



## The Lifting Operations and Lifting Equipment Regulations 1998 ('LOLER') How they apply to rope-based access systems for work at height

### Introduction

NOTE Paragraph numbers from the LOLER ACoP and Guidance are referred to thus: [99].

This information sheet gives advice to employers, the self-employed and contractors [38] who use rope-based access systems for work at height, e.g. arboriculture, rope access, general work positioning, to help them understand the requirements of the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER), while taking into consideration the Work at Height Regulations 2005 and the Work at Height (Amendment) Regulations 2007 (WAHR).

**It is important to note that the term 'load' used in LOLER includes the lifting or lowering of a person.** This information sheet gives specific guidance on the application of LOLER when the load is a person.

The requirements of LOLER apply to employers, the self-employed and people in control of, or managing, lifting equipment or lifting operations.

LOLER is aimed at ensuring all 'lifting operations' are properly planned; that 'lifting equipment' is used in a safe manner and that lifting equipment is thoroughly examined at suitable intervals by a competent person.

This information sheet does **not** include all of the detail of the regulations. It aims to provide guidance on interpretation and application in relation to rope-based access work. Details of the complete Lifting Operations and Lifting Equipment Regulations, Approved Code of Practice and Guidance can be found in HSE's '*Safe Use of Lifting Equipment*' [Ref. 1].

### Other key legislation

LOLER has links with other health and safety legislation, which need to be considered when applying the regulations:

#### **Management of Health and Safety at Work Regulations 1999 (MHSWR) [Ref. 2]**

MHSWR require a risk assessment to be carried out to identify the nature and level of the risks associated with a lifting operation.

It is essential (Regulation 8) that work is properly planned by a competent person, is appropriately supervised and is carried out in a safe manner.

The risks for each type of lifting equipment and the way in which it is used in each situation should be assessed and action taken to control those risks. Risks from lifting operations identified by the risk assessment should be eliminated, or reduced to an acceptable level, by applying LOLER.

Guidance on risk assessment is given in HSE's '*Five Steps to Risk Assessment*' [Ref. 3]. Where PPE is required, there is a need to consider the requirements of the '*Personal Protective Equipment at Work Regulations 1992*' [Ref. 4], e.g. the provision of harnesses, life jackets. [17]. **A proportionate response according to the risk is required** [14].

#### **Provision and Use of Work Equipment Regulations 1998 (PUWER 98) [Ref. 5]**

PUWER 98 applies to all work equipment, including lifting equipment. Under PUWER 98, it is required to select suitable work equipment in terms of:

- its construction and design;
- where it is to be used;
- the purpose for which it is to be used.

#### **Work at Height Regulations 2005 [Ref. 7] and the Work at Height (Amendment) Regulations 2007 [Ref. 8] (WAHR).**

WAHR apply to all work at height where there is a risk of a fall liable to cause personal injury. WAHR require that duty holders must:

- avoid work at height where they can;
- use work equipment or other measures to prevent falls where they cannot avoid working at height;
- where they cannot eliminate the risk of a fall, use work equipment or other measures to minimise the distance and consequences of a fall, should one occur;
- ensure all work at height takes account of weather conditions that could endanger health and safety;
- ensure that those involved in work at height are trained and competent;
- ensure that the place where work at height is done is safe;

- ensure that equipment for work at height is appropriately inspected;
- ensure that the risks from fragile surfaces are properly controlled;
- ensure that the risks from falling objects are properly controlled;
- ensure that the work is properly planned, appropriately supervised and carried out in as safe a way as is reasonably practicable;
- plan for emergencies and rescue;
- take account of the risk assessment carried out under Regulation 3 of the Management of Health and Safety at Work Regulations.

## Lifting Operations and Lifting Equipment Regulations (LOLER) 1998

### Interpretation (Reg. 2)

#### What is 'lifting equipment' in rope-based access work?

LOLER applies to a wide range of lifting equipment and lifting operations, and covers [29] any equipment that lifts or lowers loads, including a person.

Examples are:

- ropes and equipment used for work positioning (personal suspension equipment) during rope access work;
- rigging systems for lowering branches in arboriculture.

The regulations apply to any attachments used for anchoring, fixing or supporting this equipment. For example:

- ropes;
- harnesses;
- connectors;
- anchor points;
- lanyards;
- equipment carrying bags.

NOTE Examples of lifting equipment in non-rope-based access systems are mobile elevating work platforms (MEWPs) and cranes.

