



**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST ISO 4310:2012](#)

<https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012>

# INTERNATIONAL STANDARD

# ISO 4310

Second edition  
2009-06-01

---

---

## Cranes — Test code and procedures

*Appareils de levage à charge suspendue — Code et méthodes d'essai*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST ISO 4310:2012](https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012)

<https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012>



Reference number  
ISO 4310:2009(E)

© ISO 2009

**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST ISO 4310:2012](https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012)

<https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012>

**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

Page

Foreword.....	iv
<b>1</b> <b>Scope</b> .....	<b>1</b>
<b>2</b> <b>Normative references</b> .....	<b>1</b>
<b>3</b> <b>Types of testing and inspection procedures</b> .....	<b>1</b>
<b>4</b> <b>Test and inspection procedures</b> .....	<b>2</b>
<b>4.1</b> <b>Conformity tests and inspections</b> .....	<b>2</b>
<b>4.2</b> <b>Visual inspections</b> .....	<b>3</b>
<b>4.3</b> <b>Load lifting tests</b> .....	<b>3</b>
<b>4.3.1</b> <b>General</b> .....	<b>3</b>
<b>4.3.2</b> <b>Static tests</b> .....	<b>3</b>
<b>4.3.3</b> <b>Dynamic tests</b> .....	<b>4</b>
<b>4.3.4</b> <b>Stability tests</b> .....	<b>4</b>
<b>5</b> <b>Test conditions</b> .....	<b>5</b>
<b>6</b> <b>Test report</b> .....	<b>5</b>
<b>Annex A</b> (normative) <b>Stability test and test conditions for mobile cranes</b> .....	<b>6</b>
<b>Bibliography</b> .....	<b>10</b>

ITIH STANDARD PREVIEW  
(standards.iteh.ai)

[SIST ISO 4310:2012](https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012)

<https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012>

**ISO 4310:2009(E)****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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 4310 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 4, *Test methods*.

This second edition cancels and replaces the first edition (ISO 4310:1981), which has been technically revised.

ITEH STANDARD PREVIEW  
(standards.iteh.ai)

[SIST ISO 4310:2012](https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012)

<https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012>

# Cranes — Test code and procedures

## 1 Scope

This International Standard specifies tests, inspections and procedures for verifying the conformance of a crane with its operational specifications and its capability to lift rated loads (see ISO 7363).

This International Standard is applicable to the types of cranes designated in ISO 4306-1, prior to first use following manufacture or after modification or repair of the load-bearing structure or a component of an individual crane.

Where rated loads are governed by stability, a test procedure and test load are specified that permit stability margins to be easily verified.

## 2 Normative references

The following referenced documents are indispensable for the application 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 7363, *Cranes and lifting appliances — Technical characteristics and acceptance documents*

ISO 11629, *Cranes — Measurement of the mass of a crane and its components*

ISO 13202, *Cranes — Measurement of velocity and time parameters*

ISO 14518, *Cranes — Requirements for test loads*

## 3 Types of testing and inspection procedures

**3.1** Three types of test and inspection procedures are to be used to accomplish the aims of this International Standard:

- a) testing and inspection of cranes for conformity to specifications, as required in 4.1;
- b) visual inspection, as required in 4.2;
- c) testing of cranes for lifting loads, as required in 4.3.

**ISO 4310:2009(E)**

**3.2** Manufactured cranes ready for service shall be tested and inspected by the manufacturer prior to delivery. Cranes mounted or finally assembled at their places of use shall be tested and inspected prior to being put into service. Any agreements between the manufacturer/vendor and the purchaser<sup>1)</sup> shall include test and inspection.

In the case of serially manufactured cranes, the sample number of cranes to be tested and inspected should be established by mutual agreement between the manufacturer/vendor and the purchaser.

**4 Test and inspection procedures****4.1 Conformity tests and inspections**

When cranes are tested and inspected for conformity to specifications, the tests and inspections shall be performed according to the crane load characteristics as defined in ISO 7363.

The following parameters shall be verified:

- mass of the crane;
- distance from axis of rotation to the tilt axis;
- load lifting height;
- hook approaches;
- load lifting/lowering speed;
- precision load lowering speed;
- crane travelling speed;
- crab traversing speed;
- slewing speed;
- derricking/luffing time;
- telescoping time;
- cycle time (where necessary);
- functioning of limiting, indicating and safety devices;
- performance of driving medium, for example, motor currents under test load conditions.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST ISO 4310:2012](https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012)

<https://standards.iteh.ai/catalog/standards/sist/0ee331f9-398e-4a9d-b39f-d992a74decf7/sist-iso-4310-2012>

Verify the above parameters wherever practical.

Measure the mass of the crane and its components in accordance with ISO 11629.

Measure the velocities and time parameters in accordance with ISO 13202.

---

1) In legal terms, the manufacturer/vendor and the purchaser are understood to be the parties who signed the contract. The manufacturer/vendor is the party supplying the crane. The purchaser is the party who receives the crane according to the contract.



## 4.2 Visual inspections

A visual inspection shall be carried out, which should include checking for compliance with specifications and/or condition of all vital components, including the following:

- mechanisms, electrical and hydraulic equipment, safety devices, brakes, controls, lighting and signalling systems;
- crane steel structures and their connections, ladders, means of access, cabins, platforms;
- all guarding;
- hook or other load-handling attachments and their connections;
- ropes and their fastenings;
- sheave blocks, their pivots and fastening details, and jib linkage elements.

It shall not be inferred that the dismantling of any parts is necessary during this inspection. Nevertheless, the opening of covers (e.g. limit switch covers), as required for normal service and inspection purposes, shall be included.

This inspection procedure shall also include verification that acceptance documents have been submitted in compliance with ISO 7363, and that they have been checked.

## 4.3 Load lifting tests

### 4.3.1 General

Load lifting tests shall include the following:

- static tests;
- dynamic tests;
- stability tests (where applicable).

Test loads shall be composed, measured and applied during testing in accordance with ISO 14518.

### 4.3.2 Static tests

**4.3.2.1** Static tests are conducted for demonstrating the ability of the crane to lift rated loads and the competence of some structural components. Such tests shall be considered to be successful if no crack, permanent deformation, paint flaking or damage that affects the function and safety of the crane is visible and no connection has been loosened or damaged.

**4.3.2.2** Perform separate static tests for each hoisting mechanism and its concurrent operation, if permitted by the crane specifications, in such positions and configurations as will impose maximum rope loads, maximum bending moments and/or maximum axial forces, as applicable, on the major crane components. The test load, built up progressively, shall be lifted 100 mm to 200 mm from the ground and suspended for a period necessary for the test, but not less than 10 min, unless a higher value is required by national regulations or is specified in the purchase contract.

Where it is impossible to impose in one static test the maximum bending moments and/or axial forces in any major component of the crane, carry out an additional static test or tests that create the required forces in those components.