
**Ships and marine technology — Ship's
mooring and towing fittings — Seats
for mooring chocks**

*Navires et technologie maritime — Corps-morts et ferrures de
remorquage de navires — Sièges pour chaumards*

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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).

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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 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.

Introduction

The seat for mooring chocks is a seat type of ship's mooring and towing fitting installed on the shipside to lead the mooring and towing rope from the ship's inboard to outboard.

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Ships and marine technology — Ship's mooring and towing fittings — Seats for mooring chocks

1 Scope

This document specifies the types, nominal sizes, dimensions and materials, as well as construction, manufacturing and marking requirements, for the seats for mooring chocks installed to lead the mooring and towing rope of a ship.

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.

IMO Circular MSC/Circ.1175, *Guidance on shipboard towing and mooring equipment*

3 Terms and definitions

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

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

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

3.1

safe working load

SWL

safe load limit (maximum permissible load) of the fittings used for mooring and towing

4 Classification

4.1 Type

The seat for mooring chocks shall be classified by its installation site as belonging to one of the following types:

- a) Type A: seat for deck-mounted mooring chock;
- b) Type B: seat for deck and side shell-mounted mooring chock;
- c) Type C: brackets for bulwark-mounted mooring chock.

4.2 Nominal sizes

The nominal sizes of seats for mooring chocks are denoted by reference to the same nominal sizes of mooring chocks (ISO 13713). For the seats for mooring chocks having the same size, the letter of the alphabet, i.e. A, B or C, is followed by the nominal size for the different safe working loads (SWL).

The nominal sizes are:

250 × 200, 300 × 250, 350 × 250, 400 × 250, 450 × 250, 500 × 250A, 500 × 250B

5 Dimensions

The seats for mooring chocks shall have dimensions and particulars in accordance with [Tables 1, 2 and 3](#), and [Figures 1, 2 and 3](#).

6 Materials

Weldable steel plates having a yield point of not less than 235 N/mm² shall be used for manufacturing the seats for mooring chocks.

7 Construction

The foundation of the mooring chocks shall be determined by considering the actual load direction. The foundation and welding connections to the hull shall guarantee a reliable transmission of the maximum loading of the mooring chocks to the hull construction without any plastic deformation or cracks.

8 Manufacturing and inspection

8.1 All surfaces of the seats for mooring chocks, including welded surfaces, shall be free from any visible flaws or imperfections.

8.2 All surfaces in contact with the ropes shall be free from surface roughness or irregularities likely to cause damage to the ropes by abrasion.

8.3 The seats for mooring chocks shall be coated externally with an anti-corrosion protective finish.

9 Marking

9.1 The SWL for the intended use of the seats for mooring chocks shall be noted in the towing and mooring plan available on board for the guidance of the shipmaster, as specified in IMO circular MSC/Circ.1175.

9.2 The actual SWL on board shall be determined by considering the under deck reinforcement, and it shall be marked on the towing and mooring plan. The actual SWL shall not be over the SWL indicated in this document.

9.3 The seats for mooring chocks shall be clearly marked with their SWL by weld bead or equivalent. The SWL shall be expressed in tonnes (symbol 't') and be placed so that it is not obscured during operation of the fitting.

EXAMPLE SWL XXX t

9.4 The SWL mark shall be placed on the seat of the chock or on the deck.

- 1 seat for mooring chock
- 2 seat for single mooring chock
- 3 seat for double mooring chock
- a SWL marking.
- b Deck.
- c Under carling.
- d Smooth grinding.
- e Thickness of mooring chock (refer to ISO 13713).
- f Alternative application method.
- g Minimum height (may be adjusted depending on welding workability).

The height of seat for the mooring chock (H) shall be determined in accordance with the hull construction design. K.L is the knuckle line.

