
**Cranes — Limiting and indicating
devices —**

**Part 2:
Mobile cranes**

Appareils de levage à charge suspendue — Limiteurs et indicateurs —

Partie 2: Grues mobiles
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ISO 10245-2:2014

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 96, *Cranes*, Subcommittee SC 6, *Mobile cranes*.

This second edition cancels and replaces the first edition (ISO 10245-2:1994), which has been technically revised.

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ISO 10245 consists of the following parts under the general title *Cranes — Limiting and indicating devices*:

- *Part 1: General*
- *Part 2: Mobile cranes*
- *Part 3: Tower cranes*
- *Part 4: Jib cranes*
- *Part 5: Overhead travelling and portal bridge cranes*

Cranes — Limiting and indicating devices —

Part 2: Mobile cranes

1 Scope

This part of ISO 10245 specifies the requirements for devices which limit and/or indicate the loads, motions, performance, and environment of mobile cranes. The general requirements for limiting and indicating devices for cranes are given in ISO 10245-1.

This part of ISO 10245 applies to all mobile cranes as defined in ISO 4306-2. See [4.1](#) and also [4.2](#).

NOTE Some basic machine types within this scope are convertible for use in excavating work and other applications not considered to be lifting service. The requirements of this part of ISO 10245 are applicable to such machines only when used as lifting cranes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2374:1983, *Lifting appliances — Range of maximum capacities for basic models*

ISO 4306-1:2007, *Cranes — Vocabulary — Part 1: General*

ISO 4306-2, *Cranes — Vocabulary — Part 2: Mobile cranes*

ISO 9926-1:1990, *Cranes — Training of drivers — Part 1: General*

ISO 9927-1, *Cranes — Inspections — Part 1: General*

ISO 10245-1:2008, *Cranes — Limiting and indicating devices — Part 1: General*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10245-1 and the following apply.

3.1 rated capacity

load that the crane is designed to lift for a given operating condition, e.g. the configuration or position of the load

[SOURCE: ISO 10245-1:2008, 3.12]

3.2 anti-two-block device

device which, when activated, disengages all functions whose movement can cause any part of the lower load block or hook assembly to come into contact with the upper load block, boom or jib point sheave assembly(s)

3.3

two-block damage prevention device

device which, when activated, reduces the wire rope pull caused by contact of the lower load block or hook assembly and upper load block, boom or jib point sheave assembly(s)

Note 1 to entry: The pull should be reduced such that contact will not cause damage to the machine and well-maintained wire rope. It should have a feature which prevents the hook block or hook assembly from rotating to a position which would cause rigging to disengage from the hook.

4 General

4.1 This part of ISO 10245 applies to all new mobile cranes manufactured one year after publication of this part of ISO 10245. It is not the intent of this part of ISO 10245 to require retrofitting of existing equipment. It is intended, however, that when a component is being modified its performance requirement shall be reviewed relative to this part of ISO 10245. If the performance differs substantially, the need to meet the current requirement shall be evaluated by a qualified person selected by the owner (user) and consequent recommended changes shall be made by the owner (user) within one year.

4.2 Devices described within this part of ISO 10245 shall be applied according to [Table 1](#). The tonne limits specified in [Table 1](#) relate to the maximum capacity of the crane (see ISO 2374). [Table 1](#) does not apply to all situations that can be encountered, such as high winds. Application of the devices shall be carried out in the manner required for safe operation of the crane, taking into account the type of crane and its intended use.

4.3 All devices with readouts shall be legible from the operator's station.

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5 Rated capacity limiter

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5.1 General

The rated capacity limiter shall meet the requirements of ISO 10245-1:2008, 4.3.1, and shall operate in accordance with the requirements stated in ISO 10245-1:2008, 4.3.2.

A rated capacity limiter/indicator shall operate automatically without the need for resetting during a lifting cycle.

Where a crane can be operated in different configurations, there shall be a precise and continuous indication of the crane configuration for which the rated capacity limiter/indicator has been set. As a minimum requirement, the configuration selection device shall provide a direct description of the configuration selected, or indicate a code which can be checked against a separate list of codes/configurations which are given on the capacity chart or attached to it.

On mobile cranes which can be operated in different configurations (e.g. on wheels, on outriggers, different counterweights, different jib length, different number of falls), no unintended change of the configuration selection shall be possible (e.g. location of selection device, separate confirmation of settings).

NOTE 1 Normally there is no check (automatic plausibility check), whether the selected configuration corresponds with the real configuration.

NOTE 2 Acknowledgement by the operator can be used to satisfy the requirement for prevention of unintended configurations changes.

Selections of configurations of the crane not permitted by the manufacturer shall be prevented, unless the discrepancy is acknowledged by the crane operator. The rated capacity limiter shall prevent the crane from supporting a load outside the limits of the permitted radii and outside the positions and

loads shown and/or described on the rated capacity chart or outside the permissible working load of the ropes. The rated capacity limiter shall operate to override the controls of the crane

- a) to prevent any motion that will lead to an overload condition (except slewing - where capacity decreases by slewing, power to the slew function in the direction of continued motion will be deactivated), and
- b) to prevent dangerous movements of the load.

For a mobile crane, the motions that shall normally be overridden by the rated capacity limiter when triggered are:

- a) derricking out;
- b) derricking in;
- c) hoisting;
- d) telescoping out.

NOTE 3 An override key for b) can be provided within the reach of the operator (for derricking in a suspended load).