### Application (Reg. 3)

The regulations apply to 'employers' — a definition which includes the self-employed (in relation to lifting equipment they use themselves) — and any other person who has control to any extent of lifting equipment, its use or those who use it. For example, employers have a duty to ensure that lifting equipment provided for their employees — and the self-employed working for them — complies with the regulations [39(a)]. The regulations also apply to

employers who allow their employees to provide their own lifting equipment [39(c)].

When selecting suitable lifting equipment, account should be taken of the:

- ergonomic risks [49];
- material of manufacture [58].

When planning and undertaking rope-based access work, consideration should be given to:

- the means of access and egress [62];
- protection against slips, trips and falls [68];
- protection of the operative(s), e.g. against weather, contaminants, noise [83];
- the effects of high wind, perhaps ceasing work when necessary [89].

### Strength (Reg. 4)

LOLER requires that lifting equipment has adequate strength for its proposed use [98]. Often loads are difficult to quantify and a suitable margin of safety should be allowed. Equipment should be selected which meets standards relevant to the intended use.

A competent person should ensure that the strength and stability of the equipment is adequate [102].

Particular attention should be paid to the selection, specification and fixing of 'mounting and fixing points' (anchors). In addition to the anticipated load and load direction, consideration should be given to any additional loads to which the equipment may be subjected, e.g. rescue loads [101].

### Stability (Reg. 4)

LOLER requires that lifting equipment has adequate stability and will not collapse or overturn when working, e.g. counterbalanced roof rigs [104].

Where lifting equipment is anchored to other work equipment or structures [109], it should be ensured that the latter can withstand the forces the equipment (and its use) will impose on them.

### Lifting equipment used for lifting people (Reg. 5)

As a general principle, the risk of a person falling should be eliminated or, if this is not possible, reduced (see the paragraphs on MHSWR and WAHR above).

The risk of a person being crushed, trapped or struck, or falling from the 'carrier' should be assessed. (*Carrier* is a term that describes the means of holding the person, i.e. for a rope-based access system, the harness [136].) [147]

Where rope-based access techniques are used, LOLER requires the use of suitable devices, or other effective measures, to prevent the 'carrier' from

falling in the event of failure of the primary means of support [152], for example:

- by use of a safety (back-up) rope with a separate anchorage;
- by use of an appropriate rope which has an adequate margin of safety, e.g. one that meets the requirements of EN 1891 type A or, where appropriate, EN 892 Single rope;
- by daily inspections of the equipment by a competent person [153] and adequate instruction and training for all persons involved (see also Regulation 8 and WAHR).

In the event of an emergency, a reliable means of rescue should be available [156]. Risk assessment should consider the options and method(s) for rescue. Those working should be trained in emergency lowering and the use of self-rescue equipment, and other relevant rescue procedures [158].

#### **Positioning and installation (Reg. 6)**

Rope-based access equipment is not 'installed' within the meaning of LOLER. Nevertheless, it should be positioned and rigged to reduce to as low as reasonably practicable the risk of the equipment (or a load) striking people, or the risk of the load drifting, falling freely or being released unintentionally.

Lifting equipment should be positioned to minimise the need to lift loads over people [162].

Consideration should be given as to whether:

- unauthorised access below the work area should be prevented;
- there is a need to cover any passageways below to help protect persons, should a load drop unexpectedly [169];
- rope-based access workers in close vicinity may endanger each other.

Loads should not be allowed to:

- drift, e.g. in a wind;
- snag, e.g. on sharp edges,

for example, by the use of deviations or control lines.

In addition, loads should not be allowed to:

- pendulum, e.g. on long drops;
- become entangled, e.g. by unnecessarily suspending excess rope beneath the user.

Lifting equipment should be fitted with suitable devices, e.g. back-up devices, to minimise the risk of the load (including persons) falling out of control [174]. Where practicable, users should not climb above anchor points when using work-positioning techniques. They should:

- use safety lines with a back-up device or other suitable system;
- ensure that ropes are descended in a controlled manner using a mechanical descender device.

Loads should be prevented from being released unintentionally by, for example:

- ensuring people are appropriately trained and competent;
- always using connectors with a safety locking action and by ensuring that they are only loaded in their designed direction.

#### **Marking of lifting equipment (Reg. 7)**

A declaration (or certificate) of conformity indicating the standard to which any rope-based access equipment conforms and information on any strength requirements should be readily available to the user.

