



LEEA Academy | Training Course Handbook

# Lifting Equipment End User Guidance (EUG Global)

Lifting Equipment Engineers Association | Lifting Standards Worldwide™

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## 1. Introduction

This course provides an essential insight to the responsibilities of lifting equipment owners and end users.

The course introduces legislative requirements for both owners and end users of lifting equipment, covering standards and best practice, principles for selection of equipment, information to be exchanged between the user and supplier and the various types of thorough examination.

The role of the competent person conducting thorough examinations of lifting equipment is also explained.

## 2. Learning outcomes

On completion of this short course, participants will have gained an underpinning knowledge of the legislative frameworks, standards, and best practices applicable to owners and end users of lifting equipment and how lifting equipment must be managed from procurement through to disposal, including maintenance, thorough examination requirements and record keeping.

## 3. Scope of the EUG course

- a. An introduction to the legislative requirements for owners and end users of lifting equipment
- b. Definitions, best practice, and standards
- c. Compliance: management of lifting equipment in service

## 4. Duty holder responsibilities for owners and end users of lifting equipment

The duty holder is the person responsible for the lifting equipment that they own and use. Usually this is the employer or self-employed person. However, it is important to note that it is not necessarily always the employer; it may be a building owner, the person in charge of the equipment, or a hire company. The obligations imposed by legislation apply to the duty holder. However, in many cases the duty holder will not possess the necessary skills required to fulfil these obligations. It is therefore acceptable for them to delegate some or all of their obligations to suitably qualified personnel or organisations. If they do so, then it is important to note that this does not absolve them of responsibility, it simply changes the nature of their accountability.

A duty holder who delegates or sub-contracts their legal obligations becomes culpable for ensuring that those undertaking the tasks are suitably qualified, experienced, trained, equipped, etc. In short, that they are competent for their task. This means that they must ensure that employees are assessed and properly trained and provided with the necessary equipment for their role. In terms of external organisations, the duty holder must have procedures in place for vetting their competency.

Modern legislation places responsibilities on users and those in the supply chain. In terms of use, ultimate responsibility lies with the duty holder (employer of persons using the equipment), but employees also have obligations, typically to use only use equipment for which they have been trained and in accordance with that training. In terms of supply, ultimate responsibility tends to lie with the manufacturer. However, importers and distributors also have legal obligations.

The reason for placing such responsibilities on suppliers and users is to protect the health and safety of everyone exposed to lifting equipment and lifting operations by ensuring that they are properly designed, constructed, maintained, and used correctly.

If we consider what factors legislation may be required of the manufacturers to establish such levels of safety, we will need to include:

- Ensuring the product meets any, and all essential health and safety requirements
- Any necessary verification of the equipment
- Supplying the end user with all necessary safety information
- Safety in use and during maintenance
- Information relating to any foreseeable hazards

Of course, employers (persons responsible for controlling work equipment) also have an important part to play in ensuring the health and safety of their employees. Their duties include:

- Ensuring equipment complies with any essential health and safety requirements
- Ensuring equipment is maintained and regularly examined
- Providing equipment and systems that are safe and without risk to health
- Provide employees with necessary information, instruction, training, and supervision
- Ensure equipment is correctly selected for the task

Equipment manufacturers must comply with all national supply legislation applicable. This legislation varies between countries worldwide, but their fundamental principles generally align to EN ISO 12100 – Safety of machinery. General principles for design. Risk assessment and risk reduction. The standard identifies the

essential safety requirements that need to be considered by all manufacturers to overcome hazards in lifting equipment.

The LEEA Code of Practice (COPSULE) is therefore designed and established upon the general principles of the requirements of the duty holder and work equipment legislation. We will look at COPSULE in further detail in Section 7 of this handbook.

