

FEDERATION OF PILING SPECIALISTS
CODE OF INDUSTRY BEST PRACTICE

**LIFTING OPERATIONS AND LIFTING
EQUIPMENT REGULATIONS 1998**



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Although every effort has been made to check the accuracy of the information and validity of the guidance given in this document, neither the Federation of Piling Specialists, its employees, authors or the compilers of the document accept any responsibility for mis-statements contained in it nor any misunderstanding arising from it.

1. Introduction

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) came into force on 5 December 1998 to replace industry specific regulations on lifting, including sections of the Factories Act 1961, the Construction (Lifting Operations) Regulations 1961 and the Lifting Plant and Equipment (Records of Test and Examination) Regulations 1992.

Employers have a duty to ensure that lifting equipment provided for their employees (and the self employed working for them) comply with these regulations.

This Industry Code of Best Practice is designed to offer practical guidance on the application of the regulations to the piling industry, which if followed will assist in raising the standard of health and safety. This document is designed to complement the Health and Safety Executive publication 'Safe Use of Lifting Equipment, Approved Code of Practice and Guidance – L113' and other guidance for the construction industry.

It is the responsibility of those who use this Code to make themselves conversant with all the appropriate legislation and standards and not to rely on any reference or summary contained in this document, which may be incomplete or not comprehensive. It is not intended that this document should replace any Acts, Codes of Practice, Regulations or other documents having legal or contractual standing.

2. Statements and Definitions

a) Piling Rig

A machine which carries out piling operations and other ground improvement techniques whether it is working, being rigged or being de-rigged. It may be a crane that has been temporarily or permanently adapted for piling by, for example, the addition of leaders or auger boring attachment.

A crane which has piling equipment hanging from its main line and not otherwise supported by the machine, e.g. sheet piling hammer or extractor, vibrator, grabs, vibro poker etc. is NOT a piling rig.

b) Rated Capacity Indicators

Due to the nature of piling operations Rated Capacity Indicators (RCI or ASLI) are not currently practicable for use with piling rigs. Therefore piling rigs must be clearly marked or supplied with information about how the configuration of the machine affects its safe operation. This information can be in the form of duty charts, indicators, plates or certificates, which must be readily available to the operator and easy to understand.

Where a crane has piling equipment hanging from its main line, a Rated Capacity Indicator is a requirement. However Rated Capacity Indicators are not practicable with certain equipment e.g. vibro pokers and diaphragm walling grabs. Where a Rated Capacity Indicator is not used, information in the form of duty charts, indicators, plates or certification should be readily available to the operator and easy to understand.

c) Lifting Equipment

LOLER defines lifting equipment as 'work equipment for lifting and lowering loads and includes its attachments used for anchoring, fixing or supporting it'¹. The scope of LOLER is therefore very wide and includes a range of equipment from an eyebolt to a tower crane.

For the purposes of this document lifting equipment is a powered device for the raising or lowering of a load.

d) Lifting Accessory

For the purposes of this document a lifting accessory is any device temporarily attached between lifting equipment and a load for the raising or lowering of that load.

Some equipment used in piling operations are NOT considered to be lifting accessories as they are part of the load and are shown in the following non-exhaustive list.

Kelly Bars	Chisels
Augers, (including CFA)	Pokers
Grabs	Vertical drain formers
Hammers	Rock mills
Extractors	Sludge pumps
Vibrators	Core barrels
Temporary casings or liners	Other ancillaries

They do not therefore come under the Inspection, Test and Thorough Examination Scheme. They will however be subject to inspection and maintenance as required by the Provision and Use of Work Equipment Regulations 1998.

e) Lifting Accessories and Incorporation

When lifting equipment or accessories become part of the piling rig, they are covered in the rig scheme and certification, eg winches, pendant ropes, derricking ropes and hoist ropes.

f) Pile Load Test Equipment.

This is intended to support loads as opposed to moving them and should be considered under the Provision and Use of Work Equipment Regulations 1998 and the Pressure Systems Regulations 1996 and has not been included in this code.

¹ Lifting Operations and Lifting Equipment Regulations 1998, Approved Code of Practice and Guidance L113.

g) Personnel

This document uses several titles for personnel involved in lifting operations.

i) *Appointed person*

A person appointed by the organisation requiring the load to be moved to take overall control of the planning. In cases of repetitive or routine operations, this planning may only be necessary in the first instance, with periodic reviews to ensure no factors have changed. He / she will have adequate training and experience to enable these duties to be carried out competently. During normal piling operations, the appointed person will normally delegate the duties, but not responsibilities, of controlling the lifting operations to a competent person within the site team.