Each component of a rope-based access system should be uniquely identifiable in such a way that it can be easily associated with its respective documentation, e.g. declarations of conformity, test certificates, examination and inspection reports [296] and instructions for use. This may be by the manufacturer's serial number or batch marking with additional forms of identification such as a coding, e.g. by the 'tagging' of ropes [188].

NOTE Marking of metal components should not be by stamping unless by agreement with the manufacturer or their authorised representative.

The regulations require lifting equipment to be marked to indicate its safe working load (SWL). The safe working load is usually expressed in terms of the maximum load that the equipment may safely lift [187]. Rope-based access equipment is specifically designed to support a person (in a rescue scenario there may be two people). Therefore, implicit in the use of the equipment — and the standards relating to its use — is the concept of a safe working load (as required by LOLER) in terms of **body weight**, which is sometimes expressed as 'maximum rated load', e.g. as in BS EN 12841, *Personal fall protection equipment — Rope access systems — Rope adjustment devices*.

Generally, product standards, to which most rope-based access equipment should conform, do not specify a safe working load, either in the text of the standard or in the marking requirements.

Personal fall protection equipment conforming to product standards such as British (BS), European (EN) or International (ISO) Standards generally assumes a maximum mass (weight) of a person at 100 kg. However, where appropriate, the standards are beginning to specify the test mass to be the maximum rated load as specified by the

manufacturer and for this to be marked on the component.

The maximum rated load usually has to be a minimum of 100 kg but could be, for example, 200 kg. So, while personal fall protection equipment is generally rated for a safe working load of **one person** when used as described in the manufacturer's instructions, some equipment may be suitable for use with different loads, e.g. rescue requiring use by two persons. In this instance, the maximum rated load or safe working load should be marked on the equipment or indicated in the user instructions [189].

### **Organisation of lifting operations (Reg. 8)**

Lifting operations should be properly planned by a competent person, be appropriately supervised and be carried out in a safe manner. It is important to note that:

- people planning rope-based access work should have adequate practical and theoretical knowledge and experience of planning lifting operations [210];
- work is organised so that, where practicable, loads are not carried or suspended over people [230];
- there is a 'danger zone' (exclusion zone) at anchorage level and, where possible, people should not be present in the area below any rope-based access work, i.e. ensure access is prevented [232] or a sentry posted.

When planning and organising work, account should be taken of:

- *visibility* [237], e.g. communication and whether workers can see and hear each other;
- *attaching, detaching and securing of loads* [244], e.g. that the appropriate pulleys, connectors been used;
- *environment* [253 and 254], e.g. excessive wind speed, heavy rain, icing, emissions from chimneys;
- *overturning* [258 and 259], e.g. slip of dead weight anchors, or stability of tripods;
- *proximity hazards* [265], e.g. power lines, sharp edges, crane operations.

All workers should be trained and competent in inspecting the items of lifting equipment that they are using to ensure that the equipment is safe to use [285]. They should be able to detect any technical defects or omissions, recognise any implications for health and safety from those defects or omissions, and be authorised to take remedial action to deal with them [286].

Lifting equipment in rope-based access work is exposed to conditions that could cause deterioration and result in dangerous situations. These conditions could, for example, include abrasion, possible exposure to chemicals, or a severe shock load. It is essential, therefore, to carry out pre-use checks.

### Pre-use checks

During pre-use checks:

- there should always be a visual and tactile check [287] to identify obvious faults due to day-to-day wear and tear and failure or damage of all equipment, i.e. to ensure that the equipment will function correctly and is safe to use. Suspect items should be taken out of service, quarantined to eliminate re-use and then checked by a competent person to determine the appropriate action to be taken. Irreparable items should be rendered unusable and then disposed of. Repairs should only be carried out by a competent person or organisation: this is usually the manufacturer;
- ropes should be rigged so as to reflect the way in which they are being used [274], i.e. to avoid sharp bends, take account of deviations, consider carefully the sling configurations, take account of the effect of knots and possible contamination of the rope;
- it is useful for workmates to check each others personal equipment to ensure that it is fitted correctly, e.g. the harness buckles are correctly adjusted and connectors are securely closed.

### **Thorough examination and inspection (Reg. 9)**

NOTE Where a thorough examination has been made under Regulation 9 of LOLER, it may be treated as an inspection of the lifting equipment under Regulation 12 of the WAHR 2005, other than paragraphs 7 and 8 (which deal with working platforms).

