BS ISO 12480-3:2016

BSI Standards Publication

# Cranes — Safe use

## Part 3: Tower cranes

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## National foreword

This British Standard is the UK implementation of ISO 12480-3:2016.

The UK participation in its preparation was entrusted to Technical Committee MHE/3/5, Mobile cranes.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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# ISO 12480-3

Second edition
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## Cranes — Safe use —

## Part 3: Tower cranes

*Appareils de levage à charge suspendue — Sécurité d'emploi —*

*Partie 3: Grues à tour*

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

The committee responsible for this document is ISO/TC ISO/TC 96, *Cranes*, Subcommittee SC 7, *Tower cranes*.

This second edition cancels and replaces the first edition (ISO 12480-3:2005), of which it constitutes a minor revision. Notably, "driver" has been replaced by "operator" throughout the text.

ISO 12480 consists of the following parts, under the general title *Cranes — Safe use*:

— *Part 1: General*

— *Part 3: Tower cranes*


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INTERNATIONAL STANDARD ISO 12480-3:2016(E)

# Cranes — Safe use —

# Part 3: Tower cranes

## 1 Scope

This part of ISO 12480 establishes required practices for the safe use of tower cranes. It is intended to be used in conjunction with ISO 12480-1.

Subjects covered include safe systems of work, management, planning, selection, erection and dismantling, special base, operation and maintenance of cranes and the selection of operators, slingers and signallers.

It does not cover manually (non-powered) operated cranes, or cranes in which at least one of its motions is manually operated.

## 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 4306-1, *Cranes — Vocabulary — Part 1: General*

ISO 4306-3, *Cranes — Vocabulary — Part 3: Tower cranes*

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

ISO 9926-3, *Cranes — Training of operators — Part 3: Tower cranes*

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

ISO 9927-3:2005, *Cranes — Inspections — Part 3: Tower cranes*

ISO 11660-3, *Cranes — Access, guards and restraints — Part 3: Tower cranes*

ISO 12480-1:1997, *Cranes — Safe use — Part 1: General*

ISO 12482, *Cranes — Monitoring for crane design working period*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12480-1, ISO 4306-1, ISO 4306-3 and the following apply.

**3.1**
**working space limiter**
device to prevent a fixed load lifting attachment and/or parts of the crane from entering a prohibited space

Note 1 to entry: Working space limitation is often achieved by a combination of different limiters.

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# 4 Management of the lifting operation

## 4.1 Safety system work

ISO 12480-1 shall apply.

In addition, the following considerations shall be taken into account.

On sites where there is more than one tower crane, which are not equipped with anti-collision devices, and there is a possibility of collision between cranes, a person, designated as the crane co-ordinator (see 5.9), and the crane operator shall coordinate the sequence of crane movements to prevent collisions. Any corresponding instructions from the crane co-ordinator to the crane operators shall be via the respective signallers. In such circumstances the signallers shall obtain the agreement of the crane co-ordinator before carrying out any operation.

Where tower cranes inter-arc, a vertical distance shall be maintained to prevent collisions. This distance shall be either

a) a minimum clearance of 3 m, or

b) a minimum clearance of 600 mm when taking into account the manufacturer's deflections, only when full details are available from the manufacturer.

The positioning of the crane and components in the out-of-service condition, as specified by the manufacturer's instructions, shall be such that no collisions can take place [see 10.4 b)].

Cranes should, where possible, be sited such that collision hazards are eliminated or minimised.

## 4.2 Control of the crane operation

ISO 12480-1:1997, 4.2, shall apply.

## 4.3 Contractual considerations

It is unlikely that tower cranes will be used in "contract operation" (i.e. where an "employing organisation" enters into a contract with a "user organisation" that will undertake the work on their behalf).

If required, ISO 12480-1:1997, 4.3, shall apply.

# 5 Selection, responsibilities and minimum requirements of personnel

## 5.1 General

ISO 12480-1:1997, 5.1, shall apply.

