

**CODE OF PRACTICE
FOR
LIFT WORKS
AND
ESCALATOR WORKS**

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FOR
LIFT WORKS
AND
ESCALATOR WORKS

2002 Edition

[This Code is the amended version of the Code of Practice on the Examination, Testing and Maintenance of Lifts and Escalators and renamed as the Code of Practice for Lift Works and Escalator Works]

Electrical and Mechanical Services Department
The Government of the Hong Kong Special Administrative Region
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Foreword

This Code of Practice for Lift Works and Escalator Works is an updated version of the "Code of Practice on the Examination, Testing and Maintenance of Lifts and Escalators (1996)". It makes references to BS5655 (EN81) and BS5656 (EN115), with the permission of the British Standards Institution, and the Code of Practice on the Design and Construction of Lifts and Escalators (the Design Code) established under the Ordinance, and the codes of practice issued by the Labour Department with regard to safety at work. Complete copies of BS5655 (EN81) and BS5656 (EN115) can be obtained from BSI Customer Services, 389 Chiswick High Road, London W4 4AL (Tel +44 (0) 20 8996 9001)

Section A Introduction

This Code of Practice is established by virtue of Section 27G of the Lifts and Escalators (Safety) Ordinance (Cap. 327) (the Ordinance). It presents the acceptable methods and procedures for installation, examination and testing of lifts and escalators and essential safety measures to be taken during maintenance, repair, major alteration, replacement and addition of lifts and escalators.

For the convenience of the registered lift contractors or registered escalator contractors it also spells out the requirements under Section 11J (Duties of registered lift contractors or escalator contractors), Section 11A (Duties of registered lift engineers or escalator engineers), Section 27(A) (Certain occurrences to be reported) and Section 27(B) (Log-book of works to be kept and produced for inspection) of the Ordinance.

Section B References, Definitions, Symbols and Abbreviations

For the sake of consistency, the references, definitions, symbols and abbreviations adopted in this Code follow those stipulated in the Design Code and the Ordinance.

Unless the context otherwise requires -

"registered contractor" means registered lift contractor and/or registered escalator contractor;

"registered engineer" means registered lift engineer and/or registered escalator engineer.

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1. Preliminary Authorization

1.1 Approval-in-Principle of the New Lift/Escalator Brand/Model

For any new lift/escalator brand/model proposed, the registered contractors shall seek an approval-in-principle from the Director as required under Section 11J (1) (a) of the Ordinance.

The purpose is to have a preliminary vetting of the products to be introduced to Hong Kong to ensure that only properly designed quality products which comply with the Design Code and other relevant requirements will be installed. This will assist the registered contractor as well as the owner in planning the installation of lifts or escalators.

Under Section 11J (1) (a) of the Ordinance, the following are required to be submitted by the registered contractor to the Director for vetting : -

1.1.1 Information on the Manufacturer of the New Lift/Escalator Brand/Model

It shall cover: -

- a) Name and address of the manufacturer;
- b) History of the manufacturer;
- c) Organization of the manufacturer;
- d) The size of the manufacturing plants, their locations and capabilities;
- e) Product range and yearly production; and
- f) Other relevant information (e.g. brochure, job references, etc.)

1.1.2 General Specification of the New Lift/Escalator Brand/Model

It shall cover at least the following information: -

- a) Model numbers and their applications (e.g. duty load, speed and rise);
- b) For each lift model, the type of safety gear, overspeed governor, buffer, door locks, rope size, rope number, guide rail size, and mode of control;
- c) For each escalator model, the type of auxiliary brake, overspeed governor, drive chain size, drive chain number and mode of control;
- d) Confirmation from the manufacturer that the brand/models of lift/escalator are designed and manufactured to the requirements of the Design Code;
- e) Identification of major parts/components supplied by other manufacturers to the lift/escalator manufacturer and their corresponding confirmation in respect of compliance with the Design Code; and
- f) Other relevant information (e.g. brochures, job references, etc.)

1.1.3 Type Test Certificates

A set of type test certificates issued by an independent testing institute as approved by the Director on the following components: -

- a) For Lifts:-
 - i) Safety gear;
 - ii) Overspeed governor;

- iii) Buffer;
 - iv) Door locking device; and
 - v) Ascending car overspeed protection means
- b) For Escalators:-
- i) Step or pallet

Details on type testing of components are stated in Clause 1.2.

1.1.4 Technical Information

It shall include:

- a) Installation, operation and maintenance manuals;
- b) Typical electric schematic diagrams of the power circuits and safety circuits complete with explanatory notes; and
- c) Supporting drawings, illustrations and calculations.

1.1.5 Quality Assurance System

The registered contractor shall submit a quality assurance scheme which the manufacturer adopts to ensure their products are manufactured to design specifications.

1.1.6 Training and Technical Support Arrangement

The registered contractor shall indicate his arrangement of training provided by the manufacturer to ensure his workers and engineers are well versed in the products.

The manufacturer shall undertake to provide technical support to the registered contractor regarding the products under installation and during maintenance.

1.2. Type Testing and Certification of Certain Components

1.2.1 General Provisions

1.2.1.1 Under Section 11J (1) (a) of the Ordinance, certain components in a lift or escalator installation are required to have type test certificate or certification from the manufacturer, in particular when they are first installed in Hong Kong. These essentially are landing door locking devices, safety gears, ascending car overspeed protection means, overspeed governors and buffers for lift; and steps or pallets for escalator.

1.2.1.2 The type test shall be arranged by the manufacturer of the component or his authorized representative and shall be carried out by an independent testing institute approved by the Director. The testing institute shall not be part of the organization of the lift or escalator manufacturer and shall have proven competence in carrying out testing of the components.

1.2.1.3 For the purpose of this Code, it is assumed that the testing institute undertakes both the testing and the certification as a single body, although in certain countries the testing laboratory and the certification body may be separate. In these cases, the certification body must also be independent and not being part of the manufacturer organization.

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1.2.1.4 The precision of the instruments shall allow, unless particularly specified, measurements to be made within the following tolerances: -

- (a) $\pm 1\%$ masses, forces, distances, times, speeds;
- (b) $\pm 2\%$ accelerations, retardations;
- (c) $\pm 5\%$ voltages, currents;
- (d) $\pm 5^{\circ}\text{C}$ temperatures.

1.2.2 Landing Door Locking Devices for Lift

The landing door locking devices for lift shall be type tested in accordance with the testing procedures as described in Clause F. 1 of EN 81: Part 1 or other approved international standards.

1.2.3 Safety Gears for Lift

The safety gears for lift shall be type tested in accordance with the testing procedures as described in Clause F.3 of EN 81: Part 1 or other approved international standards.

1.2.4 Overspeed Governors for Lift

The overspeed governors for lift shall be type tested in accordance with the testing procedures as described in Clause F. 4 of EN 81: Part 1 or other approved international standards.

1.2.5 Buffers for Lift

The energy accumulation type buffers with buffered return movement and

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energy dissipation buffers for lifts shall be type tested in accordance with the testing procedures as described in Clause F.5 of EN 81: Part 1 or other approved international standards.

1.2.6 Suspension Ropes and Overspeed Governor Ropes for Lift

The suspension ropes and overspeed governor ropes for lift shall be certified by their manufacturer for the breaking load and principal characteristics.

1.2.7 Steps or Pallets for Escalator

The steps or pallets for escalator shall be type tested, statically and dynamically, in accordance with the testing procedures as described in Clause 8.2.2 of EN 115 or other approved international standards.

1.2.8 Handrail for Public Service Escalator

The breaking strength of the handrail for the public service escalator shall be certified by its manufacturer.

1.2.9 Belt for Passenger Conveyor

The breaking strength of the belt shall be certified by its manufacturer.

1.2.10 Ascending Car Overspeed Protection Means

The ascending car overspeed protection means shall be type tested in accordance with the testing process as described in Clause F.7 of EN81: Part 1 or other approved international standards.

2. General Duties of the Registered Contractors in Examination, Testing and Maintenance

2.1 General Provisions

The general duties of the registered contractors are specified under Section 11J of the Ordinance. The registered contractors in carrying out the lift or escalator works are also required to provide supervision and support to the registered engineers in the examination and testing stipulated in Clauses 3 and 5 of this Code.

2.2 Supervision of Lift and Escalator Works

The registered contractors have the responsibility to ensure that the lift works or escalator works are carried out in a safe manner in order to protect the safety and health of their workers and the general public.

To accomplish this objective, the registered contractors shall: -

- a) employ competent workers to carry out such works;
- b) supervise these workers to ensure the works are carried out safely and to the requirements of the Ordinance;
- c) provide sufficient and regular training to their workers on the kind of lift/escalator works on different types and models of lifts and escalators for which they are responsible, as well as on safe working practice; and
- d) keep a complete documentary record on the qualification, training and experience of the competent workers, justifying why, and stating when, they are recognized by the registered contractors as competent workers.

2.3 Maintenance and Repair

The registered contractors have to carry out periodic maintenance and accident investigation, keep the equipment in good working order and ensure that the requirements of the Ordinance are complied with.

Further details are included in Clause 4 and 6.

3. Examination and Testing of Lifts and Escalators after Installation or Major Alteration

3.1 Preparation

The general duties of the registered engineers are specified under Section 11A of the Ordinance. The registered engineer who is going to examine and test the equipment after new installation or major alterations shall firstly be fully conversant with the technical details of the equipment and the installation. Supervision and support from the registered contractor are necessary.

The registered engineer shall check and satisfy himself with the following: -

3.1.1 Technical Details

The technical dossier kept by the registered contractor for the equipment contains the correct and sufficient information for the carrying out of his work.

3.1.2 New Models

If the equipment is a new model, approval-in-principle has been obtained from the Director by the registered contractor.

3.1.3 Type Test Certificates

The type test certificates are true and correct for the installation.

3.1.4 Code Compliance of the Equipment

The design and construction of the equipment and the installation are in full compliance with the Design Code and other relevant requirements.

3.2 Technical Details to be Submitted

The technical details to be submitted with the Form 5, i.e. the certificate for application for permit to use and operate the lift or escalator, shall comprise the following documents. Such details are to be provided when the Form 11 is submitted for endorsement by the Director upon the satisfactory completion of the installation works for a service lift and before the service lift is put into operation.

3.2.1 Site Plan

A plan shows the position of the lift or escalator in the building. If more than one lift or escalator is installed, the number marked on each lift or escalator must also be shown on the plan. It is also necessary to indicate on the plan which lift is the fireman's lift or lift for the disabled.

3.2.2 Test and Examination Report

3.2.2.1 Test and examination report, signed by a registered lift engineer or a registered escalator engineer, as the case may be, certifying that the equipment and the installation are in full compliance with the requirements: -

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a) Test and Examination Report for Lifts

It shall contain the following information

- i) Description of Installation
- ii) Static Examination - Mechanical
- iii) Static Examination - Electrical
- iv) Dynamic Tests
- v) Measurements of the Electrical System
- vi) Overspeed Governor Tests
- vii) Car Safety Gear Tests
- viii) Counterweight Safety Gear Tests (if fitted)
- ix) Buffer Tests
- x) Traction Checks
- xi) Duty Cycle Test
- xii) General (Lift Works)
- xiii) General (Other Works)
- xiv) Ascending Car Overspeed Protection Means

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- b) Test and Examination Report for Escalators
It shall contain the following information: -
 - i) Description of Installation
 - ii) Static Examination
 - iii) Dynamic Examination
 - iv) Driving Motor Current Tests
 - v) Clearances
 - vi) Insulation Resistance to Earth
 - vii) Earthing
 - viii) Half-hour Run
 - ix) General (Escalator Works)
 - x) General (Other Works)

3.2.2.2 The performance of all tests and examinations of a lift or an escalator after installation shall be recorded in the appropriate report as follows:-

- a) Appendix A - Test and Examination Report for Electric Passenger Lifts/Freight Lifts/Vehicle Lifts
- b) Appendix B - Test and Examination Report for Hydraulic Passenger Lifts/Freight Lifts/Vehicle Lifts

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- c) Appendix C - Test and Examination Report for Escalators/Passenger Conveyors
- d) Appendix D - Test and Examination Report for Electric Service Lifts

3.3 Technical Details to be Kept by the Registered Contractor

Besides the documents required to be submitted to the Director for application for permit to use and operate the lift or escalator, the registered contractor shall in his possession and make available for inspection by the Director, the following additional information: -

3.3.1 Technical Details in Relation to Lifts

- a) Layout plans, drawings and technical details for lifts

Layout plans, sectional drawings and technical details for lifts to show details of the lift installation, including rooms for machines, pulleys and apparatus. These plans do not have to give details on construction, but they shall contain the necessary particulars to check conformity to the Design Code, in particular the following: -

- i) Clearances at the top of the well and in the pit.
- ii) Any accessible spaces which exist below the well.
- iii) Access to the pit.
- iv) Guards between lifts if there are more than one in the same well.
- v) Provision for holes for fixings.

