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# Ships and marine technology — Deck machinery — Multifunctional manipulator

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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.

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This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 4, *Outfitting and deck machinery*.

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 <a href="https://www.iso.org/members.html">www.iso.org/members.html</a>.

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## Ships and marine technology — Deck machinery — Multifunctional manipulator

#### 1 Scope

This document specifies the classification, requirements, test methods and inspection rules, as well as marking, packaging, shipping and storage requirements for multifunctional manipulators for deck operations (hereinafter referred to as "multifunctional manipulators").

It is applicable to the design, manufacture and acceptance of double folding multifunctional manipulators for clamping and tidying the anchor chain and ropes in deck operations.

#### 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 780, Packaging — Distribution packaging — Graphical symbols for handling and storage of packages

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

ISO 13849-1:2015, Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design

IEC 60529, Degrees of Protection Provided By Enclosure (IP Code)

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in 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 <a href="https://www.iso.org/obp">https://www.iso.org/obp</a>
- IEC Electropedia: available at <a href="http://www.electropedia.org/">http://www.electropedia.org/</a>

#### 3.1

jib

second movable arm of the multifunctional manipulator used to lift and hook tension free ropes

#### 3.2

#### multifunctional head

operating device of the multifunctional manipulator used to grasp, clamp and tidy the anchor chain and ropes

#### 3.3

#### multifunctional boom

second movable arm of the multifunctional manipulator used to connect the *multifunctional head* (3.2)

#### 3.4

#### main boom

first movable arm of multifunctional manipulator used to connect the slewing tower body and the second movable arm of the double folding boom

#### 3.5

#### luffing

movement made by the *main boom* (3.4), *jib* (3.1) and *multifunctional boom* (3.3) of the multifunctional manipulator in changing the range in a reach direction

#### 3.6

#### safe working load

#### **SWL**

maximum static load (kN) that the multifunctional manipulator can hoist or the *multifunctional head* (3.2) operates under design working conditions

#### 3.7

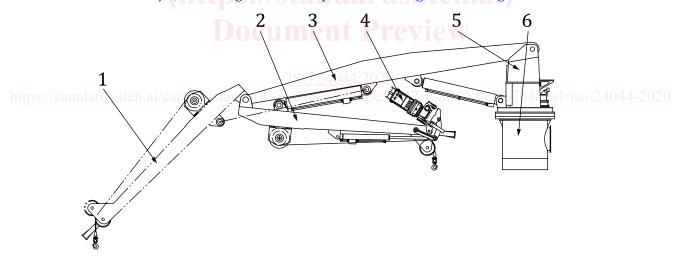
#### travelling mechanism

mechanism of the travelling multifunctional manipulator used to complete the movement with load along the guide rail, consisting of carrier, roller train, guide pulley set, travel driving unit, cable reel, pay-out stand, rail clamping device, speed control valve, buffer, and lubrication line

#### 4 Classification

#### 4.1 Structural types

- **4.1.1** Multifunctional manipulators can be divided into fixed and travelling types, according to their structure (installation) form.
- **4.1.2** Multifunctional manipulators can be divided into multifunctional boom only and combined multifunctional boom and jib, according to their composition. See Figure 1 and Figure 2.



#### Key

- 1 jib
- 2 multifunctional boom
- 3 main boom

- multifunctional head
- 5 slewing tower body
- 6 fixed base

Figure 1 — Fixed multifunctional manipulator with combined multifunctional boom and jib