



LEIA Safety Information Sheet

Machine-Room-Less Lifts

Devising Safe Systems of Work

Prepared by the LEIA Safety and Environment Committee



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PREAMBLE

This Information Sheet is one of a series produced by the LEIA Safety and Environment Committee on topics relevant to the Lift and Escalator Industry. Whilst every effort has been taken in the production of these sheets, it must be acknowledged that they should be read in conjunction with the relevant legislation, codes of practice etc. They should not be taken as an authoritative interpretation of the law but guidance to it.

INTRODUCTION

A Machine-room-less (MRL) lift is a concept in space saving technology whereby the need for a machine room to house a substantial amount of the lift equipment has been eliminated. Although this results in savings in floor space to the client it can present significant challenges both during the installation phase and subsequent maintenance. The requirements for machine-room-less lifts are now covered within the harmonised standard for passenger lifts EN81-20.

The lift machine or hydraulic tank can be situated within the lift shaft along with other components. The controller may be located either on the landing or within the shaft. Where the controller is located within the lift shaft an additional service/ rescue panel is normally provided on the landing to aid maintenance and the release of trapped passengers.

As with any lift technology, safe systems of work are required for both the installation engineers, when installing the equipment within the shaft, and also for the maintenance engineer when undertaking maintenance, on the machine and any ancillary equipment.

The manufacturing companies should provide instructions detailing how to safely install and maintain the equipment, and how it should be removed at the end of its life. Manufacturers' instructions and Manuals are vital and must be made available by the client to the lift company.

It is important for building designers to ascertain at an early stage exactly what is required to permit safe servicing and inspection works.

SAFE SYSTEMS OF WORK

Some areas where special attention to a Safe Systems of Work need to be considered:

Installation

- Scaffold-less approach to construction.
- Method of positioning the machine within the shaft.
- Method of plumbing shaft equipment (lack of machine room to drop plumb lines from)
- How to safely use mobile working platform (car top or other means).
- Entrance protection with mobile working platform.
- Electrical safety of incoming mains to control panel.

Maintenance

- Safe access to machine where this is located at top of shaft
- Space around machinery to permit safe working
- Single man working above top floor landing level (not specifically about single man working but the EN81-20 standard covers clearances etc.).
- Safe working on a control panel where this is located in a public area.
- Information on the method of releasing trapped passengers.
- Access to top of car and emergency escape from car top should the need arise
- Access to pit, where machinery is located within it and the emergency pit should the need arise.

- Ability to effectively isolate and secure power supply [i.e. LOTO] easily and from a safe location.

Access to Top of Car

The MRL lift is an established product, with many suppliers having different features which can cause difficulty when undertaking maintenance of an unfamiliar type for the first time.

The lift may have features of which the engineer is not fully aware of where the access may require a different approach or the machine may be in a place he did not expect.

A risk assessment of the lift must be carried out before work commences; where necessary the engineer should contact his supervisor for advice. The message should be if in doubt ask!

It is possible that information on safe access etc will not be available on site.

Some lift car tops are not designed to carry a person's weight, and some manufacturers may specify that work be carried out from the lift car because the design of the car roof cannot support the weight of a person. Signage should be prominently displayed to warn of the hazard, but beware that the signage may not sometimes be visible and the roof may not be obviously weak.

Car tops on some MRL may not be designed to support a person's weight

These requirements will depend on the individual lift manufacturers design concept, make-up of components, and how their intended installation and maintenance methods are designed.

SPECIAL CONSIDERATIONS

Machine-room-less lifts have led manufacturers to push the boundaries in design; there are some products that have greatly reduced headroom and pit depth. Refuge space is now required to be clearly defined by EN81:20 for new products, to prevent the risk of crushing at the upper and lower limits of travel. However older products can have substantially reduced refuge space which is hazardous for those maintaining those products still in service.

Refuge spaces may be substantially reduced

Some MRL units have mechanical interlocks fitted to the lift car that mechanically lock the lift to the guides. It is strongly recommended that this type of interlock is used only during inspection work and not as the only means of protection when components are removed which might result in the lift moving in an uncontrolled manner.

Mechanical interlocking should not be used as the only means of protection

Working on brake units within the lift shaft can pose problems and dangers of the lift moving in an uncontrolled manner. It is recommended that detailed Risk Assessments and Method Statements are carried out before work of any type commences to ensure safety measures are put in place.



For any clarification of this information sheet contact your company Safety Advisor or the LEIA Safety and Training Manager.