

Guide on Safety in Lift Repair & Maintenance



Introduction

This guide aims to enhance the safety awareness of the personnel associated with lift repair and maintenance, including the management and front-line staff in the trade. It points out the major hazards associated with the work and the necessary precautions for preventing accidents.

Hazards in lift repair and maintenance

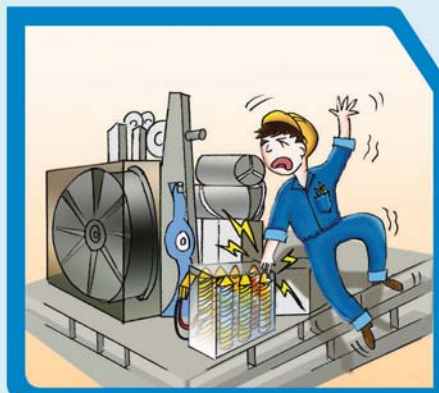
Lift repair and maintenance is potentially hazardous. It could easily cause accidents and even fatalities to personnel carrying out the work.

Common causes of serious accidents in the trade:

1 Electrocution



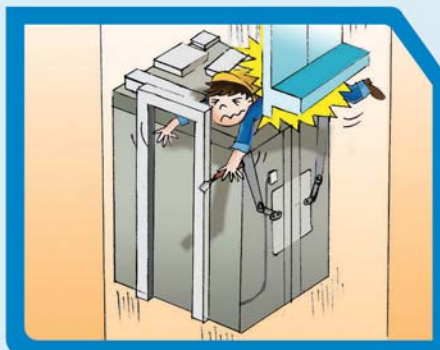
Electrocuted while working inside the lift shaft



Electrocuted while working inside the lift machine room



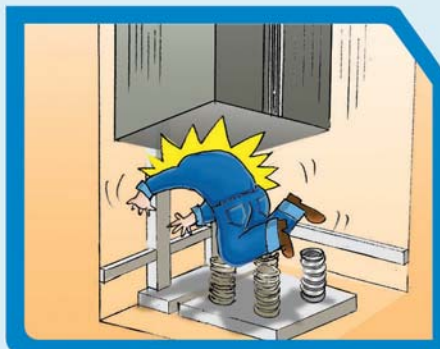
Trapped between the ascending lift car and the soffit of the lift shaft



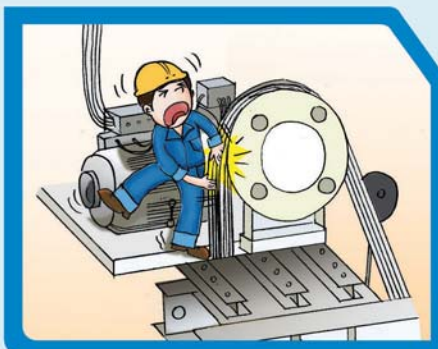
Trapped between the ascending lift car and the door opening



Trapped between the descending lift car and shaft structure/the counterweight inside the lift shaft



Trapped between the descending lift car and the bottom of the lift pit



Trapped by dangerous parts of machinery inside the lift machine room

3 Fall of persons



Fall from the top of the lift car to the bottom of the lift pit



Fall through the opened landing door into the lift shaft

4 Struck by falling objects

Hand tools or parts of lift car fall from height to the lift shaft during lift repair and maintenance



Objects fall from the top of the lift car down the lift shaft



Objects fall through the landing door down the lift shaft

5 Fire

Ignition of flammable substances or materials by heat source arising from operations involving the use of naked flame, e.g., welding or flame cutting operations, or smoking



Welding operations with the presence of flammable substances in the vicinity



Heat source arising from smoking

Safety precautions in lift repair and maintenance

- To plan an operation, carry out risk assessment at the workplace, and devise safety measures covering the lifting and transportation of large machinery parts, the replacement of components, wires and ropes, manual handling, emergency preparedness (e.g. rescue procedures and arrangements for evacuations), the appointment of trained and competent supervisors and engineering personnel, and the effective implementation of established safety plans
- To strictly follow safe codes of practices and the recommendations of lift manufacturers
- To provide engineering personnel with suitable technical and safety training in lift repair and maintenance relevant to the lift systems
- To provide engineering personnel with information, instruction, training and supervision to ensure their safety and health in lift repair and maintenance work. Such shall cover the aspects on engineering and technical data (such as plans and manuals) essential for the work, identified hazards of the work, safe use of tools, plant and equipment, relevant safety precautions to be taken, and safe codes of practices and emergency procedures to be followed. Drills on steps and procedures to be followed should be performed periodically and form part of the refreshment safety and health training.

- ✿ To employ sufficient number of qualified engineering personnel to carry out the operations
- ✿ To appoint sufficient number of experienced and trained persons to supervise the lift repair and maintenance work, and put the supervisory records in writing
- ✿ As far as practicable, to arrange at least two engineering personnel, or according to nature and complexity of work, more than two engineering personnels to work in one team. If it is unavoidable for one engineering personnel to work alone, special safety precautions and communication methods should be devised. Effective communication devices shall be provided to and arranged for the engineering personnel at work. The work carried out by those engineering personnel should be inspected and supervised from time to time to ensure their safety
- ✿ To ensure the tools and equipment are suitably maintained and used
- ✿ To provide sufficient lighting and ventilation inside the lift machine room and lift shaft
- ✿ To post permanent warning notices at the entrance doors of the lift machine room
- ✿ To prohibit unauthorized entry into the lift machine room; lock the doors after work
- ✿ To provide suitable personal protective equipment such as safety helmets, goggles, gloves and safety belts to every engineering personnel at work and ensure that they are properly used
- ✿ To inform responsible persons and the authority immediately in case of accident or dangerous occurrence

