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Cranes — Requirements for test loads

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Foreword

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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 14518 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 4, *Test methods*.

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Cranes — Requirements for test loads

1 Scope

This International Standard establishes

- methods for composition and measurement of test loads;
- procedures for the application of test loads during the testing of cranes.

This International Standard was developed in addition to ISO 4310 and covers the types of cranes described in ISO 4306-1.

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 4310, *Cranes — Test code and procedures*

ISO 7363, *Cranes and lifting appliances — Technical characteristics and acceptance documents*

ISO 9373, *Cranes and related equipment — Accuracy requirements for measuring parameters during testing*

3 Terms and definitions

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

3.1

test load

load designed for crane testing, which may consist of one or several components

3.2

direct method of measuring the mass of a test load

determining the mass of a test load by weighing

3.3

combined method of measuring the mass of a test load

determining the mass of a test load by calculating the sum of the masses of its components as determined by the direct method and/or calculation

3.4

application of test load

action whereby the mass of a test load is transferred to the structure of the crane during the testing cycle

4 Composition and measurement of test loads

4.1 Composition and requirements for test loads

4.1.1 A test load may be a single unit or made up of several components.

4.1.2 The components of a test load may be

- individual units in the form of steel and/or other type (e.g. concrete) blocks;
- containers filled with water, sand or other granular material with homogeneous density.

NOTE A container for containing test loads can be any containment capable of safely bearing the test load (e.g. rubber bag with water, rigid box with sand, etc.).

4.1.3 A container used as a test load should

- be strong enough to withstand the pressure of the water or other granular filler material;
- be of a simple (rectangular or cylindrical) shape and shall have marks on interior wall to show the volume of water or other granular material to simplify the calculations;
- have an effective means to drain off the water or remove the filler material after testing.

4.2 Equipment for measuring the test load and accuracy of measurements

4.2.1 The equipment for measuring the mass of a test load shall be selected in compliance with national specifications.

4.2.2 The number of measurements and the accuracy of measuring the mass of a test load shall be in accordance with ISO 9373.

These requirements shall satisfy both the direct and combined methods of measuring the mass of a test load.

4.3 Measuring the mass of a test load by the direct method

4.3.1 The direct method can be used to measure both the mass of a single load and the total mass of a load composed of several components.

4.3.2 The test load to be measured shall be placed on a floor scale or lifted 100 mm to 200 mm off the floor by a crane equipped with a weight-measuring device. The result of the measurement shall be recorded in the report.

4.4 Determining the mass of a test load by the combined method

4.4.1 Determining the mass of a test load as a sum of masses of its components is recommended for use where the test load can be made up of several components with known masses, each of which was measured by the direct method.

In this case, the total mass of the test load shall be calculated as the sum of the masses of the components.

4.4.2 Determining the mass of a test load as the sum of the masses of a container and its content is recommended for use where the test load is a container filled with water, sand or other granular material.

The mass of the container shall be measured by the direct method. The mass of the content inside the container shall be weighed or calculated as the product of the density of the content by the volume it occupies. The volume of the content occupied in the container shall be calculated based on the volume marks. The total mass of the test load shall be calculated as the sum of the mass of the empty container and the mass of content. The result shall be recorded in the report.

5 Application of test loads

5.1 Preparation of test loads

Loads to be prepared for testing shall be in accordance with the crane rated capacity and the type of tests to be conducted (static tests, stability tests, or dynamic tests) as specified by ISO 4310.

5.2 Procedure

5.2.1 The procedure for loading the crane for testing shall be in accordance with the crane manufacturer requirements.

5.2.2 A gradually increasing test load may be used in static and stability tests, as specified by ISO 4310 and ISO 7363.

6 Test report

The test report on the measurement of a test load mass may be submitted as the independent document or as a part of the complete report about test of the crane and should include the following data:

- a) general data for the load;
- b) name and address of the organization/person that made the measurements and calculations of the load mass;
- c) date and place of the measurements;
- d) equipment used for the measurement and data of its registration and last calibration;
- e) result of the measurements and/or calculations of the test load mass.

Bibliography

- [1] ISO 4301-1, *Cranes and lifting appliances — Classification — Part 1: General*

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