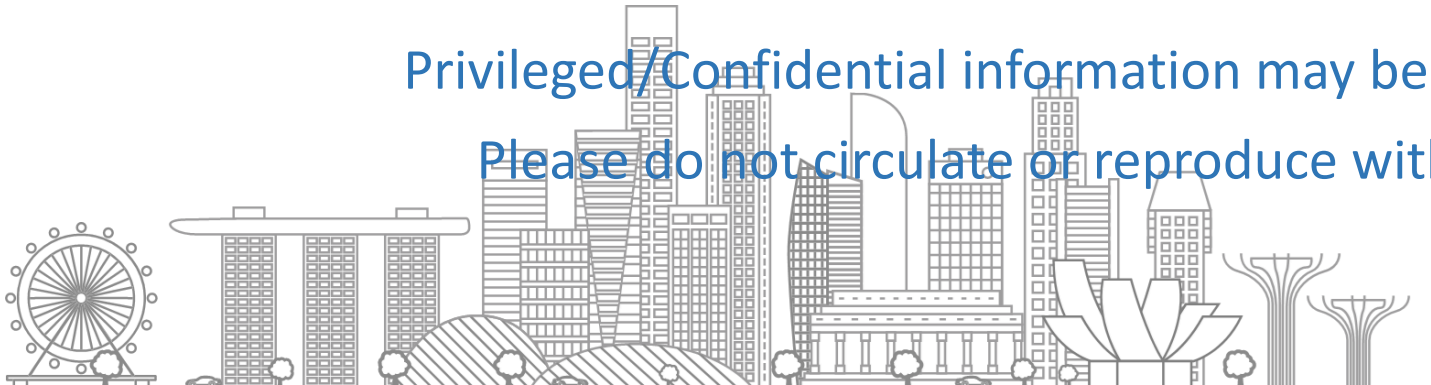
Maintenance Control Plan (MCP) – Helping the owner to better manage your lifts

Presented by: Er. Wang Yu

Senior Engineer

Electrical and Mechanical Engineering Group

Building and Construction Authority



Content

- Part 1 New requirement on MCP
- Part 2 How to prepare MCP
  - Key components of MCP
  - MCP – Replacement Criteria
- Part 3 MCP - Modernisation plan for lifts
  - Condition assessment of lifts
  - Modernisation plan including fund preparation

Part 1

New Requirement – MCP for Fixed Installations (FI) Permit to Operate (PTO) Applications

MCP is required for New FI PTO Application

Effective from 1 July 2025

Key Duties of Relevant Stakeholders under the BC (FI) Regs

(A) Developers/Owners/Builders

4 For installation of new FIs and major A/R of existing FIs, the key duties of developers/owners/builders are:

d) Apply and obtain a permit to operate ("PTO") for the FI, including having a maintenance control plan ("MCP")[4] for FIs relating to new lifts, before the application for the Temporary Occupation Permit /Certificate of Statutory Completion for the other building works (if any).

(C) FI Works Contractors/FI Service Contractors

9 Key duties of an FI works contractor performing installation and major A/R works of FIs are:

c) Prepare and hand over an MCP for FIs relating to new lifts to the owner, prior to application for the first PTO.

Building and Construction Authority

An MND Statutory Board

Our Ref: APPBCA-2024-24 Electrical and Mechanical Engineering Group

13 December 2024

See Distribution List

Dear Sir/Madam

IMPLEMENTATION OF BUILDING CONTROL (FIXED INSTALLATIONS) REGULATIONS 2025, BUILDING CONTROL (REPORTABLE MATTERS) REGULATIONS 2025 AND BUILDING CONTROL (EXEMPT FIXED INSTALLATIONS AND FIXED INSTALLATION WORKS) ORDER 2025

Objectives

This circular is to inform the industry about the upcoming implementation of the following:

(a) The Building Control (Fixed Installations) Regulations 2025 (the "BC (FI) Regs");
(b) The Building Control (Reportable Matters) Regulations 2025 (the "BC (RM) Regs");
(c) The Building Control (Exempt Fixed Installations and Fixed Installation Works) Order 2025 (the "BC (Exempt FI) Order");
(d) The repeal of the Building Maintenance and Strata Management (Lift, Escalator and Building Maintenance) Regulations 2016 (the "LEBM Regs").