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- vi) Position and principal dimensions of the machine room with the layout of the machine and principal devices. Dimensions of the traction sheave or the drum. Ventilation holes. Reaction loads on the building and at the bottom of the pit. The necessary clearances.
- vii) Access to the machine room.
- viii) Position and principal dimensions of the pulley room, if any. Position and dimensions of pulleys. Position of other devices in the room.
The necessary clearances.
- ix) Access to the pulley room.
- x) Arrangement and principal dimensions of landing doors. It is not necessary to show all the doors if they are identical and if the distances between the floors are indicated.
- xi) Arrangement and dimensions of inspection and emergency doors.
- xii) Dimensions of the car and of its entrances.
- xiii) Distances from the sill of the car door to the inner surface of the well wall.
- xiv) Horizontal distance between the closed car and landing doors.
- xv) Principal characteristics of the suspension: safety factor, ropes (number, diameter, composition, breaking load), chains (types, composition, pitch, breaking load), compensation ropes (where, provided).

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- xvi) Calculations of the traction and the specific pressure.
 - xvii) Principal characteristics of the overspeed governor rope: diameter, composition, breaking load, safety factor.
 - xviii) Dimensions and calculation of the guides, condition and dimensions of the rubbing surfaces (drawn, milled, ground).
 - xix) Dimensions and calculation of energy accumulation type buffers, including their characteristic curve
 - xx) Protection of the jacks, if required.
 - xxi) Declaration of the precautions provided against free fall and descent with excessive speed, and against creeping.
 - xxii) Functional drawing of the pawl device, if any.
 - xxiii) Evaluation of the reaction force from any pawl device to the fixed stops.
 - xxiv) Calculation of the full load pressure.
 - xxv) Calculation of the jack and the piping against over pressure and buckling.
 - xxvi) Characteristics or type of the hydraulic fluid.
- b) Electric Schematic Diagrams and Hydraulic Circuit Diagram

Outline electric schematic diagrams of the power circuits and of safety circuits. These schematic diagrams shall be clear and use IEC symbols or

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other international symbols with explanatory notes.

Hydraulic circuit diagram. This diagram shall be clear and use symbols of ISO 1219 or other international symbols with explanatory notes.

c) High Voltage Test Certificate

The dielectric of electrical apparatus (excluding motors, generators, transformers, electronic apparatus and instruments, which are tested in accordance with the appropriate international standards) shall withstand a test voltage of 10 times the working voltage, with a maximum of 2000V, when applied as follows: -

- i) between the live parts and the case or the frame with all circuits completed;
- ii) between main terminals or equivalent parts with all circuits open;
- iii) between any live parts of independent circuits.

The test voltage shall be alternating of approximately sine wave form with a frequency of approximately 50 Hz and shall be applied for 1 minute.

Owing to the impracticability of applying the foregoing tests (ii) and (iii) on controllers and similar apparatus after controller wirings have been completed, these tests are to be made at convenient stages of manufacture. A test certificate to this effect issued by the manufacturer is acceptable.

d) Certificates

Copies of type test certificates issued by an independent testing institute for landing door locking devices, overspeed governors, safety gears, ascending car overspeed protection means and buffers. Copies of

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certificates for other components such as travelling cables, ropes, chains, flexible hoses or explosion proof equipment if applicable.

Setting up certificate for the safety gear according to the instructions provided by the safety gear manufacturer and calculation of the compression of the springs in the case of progressive safety gear.

Setting up certificate for the rupture valve according to the instructions provided by the rupture valve manufacturer.

3.3.2 Technical Details in Relation to Escalators

- a) Calculation Data and Certificates
 - i) Static stress analysis of the supporting structure of the escalator or equivalent certificate by a structural engineer approved by the Director;
 - ii) proof by calculation of sufficient breakage resistance of the parts immediately driving the steps, pallets or the belt, e.g. step chains, racks;
 - iii) calculation of the stopping distances for loaded passenger conveyors together with adjustment data;
 - iv) test certificate for steps or pallets;
 - v) certificate of the breaking strength of the belt; and
 - vi) for public service escalators and public service passenger conveyors, certificate of the breaking strength of the handrail.

b) Drawings

Layout drawings, description of the equipment and wiring diagrams (electric schematic diagram with legends and explanations, and a terminal connection chart) which permit a check of compliance with the safety requirements specified in the Design Code.

3.4 Examination and Testing of a Lift after Installation

Before the lift is put into normal operation upon the completion of the installation, the following examinations and tests shall be carried out. A power supply at the specified voltage and frequency should be provided for test and adjustment purposes.

3.4.1 Checking of Documents and Examinations

At least the following items shall be covered: -

- a) checking of any approval-in-principle from the Director for the particular brand/model of the lift (see Clause 1.1).
- b) checking of the documents required in Clause 3.3.1.
- c) verification of compliance with the Design Code and other relevant requirements.
- d) visual examination of the application of the rules of good construction of components.
- e) comparison of the details given in the type test certificates for the components having been type-tested, with the actual components fixed, and the characteristics of the lift and ensure their compatibility.

- f) checking of any exemption granted by the Director and whether the imposed conditions are fulfilled.

3.4.2 Tests and Verifications

3.4.2.1 Tests and verifications shall cover at least the following items:-

- a) Locking devices
- b) Electric safety devices
- c) Suspension elements and their attachments

It shall be verified that their characteristics are the same as those indicated in the test certificates.

- d) Braking system

The test shall be carried out whilst the car is descending at rated speed with 125% of the rated load with the supply to the motor and the brake interrupted.

- e) Measurements of current or power and of speed
- f) Insulation resistance and electrical continuity
 - 1) Measurement of the insulation resistance of the different circuits. For this measurement, all the electronic components are to be disconnected.
 - 2) Verification of the electrical continuity of the connection between

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the earth terminal of the machine room and the different parts of the lift liable to be made live accidentally.

- g) Final limit switches
- h) Checking of the traction
 - 1) The traction shall be checked by making several stops of the lift car with the most severe braking compatible with the installation. At each test, complete stoppage of the car shall occur.

The test shall be carried out: -

- i) at ascending, with the car empty, in the upper part of the travel.
 - ii) at descending, with the car loaded with 125% of the rated load, in the lower part of the travel.
- 2) It shall be checked that the empty car cannot be raised by the operation of the driving sheave when the counterweight rests on its compressed buffers.
- 3) In the case of industrial truck loaded freight lifts and vehicle lifts, the traction shall also be checked statically with 150% of the rated load.
- 4) It shall be checked that the % of balance is as stated by the lift manufacturer.

This check may be made by means of measurements of current combined with: -

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- i) speed measurements for a.c. motors .
 - ii) voltage measurements for d.c. motors.
- 5) The levelling accuracy of the lift car shall be checked.
- i) Overspeed governor
 - 1) The tripping speed of the overspeed governor shall be checked in the direction corresponding to the descent of the car.
 - 2) The operation of the stopping control shall be checked in both directions of movement.
 - 3) The tensile force in the overspeed governor rope produced by the governor shall be checked to comply with the Design Code requirement.
 - j) Car safety gear

The correct mounting, correct setting and the soundness of the complete assembly, comprising of car safety gear, guide rails and their fixing to the building shall be checked. The engagement test of the safety gear shall be made while the car is descending, with the contacts on the safety gear and on the overspeed governor being short-circuited in case of hydraulic lifts to avoid closing of the down direction valves, and in case of electric lifts with the brake open and the machine continuing to run until the ropes slip or become slack, and in the following conditions:-

- 1) For instantaneous safety gear or instantaneous safety gear with buffered effect, the car shall be loaded with the rated load uniformly

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distributed and engagement shall be made at the rated speed.

- 2) For progressive safety gear, the car shall be loaded with 125% of the rated load uniformly distributed and engagement shall be made at a reduced speed (e.g. levelling speed or inspection speed).

In order to facilitate disengagement of the safety gear, it is recommended that the test be carried out opposite a door in order to be able to unload the car.

In the specific case of industrial truck loaded freight lifts and vehicle lifts, the car shall be loaded with 150% of the rated load instead of 125%.

After the test, it shall be ascertained that no deterioration which could adversely affect the normal use of the lift has occurred. In exceptional cases, and if necessary, friction components may be replaced.

k) Counterweight safety gear

- 1) A counterweight safety gear which is activated by an overspeed governor shall be tested in the same conditions as the car safety gear (without any load in the car).
- 2) A counterweight safety gear which is not activated by an overspeed governor shall be tested dynamically.

After the test, it shall be ascertained that no deterioration which could adversely affect the normal use of the lift has occurred. In exceptional cases, and if necessary, friction components may be replaced.

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l) Buffers

- 1) For energy accumulation type buffers, the test shall be carried out in the following manner: the car with its rated load, or the counterweight in case of counterweight buffer, shall be placed on the buffer(s), the ropes shall be made slack for electric lifts and it shall be checked that the compression corresponds to that given by the characteristic curve.
- 2) For energy accumulation type buffers with buffered return movement and energy dissipation type buffers, the test shall be made in the following manner: the car with its rated load or the counterweight shall be brought into contact with the buffers at the rated speed or at the speed for which the stroke of the buffers has been calculated, in the case of the use of reduced stroke buffers with verification of the retardation.

After the test, it shall be ascertained that no deterioration which could adversely affect the normal use of the lift has occurred.

m) Alarm and intercommunication device.

n) Electrical Tests

- 1) The insulation resistance of the different circuits shall be measured. For this measurement, all the electronic components are to be disconnected. Verification shall be made of the electrical continuity of the earth terminal of the machine room and the different parts of the lift liable to be made live accidentally.
- 2) The normal operation of the phase reversal and phase failure device shall be verified.

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- o) Overload device with the load uniformly distributed.
- p) Fireman's lift operational control.
- q) The functional controls of the lift shall be thoroughly tested to verify its full compliance with the Design Code.
- r) The guide rails shall be checked for its compliance with the Design Code.
- s) Ascending car overspeed protection means

The correct mounting, correct setting and the soundness of the complete assembly, comprising car, ascending car overspeed protection means, guide rails and their fixing to the building shall be checked. The test shall be made while the empty car is ascending at not less than rated speed, using only this device for braking. After the test, it shall be ascertained that no deterioration which could adversely affect the normal use of the lift has occurred. In exceptional cases, and if necessary, friction components may be replaced.

3.4.2.2 Additional tests and verifications particularly applicable to hydraulic lifts shall cover at least the following points:-

- a) Clamping device
The test shall be made while the car is travelling at normal speed downwards, with the load uniformly distributed, the contacts on the clamping device and on the tripping devices being short-circuited to avoid closing of the down direction valves, and the car shall be loaded with 125% of rated load. In the specific case of industrial truck loaded freight lifts and vehicle lifts, the car shall be loaded with 150% of rated load. After the test it shall be ascertained that no deterioration which could adversely affect the normal use of the lift has occurred.

