



LEIA Safety Information Sheet

REMOVING LIFT SUSPENSION ROPES

Prepared by the LEIA Safety and Environment Committee

DRAFT



Contents

PREAMBLE.....	3
REMOVING LIFT SUSPENSION ROPES	3
SAFE WORKING	3
RE-ROPING	3
Machine Room Less Units.....	4
Counterweight	4
Indirect Hydraulic arrangements.	4
MACHINE & OTHER REPAIRS.....	4
EQUIPMENT	5
GLOVES.....	5
REFERENCES.....	7

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.

REMOVING LIFT SUSPENSION ROPES

The following guidance should be considered when removing or replacing lift suspension ropes*.

*It is acknowledged that there are suspension media types that fall outside the definition of rope, for the scope of this information sheet all suspension types are to be considered ropes

SAFE WORKING

Follow the recommended Procedures laid down in BS7255 'Safe Working on Lifts'.

Follow the recommended Procedures laid down in the 'Lift & Escalator Site Handbook'.

Wear necessary PPE including gloves compatible with the suspension type.

Follow your company Lock Off Tag Off procedures

All work involving the removal of lift suspension ropes must be the subject to detailed risk assessment to ensure that safe working is achieved throughout the job. Where the outcome of the risk assessment has identified there is a risk of injury, a Method Statement detailing each task in sequential order should be documented. The information should include the necessary control measures to ensure the safety of all those involved. The completed risk assessment and method statement must be brought to the attention of all personnel involved.

As with any lifting operation and in accordance with the requirements of the Lifting Operations and Lifting Equipment Regulations (LOLER) the work must be properly planned and, where necessary, a detailed lifting plan completed to cover all aspects of the lifting operations. (See LEIA Safety Information Sheet 48 Lifting Plans)

RE-ROPING

When it is necessary to renew the lift suspension ropes, the safest method is the replacement of one rope at a time.

Where the design of the lift allows, taking into account structural arrangement of car sling, counterweight strength and clearances, older systems for connecting the car and counterweight (such as 'Turks-Head' or 'White-metal' terminations on the lift car or counterweight) should be considered for replacement at the same time as the rope replacement.

This then could mean that all ropes will be detached from the car or counterweight at the same time – it may then be necessary that the safety gear governor should be tripped or the safety gear activated. In addition the lift car / counterweight should be suspended on at least two independent devices e.g. slings or lifting tackle and/or supports.

Each independent device should be capable of holding the full suspended/ supported load safely should the other device fail. Care must also be taken to avoid excessive lateral loading or twisting of the Car &/or counterweight that could cause the 'opening' of the guides and subsequent release of a guide shoe

The Safety Gear System must never be considered as a means of suspension / support during a roping task.

Machine Room Less Units

Newer MRL installations may have specific systems that need to be followed in the re-rope process and you should always consult the manufacturers documentation prior to any works commencing

Counterweight.

Counterweight guide shoes must be checked for damage and minimal guide clearance to ensure that, when propped, the counterweight will not move free from the counterweight guide axis.

Indirect Hydraulic arrangements.

Further considerations must be made for indirect hydraulic units. Ensuring mechanical props are available to maintain working space under the lift car during the process. Multiplying pulleys attached to the ram are suitably suspended using 2 independent means. Pressure within the hydraulic system is removed or significantly reduced in order to limit sudden unwanted movements when loads are released.

MACHINE & OTHER REPAIRS

On the occasions it may be necessary to have all the ropes removed e.g. when a new traction machine is being fitted with an existing lift car and the new rope dimensions are different, then the safety gear governor should be tripped or the safety gear activated. In addition the lift car / counterweight should be suspended on at least two independent devices e.g. slings or lifting tackle and/or supports. Each independent device should be capable of holding the full suspended/ supported load safely should the other device fail. Care must also be taken to avoid excessive lateral loading or twisting of the Car &/or counterweight that could cause the 'opening' of the guides and subsequent release of a guide shoe

Similarly where the ropes are not detached from the lift car but only removed from the traction sheave in order to work on the machine, the temporary suspension method identified above must be employed.

EQUIPMENT

When using lifting equipment it is essential that it has been thoroughly examined in accordance with LOLER. Persons must not work directly underneath any suspended load unless the foregoing precautions have been taken so that there is absolutely no risk of injury from the load falling.

If personnel are going to work on or in the suspended lift car, then all the lifting equipment must have been thoroughly examined within the past six months. This includes any lifting beams or fixed eyes that are to be used.

