# INTERNATIONAL STANDARD

First edition 2019-06

### Ships and marine technology — Marine cranes — Manufacturing requirements

Navires et technologie maritime — Grues marines — Exigences de fabrication

# iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 21125:2019 https://standards.iteh.ai/catalog/standards/sist/10f5c3bc-33c8-476f-b2f0e1a6cf5f97cd/iso-21125-2019



Reference number ISO 21125:2019(E)

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Published in Switzerland

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### Foreword

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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 <a href="https://www.iso.org/directives">www.iso.org/directives</a>).

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This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 4, *Outfitting and deck machiner* 9.0 21125:2019 https://standards.iteh.ai/catalog/standards/sist/10f5c3bc-33c8-476f-b2f0-

Any feedback or questions on this document **should be directed to the user's national standards body**. A complete listing of these bodies can be found at <u>www.iso.org/members.html</u>.

# Ships and marine technology — Marine cranes — Manufacturing requirements

### 1 Scope

This document specifies the general technical manufacturing 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 conditions;
- floating cranes or grab cranes mounted on 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 of crane can refer to this document.

This document does not apply to cranes manufactured to operate in:

- ambient operating temperatures below -20°C; D PREVIEW
- ambient operating temperatures above +45°G; iteh.ai)
- lifting operations below sea level;
- <u>ISO 21125:2019</u>
  lifting operations involving more/than\_one/trane;t/10f5c3bc-33c8-476f-b2f0-

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- emergency rescue operations;
- shore-side cargo handling cranes;
- lifting lifeboats, liferafts accommodation ladders, pilot ladders, gangways and their handling appliances;
- launching appliances for survival craft and rescue boats.

### 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 3828, Shipbuilding and marine structures — Deck machinery — Vocabulary and symbols

ISO 4306-1, Cranes — Vocabulary — Part 1: General

ISO 19354:2016, Ships and marine technology — Marine cranes — General requirements

ISO 19355, Ships and marine technology — Marine cranes — Structural requirements

ISO 19356, Ships and marine technology — Marine cranes — Test specifications and procedures

ISO 19360, Ships and marine technology — Marine cranes — Technical requirements for rigging applications

### 3 Terms and definitions

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

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

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

### 3.1

### oil sealing

process of coating the machining surface of metal components with anti-corrosion grease to prevent corrosion

### 4 General requirements

The manufacturing of marine cranes shall be in accordance with ISO 19354, ISO 19355, ISO 19356 and ISO 19360.

### 5 Fabrication standard

### 5.1 Materials iTeh STANDARD PREVIEW

### 5.1.1 Materials of marine cranes shall meet the requirements of 43 in ISO 19354:2016.

**5.1.2** Detailed test records shall be kept for all the specified materials requiring testing. Inspection certificates shall be provided for the inspected materials required by a ship inspection institution. e1a6cf5f97cd/iso-21125-2019

### 5.2 Welded connection of steel plates

**5.2.1** The connection of components of different thickness shall be in accordance with <u>Table 1</u>.

### Table 1 — Requirements for the connection of components of different thickness

Butting form	Transitional slope	
	$a:b \le 1:3$	
	<i>a</i> : <i>b</i> ≤ 1:3	
NOTE. If the thickness difference is less than 4 mm, the connection can be done by its shape evenly within the welding width.		

**5.2.4** The mismatch allowable value of single-sided or double-sided butt welding bevel is given in Table 2.



Table 2 — Allowable value for mismatch of different butting forms

**5.2.5** During the cold working and assembly of the metal structure, the parallel distance of butt welded seams shall be no less than 200 mm, which shall also avoid the contact between sharp angles; the parallel distance between butt welded seams and angle welded seams shall be no less than 50 mm.

**5.2.6** The unnoted allowance of the assembly dimensions of the metal structure shall meet the following requirements:

- a) the unnoted allowance of dimensions shall comply with the requirements in <u>Table 3</u>;
- b) the unnoted allowance of angles shall comply with the requirements in Table 4;
- c) the unnoted allowance of aligning degree, planarity and parallelism shall comply with the requirements in <u>Table 5</u>;
- d) the unnoted allowance of circular degree for butt parts shall comply with the requirements in <u>Table 6</u>.