Background

2 The current LEBM Regs regulate the maintenance and operation of lifts and escalators. To enhance the regulation and improve downstream operation and safety of lifts, escalators and mechanised car parking systems ("MCPS") (collectively known as "fixed installations" or "FIs"), the following key requirements are included in the BC (FI) Regs, BC (RM) Regs and BC (Exempt FI) Order:

(a) Submission of FI works plans, including type-testing certificates for lift models and relevant lift components (specified in SS550:2020[1]) for FI works plans relating to lifts, to the Commissioner of Building Control ("CBC") for approval prior to the installation or major alteration/replacement ("A/R")[2] works of FIs;
(b) Registration of installation contractors for FI works and the service contractors for maintenance of FIs, as well as progressive wage model (PWM) for lift and escalator maintenance technicians. These came into effect on 9 December 2022[3];
(c) Reporting of incidents and potential safety defects in building products;
(d) The specified FIs and FI works which the BC Act and regulations do not apply.

[1] Code of practice for installation, operation and maintenance of electric passenger and goods lifts.
[2] Please refer to First Schedule of the BC (FI) Regs for the scope of major A/R works.
[3] Please refer to circular at (https://www1.bca.gov.sg/docs/default-source/docs-corp-news-and-publications/circulars/commencement-of-part-5b-of-the-building-control-act-1989-(the-act-)-and-the-building-control-(regulating-fixed-installation-contractors)-regulations-2022.pdf?sfvrsn=de90fcce_2).

Page | 1

52 Jurong Gateway Road #11-01 Singapore 608550
Tel: 1800 3425 222 | Fax: (65) 6334 4287
www1.bca.gov.sg

BuildSG

Part 2

How to Prepare MCP

MCP and Its Key Components

MCP is a document that is prepared by the contractors/OEM for the owners. It contains information on maintenance including parts replacement so that owners are more aware of the lifecycle costs of the lift and can do forward planning and budgeting.

Objective of MCP MCP aims to address the challenges faced by the owner in managing the lifts:

Fund not set aside for replacement for "unexpected" failure

Difficulty to review and decide on the parts replacement proposal

Long downtime due to lead time of parts

Lack of visibility of the repair and replacement records

Unsure on how or what to modernize for older lifts

Key Components of MCP

Replacement Criteria and Modernisation Plan

Indicative Cost and Lead Time for Budgeting Purpose

Logbook for Repair or Replacement

BCA's Guide to Implement the MCP

A guide has been developed by BCA to help owner and contractor to implement the MCP for the lifts. It includes:

- *Introduction – Life Cycle Maintenance of Lifts*
- ***Maintenance Control Plan***
- ***Lift Modernisation***
- ***Logbook***
- *Annex A – Suggested Replacement Criteria for Mechanical Parts*
- *Annex B – Suggested Replacement Criteria for Electrical/Electronics Parts*