NOTE 4 The derricking in/luffing in of a grounded load is not to be permitted. Adequate information shall be given in the instruction manual.

5.2 Setting

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The rated capacity limiter shall be set to override the crane controls at values between 100 % and 110 % of the rated capacities of the crane. All sensor tolerances within the system must be considered when determining the accuracy of the system.

The rated capacity limiter shall operate between 100 % and 110 % of the rated capacity during calibration and testing, with the crane operating at the lowest possible working speed.

NOTE Rated capacities referred to in [5.2](#) do not take into consideration adverse operating conditions, e.g. high winds, multilift operation, etc.

6 Rated capacity indicator

6.1 The rated capacity indicator shall give a warning both visually and acoustically of the approach to the rated capacity starting between 90 % and 97,5 % of the rated capacity of the crane.

6.2 The rated capacity indicator shall warn persons visually in the vicinity of the crane whenever the rated capacity limiter overrides the crane controls (see [5.2](#)).

6.3 The rated capacity indicator shall continue its function when the rated capacity limiter is overridden during testing, rigging, or de-rigging.

Provisions can be made to cancel the audible warning during calibration and testing of the crane. Provisions can also be made for a rigging setting that inhibits audible warnings during the rigging of the crane.

6.4 The rated capacity indicator shall be such that its operation, but not necessarily its accuracy, can be checked without applying loads to the crane.

7 Load indicator

- 7.1 The load indicator shall measure and display net load or hoist medium load being lifted.
- 7.2 The load indicating system shall be compatible with the maximum capacity of the crane, as specified by the crane manufacturer.
- 7.3 The accuracy of the load indicating system shall be such that the indicated load is between 100 % and 110 % of the actual load when load exceeds 75 % of rated capacity.

8 Motion limiters

8.1 Operating requirements

Motion limiters shall operate according to ISO 10245-1:2008, 4.5.1. In most cases, the motion limiting devices should be coupled to the crane controls to prevent any such further movement of the crane.

NOTE In the case of hydraulic systems, the extent of travel of operating cylinders or, alternatively, mechanical stops can be considered as meeting this requirement, but it can be necessary to fit pressure-relief valves to prevent overloading of parts of the crane.

8.2 Types of hoisting limiters

Hoisting limiters shall consist of either an anti-two block device or a two-block damage prevention device (see 3.2 and 3.3).

Cranes shall be fitted with a hoisting limiter if it is required to stop all motions which can cause the hook block to make contact with the boom/boom head and cause damage. The bridging device for the hoisting limiter has to be of the type that requires it to be held in the override position.

8.3 Lowering limiter

The lowering limiter shall meet the requirements of ISO 10245-1:2008, 4.5.1.

All cranes shall be fitted with a lowering limiter. As a minimum the lowering limiter shall ensure three turns of rope on the drum. Bridging the lowering limiter shall only be possible for rigging operations, transport, and changing of the rope. The bridging device has to be of the type that requires to be held in the override position.

8.4 Derrick limiter

The device shall be provided with suitable adjustments for obtaining the specified luffing boom and luffing jib angles. Where necessary, the device shall be provided with means for the operator to bypass the limiter to permit momentary re-engagement of the boom or jib derricking power for the purpose of unloading locking devices.

8.5 Attachment backstops

The backstop shall be designed to absorb all the energy imparted to it by the luffing boom or luffing jib according to the maximum allowable wind from front upon sudden release of all rated loads due to failure of the load line or rigging. The backstop shall provide energy-absorbing resistance to the upward and rearward movement of the boom or jib for the last 5° of angular movement about the boom or jib pin.

9 Additional mandatory limiters

The following mandatory limiters shall be fitted to the crane under the following conditions:

- a) maximum and minimum boom angle for all configurations;
- b) maximum and minimum fly jib angle for luffing fly jib configurations;
- c) telescoping for telescopic boom cranes;
- d) mast/A-frame position where mast/A-frame shall be kept within limits;
- e) slack rope on winches other than load lifting hoists where slack rope can occur.

10 Motion and performance indicators

10.1 Hoisting limit indicator

10.1.1 Operating requirements

The hoisting limit indicator, when activated, shall warn the operator of impending contact of the lower load block or hook assembly with upper load block, boom or jib point sheave assembly(s). The warning shall be both audible and visible to the operator at the operator station only.

10.1.2 Setting

The hoisting limit indicator shall be set to take into account the stopping distance necessary for any motion, e.g. of the hook or telescopic attachment, assuming prudent crane operation.

10.2 Attachment angle indicators

The readout accuracy of angle indicators shall be as follows:

- a) For boom or jib angles 65° or more from the horizontal, the indicated angle tolerance shall be 0°/-2° from the actual boom or jib angle;
- b) For boom or jib angles less than 65°, the indicated angle tolerance shall be 0°/-3° from the actual boom or jib angle.

10.3 Attachment length indicators

The readout accuracy shall have a tolerance of ± 2 % of the actual boom length of telescopic cranes.

10.4 Radius indicator

The accuracy of the radius indicator shall be such that the radius indicated shall be within -0 to +10 % of the actual radius.

10.5 Rope drum rotation indicator

10.5.1 Operating requirements

The device shall indicate rope drum movement by visible, audible, or tactile means. It shall also indicate the direction of rope travel.

10.5.2 Indicator sensitivity

The indicator shall be able to detect initial drum rotation producing rope travel of 50 mm.