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- b) Safety gear (car or counterweight) tripped by failure of the suspension gear or by safety rope

The safety gear shall be checked for its proper functioning.

- c) Car safety gear (or clamping device) tripped by lever

The engagement of the lever with all fixed stops and the running clearance measured horizontally between the lever and all fixed stops during travel shall be checked.

- d) Pawl device

- 1) Dynamic test

The test shall be made while the car is travelling at normal speed downwards, with the load uniformly distributed, the contacts on the clamping device and on the energy dissipation buffer, if any, being short-circuited to avoid closing of the down direction valves.

The car shall be loaded with 125% of rated load and shall be stopped by the pawl device at each landing. After the test it shall be ascertained that no deterioration which could adversely affect the normal use of the lift has occurred.

- 2) The engagement of the pawl(s) with all supports, and of the running clearance measured horizontally between the pawl(s) and all supports during travel shall be checked.
- 3) Verification of the stroke of the buffers shall be made.
In the specific case of industrial truck loaded freight lifts and vehicle

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lifts, the car shall be loaded with 150 % of rated load.

- e) Limitation of the ram stroke

Verification shall be made in ensuring that the ram is stopped with buffered effect.

- f) Full load pressure

Measurement of the full load pressure shall be made.

- g) Pressure relief valve

The correct adjustment shall be checked.

- h) Rupture valve

Function test shall be carried out with rated load uniformly distributed in the descending car. The correct adjustment of the tripping speed shall be checked, for instance, by comparison with the manufacturer's adjustment diagram.

For lifts with several interconnected rupture valves, checking of the simultaneous closing by measuring the inclination of the car floor shall be made.

- i) Restrictor (or one-way restrictor)

It shall be checked that maximum speed v_{\max} does not exceed the rated speed downwards $v_d + 0.3$ m/s. v_{\max} can be evaluated by the following formula:

$$V_{\max} = V_t \sqrt{\frac{p}{p - p_t}}$$

p = full load pressure (MPa).

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p_t = pressure measured during a downward journey with rated load in the car (MPa).

If necessary, pressure losses and friction losses shall be taken into account.

V_{max} = maximum downward speed in the case of a rupture in the hydraulic system (m/s).

V_t = speed measured during a downward journey with rated load in the car (m/s).

j) Pressure test

The system shall be observed for evidence of pressure drop and leakage during a period of 5 minutes (taking into account the possible effects of temperature change in the hydraulic fluid) when a pressure of 200% full load pressure is applied to the hydraulic system between the non-return valve and the jack (included).

After this test, it shall be visually ascertained that the integrity of the hydraulic system is maintained.

This test shall be carried out after the test of the devices against free fall.

k) Creeping test

It shall be checked that the car with the rated load, stopped at the highest level served does not move by more than 10 mm downwards within 10 minutes (taking into account the possible effects of temperature change in the hydraulic fluid).

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- l) Emergency operation downwards (in the case of indirect acting lifts)

Upon hand-lowering the car onto a prop (or actuating the safety gear or clamping device), it shall be checked that slack rope or slack chain condition does not occur.

- m) Motor run time limiter

The time adjustment (by simulating the running of the machine) shall be checked.

- n) Electric temperature detecting device

The temperature adjustment shall be checked.

- o) Electrical anti-creep system

Functional test with rated load in the car shall be carried out.

3.5 Examination and Testing of a Lift after Major Alteration

3.5.1 The notification pursuant to Section 33 of the Ordinance shall clearly state the major alteration work items which are to be carried out, including relevant details of the work, the scheduled commencement and completion date for the work of individual lift installation.

3.5.2 Works deemed to be major alterations in relation to lifts are listed in Section 4 of the Ordinance. In addition, similar examination and testing are required following a change or replacement of traction sheave and buffers.

3.5.3 Before the normal use and operation of such a lift is resumed, the lift has to be examined and tested in accordance with relevant parts in Clause 3.4 by a registered lift engineer to determine that all those parts of the lift affected by

such lift works are in safe working order.

3.5.4 When the registered lift engineer is satisfied that all such parts of the lift are in safe working order, he shall deliver to the owner of the lift a Form 7 for submitting an application to the Director for a permit to resume its use and operation. A duly completed test and examination report of the affected parts shall be submitted with the Form 7.

3.6 Examination and Testing of an Escalator after Installation

Before the escalator is put into normal operation upon the completion of the installation, the following examinations and tests shall be carried out. A power supply at the specified voltage and frequency should be provided for test and adjustment purposes.

3.6.1 Checking of Documents and Examinations

At least the following items shall be covered:-

- a) checking of any approval-in-principle from the Director of the particular brand and model of the escalator (see Clause 1.1).
- b) checking of the documents required in Clause 3.3.2.
- c) verification of compliance with the Design Code and other relevant requirements .
- d) visual examination of the application of the rules of good construction of components.
- e) comparison of the details given in the type test certificates for the components having been type-tested, with the actual components fixed, and

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the characteristics of the escalator and ensure their compatibility.

- f) checking of any exemption granted by the Director and whether the imposed conditions are fulfilled.

3.6.2 Tests and Verifications

These tests and verifications shall cover at least the following:-

- a) overall visual inspection with regard to proper construction as specified in the Design Code.
- b) functional tests.
- c) test of safety equipment and devices with regard to their proper operation.
- d) test of the brake(s) of the escalator under no load, for compliance with the prescribed stopping distances. An examination of the brake adjustment according to the calculation required in Clause 3.3.2 iii) is also necessary. Whenever possible, a test of the stopping distances under total brake load, at rated speed, should be carried out to determine the performance of the escalator.
- e) Electrical tests
 - 1) The insulation resistance of the different circuits between conductors and earth shall be measured. For this measurement, all the electronic components shall be disconnected. The electrical continuity of the connection between the earth terminal(s) in the driving station and the different parts of the escalator liable to be alive accidentally shall be tested.

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- 2) The normal operation of the phase reversal and phase failure device shall be verified.

3.7 Examination and Testing of an escalator after Major Alteration

3.7.1 The notification pursuant to Section 33 of the Ordinance shall clearly state the major alteration work items which are to be carried out, including relevant details of the work, the scheduled commencement and completion date for the work of individual escalator installation.

3.7.2 Works deemed to be major alteration in relation to escalator are change of the speed, operation or design of the escalator. In particular, similar examination and testing are required following a change or replacement of the drive, the non-reversal device, the overspeed protection device or the braking systems.

3.7.3 Before the normal use and operation of such an escalator is resumed, the escalator has to be examined and tested in accordance with relevant parts in Clause 3.6 by a registered escalator engineer to determine that all those parts of the escalator affected by such escalator works are in safe working order.

3.7.4 When the registered escalator engineer is satisfied that all such parts of the escalator are in safe working order, he shall deliver to the owner of the escalator a Form 7 for submitting an application to the Director for a permit to resume its use and operation. A duly completed test and examination report of the affected parts shall be submitted with the Form 7.

4. Maintenance, Repair, Major Alteration, Replacement and Addition of Lifts and Escalators in Existing Buildings

4.1 Maintenance and Repair

Maintenance includes the inspecting, cleaning, oiling and adjusting of a lift or an

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escalator in order to keep the equipment and their accessories in good working order and prevent faults from occurring. Though Section 19 of the Ordinance requires periodic maintenance to be carried out at intervals not exceeding one month, maintenance service is recommended to be carried out on lifts and escalators in accordance with the guidelines of the manufacturer or at least once every 2 weeks. To satisfy Section 27C(b) of the Ordinance, proper maintenance is required to be carried out by a registered lift contractor to a service lift installed before 17.6.1999 at intervals not exceeding five weeks. On or after 17.6.2000, maintenance service to any service lifts shall be carried out at intervals not exceeding one month. Repair works cover the fault attending and fault finding activities as well as the action and work to restore the equipment or accessories to good working condition.

4.2 Safe Carrying Out Lift and Escalator Works in Existing Buildings

Lift and escalator works shall be carried out in compliance with requirements in the current edition of the Code of Practice for Safety at Work (Lift and Escalator) issued by the Labour Department, to safeguard persons, including workers, users and any persons in the vicinity of the installation, against the risk of any accident including fire accident associated with these works.

For the same reason, a safe system of work shall be adopted. A general safe system of work shall include, but not limited to, the requirements in the following sub-clauses:

4.2.1 Cleanliness of Lift Car Roof, Machine Room, Well and Pit, and Escalator Wellway and Pit

Good housekeeping practice shall be exercised at lift/escalator installations. The lift car roof, machine room, well and pit, and escalator wellway and pit shall always be kept clean and tidy. Unnecessary combustible materials and sundry items, such as oil rags, waste gloves and rubbish, shall be cleared away

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before and after carrying out works. When not in use, the portable service lamp on top of the lift car shall be switched off and properly placed on a hanger which is well away from any flammable substance, for preventing the lamp to act as an ignition source.

4.2.2 Handling of Inflammable Substances

Inflammable substances and waste shall be handled with great care. Inflammable substances shall be properly sealed in a suitable container when not in use. Inflammable waste shall be removed from the work site immediately after use.

4.2.3 Protection of Structure during Demolition of Lift and Escalator

In demolishing a lift or an escalator, the registered contractor shall ensure that the structural integrity of the building is not affected. Where necessary, effects made on the structure of the building shall be assessed by a registered structural engineer.

4.2.4 Number of Working Hours

There shall be a limit on the number of hours that a lift worker or escalator worker works in any one shift. In general, one normal shift of work would mean an 8-hour work. Individual registered contractor shall conduct a risk assessment on the workers to determine the optimum working hours in a shift with breaks for their workers to carry out work attentively and safely.

4.3 Safety Precautionary Measures for Lift Works

4.3.1 General Safety Precautionary Measures Related with Landing Door and Car Door

- 1) Appropriate warning signs are required to be prominently displayed at

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least at the main landings. An example of such a sign is shown in Figure 1. When people are working within the lift well, or work lasting for more than 30 minutes is being carried out, the lift car entrance is required to be suitably blocked by a barrier with warning sign such that any intended users will not inadvertently enter the lift car. When any safety circuits are bypassed or interfered affecting the safety of the users, in addition to the barrier at the lift car entrance, warning signs are required to be displayed on all landings. In case of emergency, rescue operation may be commenced before displaying of signs. In any case, adequate safety precautions must be taken at all times.

- 2) The accidental opening of power-operated automatic doors must be prevented.
- 3) Whenever a landing door is unlocked or open with the car not at the level of that landing, suitable safety precautions shall be taken and the landing door shall not be allowed to remain open any longer than is absolutely necessary for working. In any case, effective precautions shall be provided to protect a landing entrance which is kept open or unlocked. This may take the form of any of the following:-
 - a) a barrier comprising a guard rail of at least 1 m high with a mid-rail and toe-board being fixed across the landing entrance threshold; or
 - b) a mesh or solid enclosure of a least 1 m high being erected at an appropriate distance from the landing threshold.

The landing door must be closed and locked whenever there is no person working at or near the landing, notwithstanding that a barrier or an enclosure as mentioned above is provided. If the landing door cannot be closed and locked, the barrier shall have to be extended to the full height of the entrance unless the car is at

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the level of that landing.

All protective barriers shall incorporate warning notices in both English and Chinese and appropriate safety signs. These barriers shall be stored at convenient locations so as to be readily available to the workers when required.

- 4) The posting of persons instead of fixing barriers at unprotected landings in order to prevent other persons from entering the area of danger is discouraged and shall only be used after very careful consideration of the overall situation, e.g. time factor, degree of risk and the type of persons at risk.

4.3.2 Ascertaining Presence of Trapped Passengers inside a Stalled Lift

In attending a lift breakdown call, the registered lift contractor and its lift workers shall check whether there is any passenger trapped inside the stalled lift. They shall ascertain that no passenger is trapped inside the lift, by physical inspection of the interior of the lift car, before leaving the scene.