## 5. Why health and safety is important, including moral, financial, legal and PR reasons

The responsibility for health and safety at work rests primarily on the shoulders of the employer. Employers have a moral responsibility to ensure appropriate working conditions are provided and this generally known as a 'moral duty of care'. The consequences for employers failing to adequately manage the health and safety of their employees can have serious implications:

- Unsafe working conditions are likely to have an impact on production
  - Loss of output leading to lowering of morale and motivation
  - Loss of sales turnover and profitability
- Society and customer expectations of a company's approach to managing safety – health and safety culture
  - Negative PR would have a damaging effect on any business
- Financial cost from loss of output
  - Fines, damages, legal costs, insurance etc.

## 6. Definitions used widely within the industry and their relevance to the owners/end users of lifting equipment

### Competent Person

The term 'Competent Person' has long been used in legislation. Current legislation uses it for a variety of duties to describe a person with the necessary knowledge, experience, training, skills and ability to perform the specific duty to which the requirement refers. There can therefore be several 'Competent Persons', each with their own duties and responsibilities, i.e. competent for the purpose.

The Competent Person should have the maturity to seek such specialist advice and assistance as may be required to enable them to make necessary judgements and be a sound judge of the extent to which they can accept the supporting opinions of other specialists. For example, the Competent Person inspecting, maintaining or examining lifting equipment must be able to certify with confidence whether it is free from defect and suitable in every way for the duty the equipment is required.

What can be considered as the most important elements of competency?

- Qualifications
- Physically fit for the task
  - Good, or corrected eyesight
  - Ability to work at height
- Experience
- Professional attitude
  - Morals and ethics
  - Integrity
- Knowledge, understanding and application of legislative requirements
- Continual professional development
- Access to information
- Knowing your limits (when to seek help)

### Inspection

We will consider 3 levels of inspection during this course:

1. Pre-use inspection
2. Interim inspection
3. Thorough examination

The pre-use inspection is normally carried out by the user of the equipment prior to use. The user will visually check for any signs of obvious defect or damage that give cause for concern. If such an issue is found, the user must report their findings to the appropriate maintenance/inspection personnel for further investigation before the equipment is made available for service.

The interim inspection (sometimes referred to as the 'frequent inspection' is determined by risk assessment as to how often, and to what extent the inspection is performed. This level of inspection normally focuses on critical components that may become problematic prior to the next periodic thorough examination.

The thorough examination (sometimes referred to as the periodic, or through inspection) is a visual examination of lifting equipment that is carried out by a competent person. The examination should be performed carefully and critically,

supplemented by testing and measurements required by the competent person to ascertain the equipment's fitness for a further period of service.

### **Lifting Accessory**

Sometimes referred to as lifting gear, lifting tackle or rigging equipment. An accessory is defined as a piece of lifting equipment that is used to connect a load to the lifting appliance.

In 'supply' legislation, the term can include equipment which is intended to constitute an integral part of the load and which is independently placed on the market.

In terms of 'use' legislation, accessories that are incorporated into the load are deemed to be part of the load all fall under the legislative requirements for general work equipment. Examples of lifting accessories would include:

- Shackles
- Eyebolts
- Chain slings

### **Lifting Appliance**

Sometimes referred to as a lifting device or machine.

The appliance is a machine that can raise, lower, or suspend a load. This excludes 'guided loads' such as lifts, and continuous mechanical handling devices such as conveyors.

Example of lifting appliances would include:

- Cranes
- Hoists
- Jacks

### **Lifting Equipment**

This is a generic term used to describe all types of lifting accessories and appliances.

### **Rated Capacity**

This is defined as the maximum gross load that the lifting appliance can lift in any given configuration; generally used for lifting appliances in the same way as Working Load Limit is used for lifting accessories.

### **'Safe' or 'Specific Application' Working Load (referred to as SWL in both cases)**

Not to confused with the term Working Load Limit (WLL)

The Safe Working Load (SWL) refers to the maximum load (mass) that the lifting equipment can lift, lower, or suspend in under specific service conditions, and is determined by the competent person.

