Safe Lorry Loader Crane Operations

Information Sheet

May 2018

This information sheet deals with the set-up, use, maintenance and thorough examination of lorry loader cranes (LLCs), also known as lorry loaders, to make sure that lifting operations are carried out safely. It is aimed at employers, the self-employed, employees and anyone who works with LLCs which are used for operations involving lifting of smaller loads such as building materials, (blocks, timber, bags, logs), small containers and general waste.

It does not cover loader cranes operating with rope and winch systems, or where they are being used as an alternative to conventional mobile cranes, or situations involving the lifting of persons.

All lifting operations are potentially hazardous and should be planned to make sure that they are carried out safely and that all foreseeable risks have been taken into account and effectively controlled. Poor planning is one of the major causes of accidents arising from lifting operations.

What is an LLC?

An LLC is a crane mounted on a vehicle for the purpose of loading and unloading that vehicle. In construction and utility works LLCs are used widely for loading and unloading and are commonly fitted with **clam-shell bucket or grab attachments.** In general transport and haulage they can be used with a crane hook and lifting accessories. A crane should only be mounted to a vehicle in accordance with the vehicle manufacturer's bodybuilding guidelines by a person competent to do so.

Training requirements

LLCs must be operated by trained competent persons. A person is deemed to be competent if they are trained and experienced, and know how to safely carry out LLC operations, having regard to the nature of the hazards involved.

Training should cover, as a minimum:

- the controls,
- instruments,
- working load limits,
- load assessments and load charts,
- safe working procedures for slinging and lifting, including hand-signals,
- operating limitations of each type of crane and accessory they operate, and
- in-service checks.

Documented procedures must also be followed for maintenance and use of the crane.

What causes LLC accidents?

The most common causes of LLC accidents are:

- Vehicle instability caused by overloading
- Partial or complete loss of load through:
  - incorrect handling methods, and
  - lifting of loads in excess of lifting capacity of the loader crane.
- Failure of the crane, attachment or lifting accessories

Further Information and Guidance:

Visit our website at **www.hsa.ie**, telephone our contact centre on **1890 289 389** or email **wcu@hsa.ie**

Use BeSMART, our free online risk assessment tool at **www.besmart.ie**

Check out our range of free online courses at **www.hsalearning.ie**

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- Overturning of vehicle through:
  - inability of the ground to take load, and
  - failure to use or the incorrect use of vehicle stabilizers or spreader plates.
- Loader crane striking:
  - pedestrians,
  - other vehicles, and
  - overhead power lines.

What the law requires

Designers and manufacturers must make sure that LLCs are designed and constructed safely and that relevant information is provided to customers. Importers or suppliers of LLCs should make sure that the equipment they are putting on the market has CE certification[1].

New LLCs must:

- be CE marked in accordance with the relevant directives of the EC,
- be accompanied by an EC Declaration of Conformity in accordance with the relevant directives of the EC,
- be accompanied by information about the rated capacity for all boom configurations and positions, and
- not have been reassembled since dispatch from the manufacturer.

LLCs should not be taken into use in any place of work for the **first time** unless it has been examined and certified by a competent person in accordance with the relevant Regulation[2], which requires that:

- an LLC is **thoroughly examined** by a competent person at least once in every 12 months,
- a **report of thorough examination** is completed by the competent person,
- any lifting accessory (e.g. grapple, grab, slings, chains) is **thoroughly examined** by a competent person every 6 months, and
- any crane or lifting accessory which undergoes **any alteration or repair,** where the alterations or repairs are relevant to the safe operation of the equipment, **must be examined and tested** by a competent person **before** the equipment is **returned to service.**

BS 7121-4:2010 Code of Practice for safe use of cranes – Lorry Loaders. This Standard recommends that the periodicity of thorough examinations is reduced to 6 months after 8 years.

Daily and weekly checks

LLCs should have daily pre-use inspections carried out and planned maintenance organised, depending on the use of the loader crane and the environmental conditions in which it typically works. In addition, if an LLC is being used on construction sites, there is a requirement to carry out weekly inspections of lifting equipment and to record inspection details on a **GA2 Form.**

Record keeping

Written records of examinations and inspections should be held by the operator, and a copy of the thorough examination report should be kept in the cab of the vehicle.

Risk assessment

The operation of an LLC requires a written risk assessment to identify the relevant hazards and associated controls to achieve safe systems of work. Safe systems of work must include safe ways of operating the crane. Suitable instruction and training must be provided to those who work with, on and around loader cranes. The operator should wear a hard hat, hi-visability clothing and safety footwear when operating the crane.

[1] CE marking is a certification mark that indicates conformity with health, safety, and environmental protection standards for LLCs sold within the European Economic Area (EEA) in accordance with the European Communities (Machinery) Regulations 2008 (S.I. No. 407 of 2008), as amended.

[2] Regulation 52 of the Safety, Health & Welfare at Work (General Application) Regulations 2007– SI No. 299 of 2007.

LLCs operational considerations

People involved in lifting operations

The number of people involved in a lifting operation will vary depending on the size and complexity of the operation. This will be determined as part of the risk assessment. Some lifting operations may require only the vehicle operator, whereas others may require additional people such as banksmen, slingers and signallers. It is important that everyone involved in a lifting operation is competent to fulfil their role, and that one person is in charge.