This action shall be performed by a competent lift worker. He shall record such in the log book before he leaves the scene.

4.3.3 Work to be Carried out by Two or More Lift Workers

The registered lift contractor shall remind its lift workers to take necessary safety precautions in carrying out maintenance and repair works, in particular when any safety circuit is bypassed or interfered affecting the safety of the lift users. The registered lift contractor shall ensure that the following lift works are carried out by two or more lift workers as required:-

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- i) releasing passengers trapped in a lift which stopped outside the unlocking zone; and
- ii) manually releasing the brake of the traction machine of an electric lift, or operating the manual emergency lowering or ascending device of a hydraulic lift.

4.3.4 Provision of Emergency Lighting

Emergency lighting or a battery torch shall be provided or made available to workers working in a lift shaft or a confined or dark area for use in the event of power failure or sudden failure of the normal lighting.

4.4 Safety Precautionary Measures for Escalator Works

In addition to the requirements in Clause 4.2, the following shall be observed with regard to the safety of the general public: -

- 1) Whenever an escalator is to be stopped and put out of service, the worker shall ensure that nobody is using the escalator before stopping it and shall erect suitable barriers at both landings to prevent any passenger going onto the escalator after it is stopped. If traffic signs are provided, they shall be switched to the 'NO ENTRY' mode.
- 2) Such barriers may take the form of a mesh or solid enclosure of at least 1 m high or a guard rail of at least 1 m high with a mid-rail and toe-board, with warning notices in both English and Chinese and appropriate safety signs incorporated on the barrier. These barriers shall be stored at convenient locations so as to be readily available to the workers when required.

4.5 Periodic Maintenance on Lifts

4.5.1 For keeping the lift and accessories in good working order, at least the following applicable items are to be checked for proper condition, and attended to if necessary, in accordance with a schedule recommended by the manufacturer.

- a) lift machine gearbox and bearings
- b) brake and the proper positioning of brake release gear and hand winding wheel
- c) overspeed governor
- d) drums, sheaves and pulleys
- e) commutators and sliprings of motor generator set
- f) controller contacts, interlocks and dashpots
- g) floor selector
- h) counterweight guide shoes and lubricators
- i) lift well cleanliness and condition of lift well enclosure
- j) guides and fixings
- k) limit switches, direction switches and their operating devices
- l) car door and landing door operation including the clearances, bottom tracks, sill nosings, inter-connecting wires or chain, and door operating mechanism
- m) car guide shoe and lubricators, tensioning devices and door operating gear
- n) any irregularities in starting, stopping and general running of the lift
- o) car controls, car door switches, safety edges, emergency stop, alarm bell and intercom system; condition of car body fixing, car interior and floor covering; car lighting, car ventilation and levelling accuracy
- p) landing buttons, indicators, and fireman's lift switch
- q) door lock operation including electrical and mechanical interlocks for car door and landing door
- r) suspension ropes, compensation ropes/chains and their anchorages

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- s) slack rope switch, safety gear switch, broken tape or rope switch and overspeed governor switch
- t) counterweight clearances for rope stretch; rope equaliser; filler weight fixings; and safety gear for guide clearance and free movement
- u) buffer condition
- v) travelling cables and their anchorages
- w) safety notices and signs

4.5.2 In addition, at least the following applicable items which are pertinent to hydraulic lifts shall be checked and accordingly attended to.

- a) ram and cylinder condition
- b) levelling switches
- c) pipework, joints, bolts and fixings; stop valve; oil reservoir; pump and motor
- d) control valves, pilot and levelling valves; overrun and cut-off devices; overload relief valve
- e) air release cock and anti-syphon valve

4.6 Periodic Maintenance on Escalators

For keeping the escalator and accessories in good working order, at least the following applicable items are to be checked for proper condition, and attended to if necessary, in accordance with a schedule recommended by the manufacturer.

- a) clearances between consecutive steps/pallets and between the steps/pallets and the skirt panels
- b) drums, pulleys and moving parts
- c) machine room cleanliness
- d) any irregularities in running the escalator/passenger conveyer
- e) safety devices, such as skirt panel switches, handrail inlet switches, emergency stop switches, broken drive/step chain devices, step sagging devices, combplate

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- switches, etc.
- f) main drive system
- g) step/pallet rollers
- h) handrail
- i) braking efficiency
- j) comb
- k) lubricating pump and oil
- l) motor gear box
- m) lighting system
- n) floor intersection guards and any safeguards against adjacent building obstacles from causing injury to users
- o) safety notices and signs

4.7 Fire Safety Measures in Carrying out Lift and Escalator Works in Existing Buildings

Registered contractor shall ensure that adequate fire safety measures are taken in carrying out lift and escalator works, especially when hot works are to be carried out.

4.7.1 Notification of Lift Works

The registered lift contractor shall submit two types of notices to Director of Electrical and Mechanical Services, Commissioner for Labour, Director of Fire Services and, when applicable, Director of Housing as shown in Appendix E & F:

- a) The first notice (in Appendix E) shall be used to notify the departments concerned of commencement of lift works involving major alteration, replacement or addition of lift in existing building. The registered lift contractors shall indicate in the notice the period when hot work would be carried out inside a lift well.

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- b) The second notice (in Appendix F) shall be used to notify departments concerned of commencement of major hot work which lasts for one day or more for major alteration, replacement or addition of lift in existing building. The registered lift contractors shall specify the commencement and ending dates of the major hot work in the notice.
- c) The registered lift contractors shall use their best endeavours to forward the second notice to departments concerned at least one working day prior to the commencement of each major hot work so as to facilitate inspection by the government departments. In any event, if there is a change in the work schedule, further notification must be given.
- d) The names and contact numbers of the contractor's hot work supervisor and the contact person responsible for the whole lift work project shall be supplied in the second notice.

4.7.2 Hot Work Supervisor

4.7.2.1 A hot work supervisor shall be present at site during the whole time while hot work relating to lift works or escalator works is being carried out. He shall -

- a) perform the duties of a fire watch; and
- b) ensure that adequate fire safety measures are carried out and fire safety requirements are complied with.

4.7.2.2 The hot work supervisor shall –

- a) be a competent lift worker or a competent escalator worker, as the case may be;
- b) be of a supervisory grade;

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- c) have the ability and experience to carry out fire prevention and safety work.

He could also act as the supervisor of lift works or escalator works, as the case may be, if so desired.

4.7.3 Safety Training

4.7.3.1 Training on fire safety shall be provided to hot work supervisors. Every hot work supervisor shall have attended fire safety training course organized by recognized institutions, e.g. the Occupational Safety and Health Council.

4.7.3.2 Welding worker who is to carry out welding work in relation to lift works or escalator works shall attend safety training course including fire safety aspects.

4.7.4 Welding and Cutting

When gas or electric arc welding/cutting work is carried out, adequate safety precautionary measures shall be taken to prevent fire and personal injuries.

The registered contractor shall require its welding workers to return the same number of spent welding electrodes as the number of electrodes issued to them.

4.7.5 Fire Resisting Construction Requirements for Lift Well

The fire resisting construction requirements for lift well and its landing doors are stipulated in the Code of Practice for Fire Resisting Construction issued by Building Authority. In order to provide adequate resistance to the spread of fire, a landing door should normally remain in a closed position unless a lift car stops at the floor of the landing door.

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If, when carrying out lift works, some landing doors need to be kept open or taken down before reinstatement, the registered lift contractor shall ensure that the fire safety requirements in the "Practice Note for Registered Contractors 36 - Maintenance and Replacement Works of Lift Installations", as well as any subsequent amendments including those after these requirements have been incorporated into the Code of Practice for Fire Resisting Construction, issued by Building Authority are complied with. These requirements include the provision of hoardings of not less than one hour fire resisting period for lift door openings and prohibition of scaffolds made up of combustible materials inside the lift well.

5. Periodic Examination and Testing

Sections 21, 22, 23 and 24 of the Ordinance stipulate the requirements for periodic examination and testing of lifts and escalators.

5.1 Periodic Examination of Lifts

The examination and checks to determine whether the lift is in safe working order shall at least cover the following:-

- i) motor and its overload protection
- ii) brakes and the braking components such as the hubs, spindles, and linkages to ensure there is no wear, corrosion or dirt accumulation affecting their satisfactory operation
- iii) control equipment and safety devices
- iv) interlocking devices, both mechanical and electrical, provided for the landing doors and car door

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- v) overspeed governor, safety gear, and other devices connected therewith
- vi) buffer tested with empty car and at reduced speed
- vii) safety edges/door re-opening device and door operation
- viii) alarm and intercommunication devices
- ix) fireman' s lift operational control
- x) insulation resistance and electrical continuity
- xi) hydraulic circuit for hydraulic lifts
- xii) clamping device and pawl device tested with empty car and at reduced speed
- xiii) creeping check and electrical anti-creep system
- xiv) ropes or chains including terminations
- xv) all sheaves including driving and deflector sheaves
- xvi) any gearbox and generator provided

5.2 Periodic Testing of Safety Equipment of Lifts

The testing as required in Section 23 of the Ordinance is to be carried out in accordance with relevant parts in Clause 3.4. After the test, it shall be ascertained that no deterioration which could adversely affect the normal use of the lift has occurred. For lifts designed and constructed in accordance with the Design Code or specific requirements for particular applications, such as

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vehicle lifts, the testing of the brake at intervals not exceeding 5 years shall be carried out by the operation of the same when the car of the lift is travelling downwards at its rated speed with a load weighing 125% of the rated load or with a load according to the specific design requirements. At other intervals, a testing of the brake without any load in the lift shall be carried out in the periodic testing of safety equipment of a lift.

5.3 Periodic Examination of Escalators

The examination and checks to determine whether the escalator is in safe working order shall at least cover the following:-

- i) motor and its overload protection
- ii) safety equipment with particular regard to the brake and the stopping distance of the escalator
- iii) control equipment and safety devices
- iv) driving elements for signs of wear and tear and for insufficient tension of belts and chains
- v) steps, pallets or the belt for defects, true run and guidance
- vi) dimension and tolerances to ensure that dimensions specified are maintained despite wear
- vii) combs for proper condition and adjustment
- viii) balustrade interior panelling, skirting and skirt panel deflector devices
- ix) handrails

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- x) preventive measures provided in safeguarding adjacent building obstacles from causing injuries to the users, in particular, at floor intersections and on criss-cross escalators
- xi) insulation resistance and electrical continuity
- xii) signs and notices for use

5.4 Periodic Testing of Safety Equipment of Escalators

The testing as required in Section 24 of the Ordinance is to be carried out in accordance with relevant parts in Clause 3.6. After the test, it shall be ascertained that no deterioration which could adversely affect the normal use of the escalator has occurred.

6 Accident Investigation

6.1 The registered contractor is required, under Section 27A of the Ordinance, to report to the Director on certain occurrences. Other occurrences which are required to be similarly reported by the registered contractor are:-

- a) a failure of any components of a lift causing the operation of the car buffer, or the overspeed governor at tripping speed
- b) a fire originating from the equipment of a lift or an escalator
- c) a serious damage of the lift or escalator

6.2 A report thus submitted shall include at least the following details: -

- a) Location and EMSD Location Number

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- b) Particulars of the installation
 - i) Manufacturer
 - ii) Type
 - iii) Capacity
 - iv) Speed
 - v) Floors served
 - vi) Control
 - vii) Year of installation
 - viii) Rise and angle of inclination (for escalator)
 - ix) Step width (for escalator)
 - x) Width between centrelines of handrails (for escalator)
- c) Description of sequence of events relating to the incident;
- d) A copy of relevant parts of the log-book;
- e) Names and grade of contractor's workers involved in the incident;
- f) Whether any person is injured. If yes, indication of his/her injured condition and age;
- g) Investigation and cause of the incident;

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- h) Recommendation, if any. to prevent the recurrence of the incident;
- i) Necessary circuit diagrams, drawings and photographs for illustration.