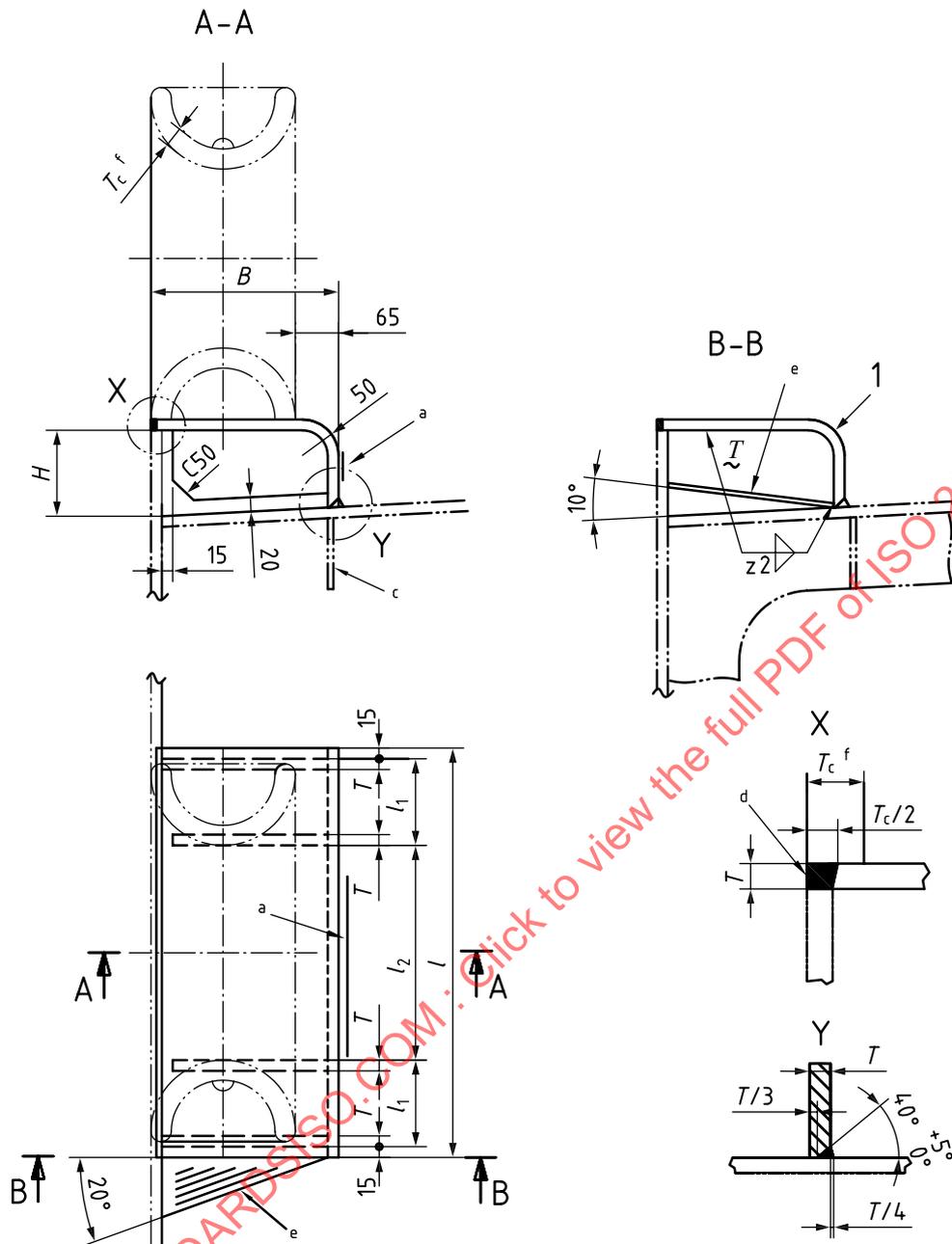
Figure 1 — Type A — Seats for deck-mounted mooring chocks

