



**International  
Standard**

**ISO 23814**

## **Cranes — Competency requirements for crane inspectors**

*Appareils de levage à charge suspendue — Exigences relatives  
aux compétences pour les inspecteurs d'appareils de levage à  
charge suspendue*

**Second edition  
2024-07**

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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 5, *Use, operation and maintenance*.

This second edition cancels and replaces the first edition (ISO 23814:2009), which has been technically revised.

The main changes are as follows:

- in 4.2, technical knowledge to be possessed by crane inspectors has been revised;
- Clause 5 has been removed.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The objective of this document is to achieve uniform competency standards for work involving crane inspectors.

In some countries, additional requirements for the competency of crane inspectors can apply.

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# Cranes — Competency requirements for crane inspectors

## 1 Scope

This document specifies the competency required for persons who carry out periodic, exceptional, and enhanced periodic inspections of cranes. It excludes the inspection and checks performed by crane operators and maintenance personnel.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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 4310, *Cranes — Test code and procedures*

ISO 9927 (all parts), *Cranes — Inspections*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4306-1, ISO 4310 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **crane inspector**

person with the necessary knowledge, training and experience to perform the specific crane inspection

Note 1 to entry: [Annex A](#) provides categories of crane inspectors.

## 4 Requirements

### 4.1 Independence, impartiality and integrity

Inspectors shall avoid undue influences or conflicts of interest that can compromise professional independence, ethics, objectivity or inspection integrity.

### 4.2 Technical knowledge

Crane inspectors shall possess the technical knowledge of the following items and shall be proficient at inspection methods as applicable to the assigned tasks:

- a) structures and components:
  - 1) structural members and connecting elements;

- 2) electrical elements including power connections, motors, circuits, control systems, sensors and electronics, etc.;
  - 3) mechanical components including gearboxes, drums, bearings, brakes, clutches, sheaves, ropes/chains with their fittings, lifting attachments, etc.;
  - 4) hydraulic components including hoses, cylinders, valves and fittings, etc.;
  - 5) internal combustion engines;
  - 6) lubrication systems;
- b) assembly and operation:
- 1) proper assembly including installation of connecting elements, etc.;
  - 2) reeving and drum storage;
  - 3) safe access including ladders, hatches, platforms and guardrails, etc.;
  - 4) cabs and control stations;
  - 5) safety labels;
  - 6) basic crane functions and operations;
- c) documentation:
- 1) maintenance schedules and procedures;
  - 2) record keeping;
  - 3) crane manuals and service bulletins;
  - 4) specifications and certifications for replaceable hardware such as ropes and bolts;
- d) safety, rules and practices:
- 1) applicable international standards (e.g. ISO 12480-1);
  - 2) site-specific and equipment-specific safety rules;
  - 3) use of personal protective equipment;
- e) tools and methods:
- 1) use, care, calibration and maintenance of inspection tools, including sheave gages, dial gage, calliper, torque wrench and tensioning devices, etc.;
  - 2) non-destructive testing;
  - 3) load tests, calibration and limits.

Crane inspectors should possess the technical knowledge of national safety regulations related to cranes.

Performance criteria are given in [Annex B](#).

### 4.3 Experience requirements

The crane inspector shall possess knowledge and skills relevant to the equipment to be inspected and the methods employed. Experience can be gained through a combination of training, apprenticeship, and collateral performance of crane design, manufacture, installation, maintenance or operation.

#### 4.4 Techniques for crane inspection

Crane inspectors shall be competent in inspecting cranes and crane components in accordance with the ISO 9927 series, as applicable to the type of crane.

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**Annex A**  
(informative)

**Recommended crane inspector categories**

The following categories are recommended:

- a) tyre-mounted mobile crane inspector;
- b) crawler-mounted mobile crane inspector;
- c) tower crane inspector;
- d) jib crane inspector;
- e) bridge and gantry crane inspector;
- f) inspector for other specific types of crane for which the inspector has been given training.

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## Annex B

### (informative)

## Performance criteria for technical knowledge

See [Table B.1](#).

**Table B.1 — Performance criteria related to technical knowledge**

| Item (see <a href="#">4.2</a> ) | Performance criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a) Structures and components    | <p>Knowledge of</p> <ol style="list-style-type: none"> <li>1) structural members and connecting elements               <ul style="list-style-type: none"> <li>— corrosion limits</li> <li>— alignment and distortion tolerances</li> <li>— welds</li> <li>— bolting material handling, specifications and discard criteria</li> </ul> </li> <li>2) electrical elements including power connections, motors, circuits, control systems, sensors and electronics, etc.               <ul style="list-style-type: none"> <li>— electrical wiring diagrams</li> <li>— maintenance and protection of wiring, terminals, electrical enclosures and devices</li> <li>— protection and support of power cables</li> <li>— grounding</li> </ul> </li> <li>3) mechanical components including gearboxes, drums, bearings, brakes, clutches, sheaves, ropes/chains with their fittings, lifting attachments, etc.               <ul style="list-style-type: none"> <li>— fit and tolerances</li> <li>— alignment</li> <li>— maintenance and lubrication requirements</li> <li>— brake and clutch wear limits</li> <li>— sheave groove profile and wear limits</li> <li>— rope/chains construction, dimensional tolerances, defects and discard criteria, proper installation, handling and maintenance</li> <li>— lifting attachments inspection and discard criteria</li> </ul> </li> </ol> |

Table B.1 (continued)

| Item (see 4.2)            | Performance criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <p>4) hydraulic components including hoses, cylinders, valves and fittings, etc.</p> <ul style="list-style-type: none"> <li>— circuits, fluid flow and valve functionality</li> <li>— types of pumps and their control systems</li> <li>— system performance and leakage</li> <li>— hose specification</li> <li>— hydraulic fluid specifications</li> <li>— filtration and cleanliness</li> <li>— cooling</li> </ul> <p>5) internal combustion engines</p> <ul style="list-style-type: none"> <li>— service and maintenance</li> <li>— mounting and vibration</li> <li>— defects and causes</li> </ul> <p>6) lubrication systems</p> <ul style="list-style-type: none"> <li>— types of systems</li> <li>— lubricants</li> <li>— performance assessment</li> </ul> |
| b) Assembly and operation | <p>Knowledge of</p> <p>1) proper assembly including installation of connecting elements, etc.</p> <ul style="list-style-type: none"> <li>— assembly diagrams</li> <li>— bolt installation and tensioning</li> <li>— pin installation and tolerances</li> <li>— plumbness</li> </ul> <p>2) reeving and drum storage</p> <ul style="list-style-type: none"> <li>— reeving diagrams</li> <li>— spooling fundamentals</li> </ul> <p>3) safe access including ladders, hatches, platforms and guardrails, etc.</p>                                                                                                                                                                                                                                                     |