### **Documentation**

Depending on the standard being worked to, a manufacturer will

normally issue a manufacturers certificate, a record of test or statement of conformity which provides confirmation that the item has been verified by testing or other product verification required by the standard. The Load Limit is also stated. Note: Further information may also be required by relevant national enforcing legislation.

LEEA 059 series guidance documents are available from LEEA to provide further detail for documentation and marking.

## **7. Standards, Approved and Recommended Codes of Practice (ACOP/RCOP) and LEEA COPSULE**

Standards are a published specification that sets a common language and contains a technical specification or other precise criteria and is designed to be used consistently, as a rule, a guideline, or a definition.

Standards are applied to many materials, products, methods, and services helping to make life simpler and increase the reliability and effectiveness of goods and services.

Standards are designed for voluntary use and do not impose any regulations, but many have such recognition that compliance with them gives presumption of conformity and as a such a quasi-legal status. Examples include:

- ISO Standards (International standard used globally)
- BS (British Standards, a 'national' type standard)

A Code of Practice is a set of written rules which explains how people working in a particular profession should behave, or a set of standards agreed on by a group of professionals who do a particular job. There are various types of Codes of Practice:

- ACOP (Approved Code of Practice)
- RCOP (Recommended Code of Practice)
- A 'trade' or 'professional' Code of Practice

Approved Codes of Practice (ACOPs) are issued by enforcing authorities with the consent of the relevant government ministers and following consultation with government departments, employers' and employees' organisations, and expert opinion in the subject area.

A Recommended Code of Practice (RCOP), whilst not directly issued by enforcing authorities are supported and assisted by such bodies.

LEEA COPSULE is a recommended code of practice now in its 9th edition (November 2019). Unlike the first 8 editions of COPSULE which were primarily based on UK legislation and standards, the 9th edition is based upon industry best practice or

legislation offering the highest level of safety that either meets or exceeds the minimum requirements globally.

COPSULE sets a minimum benchmark for safety, and a level playing field for LEEA members to ensure that they, and this guidance is fully compliant.

There are 8 underlying requirements of COPSULE which must be considered for all lifting operations:

1. The equipment must be safe and suitable for the intended purpose
2. Manufacturers and suppliers must provide information on the use including any incorrect use of their equipment, including maintenance and inspection
3. Those obtaining equipment for others to use at work must ensure that it is safe and suitable for the intended purpose
4. The lifting operation must be adequately planned, supervised and carried out in a safe manner
5. The personnel who use the equipment must be suitably trained
6. The equipment must be maintained in a safe condition
7. The equipment must be inspected and thoroughly examined to check whether it is safe to use
8. Records of conformity, test and examination need to be kept in accordance with national regulations

## 8. Managing lifting equipment in the business

### **Selection and procurement (information to be exchanged between user and supplier)**

Procurement personnel are responsible for selecting equipment that is best suited to the intended application. This requires a specification that includes full understanding of the equipment, environmental conditions of use, required duty, applicable legislation and relevant standards. Consideration should also be given to the general acumen of users of the equipment and any additional training that may be required.

Procurement personnel must be able to produce tenders that accurately identify the minimum performance requirements and be able to identify and reference the most appropriate product safety standards. The equipment shall be selected on its ability to perform safely under all foreseeable conditions of use, as determined by risk assessment, and not just the price.

The procurement personnel should be competent to understand technical specifications and ascertain the fitness for purpose of the equipment by comparing the specification with the risk

assessed procurement specification.

It is important to note that work equipment regulations make it clear that the person(s) responsible for taking equipment into any undertaking must ensure that it meets all applicable essential health and safety requirements. This obligation is often fulfilled by ensuring that the correct paperwork is supplied with the equipment, and that the equipment is marked with information required by the appropriate standards and legislation.

The following list of information to be exchanged is specifically aimed at the safety of the specific equipment and has no bearing on any commercial information.

