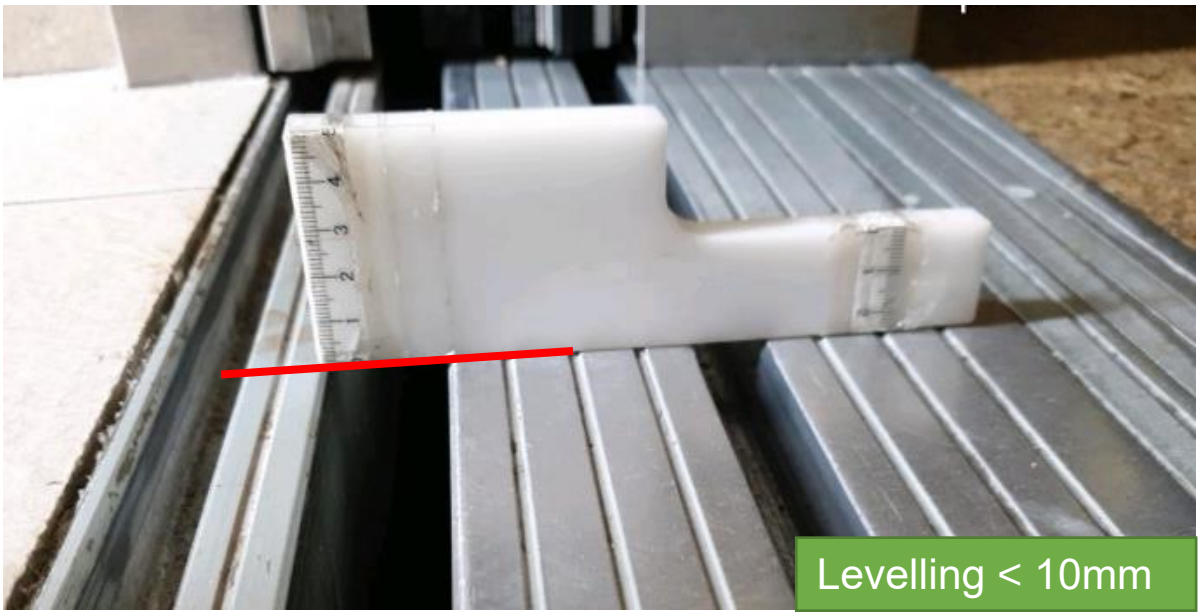
Excessive wear on deflector sheave

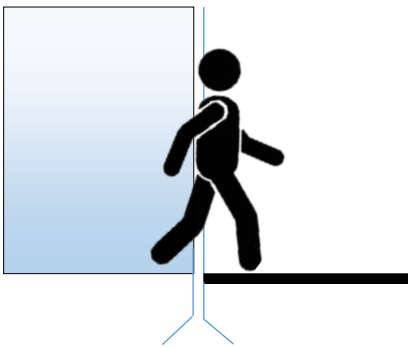
Rust on lift machine

23. Stopping or level accuracy

Check

Make sure that the stopping accuracy between the lift car and landing floor level **must be ± 10mm**.





Prevent

Prevent poor leveling as it is a tripping hazard.