

Code of practice for

Safe use of cranes

Part 4. Lorry loaders

ICS 53.020.20

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee MHE/3, Cranes and derricks, upon which the following bodies were represented:

- Associated British Ports
- Association of Lorry Loader Manufacturers and Importers
- British Iron and Steel Producers' Association
- Building Employers' Confederation
- Construction Plant-Hire Association
- Electricity Association
- Engineering Equipment and Materials Users' Association
- Federation of Manufacturers of Construction Equipment and Cranes
- Federation of Wire Rope Manufacturers of Great Britain
- Health and Safety Executive
- Institute of Logistics
- Institution of Mechanical Engineers
- Institution of Occupational Safety and Health
- Institution of Plant Engineers
- Institution of Structural Engineers
- Lifting Equipment Engineers' Association
- Lloyd's Register of Shipping
- Safety Assessment Federation Ltd.

The following bodies were also represented in the drafting of the standard, through a subcommittee:

- Amalgamated Engineering Union
- Construction Health and Safety Group
- Federation of Civil Engineering Contractors
- Institution of Civil Engineers
- Oil and Chemical Plant Constructors' Association
- United Kingdom Module Constructors' Association Ltd.

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Foreword

This Part of BS 7121 has been prepared by Technical Committee MHE/3. It provides recommendations for the safe use of lorry loaders and their associated equipment. It should be used in conjunction with BS 7121 : Parts 1 and 2, to which specific references are made.

It is in the interest of all parties involved in lifting operations to ensure that these operations are carried out efficiently and safely. This Part of BS 7121 is commended to owners and users of lorry loaders, who are encouraged to observe all the recommendations, and where possible, upgrade existing equipment and operating procedures accordingly.

Whilst it is recognized that the recommendations given do not relate to the design and manufacture of lorry loaders, designers are strongly advised to take them into consideration.

This Part of BS 7121 is one of a suite of standards. The complete series will be as follows:

BS 7121 *Code of practice for safe use of cranes*

- Part 1 *General*
- Part 2 *Inspection, testing and examination*
- Part 3 *Mobile cranes*
- Part 4 *Lorry loaders*
- Part 5 *Tower cranes*
- Part 6 *Derrick cranes*
- Part 7 *Overhead/underhung travelling and goliath cranes*
- Part 8 *High-pedestal and portal-jib cranes*
- Part 9 *Container handling cranes*
- Part 10 *Rail-mounted cranes*
- Part 11 *Offshore cranes.*

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

This British Standard is based on a text provided by the Association of Lorry Loader Manufacturers and Importers, and due acknowledgment is made to this organization.

Attention is drawn to relevant legislation and, in particular, to statutory requirements for the testing and examination of cranes.

This standard does not at present cover the use of lorry loaders for the lifting of personnel, as new legislation relating to such use is in preparation.

The Health and Safety Executive (HSE) commends the use of this British Standard to those who have duties under the Health and Safety at Work etc. Act 1974. The standard was drawn up with the active participation of HSE representatives and will be referred to in relevant HSE publications.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 20, an inside back cover and a back cover.

Code of practice

1 Scope

This Part of BS 7121 gives recommendations for the safe use of lorry loaders. It should be read in conjunction with BS 7121 : Part 1 : 1989 and BS 7121 : Part 2 : 1991.

Subjects covered include management, procedures and precautions, testing, inspection, maintenance and examination.

2 References

2.1 Normative references

This Part of BS 7121 incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies: any subsequent amendments to or revisions of the cited publication apply to this Part of BS 7121 only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

2.2 Informative references

This Part of BS 7121 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on page 53, but reference should be made to the latest editions.

3 Definitions

For the purposes of this Part of BS 7121, the definitions given in BS 7121 : Part 1 apply, together with the following.

3.1 lorry loader

A combination of a loader crane fitted to a commercial vehicle or trailer which normally has a load carrying capability.