For more information, scan the QR code to download a copy of the MCP Guide

https://go.gov.sg/bca-mcp-guide

How to Prepare the MCP

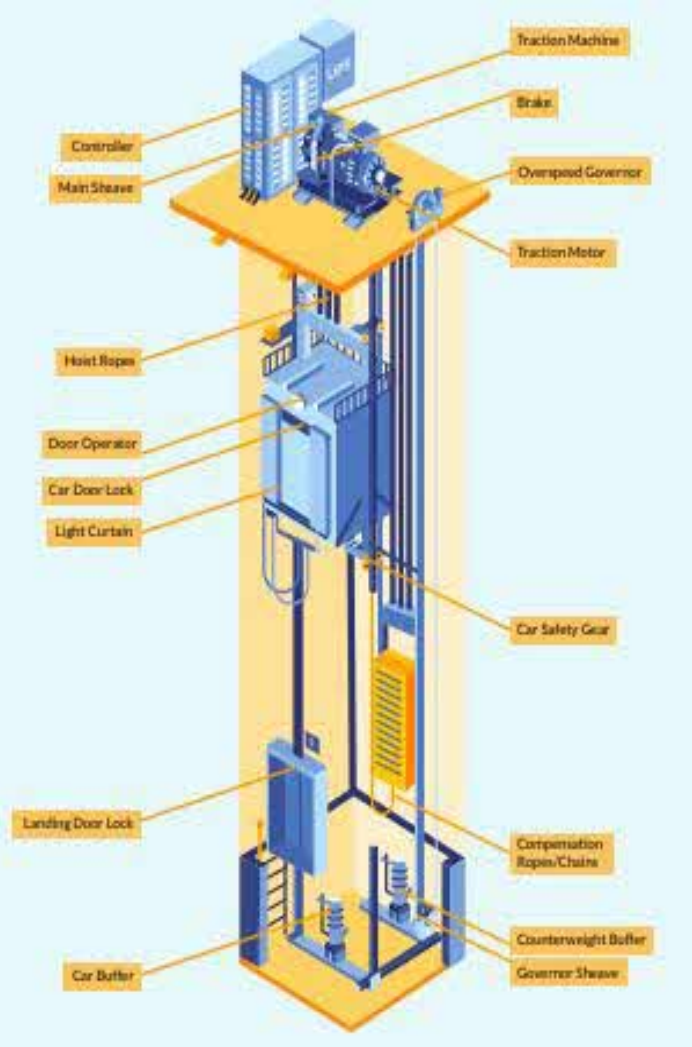
1. Identify Safety Critical Component
2. Determine the Replacement Criteria
3. Set Monitoring Criteria and If two stage monitoring is applicable

Consult the manufacturer/OEM

4. Estimate Cost & Lead Time for Replacement
5. Create Logbook for Repairs & Replacement
6. Compile the information into MCP & handover to owner

7. Review and update the MCP periodically

What Needs to Be Included in the MCP



MCP needs to include minimally the safety critical parts of the lift (model).

Mechanical Parts:

1 Brake; 2 Ropes/belts;
3 Sheave;
4 Safety Gear and Governor;
5 Buffers; 6 ACOP/UCMP
7 Landing/car door locks;

Electrical and Electronic Parts:

1 UPS batteries; 2 Traction motor drive;
3 Car door drive; 4 Electrical switches/sensors used in safety circuits;
5. Printed Circuit Boards (PCBs) used in controller/car door control etc

The contractor must review the lift design to ensure the list includes all safety-critical parts.

Case study: Disagreement on Replacement Criteria

- *Contractor A found during maintenance that the ropes showed signs of wear and tear and sent a quotation to the owner for replacement*
- *The owner didn't agree that the rope, which seemed usable, needed to be replaced. As no agreement was reached, the rope continued to be used.*
- *During BCA audit, the rope was found to be unsafe (>6% diameter reduction), and the lift had to cease operation immediately.*
- *The lift had to be shut down for more than 2 weeks due to last-minute procurement and arrangements for rope replacement.*

What Needs to Be Included in the MCP

Additionally It should include the **1) replacement criteria** and **2) monitoring criteria**, including two stage monitoring where applicable.

Replacement Criteria

Different approaches due to difference in nature of parts, usage or quality of parts:

Replacement based on condition assessment
For Mechanical and other measurable parts

Follow manufacturer's recommended replacement frequency
For Electrical/Electronics and other non-measurable parts

Two-Stage Monitoring

Stage 1

Criteria to start preparation, source for parts and schedule for replacement in advance

Stage 2

Criteria for immediate replacement, otherwise shut down the lift

Also, it is preferable to have some pictures to illustrate such replacement/monitoring criteria.