LLC working location

The area in which a lorry loader crane is to operate must be carefully assessed to make sure that it is suitable before the crane is put into service. During this assessment, the following points should be considered;

- **Clearances** - The area of a lifting operation must be of a sufficient size to enable the vehicle to be manoeuvred into position, set up and operated, with sufficient clearances between the LLC and surrounding structures. This is to make sure that trapping points are not created and that damage does not occur to either the LLC or the surrounding structures. Designated loading/unloading areas should be used wherever possible.
- **Ground conditions** - Accidents have occurred with LLCs because ground conditions were not properly considered and assessed. All LLCs, mounted on a vehicle, rely on the ability of the ground on which they are standing to safely absorb the loads imposed. Most LLC manufacturers supply information on the loads imposed by the machine on the ground in the various operating and set up arrangements of the crane. The operator has to make an assessment of the ability of the ground to take these loads. This assessment may indicate that the ground is not capable of bearing the loads imposed by LLC, in which case additional measures may be needed to spread the load, such as using timber sleepers, special mats or steel plates. If the operator is unsure they should not proceed, and they should seek further advice.

Lifting accessories

All lifting accessories should have a unique identification marking on them. Careful consideration should be given to the selection of lifting accessories such as hooks, clamps, wire rope slings, chains slings, webbing slings and shackles to make sure that:

- they are strong enough to take the intended loads,
- the slinging method has been selected by considering the size and shape of the load ,
- they are protected in situations where loads have sharp edges (for example, web slings),
- they have a current Report of Thorough Examination,
- they are marked with a safe working load (except for ropes and rope slings),
- pre-use checks are carried out before each use to make sure that they are in good condition, and
- they are stored in such a way to keep them in good working condition and ready for the next use.

Useful information

BS 7121-4:2010 Code of Practice for safe use of cranes. Lorry Loaders.

Safety alert on lorry mounted cranes at http://www.hsa.ie/eng/Safety_Alerts/2014/Lorry_Mounted_Crane_Alert/

HSA online courses on Managing Workplace Transport Safety at https://hsalearning.ie/

HSA vehicle risks information portal at http://www.hsa.ie/eng/Vehicles_at_Work/

Guidance on the General Application Regulations 2007 - Work Equipment available at http://www.hsa.ie/eng/Publications_and_Forms/Publications/General_Application_Regulations/ Work%20Equipment%20updated%20version.pdf

Code of Practice for Avoiding Danger from Overhead Electricity Lines available at http://www.hsa.ie/eng/Publications_and_Forms/Publications/Safety_and_Health_Management/CoP_ESB_overhead_lines.pdf

CPA – ALLMI Best Practice Guide – Safe Use of Lorry Loaders available at https://www.allmi.com/images/downloads/Guidance-on-the-Safe-Use-of-Lorry-Loaders.pdf

Practical ways to prevent lorry loader crane (LLC) incidents…..

Risk area	Risk	Suggested control measures
Crane equipment	Failure of the crane or accessories	The owner should make sure that: • the LLC is thoroughly examined by a competent person every 12 months, • a system of ongoing monitoring/regular inspections is in place to detect deterioration in sufficient time to allow remedial measures to be taken, • lifting accessories such as clamps, chains slings, hooks, shackles, swivels, etc. are thoroughly examined by a competent person every 6 months, and inspected regularly to make sure that they are not damaged and are fit for use, • planned maintenance is carried out in accordance with manufacturers guidelines, • limit switches and emergency stops in good working order, and • controls are properly marked controls and relevant load charts are available. The operator should make sure that: • daily visual walk-around checks of the crane, in the folded out position, are carried out before the crane is used, and • defects, oil leaks or unusual noise or looseness are reported immediately to management.
	Unintended operation	The owner should make sure: • to carry out a complete operation check of the equipment, particularly after a repair or a change of attachment, and • that any interlocks or safety devices are properly maintained.
Falling from or in the course of accessing/ exiting the operating position	Slips, trips or falls	The owner should consider changing the controls to a wireless or hard wired remote control unit, operated from the ground.
Loss of load	Load falling on operator or slinger	The operator should make sure that: • people stand well clear of the lifting operation, and never between the load and the vehicle, and • the attachment or handling method being used is the right one for the load being lifted.
Uneven ground	Overturning	The operator should: • only load/unload in designated loading areas, • check the area in which an LLC is to be positioned to make sure that it is suitable, and • always use the stabilizers (see overturning below).
	Slips, trips and falls	• The operator should remain stationary on the ground if they are using a remote control.
Restricted space	Striking overhead cables or other structures	The operator should: • check clearances between the vehicle and adjacent structures, • look out for overhead cables, • make sure that the extending crane mechanism will not contact or approach overhead hazards such as power lines, communications cables or overhead structures, • take extra care if work is in a confined restricted area, • consider the possibility of the build-up of exhaust fumes, and • always stow crane fully before moving the vehicle.
Overturning	Overturning	The operator should: • make sure that all stabilisers are fully out and down for lifting, and returned to the correct position after use, • know and understand the safe working load of the crane in the different positions, and • pay particular attention when picking up an unfamiliar load.
Striking people	Striking the operator or other people	The operator should: • be aware of the possibility of people in the vicinity and make sure they are clear of the working area before lifting operations begin, • keep unauthorised people out of loading/unloading area, • if using a remote control unit, stand clear of the operation, • take care when extending the stabilizers, • plan the operation to prevent lifting over people, • be aware of the possibility of people out of their line of sight, and • if lifting in an area to which the public have access, cordon off the area and provide alternative safe passage for pedestrians.
Wind conditions	Loss of load	The operator should not operate the crane in windy conditions.

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