### **Verification**

All lifting equipment should be of adequate strength, sound material, of good construction and suitable for the duty which it must perform. New equipment should comply with the essential health and safety requirements stipulated in the applicable legislation, product standard where available, and issued with the required conformity documentation. This documentation is often combined with the results of the verification and together they form the 'birth certificate' which is an important legal document.

Verification is the generic term used to describe the procedures adopted by the manufacturer or Competent Person to ensure that lifting equipment is to the required standard or specification, meets legal requirements and is safe to operate. This includes proof load tests, sample break tests, non-destructive tests, calculation, measurement and thorough examination.

Note: For new equipment, the verification methods used by the manufacturer will depend on the standard being worked to. Some equipment is unsuitable for proof load testing due to the nature of the materials used, e.g., textile slings. Some items are assembled from components verified to their own standards so no further tests are required, e.g., grade 8 mechanically assembled chain slings. Once in service, the verification methods used will be those deemed necessary by the Competent Person in reaching their conclusions about fitness for purpose.

### **Factor of Safety (FOS)**

Good practice requires that any lifting equipment shall have an adequate factor of safety incorporated in its design. Where appropriate in each of the separate sections, a minimum factor of safety for the specific item is recommended and this should not be reduced. A factor of safety is used to allow for impact, wear, dynamic loading and accidental overloading but this is only a contingency factor and must never be purposely used in calculation of safe working or safe application working load.

A competent person will need to advise when there are several extreme factors involved with any lifting operation that may occur simultaneously, resulting in a likely failure. In such cases, the competent person will advise if higher rated equipment will need to be used.

## Compatibility

Care must be taken when using various items of lifting equipment joined together. Each item of equipment must seat correctly and align with its neighbour. Additional specific information relating to various types of equipment is given in each section of COPSULE.

## Intended use

There are many types of lifting equipment that can be used in various ways; therefore, it is important that information regarding its intended use is provided to the supplier with any advice that has been offered by the competent person. Details of any potential misuse of the equipment must also be provided.

Information to be exchanged between the user and supplier should include:

- Geometry and total maximum weight of the load to be lifted
- Detailed description and/or drawing of the load to be lifted giving all principal dimensions which affect the lifting operation and method of lifting envisaged, with particular emphasis on:
  - Headroom
  - Height of lift
  - Transport when suspended
  - Manipulation of suspended load
  - Centre of gravity
- In addition, methods of lift and means of attachment should be stated together with external obstructions likely to be encountered in the use of the items
- Details of any adverse environmental conditions such as extremes of temperature, humidity, chemical attack, corrosive atmospheres
- Details of frequency of use and average loadings so that a duty rating can be established
- Details of where to send operating instructions and legal documentation including information on correct maintenance, storage and limitations on its use

## Marking, storage and handling recommendations

### Marking

Lifting equipment shall be marked with:

- The WLL/SWL or rated capacity
- Means of ID cross-referencing to associated documentation
- Other marks as may be required by the standard and by legislation

Marking should be by suitable means, i.e. plate, metal tab, textile

label, etc. permanently attached or by stamping directly into the equipment, preferably in a non-load bearing or low stress area. Stamping into a stressed area may also be permissible provided that the mechanical properties of the component are not significantly impaired. Where applicable, the position and size of stamping should be as indicated in the relevant standard.

When the means of marking can be lost, additional information should be used to convey this information. It is therefore recommended that the identification mark should also be put directly onto the equipment so that in the event of the original means of marking becoming detached, the identity is not lost, and the other information can be recovered from the related documentation. Should any of the required marking become obliterated or illegible, the equipment should be withdrawn from service and referred to a Competent Person for re-marking or, if necessary, for re-verification and re-marking.

If a user wishes to mark the equipment with information which is liable to change (e.g. plant location reference, date of examination, etc.) it is recommended that a tag is used as opposed to remarking the original equipment material.