(Refer to detail in BS 7121:Part 1: 1989 British Standard Code of Practice for Safe use of cranes paragraphs 3.2 and 3.3.)

ii) *Authorised person*

An individual who has been given authority to directly control a task or sequence of tasks to a plan provided by the organisation requiring them to be carried out. Such authorisation should only be given after ensuring that the individual's training and competence is adequate for safe execution.

iii) *Competent person*

An individual who is recognised by the organisation requiring the task(s) to be carried out as having sufficient training, knowledge and experience to complete the task(s) safely and efficiently.

iv) *Slinger Signaller*

The slinger / signaller qualification may be one of the following -

1. CPCS slinger/signaller card.
2. CSCS Piling operations by NVQ2 (includes unit PR07 'slinging/signalling)
3. CSCS Piling operations by Industry Accreditation.

They will therefore be fully competent in the following activities -

- Selecting appropriate lifting accessories;
- Attaching, using and detaching lifting accessories;
- Directing movement of loads;
- Directing the movement of tracked piling rigs and the like where required (i.e. banksman duties).

i.e. to carry out the duties of both Slinger and Signaller as described in BS 7121:Part 1: 1989 British Standard Code of Practice for Safe use of cranes paragraphs 5.2.2 and 5.2.3.

3. LOLER Considerations

Suitability

When selecting lifting equipment, the integrity, place of use and the purpose of use must be taken into account. This will include ergonomic risks and the materials used in the manufacture of lifting equipment. This can often be achieved during the risk assessment process but further guidance may be required on an individual piece of equipment.

Safe Access

Where access to, or egress from, any part of the lifting equipment is required safe means of doing so should be provided and that means of access should be suitable for the purpose. Consideration should also be given to areas of the lifting equipment that need to be accessed on an irregular basis e.g. for maintenance or adjustment and how safe access will be achieved. Permanent means of access should be provided rather than temporary means and it should be maintained.

Protection from Falls

Adequate protection must be provided against the risks of slips, trips and falls. Where there is a risk of a person falling, suitable protection should be provided. The potential for injury due to a person falling when working at height must be assessed and appropriate protection provided and maintained. The hierarchy of protection should be

- permanent fixed (eg handrails, midrails and toeboards);
- semi-permanent (eg safety nets);
- temporary or occasional or emergency work (eg secured safety harness).

Suitable protection should be provided where there is a risk of an object falling from a working place on the lifting equipment and injuring a person below.

Strength and Stability

An assessment should be made of the strength of the lifting equipment to ensure that it is strong enough for the proposed use. Account should be taken of other factors that affect the strength of lifting equipment².

The stability of the lifting equipment should be ensured, including, where necessary, protection against overturning. Working environment factors need to be taken into account, for example ground conditions and the effect of high wind, and measures should be in place to control these situations.

² Reference should be made to EN791 Drill Rigs – Safety, EN 996 Piling Equipment – Safety Requirements and documents detailed in Section 6 of this document.

Positioning and Installation

Procedures should be in place to prevent the risk of a load being lifted over a person. This may include, at the planning stage, consideration of traffic routes, access and working positions.

Where two or more items of lifting equipment are used they should be installed and positioned in such a way as to prevent them from coming into contact with one another. The best way to achieve this is to position them in such a way that their operating paths do not overlap. Where this is not possible the operation of the lifting equipment should be planned, and appropriate measures put in place to prevent collision.

The prevention of crushing by a slewing machine should be considered. Where practicable there must be a minimum of 600mm between the nearest part of the machine during a slewing operation and any other fixed object. Where this is not possible the danger area should be guarded to prevent access. In all cases, warning signs on counter weights should be provided.

Control of the Load

Freely suspended loads should be prevented from moving in an uncontrolled manner and where necessary appropriate devices should be fitted to prevent a load from falling freely. This includes control being maintained over the load during exceptional circumstances, for example where there is a power failure, to ensure there is no increase in the consequential risk.

Hooks on lifting equipment should be of a type that reduces the risk of a load becoming displaced e.g. fitted with safety catches, or of such shape as to reduce as far as possible the risk of accidental displacement of the load.

Marking

The safe working load (SWL) of an item of lifting equipment or lifting plant must be identified on the item. Where the SWL depends upon a certain configuration, then information about the corresponding SWL at that configuration must be provided and available to the user.

Any structural element of lifting equipment, which is occasionally dismantled or partially dismantled, and which is, or may become, separated from the lifting equipment, should be marked to identify the lifting equipment of which it is a part.

Equipment used for the lifting persons must be specifically marked 'For Lifting Persons' e.g. descent capsules, maintenance platforms etc.

4. Organisation of Lifting Operations

The British Standard Institute Code of Practice BS 7121 advises employers to ensure that every lifting operation is properly planned by a competent person, appropriately supervised and carried out in a safe manner.³

To achieve this an Appointed Person (see definitions) should be nominated to prepare a Lifting Plan. For non-complex lifting operations his/her presence at the lift site is unlikely to be necessary and it will be carried out by a competent person eg. Slinger / Signaller (see definitions).

Lifting Plans.

The plan will directly relate to the complexity of the load movement (lift) involved. Many lifts will be of routine/repeat nature, e.g. loading or unloading piling equipment and supplies.