3.2 operator

The person preparing the lorry loader for operation, or operating the crane for the purpose of positioning loads.

NOTE. The operator may also perform the task of driving the vehicle.

4 Management of the lifting operation

4.1 Safe system of work

A safe system of work should be established and this should be followed for every lifting operation whether it be an individual operation or a group of repetitive operations.

The safe system of work should include the following:

- a) planning of the operation;
- b) selection, provision and use of a suitable lorry loader and equipment;
- c) maintenance, examination and, where necessary, testing of the lorry loader and equipment;
- d) the provision of properly trained and competent personnel who have been made aware of their relevant responsibilities under the Health and Safety at Work etc. Act 1974 [1];
- e) adequate supervision by properly trained and competent personnel having the necessary authority;
- f) ensuring that all necessary test certificates and other documents are available;
- g) preventing unauthorized movement or use at all times;
- h) the safety of persons not involved in the lifting operation;
- i) the need for the operator, unless in imminent danger, to remain at the operating controls throughout the lifting operation.

The lifting operation should be taken to include any necessary preparation of a site and erection and dismantling of the lorry loader.

The safe system of work should be effectively communicated to all parties concerned.

4.2 Control of the lifting operation

To ensure the implementation of the safe system of work, one person should be appointed to have overall control of the lifting operation to act on behalf of the management of the organization requiring the load to be moved (the 'employing organization'). The appointment of the person does not remove any legal responsibility from the management but enables them to use his expertise to fulfil their responsibilities. The person appointed may have other duties and need not be an employee of the employing organization. The person appointed should have adequate training and experience to enable the duties stated in 4.3 to be carried out competently.

4.3 Duties of the person appointed to control the lifting operation

The appointed person's duties should include the following:

- a) the assessment and planning of the lifting operation, the selection of the lorry loader, lifting gear and equipment, and such instruction and supervision as is necessary for the task to be undertaken safely;

- b) consultation with other responsible bodies, if necessary, and ensuring that where different organizations are involved they collaborate appropriately;
- c) ensuring that adequate inspection and maintenance of the equipment has been carried out;
- d) ensuring that there is an effective procedure for reporting defects and incidents, and taking any necessary corrective action;
- e) responsibility for the organization and control of the lifting operation.

The appointed person should be given the necessary authority to perform all these duties, and in particular, authority to stop the operation whenever he considers that danger is likely to arise if the operation were to continue.

It may be appropriate for the operator to be in control of the lifting operations.

4.4 Contractual considerations

The employing organization (see 4.2) may enter into a contract with another party (the 'contractor') who will undertake the work on their behalf.

The contract should state the following:

- a) that all work should be carried out in accordance with this Part of BS 7121;
- b) that the contractor should appoint a person, in accordance with 4.2, to the satisfaction of the employing organization;
- c) that all information or services provided by the employing organization to facilitate compliance with this Part of BS 7121 should be notified to the contractor in writing.

The contractor should be given full authority to ensure that the recommendations of this Part of BS 7121 are followed, including, where appropriate, the authority to control and instruct the employing organization's personnel.

Before entering into a contract, the employing organization should satisfy itself that the contractor has the necessary competence to carry out the work in accordance with this Part of BS 7121.

5 Planning the lifting operation

All lifting operations should be planned to ensure that they are carried out safely and that all foreseeable risks have been taken into account. Planning should be carried out by personnel who have the appropriate expertise and have been appointed for this purpose.

In cases of repetitive or routine operations, this planning may only be necessary in the first instance, but there should be periodic reviews to ensure that no factors have changed.

Planning should include consideration of the following:

- a) the load, its characteristics, the method of lifting, and any likely adhesion between the load and its support;
- b) the selection of a suitable lorry loader, and the need for adequate clearances between the load(s) and the lorry loader during lifting (see clause 8);
- c) the selection of lifting gear, and the contribution of its weight to the load on the lorry loader;
- d) the position of the lorry loader and of the load before, during and after the operation;
- e) the site of the operation, taking into account proximity hazards, space availability and suitability of the ground or foundations;
- f) any necessary erection and dismantling of the lorry loader;
- g) the environmental conditions that exist or may occur at the site of the operation, and whether the operation will need to be stopped if conditions become unfavourable.