The SWL of new equipment will be in the metric units of tonnes (t) or kilograms (kg) or imperial units of Tons (T) and Pounds (lb). The generally accepted rule is that a SWL of less than one tonne or Ton are marked in kilograms or pounds, respectively.

### Storage and Handling

It is important to minimise risk of damage and/or deterioration of lifting equipment whilst it is in service, therefore storage is an important element of its upkeep.

Generally speaking, the storage area should be dry, free from contamination and pollution and not subjected to extremes of temperature. Any exposed threads and machined surfaces (e.g. eyebolts) should be protected and stored carefully as these characteristics are critical to the operational integrity of the equipment.

Equipment which is returned to stores wet or having been in contact with other substances that may cause deterioration should be treated with special care. In particular, it should be remembered that solutions of chemicals will become more concentrated as the solvent evaporates, e.g. weak acids will become strong acids. In these circumstances the general advice is to clean and dry the equipment as it is put into storage.

Storage areas should be carefully controlled with no unauthorised access.

Bins, racks, etc. should be provided and only the heavier, more robust, items allowed to lie on the floor.

## **Maintenance and thorough examination requirements**

### **Maintenance**

Lifting equipment should be properly maintained and safe to operate at all times. This is a general legislative requirement. Current good practice requires pre-use inspections and interim inspections at suitable intervals between the statutory thorough examinations. Regular 'interim' inspections should be carried out at appropriate intervals to ensure the legal requirements are met.

### **Inspections**

These are particularly important before issuing the equipment for use.

The interim inspection should be carried out by a Competent Person. For organisations handling a large and varied amount of equipment, it may be more economical to invest in a planned control system using a series of controlled stores, colour coding systems, etc. information on such systems can be provided by LEEA Members.

Users are reminded that notwithstanding any interim inspections carried out, they are required by COPSULE to have all lifting equipment thoroughly examined by a Competent Person at statutory periods. This is also a legal requirement in many countries. It is also recommended that procedures be instituted to ensure that manufacturers' recommendations with regard to regular maintenance are carried out.

On completion of the thorough examination by a Competent Person, a report of thorough examination should be issued. This should be kept with the records for the equipment.

### **Training and safe use**

The general objective of good lifting practice is to ensure that the load is safe, and when lifted, it is as secure in the air as it was on the ground.

COPSULE s1.8.1 (1-17) and s1.9.1 (1-13) lists the general procedures and training requirements which can be adapted to any lifting operation irrespective of the type of lifting appliance or the method of attaching the load to the appliance.

Important to note is:

- Operatives and supervisors should be adequately trained in the safe use of the lifting equipment being used
- Operatives and supervisors are to use only equipment for which they have received training or instruction and to use it only in accordance with such training and instruction. It should be noted that in some countries this is a legal requirement.
- Operatives and supervisors shall be supplied with any operating instructions provided by the manufacturer or supplier including updates relating to the use of the equipment

- Effective communication is essential where several operators are working together. Hand signals should be used in accordance with the standards in the country of use, e.g. ISO 16715, BS 7121-1 and ASME B30 Series.
  - Whatever method of communication is decided upon, it is important that there should be no risk of signals being confused or being misunderstood
- Lifting equipment should not be altered or modified in any way without the approval of the manufacturer or other competent design authority and if so should be re-verified, examined and certified before further use

### **Lifting Operation Supervisor**

The training of the Lifting Operation Supervisor, whilst covering similar points, is likely to require a different emphasis to the above. Formal training should also be undertaken, and a record kept that the Supervisor reached a satisfactory standard.

### **Disposal of equipment**

Disposal of lifting equipment is the ultimate responsibility of the owner/end user. The general principle that all lifting equipment should be disposed of responsibly, and respectful of the environment is the message from LEEA.

Steel components and machinery have scrap value, so this is the best form of disposal. Crane components can sometimes be used in the manufacture of new machinery.

Particularly problematic are webbing and round slings which cannot be recycled. Another issue with this type of sling is if they are not destroyed (cut up) prior to disposal they can often be mistakenly returned to service.