#### Thorough examination

LOLER requires lifting equipment to be 'thoroughly examined'. All equipment that requires a 'thorough examination' should be identified [296].

Thorough examination means a detailed examination by a competent person, who has the appropriate practical and theoretical knowledge and experience to enable them to detect defects or weaknesses and assess their importance in relation to the safety and continued use of the lifting equipment [294].

The competent person should decide upon the nature and extent of the examination and carry out tests when necessary [301]. Any thorough examination of personal fall protection equipment should not include proof loading.

It is essential that the person carrying out a thorough examination is sufficiently independent and impartial to allow objective decisions to be made, i.e. has appropriate and genuine authority to discard equipment. This does not mean that competent persons must necessarily be employed from an external company [295].

Companies that carry out rope-based access may be competent to conduct their own examinations. The insurer should accept this, but it should be checked that this is the case. If required, the supplier or the manufacturer may also be able to suggest suitable people or organisations.

Lifting equipment should be thoroughly examined before use for the first time and the manufacturer's declaration of conformity normally serves this purpose. Thereafter, where it is being used for rope-based access, it should be thoroughly examined either:

- every six months; or
- in accordance with time intervals specified in an 'examination scheme' drawn up by a competent person.

In drawing up an examination scheme, a competent person should take into account the recommendations of the manufacturer/supplier [336].

Lifting equipment should be thoroughly examined after installation, but 'installation' does not apply to the positioning or repositioning of rope-based access equipment [308]. 'Installation' is taken to apply to longer-term, normally fixed, equipment items, e.g. site cranes, hoists [307].

Lifting equipment should always be accompanied by a current written thorough examination report, which should be available to the employer at each work site [343].

#### Interim inspection

Inspections of lifting equipment should be carried out over and above the pre-use check, at suitable intervals between 'thorough examinations', where a risk assessment made under the Management of Health and Safety at Work Regulations (Regulation 3) has identified risks which could be addressed by 'inspection' [335], e.g. in the case of items subject to high levels of wear and tear, such as textiles.

Interim inspections should be carried out each time an exceptional circumstance occurs [337] that may jeopardise the safety of the equipment.

### **Reports and defects (Reg. 10)**

NOTE Where a report of a thorough examination under Regulation 10 of LOLER is made, it may be treated as the recording of equipment under Regulation 12, paragraph 6 of the WAHR 2005.

#### Thorough examination

The competent person should make a written report of the state of the equipment at the time of the thorough examination [348] and any identified defect(s) should be included (refer to LOLER, Schedule 1 for a list of the information required).

The competent person should notify the employer immediately of any defect [345], which in their opinion is or could become a danger to people.

The competent person should also send a copy of the report to HSE within 28 days of the thorough examination if they consider there is an imminent risk of serious personal injury [351] arising from failure of the equipment should anyone attempt to use it.

NOTE With a regime of regular inspection and pre-use checks it is not anticipated that 'thorough examination' will normally identify equipment that is, or could become, a danger to people.

When a defect is notified, it should be ensured that the lifting equipment is not used before the defect is rectified or it is rectified within the time specified in the report [350].

#### Interim inspection

A person making an 'inspection' should make a record of the inspection, in writing. If, during an inspection, a defect is discovered which could become a danger to people, the employer should be informed and the lifting equipment not used before the defect is rectified.

### **Records (Reg. 11)**

Copies of any EC 'Declarations of Conformity' for any lifting equipment should be kept for as long as the equipment remains in use [356].

Information contained in any thorough examination report for the previous two years should be readily available to inspectors from the relevant enforcing authority, should they request to see them [356].

Inspection records should be kept until the subsequent inspection.

## References

1. *Safe Use of Lifting Equipment. Lifting Operations and Lifting Equipment Regulations 1988, Approved Code of Practice and Guidance.* L113 HSE Books 1998, ISBN 0 7176 1628 2 (LOLER).
2. *Management of Health and Safety at Work, Management of Health and Safety at Work Regulations 1999. Approved Code of Practice,* L21 HSE Books 1992, ISBN 0 7176 2488 9 (MHSW).
3. *Five Steps to Risk Assessment,* INDG163 (Rev.2), HSE Books.
4. *Personal Protective Equipment at Work, Guidance on the Regulations (Second edition)* (includes a copy of the *PPE Regulations 1992 (as amended)*), L25 HSE Books 2005, ISBN 0-7176 6139 3 (PPE).
5. *Safe Use of Work Equipment, Provision and Use of Work Equipment Regulations 1998, Approved Code of Practice and Guidance,* L22 HSE Books 1998, ISBN 0 7176 1626 6 (PUWER).
6. *Workplace (Health, Safety and Welfare) Regulations 1992 (as amended),* L24 HSE Books 1992, ISBN 0-7176-0413-6.
7. *The Work at Height Regulations 2005,* SI 2005/735, The Stationery Office, 2005.
8. *The Work at Height (Amendment) Regulations 2007,* SI 2007/114, The Stationery Office, 2007.