All lifting plans should

- Have been prepared by an appointed person and
- Adequately describe the activity and
- Address the risks identified in the risk assessment and
- Stipulate the level of training required for the person in charge and
- Remain valid for the entire range of the lifting operations that may be carried out.
- Consider the Lifting Equipment and
- Consider the lifting accessories, the means of attachment to the load and how they will be used, including any necessary de-rating required to keep within the safe working load of the machine and
- Consider proximity hazards such as: -
 - Overhead power lines⁴
 - Other work equipment and structures
 - Trenches, excavations⁵; Underground services
 - Other lifting operations, and
- Avoid locating lifting equipment on soft or sloping ground, unless adequate arrangements are taken to ensure stability of the machine at all times, and
- ensure a minimum of 600mm clearance between a fixed object and the nearest part of slewing lifting equipment.

Generic lifting plans for routine / repeat activities are a practical way of ensuring uniform safe working methods provided that they address the foregoing points.

³ BS 7121 1989 Part 1 – Safe Use of Cranes

⁴ GS 6 Avoidance of Danger From Overhead Power Lines

⁵ HS (G) 185 Health and Safety in Excavations

Supervision

An Authorised Person (see definitions) must supervise the lifting operation.

Authorised persons may, depending on the complexity of the lift, also carry the title Competent Person or Slinger / Signaller (see definitions). They should have appropriate and sufficient training to ensure that they are: -

- capable of ensuring that the lifting equipment is safe to use. This may include pre-use checks, completion of inspection reports and reporting procedures.
- Capable of ensuring that lifting equipment is stored in such a way so as to prevent deterioration or damage.

5. Examination, Inspection and Test (Written Schemes) and Records

A written scheme of examination must be developed, to include all items of lifting equipment, its distinguishing mark, safe working load, description and record of last thorough examination, and weekly inspections.

The summary record may appear as follows: -

Scheme ID No.	<i>Unique ID No. assigned by the Company</i>	Safe Working Load	<i>SWL as marked on the test certificate</i>
Description	<i>Brief description as included on test certificate</i>	Date of Last Thorough Examination or Test	<i>Date of examination</i>
Distinguishing Mark	<i>Unique No. given to item by manufacturer</i>	Test Certificate Number	<i>Test certificate carrying the unique distinguishing mark of the lifting equipment</i>
Next Scheduled Thorough Exam	<i>Date</i>	Next Scheduled Test	<i>Date</i>

All lifting equipment should be examined, inspected and tested by a competent person. This will be a person who has appropriate practical and theoretical knowledge and experience of the lifting equipment. It is essential that the competent person is sufficiently independent and impartial to allow objective decisions to be made.

A certificate showing when the last thorough examination was carried out must accompany lifting equipment on site. Piling rigs are thoroughly examined every 12 months and inspected at the point of rigging on each site. A current examination certificate should be available for inspection on site.

Lifting equipment must be thoroughly examined as follows: -

- ◆ Accessory for lifting – Every 6 Months
- ◆ Lifting Equipment for Lifting Persons – Every 6 Months
- ◆ Lifting Equipment – Every 12 Months

The competent person may, depending upon how and where the lifting equipment is used, decide to increase the frequency of the thorough examinations but the above should be considered as a minimum requirement.

Lifting accessories need not have the certificates available on site where they are being used, but all accessories must be individually identifiable and the certificates held at the company office should be traceable to that piece of equipment and the last examination. Lifting accessories should be checked daily before use and the lifting equipment should be visually examined daily before use and inspected weekly to ensure continued integrity of the equipment. The results should be entered on the company's equivalent to the F91 form.

Therefore the following scheme is recommended as a **minimum standard**: -

Timing	Check	Responsibility	Record
On arrival at site	Check records of plant and equipment	Foreman	None
Before work starts	Complete machine and inspection checks as F91	Rig operator	F91 or equivalent
Daily, before use	Visual check of rig	Rig operator	None
Daily before use	Check of lifting accessories	Operator	None
Weekly	Complete machine and inspection report	Rig operator	F91 or equivalent
6 monthly	Thorough examination of lifting accessories	Competent person	F97 or equivalent
12 monthly	Thorough examination of lifting equipment	Competent person	F97 or equivalent
Before First Use	Test and thorough examination	Competent Person	Certificate of Test or CE compliance if new

6. Further Information

The following publications were consulted during the development of this code.

Health and Safety at Work Etc. Act 1974
The Management of Health and Safety at Work Regulations 1999
The Lifting Operations and Lifting Equipment Regulations 1998
The Provision and Use of Work Equipment Regulations 1998
The Noise at Work Regulations 1989
The Manual Handling Operations Regulations 1992
The Construction (Health, Safety and Welfare) Regulations 1996
The Construction (Design and Management) Regulations 1994
GS 6 – Avoidance of Danger from Overhead Electrical Lines
HSG 150 Health and Safety in Construction
BS 7121 part 1 1989 – Safe Use of Cranes