## 5.2 Duties of the person appointed to control the crane operation (the appointed person)

ISO 12480-1:1997, 5.2, shall apply.

In the interests of safety the appointed person shall arrange the lifting programme such that no operator has to be in attendance at the control station or actually operating the crane for an unreasonably long period, taking into account environmental conditions. The operator shall have breaks from the working activity in line with other personnel on the site.

## 5.3 Crane operator

ISO 12480-1:1997, 5.3.1 and 5.3.2, shall apply.


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When selecting tower crane operators, it shall be borne in mind that they may be required to climb to considerable heights and to spend long periods of time in isolation.

ISO 9926-1 and ISO 9926-3 specify the minimum training to be given to trainee tower cranes operators in order to develop the operational basic skill in driving and to impart the requisite knowledge for the correct use of these skills.

## 5.4 Slinger

ISO 12480-1:1997, 5.4, shall apply.

## 5.5 Signaller

ISO 12480-1:1997, 5.5, shall apply.

## 5.6 Crane erector

ISO 12480-1:1997, 5.6, shall apply.

In addition, the crane erectors should be

a) fully conversant with the appropriate sections of the manufacturer's instruction manual, and

b) familiar with all aspects of their personal protective equipment and capable of using it correctly.

## 5.7 Maintenance personnel

ISO 12480-1:1997, 5.7, shall apply.

In addition, the maintenance personnel shall be

a) fully conversant with the appropriate sections of the manufacturer's instruction manual,

b) familiar with the "permit to work" system where it is required by the safe system of work (see ISO 12480-1:1997, 10.2.2), and able to operate it correctly;

c) familiar with all aspects of their personal protective equipment and capable of using it correctly.

## 5.8 Inspection personnel/crane inspector (for "routine periodic inspection")

### 5.8.1 Duties

The inspection personnel/crane inspector shall

a) verify that

- the documentation is available,
- the crane is erected according to manufacturer's instructions,
- there is no defect or deterioration on
  - the steel structure,
  - mechanisms (brakes), or
  - the control system,
- all mechanisms (brakes) are functioning properly
- all limiting and indicating devices are functioning properly, and

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b) give a report of the inspection to the appointed person.

#### 5.8.2 Minimum requirements

The inspection personnel/crane inspector shall be

a) competent for the type of inspection being carried out,

b) able to work confidently and safely at heights,

c) conversant with the legislation relative to the crane,

d) conversant with the use of a crane, and

e) capable of verifying and recognizing the importance of defects.

For non-routine inspection (e.g. first use inspection, inspection after major repair or modification, special assessment) an expert engineer is required. See ISO 9927-1, ISO 12482.

### 5.9 Crane co-ordinator

#### 5.9.1 Duties

The crane co-ordinator should coordinate the sequence of operations of tower cranes on sites having more than one crane, to prevent the collision of the cranes, components and/or loads.

#### 5.9.2 Minimum provisions

The crane co-ordinator should be

a) competent,

b) over 21 years of age unless under the direct supervision of a person competent for the purposes of training,

c) fit, with particular regard to eyesight, hearing, reflexes and agility,

d) experienced for at least five years in the use of tower cranes,

e) trained in the techniques of signalling and with a good understanding of hand signals for cranes,

f) capable of giving precise and clear instructions, (e.g. verbal, non-verbal, audio),

g) where audio equipment (e.g. radio) is employed, capable of operating such equipment, and

h) capable of producing a crane coordinator's plan [see 5.10.1 b)].

### 5.10 Crane erection supervisor

#### 5.10.1 Duties

The crane erection supervisor is the "erector in charge", as detailed in ISO 12480-1:1997, 5.6.1.

The crane erection supervisor should have the responsibilities of a crane erector and in addition

a) be in control of all crane erectors and of any additional cranage and lifting equipment which may be used in the erection/dismantling operation,

b) provide a means for ensuring that the operation is carried out in accordance with the crane co-ordinator's plan,


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