Table 1 — Dimensions and SWL of Type A — Seats for deck-mounted mooring chocks

Dimensions in millimetres

| Nominal size $L \times H$ | I | I_1 | I_2 | B | T | T_1 | Welding leg length ^a | | | SWL ^b | | Calculated weight ^c kg |
|------------------------------|-----|-------|-------|-----|-----|-------|---------------------------------|-------|-------|------------------|-----|--------------------------------------|
| | | | | | | | z_1 | z_2 | z_3 | kN | t | |
| 250 × 200 | 494 | 87 | 290 | 225 | 20 | 16 | 10 | 14 | 12 | 353 | 36 | 90 |
| 300 × 250 | 588 | 107 | 344 | 265 | 22 | 24 | 11 | 16 | 17 | 491 | 50 | 125 |
| 350 × 250 | 660 | 118 | 394 | 285 | 22 | 24 | 11 | 16 | 17 | 589 | 60 | 143 |
| 400 × 250 | 734 | 130 | 444 | 305 | 22 | 30 | 11 | 16 | 21 | 736 | 75 | 171 |
| 450 × 250 | 818 | 141 | 506 | 325 | 28 | 34 | 14 | 20 | 24 | 981 | 100 | 231 |
| 500 × 250A | 892 | 151 | 560 | 345 | 30 | 36 | 15 | 21 | 26 | 1 128 | 115 | 270 |
| 500 × 250B | 904 | 153 | 568 | 345 | 34 | 40 | 17 | 24 | 28 | 1 373 | 140 | 302 |

- ^a The welding method may be changed based on the same welding volume/strength.
- ^b The SWLs shown are for reference only. These are based on the loadings as mentioned in [Annex A](#). The strength of the seat for the closed chocks was evaluated on the basis of a seat height of 300 mm.
The "SWL" which is marked on the fitting may be adjusted depending on the actual loading conditions of mooring rope under the agreement between the user and the manufacturer.
- ^c The calculated weight (mass) is for reference only, which was calculated on the basis of a seat height of 300 mm for single chock excluding the mooring chock itself.



Key

- 1 seat for mooring chock
- a SWL marking.
- b Deck.
- c Under carling.
- d Smooth grinding.
- e Slant plate (may be provided to the mooring chock seat in order to avoid accumulation of water, as optional).
- f Thickness of mooring chock (refer to ISO 13713).

The height of seat for the mooring chock(H) shall be determined in accordance with the hull construction design.

Figure 2 — Type B — Seats for deck and side shell-mounted mooring chocks

Table 2 — Dimensions and SWL of Type B — Seats for deck and side shell-mounted mooring chocks

Dimensions in millimetres

| Nominal size <i>L × H</i> | <i>I</i> | <i>I</i> ₁ | <i>I</i> ₂ | <i>B</i> | <i>T</i> | Welding leg length ^a | | SWL ^b | |
|------------------------------|----------|-----------------------|-----------------------|----------|----------|---------------------------------|-----------------------|------------------|-----|
| | | | | | | <i>z</i> ₁ | <i>z</i> ₂ | kN | t |
| 250 × 200 | 494 | 87 | 290 | 225 | 20 | 10 | 14 | 353 | 36 |
| 300 × 250 | 588 | 107 | 344 | 265 | 22 | 11 | 16 | 491 | 50 |
| 350 × 250 | 660 | 118 | 394 | 285 | 22 | 11 | 16 | 589 | 60 |
| 400 × 250 | 734 | 130 | 444 | 305 | 22 | 11 | 16 | 736 | 75 |
| 450 × 250 | 818 | 141 | 506 | 325 | 28 | 14 | 20 | 981 | 100 |
| 500 × 250A | 892 | 151 | 560 | 345 | 30 | 15 | 21 | 1 128 | 115 |
| 500 × 250B | 904 | 153 | 568 | 345 | 34 | 17 | 24 | 1 373 | 140 |

