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Cranes — Measurement of the mass of a crane and its components

*Appareils de levage à charge suspendue — Mesurage de la masse
d'une grue et de ses composants*



Reference number
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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.

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 11629 was prepared by Technical Committee ISO/TC 96, *Cranes*, Subcommittee SC 4, *Test methods*.

Cranes — Measurement of the mass of a crane and its components

1 Scope

This International Standard sets forth basic procedures for measuring the mass of a crane as a whole and/or of its components. This International Standard was prepared in addition to ISO 4310 and covers the types of cranes as defined 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 9373, *Cranes and related equipment — Accuracy requirements for measuring parameters during testing*

3 Terms and definitions

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

3.1

apparatus

complete set of equipment and devices required to determine the mass of a crane as a whole and/or of its components

3.2

simple measurement

measurement for which the result is read off one measuring device or is the sum of readings of several measuring devices operating simultaneously

3.3

complex measurement

measurement for which the result is the sum of the readings of several measuring devices used sequentially

4 Apparatus and its accuracy

4.1 The following apparatus may be used to measure the mass of a crane as a whole and/or of its components:

4.1.1 Scale.

4.1.2 **Dynamometers**, compression or extension.

4.1.3 **Supports**, knife-edge.

4.1.4 **Decking**.

4.1.5 **Level**.

4.1.6 **Auxiliary hoist**.

4.1.7 **Slings**, wire rope or chain.

4.2 Measuring apparatus used for measuring the mass of a crane as a whole and/or of its components shall be selected in accordance with the accuracy requirements in ISO 9373 and in compliance with national specifications.

4.3 Either simple or complex measurement of the mass of a crane and/or of its components may be used, but simple measurement is preferable.

5 Measuring the mass of the crane as a whole and/or the crane components

5.1 The crane, prepared for measuring the mass as a whole or disassembled into its individual components, shall have the equipment required for it to be used as specified in the manufacturer's instructions.

5.2 The mass of the crane as a whole and/or its components shall be measured by either simple or complex measurements.

The reaction forces are measured at points of support by measuring devices (Figures A.1 to A.4).

5.3 When measuring as specified in 5.2, the crane and/or its components shall be placed on the measuring devices as follows.

- All measured loads shall be vertical with no induced horizontal forces imparted on the measuring apparatus (Figures A.1 to A.3).
- The point of support shall be in the centre of the measuring apparatus (Figure A.1).
- The suspension line shall go through the centre of the mass being measured (Figure A.2).
- Decking and knife-edge supports should be placed at the supporting points for a more accurate load transfer from the mass being measured to the measuring apparatus (Figure A.3).
- For large cranes and/or components, the mass to be measured may be placed sequentially on measuring apparatus with the support surfaces (the right and left or the front and rear side), while the other side is placed on a firm surface next to measuring apparatus (Figure A.4).

5.4 Each measurement result shall be reduced by the mass of the decking, knife-edge supports, slings and other arrangements, as appropriate.

6 Measurement report

The report on the measurements of the mass of the crane as a whole and/or its components shall include the following data:

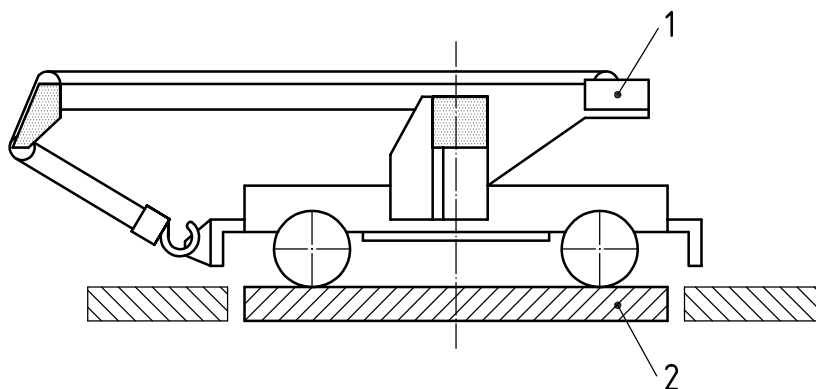
- crane and/or component type;
- name of the manufacturer;
- date of the measurement;
- description of the crane and/or its component;
- conditions of measurement (see section on test conditions as defined in ISO 4310);
- name of the person supervising the testing.

The results of measuring the mass of the crane and/or its components should be tabulated.

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Annex A (informative)

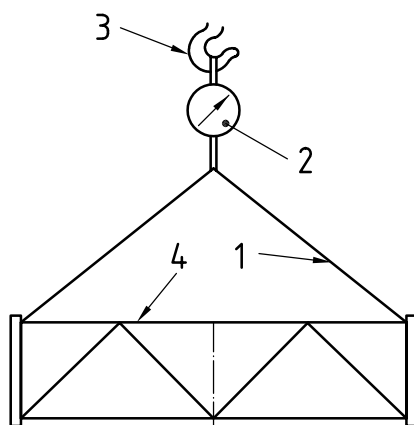
Examples to illustrate how the mass of a crane as a whole and/or its components should be measured



Key

- 1 crane
- 2 scale platform

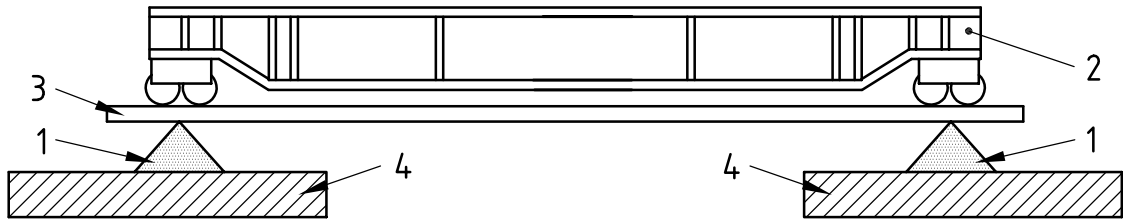
Figure A.1 — Measuring the mass of a crane (mobile) as a whole



Key

- 1 slings
- 2 dynamometer
- 3 hoist hook
- 4 crane component

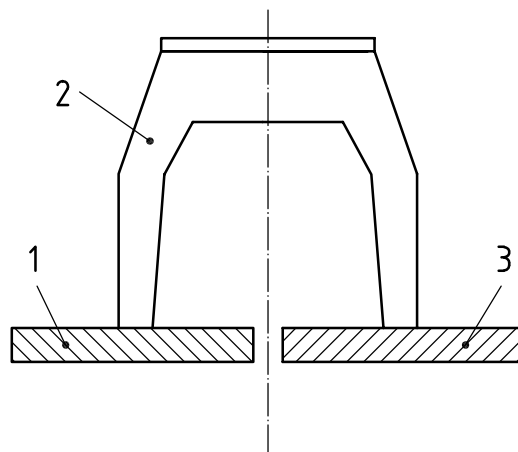
Figure A.2 — Measuring the mass of a crane component with a dynamometer



Key

- 1 knife-edge support
- 2 crane component
- 3 decking
- 4 compression dynamometer

Figure A.3 — Measuring the mass of a crane component with compression dynamometers working simultaneously



Key

- 1 supporting surface
- 2 crane component
- 3 compression dynamometer

Figure A.4 — Measuring the mass of a crane component with compression dynamometer working sequentially

Bibliography

- [1] ISO 7363, *Cranes and lifting appliances — Technical characteristics and acceptance documents*

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