7 Log-book and Circuit Diagram

7.1 A Log-book approved by the Director is required to be kept under Section 27B of the Ordinance. The basic characteristics of the lift or escalator shall be recorded in the log-book drawn up at the latest at the time the installations are brought into service. The log-book shall be kept up-to-date and contain the following information: -

- a) Location or address of the installation;
- b) Name of installation contractor;
- c) Name of maintenance contractor;
- d) Name of owner;
- e) Date of installation;
- f) Date of start of maintenance by particular contractor;
- g) EMSD Location Number and reference;
- h) Description of lifts or escalators such as .
 - i) general specification of lift or escalator;
 - ii) number, diameter and type of rope/chain;

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- iii) type of locking device, landing door and car door, overspeed governor, safety gear, ascending car overspeed protection means and buffer.
- i) Date of which log-book started; and
- j) Date of which log-book finished.

7.2

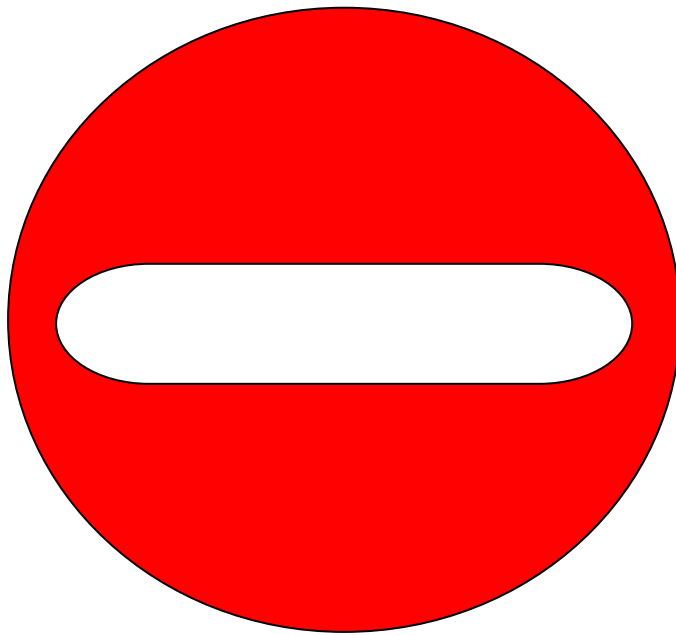
The registered engineer or registered contractor shall enter into the log book details of the lift works or escalator works carried out, including: -

- i) examination and testing of lift or escalator after installation or major alteration;
- ii) periodic maintenance of lift and escalator with observation;
- iii) periodic examination and testing of lift and escalator with observations;
- iv) examination or testing of lift or escalator ordered by the Director;
- v) major alterations to the lift or escalator;
- vi) replacement of ropes or important parts of lift or escalator;
- vii) events of emergency rescue and its cause;
- viii) events of fault attendance, rectification work done and its cause; and
- ix) events of any accidents.

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- 7.3** The registered contractor or registered engineer has to note down the time of arrival at site and the time that the service has resumed, and to enter any unusual matters such as fault not yet rectified, people injured, lift/escalator not safe, etc. in the log-book. To ensure that lift works or escalator works are only carried out by competent personnel, the registered engineer or the competent lift/escalator worker carrying out the works has to put down his name and sign on the log-book. To ensure that the owner or his representative is aware of the carrying out of the works, the registered engineer or registered contractor is required to advise the owner or his representative to accordingly sign on the log-book.
- 7.4** Essential circuit diagrams including the power and safety circuits shall be properly kept in the machine room or machinery space. Updated circuit diagrams shall always be available to the maintenance personnel as well as the registered lift or escalator engineers for them to carry out related work. Accurate hydraulic circuit and schematic diagrams for hydraulic lift are also to be available.

維修工程
暫停使用



**TEMPORARY SUSPENSION
FOR REPAIR**

Figure 1

Note to figure 1

On a white background of at least 150 mm wide and 180 mm high, the sign shall be in red colour with letters and Chinese characters in black colour.

**Appendix A Test and Examination Report for Electric
Passenger Lifts/Freight Lifts/Vehicle Lifts**

TEST AND EXAMINATION REPORT FOR ELECTRIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

1. Description of Installation

Location _____
 Manufacturer _____ Plant No. _____
 Lift Identification No. _____ Length of Travel _____ m
 Levels Served _____
 Rated Load _____ kg _____ Person Rated Speed _____ m/s
 Power Supply at Time of Test _____ Volt _____ Phase _____ Hz
 Levelling tolerance \pm _____ mm Number of Starts _____ /hr
 Car Floor Area _____ m²
 Machine Room Location: above lift well*/below lift well*/at side*/others _____
 Is this a fireman's lift? Yes No
 Is this lift for persons with a disability? Yes No
 The model no. and manufacturer of the controller _____

2. Static Examination - Mechanical

2.1 Suspension

(a) Suspension Ropes
 Certificate No. & Date of Issue _____
 (i) Number _____ (ii) Nominal Diameter _____ mm
 (b) Type of Anchorages: Car _____
 Counterweight _____
 Have the anchorages been examined and found in good working condition? Yes No

2.2 Safety Gear

Has the safety gear been certified in accordance with 5.11.1 of the Design Code, Part 1? Yes No
 Model No., _____
 Certificate No. & Date of Issue _____

2.3 Energy Dissipation Buffers N.A. */Fitted*

(a) Have the buffers been certified in accordance with 6.2.1 of the Design Code, Part 1? Yes No
 (b) Model No., _____
 Certificate No. & Date of Issue _____
 (c) Is the buffer switch functioning properly? Yes No

2.4 Energy Accumulation Buffers N.A. */Fitted*

(a) Have the buffers been certified in accordance with 6.2.1 of the Design Code, Part 1? N.A. Yes No
 (b) Model No., _____
 Certificate No. & Date of Issue _____
 (c) Do the buffers comply with 6.2.2 of the Design Code, Part 1? Yes No

2.5 Brake

Does the brake sustain the static car, in the lower part of its travel, with the rated load plus 25% (passenger/general freight lifts) or 50% (vehicle lifts/industrial truck loaded freight lifts)? Yes No

2.6 Overspeed Governor

(a) Has the governor been certified in accordance with 5.12.1 of the Design Code, Part 1? Yes No
 (b) Model No., _____
 Certificate No. & Date of Issue _____
 (c) Is the data plate in accordance with 11.6 of the Design Code, Part 1? Yes No
 (d) Does the governor rope conform to 5.12.6 of the Design Code, Part 1? Yes No
 (e) Is the governor rope slack switch working properly? Yes No

2.7 Landing Door Locking Device

Has the landing door locking device been certified in accordance with 3.7.3.1 of the Design Code, Part 1? Yes No
 Model No., _____
 Certificate No. & Date of Issue _____

2.8 Ascending Car Overspeed Protection Means

Has the ascending car overspeed protection means been certified in accordance with 5.13.11 of the Design Code, Part 1? N.A. Yes No
 (a) Overspeed Governor
 (i) Is the Overspeed Governor using the one as mentioned in item 2.6? Yes No
 (If 'Yes', skip the following and go to item 2.8 (b).)
 (ii) Has the governor been certified in accordance with 5.12.1 of the Design Code, Part 1? Yes No
 (iii) Model No., _____
 Certificate No. & Date of Issue _____
 (iv) Is the data plate in accordance with 11.6 of the Design Code, Part 1? Yes No
 (v) Does the governor rope conform to 5.12.6 of the Design Code, Part 1? Yes No
 (vi) Is the governor rope slack switch working properly? Yes No
 (b) Speed Reducing Element
 (i) Type: Car Safety Gear (acting upwards) Brake on Sheave
 Counterweight Safety Gear (acting downwards) Rope Gripper

* Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR ELECTRIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

Others _____
 (ii) Model No., _____
 Certificate No. & Date of Issue _____

3. Static Examination - Electrical

3.1 Insulation Resistance to Earth

- (a) Lift Motor _____ MΩ
 (b) MG Set (if fitted): Motor _____ MΩ Generator _____ MΩ
 (c) Power System _____ MΩ (d) Safety Circuits _____ MΩ

3.2 Earthing

- (a) Is the maximum continuity resistance to earth less than 0.5 Ω? Yes No
 (b) Is the car connected to controller earthing terminal by a separate conductor $\geq 0.75 \text{mm}^2$? Yes No

3.3 Protection of Conductors

Is the fixed wiring in conduit or trunking (or fittings which ensure equivalent protection) throughout? Yes No

3.4 Phase Reversal and Phase Failure Devices

Do the phase reversal and phase failure devices operate correctly? Yes No

4. Dynamic Tests

4.1 Safety Contacts/Circuits

- (a) Have the contacts at each landing entrance been proved to ensure that when broken there is no movement of the car? Yes No
 (b) Have the mechanical locks at each landing entrance been proved for positive locking? Yes No
 (c) Have the car door/gate contacts been proved so that when broken there is no car movement? Yes No
 (d) If separate terminal stopping switches are fitted, do they operate satisfactorily? N.A. Yes No
 (e) Do the final limit switches remove the motor supply before the car or counterweight contact the buffers? Yes No
 (f) Have the stopping devices on the car top, in the pulley room and pit, been proved so that when broken no movement of the car occurs? Yes No
 (g) Have all other switches/contacts in the safety circuit been proved so that when broken no car movement occurs? Yes No
 (h) Does the earthing of the most remote contact (lock or

push button) operate a fuse or trip a breaker without delay? Yes No

(i) Are all other electromechanical interlocks working properly? Yes No

4.2 Car Top Control Station

- (a) Speed Up _____ m/s (b) Speed Down _____ m/s
 (c) Does the design and operation of the car top station comply with 10.3.1.3 of the Design Code, Part 1? Yes No

4.3 Clearances and Runbys

- (a) With the counterweight on its fully compressed buffers, how much further can the lift car move upwards before it hits any obstruction? _____ mm
 (b) What is the distance between the car roof and the lowest parts of roof of the lift well, when the car levels with top floor? _____ mm
 (c) With the car resting on its fully compressed buffers, is there a sufficient space to accommodate a rectangular block as specified in 1.5.3(a) of the Design Code, Part 1 with at least 0.5m between the bottom of the pit and the lowest point of the car? Yes No
 (d) Distance of bottom runby of car _____ mm
 (e) Distance of bottom runby of counterweight _____ mm

4.4 Door Tests

- (a) Type of sliding doors Horizontal*/Vertical*/Collapsible*
 (b) Form of operation of doors Manual*/Powered*
 (c) Power supply to door control circuit _____ V
 (d) Maximum force at the mid-point of the travel _____ N
 (e) Does the construction & operation of the door re-opening device comply with 3.5.2.2 & 4.6.2.2*/3.5.2.3 & 4.6.2.3* of the Design Code, Part 1? N.A. Yes No
 (f) Do the car doors fulfil the requirements of 4.10 of the Design Code, Part 1? Yes No

5. Measurements of the Electrical System

- (a) Particulars of Lift Motor (as stated on data plate)
 Maker _____ Drive System _____
 Serial No. _____ Speed _____ rpm Frequency _____ Hz
 Power rating _____ kW Rated Voltage _____ V Current Rating _____ A
 (b) Particulars of MG Set Drive Motor*/Convertor* (as stated on data plate)
 Maker _____ Serial No. _____

* Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR ELECTRIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

Power Rating _____ kVA Voltage _____ V
 Current Rating _____ A Speed _____ rpm Frequency _____ Hz
 (Note: Speed and frequency not applicable for convertor)

State how the governor was tested on the installation:
 Simulation*/Free Fall*/Actual Overspeed*/Others* _____

(c) Current and Speed Tests (at mid-point of travel)

	Lift Motor Speed	Lift Speed	Lift Motor Input		System Input MG Set*/Convertor*	
No Load Down	rpm	m/s	V	A	V	A
Full Load Up	rpm	m/s	V	A	V	A

(d) Overcurrent protection devices

	Lift Motor	MG Set Drive Motor	Convertor
Type			
Settings			

6. Overspeed Governor Tests

6.1 Car Governor

Governor Type _____ Serial No. _____

		Electrical	Mechanical
Device Tripping	Marked	m/s	m/s
Speed	Measured	m/s	m/s

State how the governor was tested on the installation:
 Simulation*/Free Fall*/Actual Overspeed*/Others* _____

6.2 Counterweight Governor (if fitted)

Governor Type _____ Serial No. _____

		Electrical	Mechanical
Device Tripping	Marked	m/s	m/s
Speed	Measured	m/s	m/s

7. Car Safety Gear Tests

Note: The following tests should be conducted with the car descending, with the brake open and the machine continuing to run till the ropes slip or become slack.