All ID labels and tags should be removed from items of lifting equipment prior to disposal.

## 9. Summary

Lifting equipment standards, design, stringent verification processes and in-service maintenance and inspections should provide safe use and minimise risk to people, plant and property.

We have considered the legal requirements of all those involved with lifting equipment, in particular owners and end-users (the duty holders) of lifting equipment and their duty to protect the health and safety of everyone exposed to lifting equipment and lifting operations.

Recap of employers main duty requirements:

- Ensuring equipment meets any and all essential health and safety requirements
- Ensuring equipment is maintained and regularly examined
- Providing equipment and systems that are safe and without risk to health
- Provide employees with necessary information, instruction, training, and supervision
- Ensure equipment is correctly selected for the task

We have looked in some further detail as to how regulations, standards and codes of practice can provide guidance in meeting these requirements, but more importantly, owners and end users of lifting equipment will note that by using a LEEA member to assist them in meeting their duty requirements, they can be confident that they are dealing with a company that is highly capable, has adequate facilities for the work they undertake and that their personnel are appropriately qualified in their work. Personnel are also subject to 3 yearly CPD (Continuous Professional Development) re-assessment for capability and currency in all LEEA qualifications held. Only when this criterion is met will LEEA's TEAM Card be re-issued to the qualification holder. (See Fig.1)

## 10. Recommended further reading

- LEEA COPSULE (Code of Practice for the Safe Use of Lifting Equipment) Edition 9 -November 2019 ISBN 978-0-9930124-0-2
- LIFTING EQUIPMENT – A USER'S POCKET GUIDE – A6 Pocket Guide published by LEEA – [www.leeaint.com](http://www.leeaint.com)
- LEEA Guidance Document 072 - Roles and responsibilities for ensuring the continued safety of in-service lifting equipment.
- LEEA Guidance Document series 059 – Documentation and marking

## 11. Copyright and legal information

The content of this course handbook is provided for general information only. Whilst it is intended to represent a standard of good practice, it has no legal status and compliance with it does not exempt you from compliance with any legal requirements. Although we make reasonable efforts to provide accurate guidance, we make no representations, warranties or guarantees, whether express or implied, that the content of our guidance and our interpretation of the requirements is accurate, complete or current. It is therefore the responsibility of those with specific duties under the legislation to ensure that they fulfil the obligations imposed on them.











# One less headache

**When it comes to lifting operations, don't let it become a headache, join forces with the winning team and insist on a LEEA member. LEEA is established across the world as the leading trade association for all those involved in the lifting industry.**

**Can you be sure if the person responsible for keeping your lifting equipment in a safe condition, is qualified to do the job? Don't compromise, ask to see their Team Card and insist on a LEEA member.**

#### **All LEEA Member companies have**

- Proven standards of professionalism
- Access to LEEA technical support
- Trained staff holding TEAM cards
- Commitment to raising safety standards



To find a **LEEA** member near you, or for information on how to join the Association, visit [www.leeaint.com](http://www.leeaint.com) or email [mail@leeaint.com](mailto:mail@leeaint.com)



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## Other Courses available from LEEA

<b>EUG</b>	End User Guidance
<b>FOU</b>	Foundation Certificate
<b>LAC</b>	Lifting Accessories Diploma
<b>MLM</b>	Manual Lifting Machines Diploma
<b>PLM</b>	Powered Lifting Machines Diploma
<b>BGC</b>	Bridge and Gantry Cranes Diploma
<b>SUP</b>	Supporting Structures for Hoists and Light Crane Systems Diploma
<b>MOB</b>	Mobile Cranes Diploma
<b>OSC</b>	Offshore Containers Diploma

For further information or to book a training course, please visit **[www.leeaint.com](http://www.leeaint.com)** or contact us by email: **[academysupport@leeaint.com](mailto:academysupport@leeaint.com)**