Falls Prevention



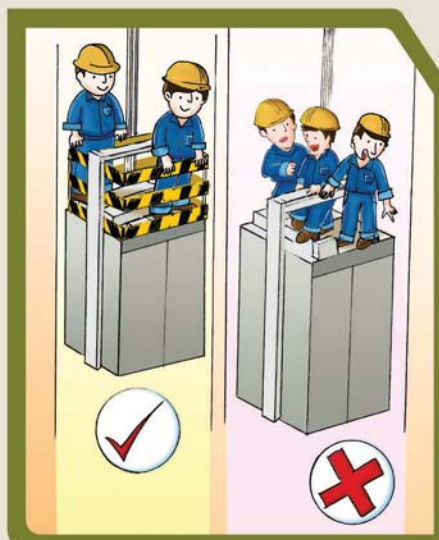
To post warning notices at every landing place; the lift car doors and landing doors should be kept closed at all times



To erect suitable barriers and post warning notices at landings with opened doors



To provide safe access for workmen to gain access to the bottom of the lift pit for work



To provide suitable railings at the top of the lift car, and restrict the number of workmen working on top of the lift car

Safety Precautions when Working at the Bottom of Lift Pit

- ✿ To ensure the engineering personnel are well versed in the type of plant installed at the bottom of the lift pit
- ✿ To establish safe communication methods among persons of different parties involved in the job
- ✿ To test the various stopping devices of the lift system before work
- ✿ To activate the plant stopping device provided at the bottom of the lift pit to prevent undue movement of the lift car before starting work at the bottom of the lift pit
- ✿ To provide safe means of access and egress
- ✿ To provide suitable communication devices
- ✿ To erect suitable and effective barriers and warning signs at the door entrance at the lowest lift landing floor before entrance to the bottom of the lift pit for work
- ✿ To take precautions against tripping or slipping hazards

Fire Precautions

- ✿ To use non-flammable scaffolding materials for scaffolds inside the lift shaft
- ✿ To provide emergency arrangement in case of fire
 - ✿ alarm system
 - ✿ evacuation procedures
 - ✿ fire fighting equipment
- ✿ To provide and maintain suitable lighting at exits and escape routes, keep them free from obstructions and post sufficient number of notices
- ✿ To store flammable substances inside suitable containers fitted with tightly closed lids with suitable labels, and store the containers at suitable places
- ✿ To ensure that workplaces involving the use of flammable substances are well-ventilated and completely segregated from hot work processes



To clear and remove all wastes contaminated with grease or oil from the lift pit or lift car top before leaving the workplace



To appoint sufficiently trained and experienced persons to supervise all lift repair and maintenance work, including hot work processes and the use of flammable substances

Precautions against Electrical Hazards

- ❖ To ensure the safe use of electricity to prevent accidents
- ❖ To provide effective earthing and insulation protection to electrical apparatus; electrical supply to lightings should be of a safe low voltage
- ❖ To switch off the electrical supply to electrical apparatus and lock the switch boxes before work
- ❖ To avoid carrying out electrical work while standing on metal structure or parts or in water. Avoid working on live electrical equipment
- ❖ To carry out thorough inspection and testing of equipment only when they are cut off from electrical supply; the electrical supply should only be switched on after the circuit system has been proved to be functioning properly

Prevention of Trapping Hazards

- ❖ To provide effective guarding to dangerous parts of machinery; any guard required to be removed for repairing or maintenance shall be re-instated immediately after work
- ❖ To test and check the effectiveness and function of all the switches (such as the emergency stop, starting / stopping devices, and safety switches) before starting work. The circuits of safety switches should not be by-passed or tempered unless there are sound and good engineering reasons. In case that there is such a need due to engineering reason, sufficient safety precautions shall be taken first to ensure safety of the workmen at work
- ❖ To switch off the main supply switch, lock the switch boxes and post warning notices in certain process, e.g. replacement of wire ropes
- ❖ To completely isolate all electrical controls and activating devices before working on any piece of machinery with running parts
- ❖ To remove the fuses, close and lock the doors of the panels of the circuit breakers or switches when isolation of the control of the plant is required

Precautions for Lifting Operations

- ❖ To use mechanical equipment and plant of suitable design for transporting and lifting operations; the lifting equipment and plant shall be tested and thoroughly examined by a Registered Professional Engineer prior to use; they should be used in a safe manner within their safe lifting capacities; the lifting process should not endanger other persons

Duties of Workmen

- ❖ To have general duty of care for the safety of himself and other persons
- ❖ To carry out work in accordance with instructions, safe code of practices and established emergency procedures
- ❖ To co-operate with employers and follow safety rules

References

- 🔦 Code of Practice for Safety at Work (Lift and Escalator)
- 🔦 Guidance Notes on Fire Safety at Workplaces
- 🔦 Five steps to risk assessment
- 🔦 A Casebook of Fatal Accidents in Lift Installation, Maintenance and Repairing Work

Enquiry

If you wish to enquire about this guide or require advice on occupational safety and health, you can contact the Occupational Safety and Health Branch of the Labour Department.

Telephone: 2559 2297 (auto-recording after office hours)

Fax: 2915 1410

E-mail: enquiry@labour.gov.hk

Information on the services offered by the Labour Department and on major Labour Legislation can also be found by visiting our website <http://www.labour.gov.hk>.

Complaints

If you have any complaints about unsafe workplaces and practices, please call the Labour Departments occupational safety and health complaint hotline at 2542 2172.