Suitable planning must take into account the weight of the load including any additional weight e.g. personnel, materials etc to ensure that the lifting equipment being used is within its safe working loads. When calculating safe working loads, the capacity of the lifting equipment used to support people should be 'de-rated' by a factor of at least a half to provide a higher degree of safety margin.

Any slings used should be protected against sharp edges and bends of 90 degrees or more. This can be achieved by using purpose made sleeves over the sling or inserting padding to protect the sling.

The risk assessment must identify the suitability of the lifting attachment points. When suspending a load in the shaft, the guide brackets should not be used as lifting points unless it has been established that they will bear the intended load.

Where the suspended load is to remain rigged for longer than a work shift, it is recommended that all lifting slings are to be metallic not fibre to eliminate the risk of failure should a fire occur.

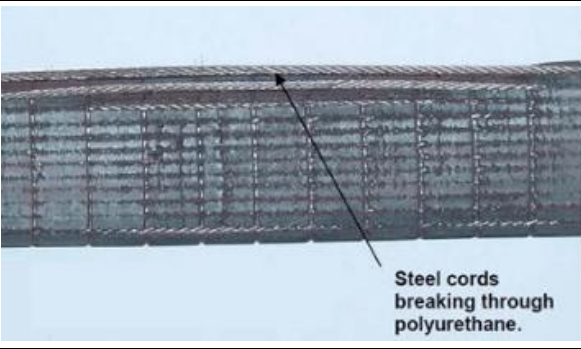
Old ropes can be dirty and contain broken wires and strands – always wear your gloves when handling ropes and ensure they are kept coiled up prior to disposal.

GLOVES

Selecting the correct glove type to use when working suspension media is paramount to safety in a number of ways.

Broken wires can slice or puncture the skin, hardened belt edges can slice and cut hands, rope lubrication can cause skin irritation as well as loss of grip when handling ropes leading to overexertion and gripping too hard to complete the task.

- Steel Wire Ropes are generally oily-causing a reduction of grip and potential contamination to skin, also the high probability of broken wires presenting a skin puncture risk. Gloves with a leather palm and fingers are most suited to handling this material.
- Coated Steel Belts (CSB's) and Vee profile Coated Steel Suspension belt can be waxy with sharp corners on the corner profile with wires protruding in rare occurrences presenting a potential cut and puncture risk when handling new and aged CSB's. Gloves with a rubberised palm and fingers are most suited to handling this material
- Coated suspension ropes / plastic coated ropes are self lubricating from the internal cores. This means the outer casings should not present lubrication/oil, the coating can deteriorate exposing wires or strands which pose a puncture risk when handling old ropes. It is critical that clean gloves are worn when installing new coated ropes. Gloves with a rubberised palm and fingers are most suited to handling this material

		
Steel Wire rope	Coated Steel Belts (CSB's)	Coated Suspension Ropes

It is recommended that gloves used within the industry are certified to BS EN:388. Protective gloves against mechanical risks. When gloves are tested against this standard, they are authorised to be supplied with the marks below. EN388 was revised in 2016 to align to an ISO standard which included a second cut test using a straight blade. Gloves may be supplied with an EN388 2003 or EN388 2016 marking. This is distinguished by having 4 or 5 values under the Symbol.

Cut and Puncture levels required for the task should be determined through a company risk assessment for the task. Starting benchmark for the industry is recommended at level 3 cut and puncture ratings for roping activities.



EN388:2003	
Mechanical Hazard	Rating Received
Abrasion	Level 4
Cut	Level 4
Tear	Level 4
Puncture	Level 2

EN388:2016	
Mechanical Hazard	Rating Received
Abrasion	Level 3
Cut	Level 1
Tear	Level 3
Puncture	Level 1
EN ISO Cut	A

Example of Leather Palm Glove with cut level 4 puncture level 3 for use with traditional Steel ropes		
Example of rubberised Palm Glove with cut level 3 puncture level 3 for use with Coated suspension ropes and belts		

REFERENCES

It is recommended that you consider the following Information Sheets (this is not exhaustive)

LEIA Information Sheet – Lifting Plans
 LEIA Information Sheet – Safe System of Work
 LEIA Information Sheet – Method Statements
 LEIA Information Sheet – Risk Assessment
 LEIA Lift & Escalator Site Safety Handbook

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

DON'T TAKE UNECESSARY RISKS – PLAN THE WORK BEFORE YOU START!