- (a) Progressive Type N.A.*/Fitted*
- (i) Does the safety gear operate correctly when engaging at rated speed with the rated load uniformly distributed in the lift car? N.A. Yes No
- OR
- (ii) Does the safety gear operate correctly when engaging at levelling or inspection speed with 125%*/150%* of the rated load uniformly distributed in the lift car? N.A. Yes No
 State the speed _____ m/s
- (b) Instantaneous Type N.A.*/Fitted*
- Does the safety gear operate correctly when engaging at rated speed with the rated load uniformly distributed? Yes No
- (c) What was the stopping distance in the test? _____ m
- (d) After the lift car was brought to a halt in the above test was the floor horizontal, or sloping less than 5% from the horizontal? Yes No

8. Counterweight Safety Gear Tests

Note: The following tests should be conducted with the counterweight descending, with the brake open and the machine continuing to run till the ropes slip or become slack.

- (a) Progressive Type N.A.*/Fitted*
- (i) Does the safety gear operate correctly when engaging at rated speed with the car empty? N.A. Yes No
- OR
- (ii) Does the safety gear operate correctly when engaging at levelling or inspection speed with the car empty? N.A. Yes No
N.A.*/Fitted*
- (b) Instantaneous Type N.A.*/Fitted*
- Does the safety gear operate correctly when engaging at rated speed with the car empty? Yes No

9. Ascending Car Overspeed Protection Means Tests

9.1. Overspeed Governor Tests

- (a) Car Governor
 Governor Type _____ Serial No. _____

* Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR ELECTRIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

		Electrical	Mechanical
Device Tripping	Marked	m/s	m/s
	Measured	m/s	m/s

State how the governor was tested on the installation:

Simulation*/Actual Overspeed*/Others* _____

(b) Counterweight Governor (if fitted)

Governor Type _____ Serial No. _____

		Electrical	Mechanical
Device Tripping	Marked	m/s	m/s
	Measured	m/s	m/s

State how the governor was tested on the installation:

Simulation*/Actual Overspeed*/Others* _____

9.2. Speed Reducing Element Tests

(a) Car Safety Gear (if fitted)

The test should be conducted with the car ascending and the brake open.

(i) Does the safety gear operate correctly when engaging at preset speed with the car empty? Yes No

State the measured speed _____m/s

(ii) What was the stopping distance in the test? _____m

(iii) What was the deceleration in the test? _____m/s²

(b) Counterweight Safety Gear (if fitted)

The test should be conducted with the car ascending and the brake open.

(i) Does the safety gear operate correctly when engaging at preset speed with the car empty? Yes No

State the measured speed _____m/s

(ii) What was the stopping distance in the test? _____m

(iii) What was the deceleration in the test? _____m/s²

(c) Rope Gripper (if fitted)

The test should be conducted with the car ascending and the brake open.

(i) Does the rope gripper operate correctly when engaging at preset speed with the car empty? Yes No

State the measured speed _____m/s

(ii) What was the stopping distance in the test? _____m

(iii) What was the deceleration in the test? _____m/s²

(d) Brake on Sheave (if fitted)

The test should be conducted with the car ascending.

(i) Does the brake on sheave operate correctly when engaging at preset speed with the car empty? Yes No

State the measured speed _____m/s

(ii) What was the stopping distance in the test? _____m

(iii) What was the deceleration in the test? _____m/s²

10. Buffer Tests

(a) For Car Buffers

(i) When the car was brought into contact with the buffers at rated load at rated speed, or at a speed for which the stroke of the buffers has been calculated, was the operation satisfactory? Yes No

(ii) Do the buffers recover automatically after operation? Yes No

(b) For Counterweight Buffers

When the counterweight was brought into contact with the buffers with the car empty at rated speed, or a speed for which the stroke of the buffers has been calculated, was the operation satisfactory? Yes No

11. Traction Checks

(a) Does the car stop under emergency conditions

(i) with the car empty when travelling upwards at rated speed? Yes No

(ii) with the rated load plus 25% when travelling downwards in the lower part of the lift well at rated speed? Yes No

* Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR ELECTRIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

(b) With the counterweight resting on its fully compressed buffers, is it impossible for the empty car to be raised under power? Yes No

12. Emergency Stopping Distance
What was the stopping distance of the car travelling in down direction at rated speed and carrying 125% of the rated load under emergency stopping conditions? _____m

What was the stopping distance of the empty car travelling in up direction at rated speed under emergency stopping conditions? _____m

13. Duty Cycle Test
Does the lift operate satisfactorily for a period of at least 0.5 hour when running with rated load, full travel and intermediate stops at a rate of starts equal to the number of starts per hour recommended in Item 1? Yes No

14. General (Lift Work)

(a) Is the maximum load indicated in the car and does it comply with 11.2.1 of the Design Code, Part 1? Yes No

(b) Does the fireman's lift operation function correctly? N.A. Yes No

(c) Are the emergency instructions displayed in the machine room? Yes No

(d) Does the emergency operation system function correctly in accordance with 8.5 of the Design Code, Part 1? Yes No

(e) Does the emergency lighting of the car comply with 4.16.3 of the Design Code, Part 1? Yes No

(f) What are the emergency alarm devices?

	Mangt office	M/C room	Lift car	Main lobby/Pit
Alarm bell*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intercom*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Indication light*	<input type="checkbox"/>	<input type="checkbox"/>		
Indication light for acknowledgement & the notice*			<input type="checkbox"/>	

(g) Does the overload device operate satisfactorily? Yes No

15. General (Other works)

(a) Is the machine room artificial lighting adequate for maintenance purposes? Yes No

(b) Does the artificial lighting in the lift well comply with 1.7(b) of the Design Code, Part 1? Yes No

(c) Are the machine room conditions satisfactory? Yes No

(d) Are the provisions for ventilating the machine room adequate? Yes No

(e) Are the machine room doors or trap doors fitted with a suitable lock to comply with 3.15.3 and 3.15.4 of COP on Building Works for Lifts and Escalators? Yes No

(f) Are the safety means of access to all items of equipment in accordance with the Design Code, Part 1 and COP on Building Works for Lifts and Escalators? Yes No
If no, state details _____

(g) Are the hoistway emergency doors (if fitted), in compliance with 3.2 of COP on Building Works for Lifts and Escalators? N.A. Yes No

(h) Documents (copy only) in respect of exemptions (if any) shall be provided for reference. N.A. Yes No

(i) Are CCTV camera provided in lift car and CCTV monitors provided in management office* and machine room*? N.A. Yes No

16. Declaration
I certify that on _____ the equipment was thoroughly examined and found to be free from obvious defects, and to comply with Part 1 of the Design Code, COP for Lift Works and Escalator Works and COP on Building Works for Lifts and Escalators with the exception of the following items and that the foregoing is an accurate record of the test and examination carried out.

Exceptions:

Name & Registration No. of Registered Lift Engineer

Signature of Registered Lift Engineer

Name of Registered Lift Contractor

Date

Remarks: COP means Code of Practice

* Delete whichever not applicable

**Appendix B Test and Examination Report for Hydraulic
Passenger Lifts/Freight Lifts/Vehicle Lifts**

TEST AND EXAMINATION REPORT FOR HYDRAULIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

1. Description of Installation

Location _____
 Manufacturer _____ Plant No. _____
 Lift Identification No. _____ Length of Travel _____ m
 Levels Served _____
 Rated Load _____ kg _____ Persons Rated Speed Up _____ m/s
 Dia. of Ram _____ m Ram Action: Direct*/Indirect* Type of Ram: Single*/Telescopic*
 Power Supply at Time of Test _____ Volt _____ Phase _____ Hz
 Levelling tolerance \pm _____ mm Number of Starts _____ /hr
 Car Floor Area _____ m²
 Machine Room Location: above lift well*/below lift well*/at side*/Others _____
 Is this a fireman's lift? Yes No
 Is this lift for persons with a disability? Yes No

Devices provided against free fall and descent with excessive speed of the car:-

- (i) Safety gear tripped by overspeed governor Yes No
 (ii) Safety gear tripped by failure of suspension gear or by safety rope Yes No
 (iii) Rupture valve Yes No
 (iv) Restrictor Yes No

Devices/systems provided against creeping of the car:-

- (i) Safety gear tripped by downward movement of the car Yes No
 (ii) Pawl device Yes No
 (iii) Clamping device Yes No
 (iv) Electrical anti-creep system Yes No

2. Static Examination - Mechanical

2.1 Jack
 Single Jack Multi Jack Number of Jacks _____
 In multi jack system, are the jacks, in compliance with 8.1.3 of the Design Code, Part 2? N.A. Yes No

2.2 Suspension

- (a) Suspension Ropes
 (i) Certificate No. & Date of Issue _____
 (ii) Number _____ Nominal Diameter _____ mm
 (b) Type of Anchorage: Car _____
 Counterweight (if provided) _____
 Have the anchorages been examined and found in good working condition? Yes No

2.3 Suspension Chains N.A.*/Fitted*

- (a) Number _____ (b) Pitch _____ mm

(c) Type and Construction _____

2.4 Safety Gear N.A.*/Fitted*

Has the safety gear been certified in accordance with 5.10.1.5 of the Design Code, Part 2? Yes No
 Model No., _____
 Certificate No. & Date of Issue _____

2.5 Energy Dissipation Buffers N.A.*/Fitted*

- (a) Have the buffers been certified in accordance with F5 of BS5655, Part 2? Yes No
 (b) Model No., _____
 Certificate No. & Date of Issue _____
 (c) Is the buffer switch functioning properly? Yes No

2.6 Energy Accumulation Buffers N.A.*/Fitted*

- (a) Have the buffers been certified in accordance with F5 of BS5655 Part 2? N.A. Yes No
 (b) Do the buffers comply with 6.2.3 of the Design Code, Part 2? Yes No

2.7 Overspeed Governor N.A.*/Fitted*

- (a) Has the governor been certified in accordance with F.4.3 of BS5655 Part 2? Yes No
 (b) Model No., _____
 Certificate No. & Date of Issue _____
 (c) Is the data plate in accordance with 11.6 of the Design Code, Part 2? Yes No
 (d) Does the governor rope conform to 5.12.6 of the Design Code, Part 2? Yes No
 (e) Is the governor slack rope switch working properly? Yes No

2.8 Landing Door Locking Device

Has the landing door locking device been certified in accordance with 3.7.3.1 of the Design Code, Part 2? Yes No
 Model No., _____
 Certificate No. & Date of Issue _____

3. Static Examination - Electrical

- 3.1 Insulation Resistance to Earth
 (a) Pump Motor _____ M Ω (b) Power System _____ M Ω
 (c) Safety Circuits _____ M Ω

*Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR HYDRAULIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