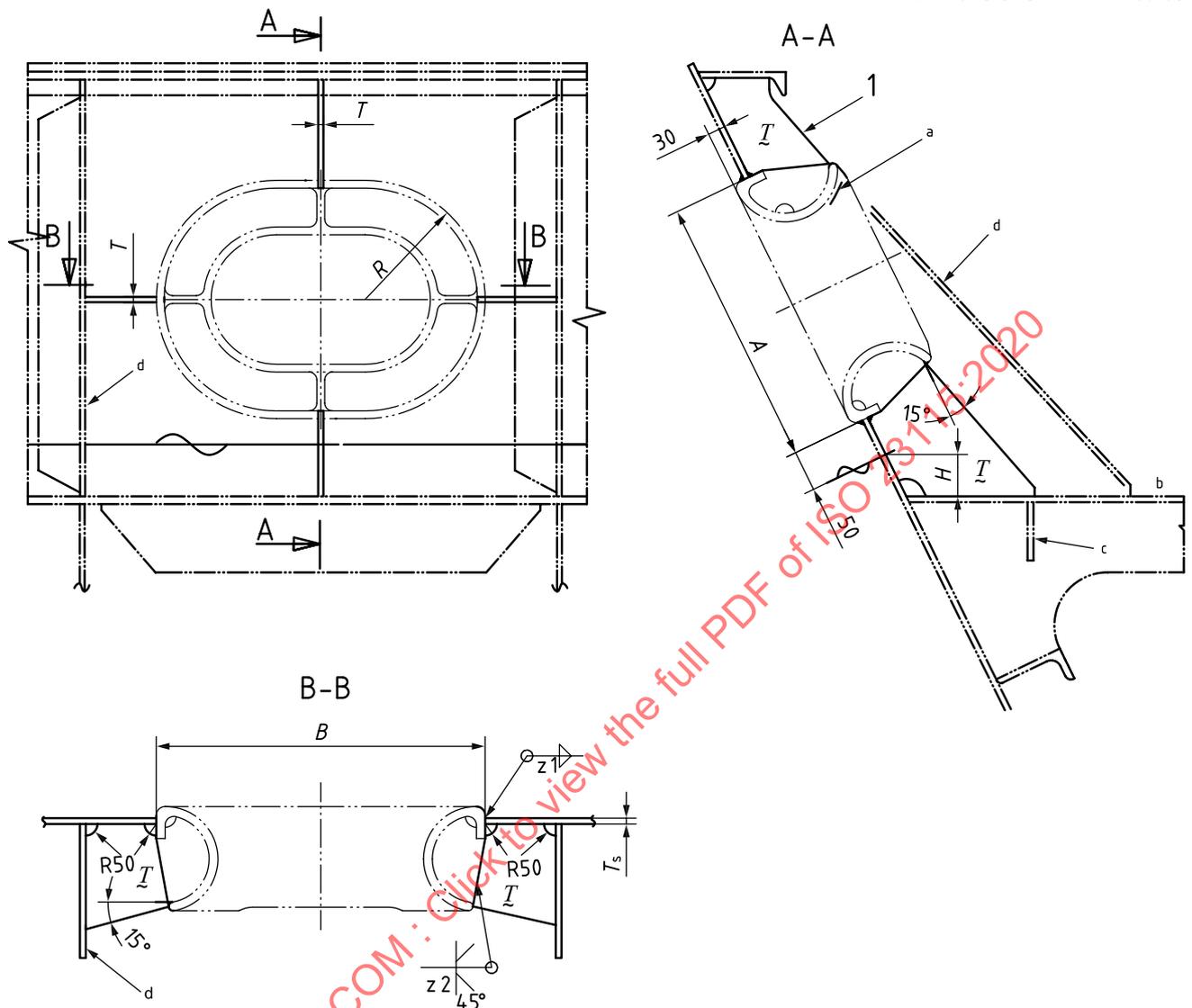
^a The welding method may be changed based on the same welding volume/strength.

^b The SWLs shown are for reference only. These are based on the loadings as mentioned in Annex A. The strength of the seat for the closed chocks was evaluated on the basis of a seat height of 300 mm.

The “SWL” which is marked on the fitting may be adjusted depending on the actual loading conditions of mooring rope under the agreement between the user and the manufacturer.

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Dimensions in millimetres



Key

- 1 brackets for mooring chock
- a SWL marking.
- b Deck.
- c Under carling.
- d Bulwark stay.

The height of mooring chock(H) shall be determined in accordance with the hull construction design.

Figure 3 — Type C — Brackets for bulwark-mounted mooring chocks

Table 3 — Dimensions and SWL of Type C — Brackets for bulwark-mounted mooring chocks

Dimensions in millimetres

| Nominal size <i>L × H</i> | Opening size of Bulwark | | | Thickness of bracket ^a <i>T</i> | Thickness of side shell (Ref- erence only) <i>T_S</i> | Welding leg length ^b | | SWL ^c | |
|------------------------------|----------------------------|----------|----------|--|--|------------------------------------|----------------------|------------------|-----|
| | <i>A</i> | <i>B</i> | <i>R</i> | | | <i>z₁</i> | <i>z₂</i> | kN | t |
| 250 × 200 | 404 | 454 | 202 | 20 | 14 | 6 | 8 | 353 | 36 |
| 300 × 250 | 470 | 520 | 235 | 24 | 14 | 8 | 9,5 | 491 | 50 |
| 350 × 250 | 486 | 586 | 243 | 25 | 14 | 9 | 10 | 589 | 60 |
| 400 × 250 | 506 | 656 | 253 | 32 | 14 | 10 | 13 | 736 | 75 |
| 450 × 250 | 538 | 738 | 269 | 36 | 16 | 10 | 14,5 | 981 | 100 |
| 500 × 250A | 566 | 816 | 283 | 36 | 16 | 10 | 14,5 | 1 128 | 115 |
| 500 × 250B | 582 | 832 | 291 | 41 | 16 | 10 | 16,5 | 1 373 | 140 |

