



**International
Standard**

ISO 16173

**Ships and marine technology —
Jacking system appliances on self-
elevating unit — Rack pinion leg
fixation system**

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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 document 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).

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For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

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 www.iso.org/members.html.

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Ships and marine technology — Jacking system appliances on self-elevating unit — Rack pinion leg fixation system

1 Scope

This document specifies requirements on the composition, classification, equipment, inspection, testing, designation, marking and documentation for the rack pinion leg fixation system of a self-elevating unit.

This document is applicable to the design, manufacture, inspection and acceptance of leg fixation systems of self-elevating units.

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 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

ISO 3662, *Hydraulic fluid power — Pumps and motors — Geometric displacements*

ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

IEC 60079-1, *Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d"*

IEC 60092-301, *Electrical installations in ships — Part 301: Equipment — Generators and motors*

IEC 60092-302-2, *Electrical installations in ships — Part 302-2: Low voltage switchgear and controlgear assemblies — Marine power*

IEC 60092-360, *Electrical installations in ships — Part 360: Insulating and sheathing materials for shipboard and offshore units, power, control, instrumentation and telecommunication cables*

IEC 60529, *Degrees of protection provided by enclosures (IP code)*

IACS Rec. No.68, *Guidelines for non-destructive testing of hull and machinery steel forgings*

3 Terms and definitions

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

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

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

3.1

self-elevating unit

mobile offshore unit with movable legs capable of raising its hull above the surface of the sea and lowering it back into the sea

3.2

rack pinion leg fixation system leg fixation system

mechanical system to keep the hull of a *self-elevating unit* (3.1) and legs stationary, where the unit is in the elevated or the afloat condition

Note 1 to entry: Its main function is to establish a rigid connection between the hull and the pile legs by meshing and fixing the *rack chocks* (3.4) with the pile leg racks after elevating the self-elevating unit or legs.

3.3

vertical design load

maximum working load that the *leg fixation system* (3.2) is able to withstand continuously in the vertical direction

3.4

rack chock

important load which, during locking operation, is pushed by a power unit, engaged and fixed with pile leg racks, and can withstand the pile leg supporting force and transfer the force to the unit hull through the mechanical fixation mechanism, so as to keep rigid connection between hull and the pile legs

4 Composition and classification

4.1 Composition

4.1.1 The leg fixation system mainly includes the mechanical fixation mechanism, power unit and control system.

4.1.2 The mechanical fixation mechanism generally includes the rack chock, screw and nut, wedge block (top/bottom, if any) and hydraulic cylinder.

4.1.3 The power unit is generally divided into an electric power unit and hydraulic power unit. The electric drive unit generally includes an electric motor and electromagnetic brake, while the hydraulic drive unit generally includes a hydraulic motor and hydraulic pump station.

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4.1.4 The control system generally includes the main control system, sub-control system and remote-control box.

4.2 Classification

4.2.1 The leg fixation system is divided into two types according to the structural types.

- a) Type A — leg fixation system with wedge blocks; see [Figure 1](#).
- b) Type B — leg fixation system without wedge block; see [Figure 2](#).