- 3.2 Earthing
- (a) Is the maximum continuity resistance to earth less than 0.5Ω ? Yes No
- (b) Is the car connected to controller earthing terminal by a separate conductor $\geq 0.75\text{mm}^2$? Yes No
- 3.3 Protection of Conductors
Is the fixed wiring in conduit or trunking (or fittings which ensure equivalent protection) throughout? Yes No
- 3.4 Phase Failure and Phase Reversal Devices
Do the phase failure and phase reversal devices operate correctly? Yes No
4. Dynamic Tests
- 4.1 Safety Contacts/Circuits
- (a) Have the contacts at each landing entrance been proved to ensure that when broken there is no movement of the car? Yes No
- (b) Have the mechanical locks at each landing entrance been proved for positive locking? Yes No
- (c) Have the car door/gate contacts been proved so that when broken there is no car movement? Yes No
- (d) If separate terminal stopping switches are fitted, do they operate satisfactorily? N.A. Yes No
- (e) Does the final limit switch operate in accordance with 6.3 of the Design Code, Part 2? Yes No
- (f) Have the stopping devices on the car top, in the pulley room and pit been proved so that when broken no movement of the car occurs? Yes No
- (g) Have all other switches/contacts in the safety circuit been proved so that when broken no car movement occurs? Yes No
- (h) Does the earthing of the most remote contact (lock or push button) operate a fuse or trip a breaker without delay? Yes No
- (i) Are all other electromechanical interlocks working properly? Yes No
- 4.2 Car Top Control Station
- (a) Speed Up _____ m/s (b) Speed Down _____ m/s
- (c) Does the design and operation of the car top station comply with 10.3.1.3 of the Design Code, Part 2? Yes No
- 4.3 Clearances and Runbys
- (a) Will the car and counterweight (if fitted) clear all obstacles when driven at slow speed:
- (i) with the car and rated load compressing the car buffers? Yes No
- (ii) with the counterweight (if fitted) compressing its buffer (car empty)? N.A. Yes No
- (iii) with the ram fully extended to the ram stop? Yes No
- (b) What is the distance between the car roof and the lowest parts of roof of the lift well, when the car levels with top floor? _____ mm
- (c) With the car resting on its fully compressed buffers, is there a sufficient space to accommodate the rectangular block as specified in 1.5.2(a) of the Design Code, Part 2 with at least 0.5m between the bottom of the pit and the lowest point of the car? Yes No
- (d) Distance of bottom runby of car _____ mm
- (e) Distance of bottom runby of counterweight (if fitted) _____ mm
- 4.4 Door Tests
- (a) Type of sliding doors Horizontal*/Vertical*/Collapsible*
- (b) Form of operation of doors Manual*/Powered*
- (c) Power supply to door control circuit _____ V
- (d) Maximum force at the mid-point of the travel _____ N
- (e) Does the construction & operation of the door re-opening device comply with 3.5.2.2 & 4.6.2.2*/3.5.2.3 & 4.6.2.3* of the Design Code, Part 2? N.A. Yes No
- (f) Do the car doors fulfil the requirements of 4.10 of the Design Code, Part 2? Yes No
5. Measurements of the Hydraulic and Electrical System
Note: $1 \text{ bar} = 10^5 \text{N/m}^2 = 10^5 \text{Pa}$
- (a) With rated load in the car and at the highest floor level, state static hydraulic pressure _____ bar
- (b) When subject to 200% of full load pressure applied between the non-return valve and the jack (included) for a period of 5 minutes, is there evidence of any pressure drop or leakage of hydraulic fluid? Yes No
- (c) Particulars of the pump motor (as stated on data plate)
Maker _____ Drive System _____
Serial No. _____ Speed _____ r/min Frequency _____ Hz
Power Rating _____ kW Rated Voltage _____ V Current Rating _____ A

*Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR HYDRAULIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

(d) Particulars of the pump (as stated on data plate)
 Maker _____ Serial No. _____ Type _____

(e) Current and Speed Tests (at mid-point of travel)

	Hydraulic pressure (See Note 1)	Lift Speed	Motor Input (See Note 2)	
No Load Up	bar	m/s	V	A
Rated Load Up	bar	m/s	V	A

Note 1 - The pressure readings should be taken between the check valve, or down direction valve, and the supply line to the cylinder.

Note 2 - The motor current readings on conductors adjacent to the motor terminal block should be taken with the motor running steadily.

- (f) Pressure relief valve operated at pressure of _____ bar and is the integrity of the pipework satisfactory? Yes No
- (g) Is the relief valve secured against any unauthorized interference? Yes No
- (h) Does the check valve hold the car with rated load at floor level? Yes No
- (i) Does the rupture valve function correctly? N.A. Yes No
- (j) Does the operation of the manual lowering valve lower the car at a slow speed not exceeding 0.3m/s? Yes No
- (k) In the case of an indirect acting lift, does the slack chain*/ropes* switch or pressure switch prevent operation of the lift until pressure is re-established by the re-setting of the switch? N.A. Yes No
- (l) Are precautions against any overheating of the fluid provided? Yes No

6. Overspeed Governor/Safety Rope/Suspension Gear Tests

(a) Governor _____ N.A.*/Fitted*
 Type _____ Serial No. _____

		Electrical	Mechanical
Device Tripping	Marked	m/s	m/s
Speed	Measured	m/s	m/s

State how the governor was tested on the installation:
 Simulation*/Free Fall*/Actual Overspeed*/Others* _____

OR

- (b) Safety Rope
 If the safety gear*/clamping device* is tripped by a safety rope, does, the triggering mechanism operate satisfactorily? N.A. Yes No
- (c) Suspension Gear
 If the safety gear*/clamping device* is tripped by the failure of suspension gear, does the triggering mechanism operate satisfactorily? N.A. Yes No

7. Car Safety Gear Tests

Note: The following tests should be conducted with the car descending.

- (a) Progressive Type
 Does the safety gear operate correctly if engaged at levelling*/inspection*/rated* speed with 100%*/125%*/150%* of the rated load uniformly distributed in the lift car? Yes No
 State the speed: _____m/s
- OR
- (b) Instantaneous Type
 Does the safety gear operate correctly if engaged at rated speed with the rated load uniformly distributed in the lift car? Yes No
- (c) What was the stopping distance in the test? _____mm
- (d) After the lift car was brought to a halt in the above test, was the car floor horizontal, or sloping less than 5% from the horizontal? Yes No

8. Clamping Device Tests

- (a) Progressive Type
 Does the clamping device operate correctly when engaging with 125%*/150%* of the rated load uniformly distributed in the lift car? Yes No
- (b) Instantaneous Type
 Does the clamping device operate correctly when engaging with 125%*/150%* of the rated load uniformly distributed in the car? Yes No

9. Buffer Tests

- (a) For Car Buffers
 i) When the car was brought into contact with the buffers at rated load and at rated speed, or at a speed for which the stroke of the buffers has been calculated, was the operation satisfactory? Yes No

*Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR HYDRAULIC PASSENGER LIFTS*/FREIGHT LIFTS*/ VEHICLE LIFTS*

- ii) Do the buffers automatically return to their designed position after undergoing compression? Yes No
- (b) For Counterweight Buffers (if fitted)
When the counterweight was brought into contact with the buffers with the car empty and travelling at rated speed, or a speed for which the stroke of the buffers has been calculated, was the operation satisfactory? N.A. Yes No
- 10. Anti-Creep
Does the anti-creep device operate in accordance with conditions stipulated in 10.3.1.4 of the Design Code, Part 2? Yes No
- 11. Duty Cycle Test
Does the lift operate satisfactorily for a period of at least 0.5 hour when running with rated load over the full travel distance and serving intermediate stops at a rate equal to the number of starts per hour as stated in Item 1? Yes No
- 12. General (Lift Work)
 - (a) Is the maximum load indicated in the car and does it comply with 11.2.1 of the Design Code, Part 2? Yes No
 - (b) Does the fireman's lift operation function correctly? N.A. Yes No
 - (c) Are the emergency instructions displayed in the machine room? Yes No
 - (d) Does the manual emergency operation system function correctly in accordance with 8.9 of the Design code, Part 2? Yes No
 - (e) Does the emergency lighting of the car comply with 4.16.3 of the Design Code, Part 2? Yes No
 - (f) What are the emergency alarm devices?

	Mangt office	M/C room	Lift car	Main lobby/Pit
Alarm bell*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intercom*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Indication light*	<input type="checkbox"/>	<input type="checkbox"/>		
Indication light for acknowledgement & the notice*			<input type="checkbox"/>	
 - (g) Does the overload device operate satisfactorily? Yes No
- 13. General (Other Works)
 - (a) Is the machine room artificial lighting adequate for maintenance purposes? Yes No
 - (b) Does the artificial lighting in the lift well comply with 1.7(b) of the Design Code, Part 2? Yes No

- (c) Are the machine room conditions satisfactory? Yes No
- (d) Are the provisions for ventilation of the machine room adequate? Yes No
- (e) Are the machine room doors or trap doors fitted with a suitable lock to comply with 3.15.3 and 3.15.4 of COP on Building Works for Lifts and Escalators? Yes No
- (f) Are the safety means of access to all items of equipment in accordance with the Design Code, Part 2 and COP on Building Works for Lifts and Escalators? Yes No
If no, state details _____
- (g) Are the hoistway emergency doors (if fitted), in compliance with 3.2 of COP on Building Works for Lifts and Escalators? N.A. Yes No
- (h) Documents (copy only) in respect of exemptions (if any) shall be provided for reference N.A. Yes No
- (i) Are CCTV camera provided in lift car and CCTV monitors provided in management office *and machine room*? N.A. Yes No

14. Declaration

I certify that on _____ the equipment was thoroughly examined and found to be free from obvious defects, and to comply with Part 2 of the Design Code, COP for Lift Works and Escalator Works and COP on Building Works for Lifts and Escalators with the exception of the following items and that the foregoing is an accurate record of the test and examination carried out.

Exceptions:

Name & Registration No. of
Registered Lift Engineer

Signature of Registered Lift
Engineer

Name of Registered Lift Contractor

Date

Remarks: COP means Code of Practice

*Delete whichever not applicable

**Appendix C Test and Examination Report for Escalators/
Passenger Conveyors**

TEST AND EXAMINATION REPORT FOR ESCALATORS/PASSENGER CONVEYORS

1. Description of Installation

Location _____
 Environment: Outdoor*/Indoor*
 Manufacturer _____ Plant No. _____
 Identification No. _____ Model No. _____
 Angle of Inclination _____ degree Rated Speed _____ m/s
 Vertical Rise _____ m Capacity _____ Persons/Hour
 Step Width _____ mm Step Depth _____ mm
 No. of Exposed Steps between Combplates _____ Step Height _____ mm
 Distance between Handrail Centrelines _____ mm
 Horizontal Travel Distance of the Steps at the ends _____ mm
 Contract Power Supply _____ Volt _____ Hz _____ Phase
 Type of Balustrade: Opaque*/Tempered Glass*/Others* _____
 Machinery Location: Inside Truss*/Outside Truss*
 Is yellow band provided on side edges*/leading*/trailing*edge? Yes No
 Is sump pump provided at upper*/lower*station? Yes No
 Is remote monitoring facilities provided? Yes No

2. Static Examination

- (a) Are the combplates and terminal guides adjusted properly? Yes No
 (b) Has the brake(s) been examined and found to be in order? Yes No
 (c) Is an auxiliary brake provided? N.A. Yes No

3. Dynamic Tests

- (a) Has the operation brake been tested at no load*/full load* up*/down* condition? Yes No
 AND
 The stopping distance is _____ mm
 (b) Does the auxiliary brake operate properly? N.A. Yes No
 (c) Does the overspeed device operate properly? N.A. Yes No

4. Driving Motor Current Tests

Driving Motor Manufacturer _____ Serial Number _____
 Voltage at Time of Test _____ Rated Power _____

Form of Overload Protection:

- 3-Phase circuit breaker
 Overloads in each phase
 Others _____

	Running Current(A)	
	Up	Down
No Load		

Separate supply for machine compartment/power socket? Yes No

5. Clearance

- (a) Is the clearance between consecutive steps not exceeding 6mm? Yes No
 (b) Is the clearance between step and adjacent skirting not exceeding 4mm? Yes No
 (c) Is the total clearance between step and both skirting not exceeding 7mm? Yes No
 (d) Is the clearance between the upper surface of the step and the root of the comb teeth not exceeding 4mm? Yes No
 (e) Is the distance between the floor and the lower point of the handrail into the newel within the range of 0.1m to 0.25m? Yes No

6. Insulation Resistance to Earth

Power System: _____ MΩ Safety Circuit: _____ MΩ

7. Earthing

- (a) Is all metalwork enclosing conductors bonded to earth? Yes No
 (b) Is the maximum continuity resistance to earth less than 0.5Ω? Yes No

8. Half Hour Run

The escalator*/passenger conveyor* is to run unladen, fifteen minutes in the up*/forward* direction followed by fifteen minutes in the down*/backward* direction. Yes No
 Observations: _____

*Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR ESCALATORS/PASSENGER CONVEYORS

9. General (Escalator*/Passenger Conveyor* Work)

Have the following items where fitted been checked for correct operation?