The future availability and accuracy of the references listed in this information sheet cannot be guaranteed.

## Further information

*Simple Guide to the Lifting Operations and Lifting Equipment Regulations 1998,* HSE, INDG290, 01/05.

*Simple Guide to the Provision and Use of Work Equipment Regulations 1998,* HSE, INDG291, 06/04, C300.

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This information sheet contains notes on good practice which, in law, are not compulsory but which you may find helpful in considering what you need to do.

## ANNEX

### (1) Eye bolts

There is some confusion over the application of LOLER to safety equipment anchorage eye bolts. In earlier sector-specific lifting legislation (such as the Construction (Lifting Operations) Regulations), which LOLER has replaced, eye bolts were classed as 'lifting gear' and were required to be thoroughly examined every 6 months. British Standards have recommended different periods for anchorage eye bolts, but only in Standards which refer to eye bolts used as anchor devices for protection against falls from a height. In such circumstances, they are not being used for lifting or lowering and do not, therefore, come within the scope of LOLER. However, where the same eye bolts are being used for lifting or lowering, e.g. as an anchor point for rope access work, then they will be covered by the requirements of LOLER, which take precedence, as standards are for guidance only and not a legal requirement.

#### **Eye bolts for lifting**

A removable threaded eye bolt, screwed into a load as an attachment for lifting slings, etc., is an 'accessory for lifting' and needs to be thoroughly examined (Reg. 9).

A 'pad eye' or 'link' permanently fastened to a load to connect lifting slings is deemed to be part of the load. They must be maintained (PUWER, Reg. 5), must be of adequate strength (LOLER, Reg. 4) and will require a pre-use check (LOLER, Reg. 8).

An eye bolt or pad eye used as an anchorage for supporting lifting equipment, such as a winch or rope access equipment, is 'lifting equipment' and subject to LOLER.

In all these cases (above) there is an absolute duty under PUWER to maintain them in a safe condition.

Under LOLER, such eye bolts are required to be thoroughly examined by a competent person every 6 months (or at frequencies in a written examination scheme drawn up by a competent person). The competent person determines whether the thorough examination should include testing. In addition, eye bolts should be inspected before use and not used if there is any doubt about their safe condition.

#### **Eye bolts for fall arrest**

An eye bolt which acts as an anchorage for a fall arrest lanyard is NOT a lifting accessory and does not require examination under LOLER. Instead, it is considered part of the fabric of the building, structure, etc. and comes under the provisions of the Workplace (Health, Safety and Welfare) Regulations 1992 [Ref. 7].

BS EN 795 recommends examination at least every 12 months by a competent person. Examination after installation and at subsequent periodic intervals is also likely to be necessary to comply with the general requirements of the Health and Safety at Work, etc. Act 1974 (i.e. the duty of an employer to ensure, so far as is reasonably practicable, the health and safety of employees). The competent person carrying out the examination will be guided by appropriate guidance and recommendations (such as that contained in the relevant standards).

### (2) Safe working loads of rope-based access equipment (Informative)

Equipment used in rope-based access is primarily governed by the EC Directive on Personal Protective Equipment (PPE), 89/686/EEC (and its amending Directives, 93/68/EEC, 93/95/EEC and 96/58/EEC). Therefore, the marking of a safe working load (SWL), as required by LOLER, is not straightforward. For example, unlike most lifting equipment, personal fall protection equipment or similar equipment used in rope-based access may be designed to withstand the impact of dynamic falls, with static loading as a secondary consideration. Traditional lifting equipment, such as cranes and other installed lifting equipment, is generally rated for static loading only (with no requirement to withstand a dynamic force).

It should be noted that the Machinery Directive (98/37/EC) states that textile ropes or slings should have a "... working coefficient ... (which) ... is, as a *general rule*, equal to 7 ..." (4.1.2.5(c)). In addition, for the lifting of persons, the working coefficient must "... as a *general rule*, be doubled ...", i.e. a total factor of safety equal to fourteen.