भारतीय मानक
*Indian Standard*

**IS 13583 (Part 3) : 2018**
**ISO 9926-3 : 2016**

# क्रेन — ऑपरेटरों का प्रशिक्षण

भाग 3 टॉवर क्रेन

# Cranes — Training of Operators

Part 3 Tower Cranes

ICS 53.020.30



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Cranes, Lifting Chains and its Related Equipment Sectional Committee, MED 14

NATIONAL FOREWORD

This Indian Standard (Part 3) which is identical with ISO 9926-3 : 2016 'Cranes — Training of operators — Part 3: Tower cranes' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Cranes, Lifting Chains and its Related Equipment Sectional Committee and approval of the Mechanical Engineering Division Council.

This standard is published in two parts. Other part in this series is:

Part 1 General

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are however not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appear to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard, which is to be substituted in its place, is listed below along with its degree of equivalence for the editions indicated:

| *International Standard* | *Corresponding Indian Standard* | *Degree of Equivalence* |
|---|---|---|
| ISO 4302 Cranes — Wind load assessment | IS 14467 : 2018 Cranes — Wind load assessment (*first revision*) | Identical with ISO 4302 : 2016 |

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# CRANES — TRAINING OF OPERATORS

## PART 3 TOWER CRANES

## 1 Scope

This part of ISO 9926 covers the specific subjects considered necessary for training tower crane operators.

## 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 4302, *Cranes — Wind load assessment*

## 3 Content of training according to tower crane type

Practical and theoretical training shall take into account the following characteristics, according to tower crane type:

a) positioning of loads;

b) types of hoist controls, e.g. stepless contact, speed;

c) type of jibs, e.g. horizontal jib, gooseneck jib, telescoping jib, articulating boom or luffing jib;

d) type of erection/dismantling, e.g. cranes assembled from component parts, self-erecting tower cranes, travelling or stationary cranes, cranes climbing inside or outside the structure (theoretical procedure);

e) special operating precautions when more than one operator is used on one crane, e.g. the last crane user has to make sure that the crane is put out of service correctly;

f) procedures for taking the crane out of service, parking crane and leaving crane unattended including putting the jib to free slewing, applying rail clamps or any special procedure describing to in the manufacturer's instructions;

g) making the crane ready for road transport, where applicable (theoretical procedure);

h) the role and responsibilities of the crane operator;

i) familiarization with national and local regulations and with special operating procedures;

j) maintaining a safe distance from electrical power lines;

k) operational interferences and proximity hazards;

l) various reeving arrangements for the load block;

m) purpose and operation of safety devices;

n) checking of all motion limiters ;

o) forbidden operations;

p) daily, frequent and periodic inspection and maintenance schedules, and record-keeping requirements;

q) detection and recording malfunctions — notifying a designated person.

## 4 Illiteracy and language problems

Wherever practicable, pictograms or other visual means, rather than text, should be used.

Part of the training shall familiarize the trainee with the pictograms and other visual means used.

## 5 Communication systems

Operators shall be trained in the use of communication systems.

For tower cranes, the following hand signals shall be defined, taking into account the national usage and standards, identifying the following controls:

a) start of command;

b) stop;

c) deceleration;

d) hoisting the load;

e) lowering the load;

f) direction of the load;

g) crane travelling;

h) emergency stop.

NOTE ISO 16715 illustrates and gives examples of different signals in usage.

Radios and hard-wired voice communication systems may be used.

## 6 Load curves

The load curves and the characteristics of the cranes shall be taught, including the manufacturer's information given on the rating plate fixed to the control panel.

## 7 Operating wind speed limits

### 7.1 General

Operators shall be trained to establish the maximum wind speed in service when starting the shift, taking into account the crane and its instruction manual.

### 7.2 Operating limits

The training shall make the operator aware of the following:

— the conditions used to determine the maximum wind speed in service (according to ISO 4302, taking into consideration the suspended load surface, in general 1 $m^2/t$);

— the need to reduce the maximum wind speed if this surface operated by the crane exceeds the design one;

— the need to control loads against pendulation and spinning;

— the dangers associated with operating tower cranes and of the different sources of information that may be available.

The trainee shall learn how to use an anemometer and to estimate the wind speeds by sight.

### 7.3 Putting out-of-service

The operators shall be trained to put the crane into the out-of-service conditions specified by the manufacturer. The necessary weathervaning operations shall be carried out and, if necessary, the tightening of the rail clamps.

## 8 Use with or without radio control

If operating by means of a radio control is required, the operator shall be trained to

a) ensure that he/she is able to see the instructions on the rating plates,

b) keep visual contact with the load or ensure adequate assistance, and

c) know the procedure to take/transfer the control of the crane (in case of several radio control sets).

# Bibliography

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

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

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

[4] ISO 16715, *Cranes — Hand signals used with cranes*

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: MED 14 (11821).

**Amendments Issued Since Publication**

| Amendment No. | Date of Issue | Text Affected |
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