6 Selection and duties of personnel

6.1 Selection

It is essential to select suitable personnel who are competent to carry out the required duties, and reference should be made to records of their training and experience. Those responsible for the selection should ensure that the personnel involved in the operation are efficiently organized in order to ensure good teamwork. No person should be a member of the team if his efficiency is impaired by alcohol, drugs or other influences. All personnel in the team should be aware of their duties (see 6.2). Personnel who are under training should be adequately supervised. It is essential to ensure that all personnel can communicate clearly in the same language.

NOTE. In some circumstances it may be appropriate for one person to undertake the duties of more than one of the roles described in 6.2.

6.2 Duties

6.2.1 Operator

The operator should be responsible for the correct operation of the lorry loader in accordance with the manufacturer's instructions and within the safe system of work (see 4.1). The operator should at any one time respond only to the signals from one slinger/signaller, who should be clearly identified (see 9.2).

6.2.2 Slinger

The slinger should be responsible for attaching and detaching the load to and from the lorry loader's lifting attachment and for the use of the correct lifting gear and equipment in accordance with the planning of the operation.

The slinger should be responsible for initiating and directing the safe movement of the lorry loader. If there is more than one slinger, only one of them should have this responsibility at any one time, depending on their positions relative to the lorry loader.

Continuity of signalling is of paramount importance. If the slinger is not visible to the lorry loader operator, signals should be relayed to the operator by a signaller (see 6.2.3) or by other audio or visual methods. If audio or visual methods are used, the equipment or its means of use should be such that the operator will be immediately aware of failure of the equipment.

Typical examples are as follows.

- a) A blank screen on a television monitor should require an operator to stop immediately all lorry loader movements.
- b) A slinger using a radio should continuously instruct the operator to lower a load, e.g. by saying 'lower-lower-lower...', and failure of this instruction from the slinger should require the driver to halt all lorry loader movements.

If during the lifting operation, responsibility for directing the lorry loader and load is to be transferred to another nominated person, the slinger should clearly indicate to the operator that this responsibility is being transferred and to whom, and the slinger should clearly indicate to the new nominated person that this transfer is taking place. The operator and the new nominated person should clearly indicate that they accept the transfer of responsibility.

6.2.3 Signaller

The signaller should be responsible for relaying the signal from the slinger to the lorry loader operator. The signaller may be given the responsibility for directing movement of the lorry loader and load instead of the slinger, provided that only one person has the responsibility.

6.2.4 Lorry loader erector

The lorry loader erector should be responsible for the erection of the lorry loader in accordance with the manufacturer's instructions (see clause 10). If two or more lorry loader erectors are required, one should be nominated as 'erector in charge' to control this operation.

6.2.5 Maintenance personnel

The maintenance personnel should be responsible for maintaining the lorry loader and ensuring its safe and satisfactory operation. They should carry out all necessary maintenance in accordance with the manufacturer's maintenance manual and within the safe system of work (see 4.1).

7 Attributes of personnel

7.1 Operator

The operator should be:

- a) competent;
- b) over 17 years of age, unless under the direct supervision of a person competent for the purpose of training;
- c) suitably fit, with particular regard to eyesight, hearing and reflexes;
- d) physically able to operate the lorry loader safely;
- e) able to judge distances, heights and clearances to a reasonable degree;
- f) trained for the type of lorry loader and its accessories, and familiar with the lorry loader's safety devices;
- g) fully conversant with the duties of the slinger and signaller, and with the signal code shown in clause 16, and with any alternative methods of signalling that are to be used;
- h) familiar with the fire appliances on the lorry loader and trained in their use;
- i) familiar with the means provided for escape in case of emergency;
- j) authorized to operate the lorry loader;
- k) aware of any duties allocated to the slinger and/or signaller by the person appointed (see 4.3).

