Fact Sheet

Fork Lift Truck Association

FACT SHEET 14

Rope evacuation from mechanical handling equipment

Some mechanical handling equipment, for example order pickers, 'man up' forklift trucks etc are equipped with a rope evacuation system, to assist evacuation in the event of the equipment being rendered immobile at height, where there is a need for immediate evacuation.

There have been a number of occurrences involving the use of rope evacuation systems, resulting in serious injury and even death of the escapee. These incidents predominantly occurred during training for rope escape and reinforce the importance of equipment selection and maintenance; a safe system of work; the thorough training of personnel, under supervision and, regular refresher training. The selection of an accredited training organisation and instructor (trainer) is also particularly important.

Clause 5.3.7 of BS EN 1726-2:2000[1] specifies that "*Trucks that are designed to elevate the operator position more than 3000 mm above ground level shall be provided with means, e.g. descender devices complying with BS EN 341:1993[2] Class C, rope ladder etc by which the operator can reach the ground safely in the event of the operator position becoming fixed in the elevated position*."

Competent person

The competent person (e.g. specialist engineer) carrying out the thorough examination of evacuation equipment required by Regulation 9 of The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER), would typically be from an external provider, e.g. equipment manufacturer or supplier.

The competent person should be appropriately trained, have enough appropriate practical and theoretical knowledge and experience of the evacuation equipment, and the ability to apply it when detecting defects or weaknesses and assess how important they are in relation to the safety and continued use of the evacuation equipment. The competent person should not normally be the same person who performs routine maintenance, as they would be responsible for assessing their own work. Also they should be sufficiently independent and impartial to make objective decisions.

They may be employed by a separate company or selected by an employer, from members of their own staff.

Trainer

The person referred to throughout this fact sheet as the trainer can be an employee of the user company. Providing they have received suitable training, have relevant knowledge and expertise and the ability to apply them to fulfil this role safely. Other factors, such as attitude and physical ability, can also affect someone's competence.

However, initial and refresher training in the use of the evacuation equipment is often provided by a specialist trainer, sourced from an external accredited training organisation.

Rope evacuation equipment - General

The principle of a rope evacuation system is the use of a single descent line with the user attached via a harness, to a descent device - descender. Descenders offer a controlled descent to floor level when correctly used.

Risk assessment

The duty holder's risk assessment for the use of mechanical handling equipment where the operator works at a high level, should recognise the possibility of the operator being stranded at high level.

It should determine the need for means of escape and the most appropriate system of work for achieving a safe escape.

Also, a suitable safe system of work may include a means of raising the alarm (a shout or whistle may be adequate), followed by a controlled lowering of the platform by rescuers at ground level.

A rope evacuation system is a "last resort" which should only be used in exceptional circumstances, for example where:

- The mechanical handling equipment is immobilized and cannot be repaired, lowered, or long travelled in a reasonable time; and
- Alternative safer means of escape cannot reasonably be provided; and
- The operator is at risk from another more imminent hazard, which cannot reasonably be controlled to allow rescue without using a rope evacuation system. Examples include risk of fire (e.g. where fire-fighting measures such as sprinkler systems do not adequately control the risk); smoke, halon, the effects of cold in a cold store (though thermal clothing and heated cabs may control the risk sufficiently to allow time for a safer method of evacuation).

The duty holder's risk assessment should determine safer alternative means of evacuation. In determining the most appropriate system of work for achieving a safe escape, the physical characteristics and fitness of the operator should be considered.

Where the risk assessment determines that rope evacuation equipment is appropriate, it should also consider any limitations with rope evacuation systems. The suitability of any particular equipment, for specific circumstances, will depend upon advice from the manufacturers of the mechanical handling equipment and evacuation systems. Rope evacuation systems should only be used with mechanical handling equipment that has been designed for and is suitable to accommodate such use. If a machine is modified, it will need to be carefully assessed to ensure that additional risks have not been added.

Law

The Work at Height Regulations 2005 (WAHR) require an assessment to be carried out before starting any work at height. If the assessment determines that the work can be carried out in a way that avoids having someone working at height then this must be done. WAHR place duties on employers, the self-employed and any person who controls the work of others (e.g. facilities managers or building owners who may contact others to work at height) to the extent they control the work.

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) deals with specific hazards/risks associated with lifting equipment and lifting operations. If you provide lifting equipment, including a fork lift truck for use at work, or you have control of the use of lifting equipment, you should make sure that every lifting operation is:

- Properly planned by a competent person. This is usually the operator for most fork lift-truck work, so they should have the appropriate training, knowledge and expertise. For unusual complex tasks or situations, specific risk assessments and planning are likely to be required;
- Appropriately supervised.
- Carried out in a safe manner using suitable equipment.