- | | | | |
|--------------------------------------|-------------------------------|------------------------------|-----------------------------|
| (a) Emergency Stop Switches | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (b) Broken Step Chain Device | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (c) Broken Drive Chain*/Belt* Device | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (d) Handrail Inlet Switch | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (e) Non-reversal Device | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (f) Combplate Switch | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (g) Operation Brake | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (h) Step Sagging Device | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (i) Skirt Panel Switch | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (j) Phase Protection Device | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (k) Overspeed Device | N.A. <input type="checkbox"/> | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (l) Broken Handrail Device | N.A. <input type="checkbox"/> | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (m) Auxiliary Brake | N.A. <input type="checkbox"/> | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

10. General (Other Works)

(1) Have the following items been properly provided?

- | | | | |
|--|-------------------------------|------------------------------|-----------------------------|
| (a) Notices/pictographs for passengers | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (b) Guards at adjacent building obstacles and criss-cross escalators | N.A. <input type="checkbox"/> | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (c) Rigid guard adjacent to escalator handrail | N.A. <input type="checkbox"/> | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| (d) Notice on access door to machinery spaces | N.A. <input type="checkbox"/> | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

(2) Do the unrestricted landing areas comply with 1.2.1.1 of the Design Code, Part 4? Yes No

(3) Does the clear height above step*/belt* comply with 1.2.2 of COP on the Design Code, Part 4? Yes No

11. Exemptions (if any).

12. Declaration

I certify that on _____ the equipment was thoroughly examined and found to be free from obvious defects, and to comply with Part 4 of the Design Code, COP for Lift Works and Escalator Works and COP on Building Works for Lifts and Escalators with the exception of the following items and that the foregoing is an accurate record of the test and examination carried out.

Exceptions:

Name & Registration No. of Registered Escalator Engineer

Signature of Registered Escalator Engineer

Name of Registered Escalator Contractor

Date

Remarks: COP means Code of Practice

*Delete whichever not applicable

Appendix D Test and Examination Report for Electric Service Lifts

TEST AND EXAMINATION REPORT FOR ELECTRIC SERVICE LIFTS

1. Description of Installation

Location _____
 Manufacturer _____ Plant No. _____
 Lift Identification No. _____ Length of Travel _____ m
 Levels Served _____
 Rated Load _____ kg Rated Speed _____ m/s
 Power Supply at Time of Test _____ Volt _____ Phase _____ Hz
 Machine Room Location: above lift well*/below lift well*/at side*
 Car Floor Area _____ m² Car internal height _____ m

2. Examinations and Tests

2.1 Suspension

- (a) Suspension Ropes
 (i) Number _____ (ii) Nominal Diameter _____ mm
 (b) Type of Anchorages: Car _____ Counterweight _____
 Have the anchorages been examined and found in good working condition? Yes No

2.2 Car Safety Gear Tests

N.A. */Fitted*

- Note: The following test should be conducted with the car descending.
 (a) Progressive Type
 Does the safety gear operate correctly if engaged at inspection*/rated* speed with 100%*/125%* of the rated load uniformly distributed in the lift car?
 N.A. Yes No
 State the speed: _____ m/s
 (b) Instantaneous Type
 Does the safety gear operate correctly if engaged at rated speed with rated load uniformly distributed in the lift car?
 N.A. Yes No
 (c) The stopping distance is _____ mm

2.3 Counterweight Safety Gear Tests

N.A. */Fitted*

- Note: The following test should be conducted with the counterweight descending.
 (a) Progressive Type
 Does the safety gear operate correctly if engaged at inspection*/rated* speed with the lift car empty? Yes No
 (b) Instantaneous Type
 Does the safety gear operate correctly if engaged at rated speed with lift car empty? Yes No
 (Delete either (a) or (b) or both)

2.4 Overspeed Governor*/Safety Rope*/Suspension Failure Device* Test

- (a) Car N.A. */Fitted*

(i) Governor
 Type _____ Serial No. _____

Device	Tripping Speed (m/s)	
	Marked	Measured
Electrical		
Mechanical		

State how the governor was tested on the installation:
 Simulation*/Free Fall*/Actual Overspeed*/Others* _____

OR

- (ii) Safety Rope*/Suspension Failure Device*
 Does the triggering mechanism operate correctly? Yes No

(b) Counterweight

N.A. */Fitted*

(i) Governor
 Type _____ Serial No. _____

Device	Tripping Speed (m/s)	
	Marked	Measured
Electrical		
Mechanical		

State how the governor was tested on the installation:
 Simulation*/Free Fall*/Actual Overspeed*/Others* _____

- (ii) Safety Rope*/Suspension Failure Device*
 Does the triggering mechanism operate correctly? Yes No

2.5 Brake

Is the brake capable of stopping the machine when the lift is travelling at its rated speed with the rated load plus 25%? Yes No

2.6 Buffer Tests

- (a) Car Buffer
 When the lift was brought into contact with the buffer with rated load at rated speed, was the operation satisfactory? Yes No
 (b) Counterweight Buffer
 When the counterweight was brought into contact with the buffer with the car empty at rated speed, was the operation satisfactory? Yes No

2.7 Insulation Resistance to Earth and Earthing

- (a) Lift Motor _____ MΩ (b) Safety Circuit _____ MΩ

*Delete whichever not applicable

TEST AND EXAMINATION REPORT FOR ELECTRIC SERVICE LIFTS

(c) Is the maximum continuity resistance to earth less than 0.5 Ω ? Yes No

(f) Is the clear space in front of the controller not less than 900mm in depth? If no, state details in Item 4. Yes No

2.8 Safety Contacts/Circuits

- (a) Have the contacts at each landing door been proved so that when broken there is no movement of the car? Yes No
- (b) Have the car door contacts been proved so that when broken there is no movement of the car? Yes No
- (c) Do the terminal stopping switches operate satisfactory? Yes No
- (d) Do the stopping device in machine room and in pit operate correctly? Yes No
- (e) Does the earthing of the most remote contact (lock or push button) operate a fuse or trip a breaker? Yes No

(g) Is the access to machine room and to all equipment safe and convenient? Yes No

4. Others

2.9 Current and Speed Tests (at mid-point of travel)

	Lift Motor Speed (rpm)	Lift Speed (m/s)	Motor Input	
			(V)	(A)
No Load Down				
Full Load Up				

5. Declaration

I certify that on _____ the equipment was thoroughly examined and found to be free from obvious defects, and to comply with Part 3 of the Design Code, COP for Lift Works and Escalator Works and COP on Building Works for Lifts and Escalators with the exception of the following items and that the foregoing is an accurate record of the test and examination carried out.

Exceptions:

2.10 Traction Checks

- Does the car stop under emergency conditions
- (a) with the car empty when travelling upwards in the upper part of the lift well at rated speed? Yes No
 - (b) with rated load plus 25% when travelling downwards in the lower part of the lift well at rated speed? Yes No

3. General

- (a) Are the maximum load and warning notice displayed at each landing in compliance with 10.1 and 10.3.1 of the Design Code, Part 3? Yes No
- (b) Are the emergency instructions displayed in the machine room? Yes No
- (c) Is the machine room lighting adequate for maintenance purpose? Yes No
- (d) Are the provisions for ventilating the machine room adequate? Yes No
- (e) Is each machine room door or trap door complied with the COP on Building Works for Lifts and Escalators? Yes No

Name & Registration No. of Registered Lift Engineer

Signature of Registered Lift Engineer

Name of Registered Lift Contractor

Date

Remarks: COP means Code of Practice

**Appendix E Notice of Commencement of Lift Works Involving Major Alteration,
Replacement or Addition of Lift in Existing Building**

**Notice of Commencement of Lift Works
Involving Major Alteration, Replacement or Addition of Lift
in Existing Building**

To Director of Electrical & Mechanical Services	Date _____
Commissioner for Labour	(Fax no. 2504 5970)
Director of Fire Services * ¹	(Fax no. 2157 9250)
Director of Housing * ¹ For rental estate (Attention: Regional MS/)*	(Fax no. 2723 2197)
For PMA managed HOS Court (Attention: SBS/Building Control)*	(Fax no. 2760 4284)

We hereby give you notice that we have been appointed to carry out the lift works as follows:-

Location: _____

EMSD location no.: _____

Lift no(s): _____

Date of commencement of the works: _____

Planned date of completion of the works: _____

Contact person's name & tel./pager no.: _____

The works will involve:-

- (a) replacement/addition* of lift(s) in existing building
- (b) breach of lift well compartmentation, e.g. removal of lift landing door(s)
- (c) conducting hot work in lift well mainly from _____ (date/time)
to _____ (date/time)²
- (d) erecting metal/bamboo* scaffold in lift well³
- (e) Fireman's lift no(s): _____

The details of the major alteration are (if applicable): _____

Name & Signature of Registered Lift Contractor

- Notes: 1. Also submit this notice to Director of Fire Services and Director of Housing (for lifts in any building over which the Housing Authority has control and management) if the works involve item (a), (b), (c), (d) or (e).
2. The date and time for conducting major hot work (hot work lasting for 1 day or more) should be provided separately with at least 1 working day's notice.
3. Only scaffold constructed of non-combustible materials shall be used for lift works tendered on or after 1.8.1997.
4. This notice should be received by relevant Government departments at least 14 days before commencement of the works if the works involve item (a), (b), (c), (d) or (e).
5. A location plan indicating the position(s) of the lift(s) should be provided together with this notice.

Tick if applicable
* Delete if inapplicable

**Appendix F Notice of Conducting Major Hot Work in Lift Well for
Major Alteration, Replacement or Addition of Lift
in Existing Building**

**Notice of Conducting Major Hot Work in Lift Well
for Major Alteration, Replacement or Addition of Lift
in Existing Building**

Date _____

To Director of Electrical & Mechanical Services (Fax no. 2504 5970)
Commissioner for Labour (Fax no. 2157 9250)
Director of Fire Services (Fax no. 2723 2197)
Director of Housing* For rental estate (Attention: Regional MS/)* (Fax no. 2760 4284)
For PMA managed HOS Court (Attention: SBS/Building Control)*

Location: _____

EMSD location no.: _____

Lift no(s): _____

Date & time of commencement of major hot works¹: _____

Date & time of completion of major hot work: _____

Hot work supervisor's name: _____ tel.: _____

pager: _____

mobile tel.: _____

Contact person's name _____ tel.: _____

pager: _____

mobile tel.: _____

Name & Signature of Registered Lift Contractor

- Notes:
1. Major hot work means hot work lasting for 1 day or more.
 2. Registered lift contractors should submit this notice to the above Government departments at least 1 working day before commencement of the major hot work. In any event, prior notice must be given.

* Delete if inapplicable
(Submit this notice to Director of Housing for lifts in any building over which the Housing Authority has control and management).