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**Ships and marine technology — Loose  
gear of lifting appliances on ships —  
General requirements**

*Navires et technologie maritime — Accessoires mobiles des appareils  
de levage sur les navires — Exigences générales*

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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 [www.iso.org/directives](http://www.iso.org/directives)).

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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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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 — Loose gear of lifting appliances on ships — General requirements

## 1 Scope

This International Standard specifies the general requirements for loose gear of lifting appliances on ships.

This International Standard is applicable to lifting appliances on ships.

## 2 Terms and definitions

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

### 2.1

#### **loose gear**

gear which is not permanently attached to the lifting appliances, such as chains, triangle eyeplates, hooks, blocks, shackles, swivels, sockets, preventer guys with patent clips, and rigging screws

Note 1 to entry: Lifting beams, spreaders, frames, and similar items of equipment are also regarded as loose gear.

### 2.2

#### **safe working load**

certified load for which the component has been designed and tested

Note 1 to entry: This certified load should be not less than the maximum load to which the component will be subjected when the appliance of which it forms part is operating at its SWL.

## 3 Technical requirements

### 3.1 Materials

**3.1.1** Loose gear, such as hooks, lifting eyes, swivels, and shackles shall not be made of cast iron or cast steel.

**3.1.2** Forgings shall be normalized or normalized and tempered or otherwise heat-treated according to a method appropriate to the properties of materials. Shackle materials shall use solid steel manufactured by Martin furnaces, electric furnaces, or oxygen top blown converters; it is recommended to use the electroslag remelting process.

### 3.2 Blocks

**3.2.1** Blocks shall be so constructed to minimize the clearance between sheaves and enclosure partition plates to prevent ropes from jamming.

**3.2.2** Effective lubricating shall be maintained to the blocks during operation. Provision shall be made for lubricating all bearings and swivel head fittings without dismantling the block.

**3.2.3** Snatch blocks shall not be used in the lifting appliance systems.

**3.2.4** The ratio of sheave diameter measured at the bottom of rope groove to the diameter of rope shall not be less than that as given in [Table 1](#).

Table 1 — Ratio of sheave diameter to rope diameter

Use of sheaves		Sheave diameter/rope diameter	
		Running ropes	Static ropes
Wire ropes	Derrick rigs (including derrick cranes)	13	8
	Cranes and submersible handling systems	19	8
Fibre ropes		6	

### 3.3 Other technical requirements

**3.3.1** “C” type hooks shall be so designed as to prevent the risk of the hook from catching on the ship’s structure or other obstruction when hoisting by means of a hook shelter. Hooks for special purposes, such as for lifting freight containers, shall comply with the appropriate recognized International Standards.

**3.3.2** Swivel shall be provided between the hook and short link chain or other item for lifting cargo, and capable of rotating freely and preventing from getting loose.

**3.3.3** It is recommended that heavy load such as bob weight or short link chain be attached to the hook, such that disorder of reeling rope will not occur when the winch is working in no load condition.

**3.3.4** The shackle pin end shall be screwed and provided with devices to prevent from getting loose. Shackles used for attaching the lifting gear (such as hooks, bob weight, or short link chains for lifting cargo, etc.) shall be provided with countersunk pins.

**3.3.5** The thickness of triangle plates connecting short link chains and cargo runners shall be appropriate to the associated shackle so as to minimize the clearance between them.

**3.3.6** The construction of rigging screws shall be capable of preventing their end fittings from turning. The end fittings of the rigging screw shall be forged in one piece. The rigging screws of hook type end fittings shall not be used in the lifting appliance system.

**3.3.7** Chains used as span chain or as part of preventer guy shall be of studless long link chains. Preventer guy with patent clip shall be fitted with stop device; the distance between the device and the end clip shall be as short as practical and, in general, not greater than one pitch of the clips.

**3.3.8** The items of loose gear, such as eyes, links, shanks, straps and hooks, etc., that have a wastage over 10 % of their original dimensions and a wastage of pins over 6 % of their original dimensions, or cracks or permanent deformation, and any breakage or cracks on the sheaves, shall be replaced or repaired immediately.

**3.3.9** Welding shall not be used to lengthen, alter, or repair chains, hooks, links, shackles, or swivels.

## 4 Test requirements

**4.1** Where testing machines are used to apply test loads, they shall be calibrated biennially by a recognized unit and the accuracy shall be within  $\pm 2$  %. Where test weights are used to apply test loads, the weights shall be certified as accurate to within  $\pm 2$  %.

**4.2** Every item of loose gear shall be proof-tested. The proof load applied to each item of loose gear shall be as the requirements given in [Table 2](#) and associated notes. Proof load shall be applied to each item with a testing machine or test weight for a duration of not less than 5 min.