					Dimensio	ons in millimetres
Nominal dimension	>30~315	>315~1 000		>1 000~2	2 000	>2 000~4 000
Allowance	±2	±3		±4		±6
Nominal dimension	>4 000~8 000	>8 000~12 000	>12 000~	~16 000	>16 000~20 000	>20 000
Allowance	±8	±10	±12		±14	±16

### Table 3 — Unnoted allowance of dimensions

### Table 4 — Unnoted allowance of angles

Length of the short side(mm)	≤315	>315~1 000	>1 000
Allowance (')	±45'	±30'	±20'
Allowance (mm/m) <sup>a</sup>	±13	±9	±6

<sup>a</sup> The allowance unit shall be given in ° or ' if the angle unit in the technical document provided by the manufacturers is given in ° or '. The allowance unit shall be given in mm/m if only linear dimensions are given on the technical document provided by the manufacturers without the angles marked.

### Table 5 — Unnoted allowance of aligning degree, planarity and parallelism

Dimension in millimetres

Nominal dimension	>30~120	>120~315	>315~1 000	>1 000~2 000	>2 000~4 000
Allowance	1	15 CTAN		4,57	6
Nominal dimension	>4 000~8 000	>8 000~12 000	>12 000~16 000	>16 000~20 000	>20 000
Allowance	8	10	12	14	16

#### ISO 21125:2019

#### Table 6 HUnnoted allowance of circular degree for butt parts

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Dimension in millimetres

Cylindrica	l	Coniform		
Nominal diameter	Allowance	Nominal diameter of large diameter	Allowance	
<2 000	3	<2 000	4	
≥2 000	4	≥2 000	5	

### 5.3 Machinery processing

**5.3.1** The metal structure of marine cranes shall be processed according to the requirements of technical document provided by the manufacturers. The corresponding inspection records shall be kept for important dimensions for the shaft, holes, surface which need to be mated in installation of lifting mechanism, luffing mechanism, rotation mechanism, turning supporting, luffing cylinder, sheave.

**5.3.2** During shipboard installation, planarity of the flange surface of the base (or twin platform, eccentric platform) shall be checked to meet the requirements from bearing manufactures. If the requirements are not met, flanges need to be grinded. The values in <u>Table 7</u> can be used as a reference.

Dimensions in millimetres

SN	Flange diameter	Planarity
1	<1 000	≤0,10
2	1 000~1 500	≤0,12
3	1 500~2 000	≤0,15
4	2 000~2 500	≤0,17
5	2 500~4 000	≤0,20
6	4 000~6 000	≤0,30
7	6 000~8 000	≤0,40

### 5.4 Anticorrosion and oil seal

**5.4.1** Metal surfaces shall be visually inspected before oil seal is applied. Oil seal shall be applied only when no rust is found. Oil sealing methods shall be continuous and uninterrupted.

**5.4.2** For temporary rust prevention and rust prevention during processing intervals, metal surfaces shall be rust-free and dust-free before oil sealing. Rust on metal surface can be removed using zero iron gauze. After the rust removal, the metal surface can be cleaned using alkaline cleaners.

# 6 Mechanical, hydraulic and electrical assembly

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### 6.1 Field requirements

A specific workshop and assembly platform shall be provided for the assembly of hydraulic components and electrical components.

### 6.2 Mechanical assembly

**6.2.1** According to the installation schematic technical document provided by the manufacturers from the parts list, record the type, manufacturing number and furnace batch number of the main parts.

**6.2.2** Before the assembly, clean all parts and purchased components to ensure that dirt and metallic shavings are removed. Ensure all burs and sharp corners are removed from mating surfaces. If defects such as abrasion, scoring or rust are present on mating surfaces, the part should not be used.

**6.2.3** Clean all fastener and lubrication holes with compressed air or similar means to ensure there are no debris present.

**6.2.4** For the parts with mating requirements, mating component dimensions shall be checked using an appropriate metering device before the assembly, and recorded for future checks.

**6.2.5** For the hoisting mechanism, a luffing winch shall be applied according to the rotation direction of the drum specified in the technical document provided by the manufacturers. There shall be no oily dirt, oil mark or other dirt on the brake ribbon of the external brake. During the installation, the distance of the two sides of the brake ribbon shall be adjusted equally. When the brake ribbon looses, the clearance shall comply with the requirements of the technical document provided by the manufacturers.