What Needs to Be Included in the MCP

Replacement Criteria of suspension belts with picture illustration

Cord Break

Coat damage Longitudinal

Coat damage Transversal

Wire Break

Two stage monitoring of brake airgap

	Allowable thickness as per Manufacturer's Recommendation	*Action to take*
Measured airgap		-
1st stage	=>0.55mm <0.6mm	*To prepare for replacement including seeking owner's approval on the replacement*
2nd stage	=>0.6mm	*To replace or shutdown the lift*

Logbook

- A logbook 

is important for the life cycle management of lifts
- An e-logbook to record the following is recommended:

  a) fault and breakdown information

  b) incident involving technical issues

  c) parts repair/replacement details

  d) SPE's recommendation for parts replacement if any

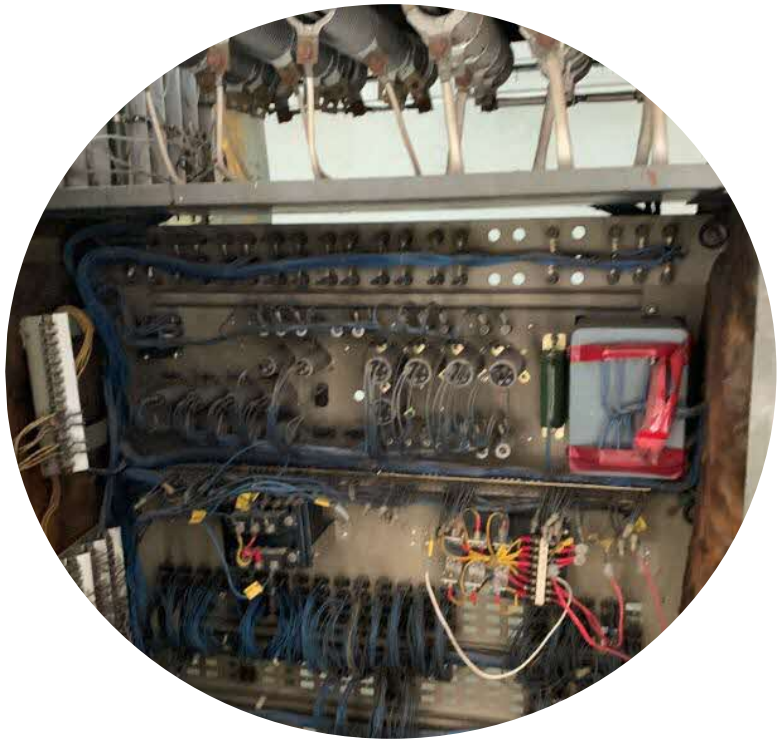
- A copy of the logbook shall be given to the owner
- SPE is recommended to review the logbook and maintenance records before annual certification of the lift

Part 3
Modernisation Plan for Lifts

Case Study : Parts Obsolescence for Ageing Lifts

- *The lifts in Condo A are 30 years old and are experiencing frequent faults and prolonged repair times*
- *The residents are dissatisfied, feeling that the contractor who has maintained the lifts for more than 7 years is no longer competent to do so*
- *Fact is lift parts are obsolescent and repairs require contractor to procure from alternative sources or have them custom-made. This results in longer lead times and higher repair costs.*

Case study : No fund Prepared for Modenising The Ageing Lifts



- *The lift is over 40 years old, and the controller and many other parts are obsolete. The start and stop of the lift are not as smooth as modern lifts using inverter drives. Jerks and excessive mis-levelling are common.*

- *A modernisation proposal was sent to the owner in 2020. The owner had no budget for modernisation. Tenants of the building continued to face the lift issues including frequent breakdowns.*

Modernisation Plan

Modernisation VS Repeated Repairs

Why timely modernisation of lifts is preferred over repeated repairs?