^a The thickness of brackets may be adjusted based on the same strength.

^b The welding method may be changed based on the same welding volume/strength.

^c The SWLs shown are for reference only. These are based on the loadings as mentioned in [Annex A](#).

The "SWL" which is marked on the fitting may be adjusted depending on the actual loading conditions of mooring rope under the agreement between the user and the manufacturer.

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Annex A (normative)

Basis for strength assessment of the seats for mooring chocks

A.1 General

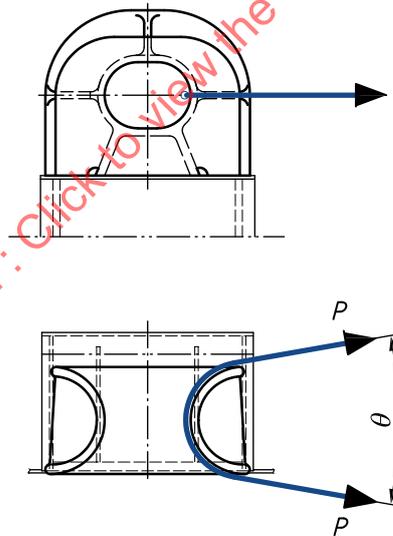
The strength of the seats for mooring chocks was evaluated by finite element model analysis and determined based on the following design criteria.

A.2 Loading

The seats for mooring chocks shall be designed to withstand the horizontal ([Figure A.1](#)) and vertical ([Figures A.2](#) and [A.3](#)) load cases.

The horizontal and vertical loadings were considered individually, but both loadings were not considered simultaneously.

A.2.1 Case 1 — Horizontal loading



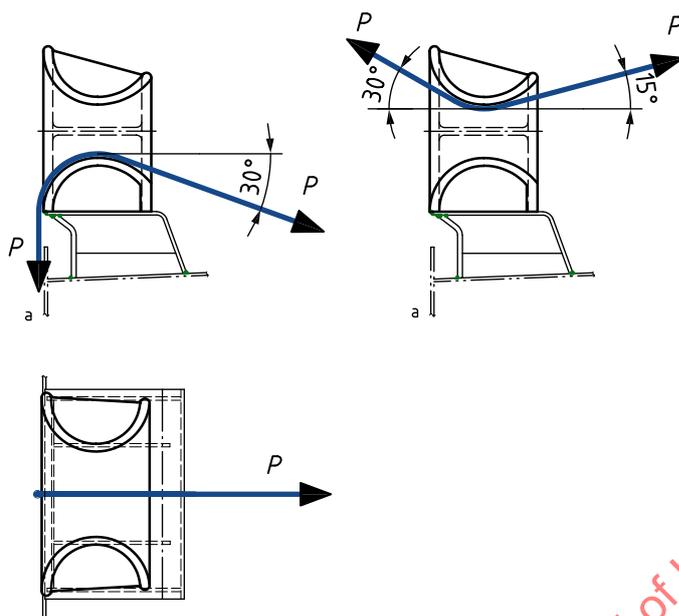
Key

P mooring force or towing force

NOTE The loads were considered for a rope deflected 180° ($\theta = 0^\circ$) through the mooring chock.

Figure A.1 — Case 1 — Horizontal loading

A.2.2 Case 2 — Vertical loading



Key

P mooring force or towing force

a Ship side.

NOTE The loads were considered for a rope deflected through the mooring chock, as shown in this figure.

Vertical down side: outboard down 90° , inboard down 30° .

Vertical up side: outboard up 30° , inboard up 15° .

Figure A.2 — Vertical loading for Type A — Deck-mounted mooring chocks

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