NOTE. Evidence that the operator is medically fit to operate a lorry loader should be obtained at intervals of not more than 5 years.

7.2 Slinger

The slinger should be:

- a) competent;
- b) over 17 years of age, unless under the direct supervision of a person competent for the purpose of training;
- c) fit, with particular regard to eyesight, hearing, reflexes and agility;
- d) physically able to handle lifting gear and equipment;
- e) able to balance loads and judge weights, distances, heights and clearances;

- f) trained in the techniques of slinging;
- g) capable of selecting lifting gear and equipment that is suitable for the load to be lifted;
- h) trained in the techniques of signalling and familiar with the signal code shown in clause 16;
- i) capable of giving precise and clear verbal instructions where audio equipment (e.g. radio) is used, and capable of operating the equipment;
- j) capable of initiating and directing the safe movement of the lorry loader and load;
- k) authorized to carry out slinging duties;
- l) aware of any duties allocated to the lorry loader operator and/or signaller by the person appointed (see 4.3).

7.3 Signaller

The signaller should be:

- a) competent;
- b) over 17 years of age, unless under the direct supervision of a person competent for the purpose of training;
- c) fit, with particular regard to eyesight, hearing, reflexes and mobility;
- d) able to judge distances, heights and clearances;
- e) trained in the techniques of signalling and familiar with the signal code shown in clause 16;
- f) capable of giving precise and clear verbal instructions where audio equipment (e.g. radio) is used, and capable of operating the equipment;
- g) capable of directing the safe movement of the lorry loader and load;
- h) authorized to carry out signalling duties;
- i) aware of the responsibilities allocated to the lorry loader driver and slinger by the person appointed (see 4.3);
- j) aware of any duties allocated to the lorry loader operator and/or slinger by the person appointed (see 4.3).

7.4 Lorry loader erector

The erector should be:

- a) competent;
- b) over 17 years of age, unless under the direct supervision of a person competent for the purpose of training;
- c) fit, with particular regard to eyesight, hearing, reflexes and agility;
- d) physically able to handle safely the loads involved in crane erection;
- e) able to work confidently and safely at heights;

- f) able to establish weights, balance loads and judge distances, heights and clearances;
- g) trained in the techniques of slinging;
- h) capable of selecting lifting gear and equipment that is suitable for the load to be lifted;
- i) trained in the erection, dismantling and working of the relevant type of lorry loader, and in the safe use and setting up of any lifting appliance used in the course of these duties;
- j) trained in the checking of the safety devices fitted to the relevant lorry loader, and of those on any lifting appliance being used for the erection.

7.5 Maintenance personnel

The maintenance personnel should be:

- a) competent;
- b) fully conversant with the machinery they are required to maintain, and with its hazards;
- c) properly instructed and trained;
- d) familiar with the inspection and maintenance procedures recommended in clause 11.

Where special machinery is involved, personnel should attend appropriate training courses given by the supplier of the equipment.

8 Selection of lorry loaders

An effective and safe lorry loader is one in which the vehicle and crane are well matched to the type and size of load to be carried. Attention is drawn to the legal requirements relating to road vehicles.

Consideration should be given to:

- a) weight, dimensions and characteristics of the loader;
- b) operation, speed, radii, height of lift and areas of movement;
- c) the number, frequency and types of lifting operation;
- d) the space required for effective deployment of stabilizers;
- e) the control position which will be most suitable for the intended purpose¹⁾.

Before accepting a lorry loader, the user should ensure that:

- 1) an appropriate test certificate is supplied;
- 2) relief valves are properly sealed;
- 3) an operator's manual is supplied;
- 4) CE documentation is supplied, when appropriate.

¹⁾ A choice is normally available which includes dual position, high seat or remote controls.