LOLER also places duties on individuals and companies (duty holders) who own, operate or have control over lifting equipment. LOLER requires that all lifting equipment is fit for purpose, appropriate for the task, suitably marked and in many cases, subject to statutory periodic 'thorough examination' by a competent person (e.g. engineer).

Under The Provision and Use of Work Equipment Regulations 1998 (PUWER) employers are required to 'ensure that all persons who use work equipment (including fork lift trucks) have received adequate training for purposes of health and safety. Including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken'.

Also, PUWER requires the inspection and maintenance of safety-related items.

Regulation 3 of The Management of Health and Safety at Work Regulations 1999 (MHSWR) requires employers to make a suitable and sufficient assessment of the risks to the health and safety of employees to which they are exposed whilst they are at work.

Employers have a general duty under Section 2 of the Health and Safety at Work etc. Act 1974 (HSW Act) to provide information, instruction, training and supervision to ensure the health and safety of their employees.

Limitations of rope evacuation systems

If a rope evacuation system is the only option for emergency evacuation from mechanical handling equipment, there are several factors for consideration:

- Operators should be sufficiently competent to use them safely. Operators who are not sufficiently competent should not be allowed to use mechanical handling equipment where the use of rope evacuation may be required. Regular refresher training is necessary so that users can acquire and maintain the competence and confidence necessary to use the evacuation equipment safely.

- Training should be undertaken with a safety rope controlled by the trainer (except as described in Appendix 2 para 1 (d) (iv) of the Health and Safety Executive (HSE) operational circular OC 282/31) even if staff have received regular training and are deemed competent. The independent safety rope should be used with an auto-locking belay device and attached to the trainee, generally via a separate full body harness (but not necessarily where an BS EN 813:1997[4] sit harness is used). If the evacuation system itself utilises a full body harness then the safety rope should be attached to a separate fall arrest attachment point on the harness.

- The equipment should be maintained as described in this Fact Sheet. However this description is for information purposes only and is not an exhaustive list, duty holders should consult the supplier and or manufacturer of the rope evacuation equipment for specific recommendations for maintenance, checks and inspections. Operators needing to use the equipment in an emergency may not have the skills to assess the condition of equipment. A rope evacuation system that has already been used for an evacuation should not be re-used unless it has been deemed suitable for re-use, by a competent person (e.g. specialist engineer).

- Inexperienced operators may be nervous and tend to grip a handled descender which, with certain types, will create a rapid descent (see Appendix 2 para 1 (d) of OC 282/31). To avoid confusion it is recommended that the same type of descender be used in all rope evacuation systems used at the same location.

During a **real-life evacuation**, wherever possible, descent should be supervised from ground level, by a person trained in emergency rope evacuation methods.

During **training**, descent should **always** be supervised, generally from the upper level, by a competent person trained in emergency rope evacuation methods. With handled descenders another person appropriately instructed, could also assist by holding the bottom of the descent rope, although they should not be directly below the evacuee. This may be one of the group undergoing instruction. Checks should be made with the appropriate descender manufacturer and/or supplier to ensure that this will not impede its function.

Equipment selection

It is important that any equipment selected is compatible with other component parts of the rope evacuation system and the mechanical handling equipment. Clear information should be provided on the components of the system and instructions for use.

Care will be needed when replacing component parts of a rope evacuation system, to ensure they are compatible with existing components e.g. the diameter of a rope may affect the performance of the descender. Replacement of component parts may need to be done in consultation with the manufacturer and or supplier of the rope evacuation system.

Where possible, the evacuation equipment selected should be common across the fleet of machines in use. This will reduce the complexity of the training arrangements and avoid user confusion in emergency situations.

Inspection, maintenance and storage of equipment

There should be a system for regular inspection and thorough examination of rope evacuation equipment by a competent person (e.g. specialist engineer). Duty holders should consult the supplier and or manufacturer of the rope evacuation equipment for specific recommendations for examinations and inspections. Regulation 9 of LOLER applies to evacuation equipment, because it is used for lowering people. Therefore the evacuation equipment should be thoroughly examined by a competent person (e.g. specialist engineer) at least 6 monthly, or in accordance with a written scheme of examination, drawn up by a competent person (e.g. specialist engineer).

Equipment used for training is likely to be used more often and may need to be inspected and thoroughly examined more frequently.

It may not be reasonably practicable to conduct a pre-use check of the rope evacuation system before a real-life evacuation. However, it should be carried out where it is reasonably practicable to do so, for example if there is damage to the sealed bag containing the equipment.

Rope evacuation systems should.

- Be packed in a sealed 'ready to use' condition.
- Have clear instructions attached to them. Where possible, a copy placed adjacent to the operator's normal working position.
- Be uniquely identifiable.
- Be stored where it is easily retrievable, will not became damaged or contaminated and close to where it will be deployed from.