- **Compliance with the latest standards**
- **Improved performance and reliability**
- **Energy savings**
- **Easier to maintain and lower maintenance cost**

To initiate the modernisation process, conduct a condition assessment when the lift reaches 15 years of age

After that, contractor shall work with the owner to develop a detailed modernisation plan.

If no modernisation has been carried out, it is recommended to repeat this assessment every 5 years.

Modernisation Plan – Fund Preparation

Plan Ahead and Build Reserves

- Lift modernisation can be a significant expense.
- It's crucial to plan ahead

Consult a Lift Contractor

- Modernisation cost depends on factors like the number of floors, speed, capacity, and brand etc.
- Consult a lift contractor for an accurate cost estimate and to start preparing funds.

Periodic Cost Review

- Regularly review the cost with the contractor to stay on track

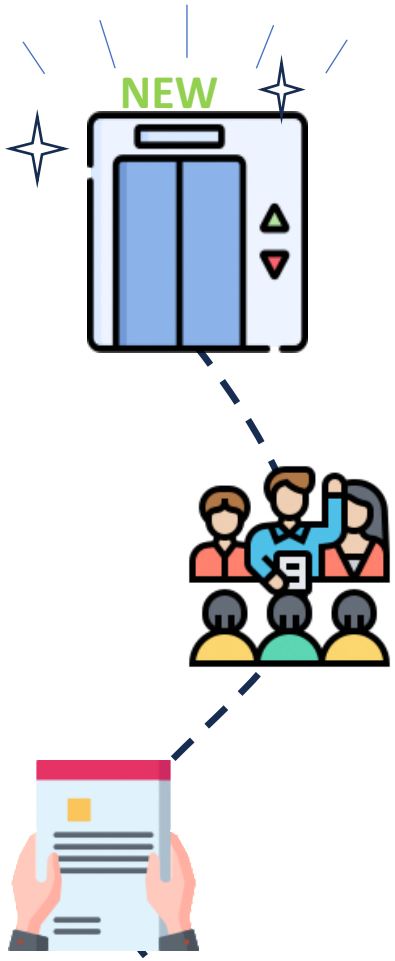
Modernisation Plan – Recommended Modernisation Items

- Modernisation needs to consider the technological advancement, the gaps between the existing lifts and latest code requirement.
- Recommended modernisation Items are included in MCP Guide

Recommended Safety-Critical Modernisation Items	*ACOP /UCMP /Inverter Drive and Modern Controller / Electrical Safety Interlocking for landing doors (including multi-panel doors) /Car door control /Continuous Traction Belt Monitoring /Redundant Brakes with Self-Monitoring*
Recommended Items to Improve Lift Safety, Performance, and Reliability	*-Governor Slack Rope Switch / Car Apron / ARD etc* *-Items for technician's work safety: Car Top Handrail/ Car top etc* *(Refer to the MCP Guide for more details)*

Scan the QR code to download a copy of the MCP Guide

Modernisation Plan – Fund Preparation



Similar to parts replacement, it's crucial to take a **proactive** stance on lift modernisation

- **For private MCST owners with relatively newer lifts**
  need to **start early** so to develop a longer-term fund collection plan, allowing for gradual accumulation of funds over time.

- **For owners with ageing lifts**,
  as the collection period is shorter, **immediate action is needed** to develop the collection plan to ensure funds are available for near-future modernisation

Lifecycle Management of Lifts Using MCP

Condition Assessment of the lifts is carried out; Detailed modernisation plan is developed

Budget is reviewed by owner to set aside sufficient **fund**.

MCP is prepared by the contractor / OEM and handed over to owner

Parts are replaced on time based on the replacement/monitoring criteria

Modernisation is carried out

Logbook is used by owner/contractor/SPE to analyse and track the performance of the lift

After installation

~15th Year

20th Year & onwards

Thank you

@BCASingapore