INTERNATIONAL STANDARD

ISO 19355

First edition
2016-12-15

Ships and marine technology — Marine cranes — Structural requirements

Navires et technologie maritime — Grues maritimes — Exigences structurelles

Reference number
ISO 19355:2016(E)

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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 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 8, *Ships and marine technology*, Subcommittee SC 4, *Outfitting and deck machinery*.

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Ships and marine technology — Marine cranes — Structural requirements

1 Scope

This document specifies the structural requirements for marine cranes of metal construction.

This document is applicable to the following types of marine cranes:

— deck cranes mounted on ships for handling cargo or containers in harbour or sheltered water conditions;

— floating cranes or grab cranes mounted on ships, barges or pontoons for operating in harbour conditions;

— engine room cranes and provision cranes, etc. mounted on ships (including floating docks) for handling equipment and stores in harbour conditions.

NOTE Marine cranes in other types can refer to this document.

This document is not applicable to the following:

— minimum ambient operating temperatures below –20 °C;

— maximum ambient operating temperatures above +45 °C;

— loads from accidents or collisions;

— lifting operations below sea level;

— transport, assembly, dismantling and decommissioning of cranes;

— lifting accessories, i.e. any item between the crane and the load;

— lifting operations involving more than one crane;

— hand powered cranes;

— emergency rescue operations;

— shore-side cargo handling cranes;

— portable cranes on board;

— lifting appliances for lifeboats, liferafts accommodation ladders and pilot ladders;

— launching appliances for survival craft and rescue boats;

— gangways, accommodation and pilot ladders and their handling appliances.

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 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

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ISO 5817, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections*

ISO 6157-1, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements*

ISO 8566-1, *Cranes — Cabins and control stations — Part 1: General*

ISO 8566-4, *Cranes — Cabins — Part 4: Jib cranes*

ISO 19354, *Ships and marine technology — Marine cranes — General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3828, ISO 4306-1, ISO 8431 and ISO 19354 apply.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 General requirements

4.1 General

4.1.1 The general requirements of the crane structure shall conform to ISO 19354.

4.1.2 Materials, structural types and construction means shall be selected properly in the design of the crane to meet the strength (including fatigue strength), stability, stiffness and safety requirements of the structural elements during transportation, installation and use, as well as the requirements of protection against fire and corrosion.

4.1.3 The composition and arrangement of the crane shall comply with the regulations of applicable organizations, such as classification societies, and satisfy the operational requirements of the marine crane to ensure the safety and reliability.

4.1.4 Types of steel and connecting materials shall be noted in the design document; for vital stressed elements, mechanical properties, chemical composition and other additional guarantee items required for steel products shall also be noted. Weld forms and quality grades required shall also be noted.

4.2 Materials

4.2.1 The materials shall be applicable to the use and manufacture of the marine crane. The selection of steel shall take into account such factors as the importance of construction, load characteristics, stress conditions, connection modes, ambient temperatures for the operation of the crane and steel thickness. The use of hull steel plates, forgings, and castings as elements shall comply with the applicable requirements, such as the requirements of classification societies.

4.2.2 The materials shall be manufactured by the approved manufacturer (e.g. approved by classification societies) with the required material quality certificate. The materials of the main structural elements shall be of batch member designations. Various tests on materials, such as the performance test, low-temperature impact test, test on the thickness direction of steel plates, ultrasonic inspection and surface quality inspection shall also comply with the applicable requirements; the test report and certificates shall conform to the regulation.

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