Rope evacuation systems found in open or damaged bags should be referred to the competent person (e.g. specialist engineer) to decide whether it is safe to use.

Training

Employees new to the work application should be trained in safe emergency evacuation procedures during initial training. It is recommended that refresher training should be conducted every 12 months, as a minimum to produce an effective "conditioning" and to maintain confidence.

Initial and refresher training should be carried out by a trainer, typically sourced from an external accredited training organisation.

In addition, it is recommended that an assessment of the competence and confidence of operators should be carried out every 6 months.

A training assessment should include ground level practice of donning the equipment and questioning about the sequence of actions in the event of an evacuation. The assessment can be carried out by the trainer. The assessment should decide whether individuals require refresher training, i.e. those who have forgotten the important principles for the use of the equipment or, express a lack of confidence if they would have to use it in an actual escape.

The employer's risk assessment can be used to determine an alternative frequency and arrangements for refresher training and assessment of competence and confidence. In practice, it may be more straightforward to carry out refresher training every 6 months using a trainer.

Candidates should be continually assessed throughout the training and complete a final assessment. It is recommended that the assessment is both oral and practical. Trainers may also wish to consider the use of written assessments. Unwilling or nervous candidates should not be coerced to act beyond their own ability and inclination, and further instruction may be appropriate.

Trainers and external training providers should be able to demonstrate they are competent and should only undertake instruction on evacuation equipment they are familiar with.

Training equipment

It is recommended that the evacuation equipment fitted to mechanical handling equipment is not used for training unless it is inspected by a competent person, (e.g. specialist engineer) before being returned to the mechanical handling equipment for use.

Most descenders are designed for single use followed by inspection and re-packing. The equipment used should replicate the equipment supplied with the mechanical handling equipment, but ideally should be designed specifically for training.

Approved code of practice

The HSE Approved Code of Practice (ACOP) and guidance L117 Rider-operated Lift Trucks gives practical advice to help employers ensure that all operators, even those who use fork lift trucks on an occasional basis, receive adequate training.

ACOP L117 proposes that refresher training should be provided to fork lift truck operators every 3-5 years. Depending on company policy, this will vary according to frequency of use, near misses etc.

Further specialist guidance

The HSE have produced a number of publications that offers associated guidance, a selection of which are listed below:

- GEIS6 - *The selection, management and use of mobile elevating work platforms (*MEWPS). This information sheet is aimed at those who select, specify, manage and operate MEWPs.

- OC 282/31 - *Rope evacuation from mechanical handling equipment*.
  This operational circular (OC) advises inspectors on the use of emergency rope evacuation systems to assist rescue from mechanical handling equipment at high level. It describes the components of a rope evacuation system and the limitations, selection and maintenance of such equipment. It advises on risk assessment criteria for considering their use and on training needs. The OC covers self-rescue, not instances where a third party rescues the evacuee.

- INDG367 - *Inspecting fall arrest equipment made from webbing or rope*.
  This leaflet is mainly aimed at employers who are responsible for the use of fall arrest equipment incorporating energy-absorbing lanyards made from webbing. It gives generic advice on inspection regimes for this equipment where it is used to provide protection against falls from a height. It does not cover rope evacuation equipment, but many of the principles can be applied to rope evacuation equipment.

- INDG401 - *Working at height*.
  This brief guide describes what an employer, needs to do to protect employees from falls from height. It is also useful to employees and their representatives. Following this guidance is normally enough to comply with The Work at Height Regulations 2005 (WAHR).

- RR302 - *A technical guide to the selection and use of fall prevention and arrest equipment*.
  The report was prepared by Glasgow Caledonian University, School of the Built and Natural Environment for the HSE and describes a study on fall prevention and arrest equipment available to the construction industry.

- CRR02451 - *Harness suspension: review and evaluation of existing information*.
  This review looks at the potential problems of the suspension phase of a fall, how the position of the attachment points on various harnesses play an important role in the comfort and survival of a casualty, and how a selection of harness standards address the issues surrounding suspension.

- British Industrial Truck Association (BITA) Guidance Note GN 49 - *Engineers working at height*.
  This guidance note, promotes safe working practices, gives guidance and advice when service engineers are working at height.

FLTA further guidance

Also see FLTA Fact Sheets 1, 2, 3, 6, 10, 12, 17, 24 and 28 for further information.

Fact Sheet

The information in this Fact Sheet has been assembled and interpreted to give truck owners and users basic guidance on frequently asked questions. Further important information will be given in the quoted reference documents. Responsibility for meeting the safety obligations discussed rests with the employer, and the FLTA will not accept liability for any problem arising as a result of the content of this document. Technical Bulletins, containing more detailed information and updated as appropriate, are made available free to members of the FLTA SAFE USER GROUP.

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