
Cranes — Inspections —

Part 5:

Bridge and gantry cranes, including portal and semi-portal cranes and their supporting structures

Appareils de levage à charge suspendue — Vérifications —

*Partie 5: Ponts et portiques roulants, y compris les ponts portiques et
semi-portiques et leurs structures portantes*

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 96, *Cranes*, Subcommittee SC 9, *Bridge and gantry cranes*.

A list of all parts in the ISO 9927 series can be found on the ISO website.

Cranes — Inspections —

Part 5:

Bridge and gantry cranes, including portal and semi-portal cranes and their supporting structures

1 Scope

This document specifies the inspections to be carried out on bridge and gantry cranes. It is intended to be used in conjunction with ISO 9927-1.

It does not cover inspection prior to the first use of a bridge or gantry crane.

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 4309, *Cranes — Wire ropes — Care and maintenance, inspection and discard*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1

competent person

person who has the necessary practical and theoretical knowledge and the necessary experience of the crane and equipment used in the lifting operation to carry out the function satisfactorily

Note 1 to entry: Some countries have legislation about the qualifications required for persons inspecting cranes.

4 General

In order to ensure safe operation of bridge and gantry cranes, their proper working and operational condition shall be maintained. Therefore, all cranes need to undergo regular inspections. This ensures that deviations from safe conditions are detected and can be rectified. The inspections shall be arranged by the user.

The regular inspections are

- daily inspections,
- frequent inspections,

- periodic inspections, and
- exceptional inspections.

If the crane is to be used for lifting a person, an appropriate inspection and risk assessment should be carried out before the lift is commenced.

The manufacturer's instructions for inspection shall take precedence over the requirements of this document.

[Annex A](#) gives an overview of the inspections (periodicity, content, persons in charge, results and reports).

5 Daily inspections

5.1 General

Daily inspections shall be carried out at the start of each shift during which the crane is to be used. These are to test the functionality of the crane and visually check for any defects (in general, no dismantling is required). It is essential that these are carried out from a position of safety. Visual and auditory checks are normally made from floor level unless a better permanent vantage point is available.

They shall be carried out by a competent person (e.g. the crane driver).

5.2 Content

The inspections shall include the following:

- a) the functioning of emergency stop controls;
- b) the functioning of all crane motion controls (generally without a load);
- c) the functioning of electrical isolator switch;
- d) the functioning of motion limiting devices, exercising caution while making checks in case of malfunction;
- e) the functioning of brakes (generally without a load);
- f) the functioning of limiting and indicating devices and audible warning devices, where fitted;
- g) a visual examination of the general condition of the crane structure and mechanisms, with particular attention to the ropes, chains or belts, the sheaves, the hook and its latch;
- h) any unusual noises or erratic movement during operation;
- i) for cab-controlled cranes and cranes with access to the bridge, a visual examination to ensure that the work areas on the crane are tidy and free from any item which might fall, that access and egress from the cab is adequate and that the appropriate fire-fighting equipment is available and serviceable;
- j) a visual examination of the condition of the cab controls, the pendant and associated cables or remote control station as appropriate; in particular, the condition of the casings and seals of pendant and remote controls, as damage can lead to false commands;
- k) where an intelligent self-diagnosis and fault-finding system is provided, checking any information on the display;
- l) a visual examination to ensure that there are no obstructions in the path of travel of the crane and power feed system and that adequate precautions are in place to prevent collisions; in particular for portal and semi-portal cranes, a check for any debris or other track obstructions;

- m) a visual examination to ensure that the crane signage is present and legible including the rated capacity, any individual hoist and hoist combination capacities and motion signage on crane/hoist structures corresponding to the operator controls.

In respect of d) above, when it is impractical, due to speed or distance, to check long travel limiting devices on every occasion, a check need only be made when the crane is to be used in their vicinity.

5.3 Results

Written records of all daily checks shall be kept and include at least the following information:

- identity of the crane;
- date of inspection;
- result of the check, i.e. whether or not the crane passed;
- name and signature of the person carrying out the check.

NOTE This can be kept to a minimum by, for example, completing a single line of a pro-forma record card located near the crane.

Any defect found shall be reported to a person authorized and competent to decide on the action to take (e.g. to leave the crane in use, repair it, make a more detailed inspection of a part of the crane or the whole crane or, in the event that the crane is not safe to use, to isolate and lock-off the crane to prevent further use until the problem has been resolved).

The crane record shall be updated with the result of the inspection and the action taken.

6 Frequent inspections

6.1 General

Frequent inspections shall comprise visual and auditory inspections as specified in 6.2, and the functional tests according to 5.2.

NOTE In general, no dismantling is required, although it might be convenient to schedule the inspections concurrently with planned preventive maintenance.

They shall be carried out by a competent person (e.g. an experienced technician; see ISO 9927-1).

6.2 Items to be inspected

In addition to any checks specified by the manufacturer, the following items, as summarized in Table 1, shall be inspected:

- a) all wire ropes for broken wires, flattening, basket distortion or other signs of damage, excessive wear and surface corrosion in accordance with ISO 4309, other lifting media such as chain or webbing belts for damage or excessive wear;
- b) all rope, chain or belt terminations, pins and retaining devices, and inspection of all sheaves, for damage, worn bushes or seizure;
- c) all hooks, safety latches and other load lifting attachments for damage, free movement or wear and a visual inspection of the hook shank thread and securing nut for undue movement, which might indicate wear or corrosion;
- d) the structure for damage, for example, deformation, cracked welds and loose bolts and other fasteners;
- e) all wheels and wheel flanges for damage and excessive wear;