INTERNATIONAL STANDARD

ISO 13799

First edition
2012-07-01

Ships and marine technology — Ship's mooring and towing fittings — Recessed bitts (Casting type)

Navires et technologie maritime — Corps-morts et ferrures de remorquage de navires — Bittes d'amarrage encastrées (type moulage)

Reference number
ISO 13799:2012(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13799 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 4, *Outfitting and deck machinery*.

Introduction

The recessed bitt is a type of ship's towing fitting installed on the side shell of the ship.

The recessed bitts are normally provided to easily attach the towing lines where the height of the mooring deck is too high.

Ships and marine technology — Ship's mooring and towing fittings — Recessed bitts (Casting type)

1 Scope

This International Standard specifies the design, size and technical requirements for casting type recessed bitts to meet normal towing requirements.

2 Normative references

The following referenced documents are indispensable for the application 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.

3.1
safe working load
SWL
maximum load in kN on the rope that should normally be applied in service conditions.

4 Classification

4.1 Type

Depending on the size and strength of the material, recessed bitts shall be classified as the following six types:

— Type 75 – nominal size 850, casting material having a yield point of not less than 235 N/mm^2

— Type 110 – nominal size 850, casting material having a yield point of not less than 350 N/mm^2

— Type 135 – nominal size 850, casting material having a yield point of not less than 430 N/mm^2

— Type 100 – nominal size 920, casting material having a yield point of not less than 235 N/mm^2

— Type 150 – nominal size 920, casting material having a yield point of not less than 350 N/mm^2

— Type 180 – nominal size 920, casting material having a yield point of not less than 430 N/mm^2

4.2 Nominal sizes

The nominal sizes of recessed bitts are denoted by reference to the outside diameter of the bitt, in millimetres.

The nominal size is: 850 and 920.

5 Dimensions

Recessed bitts have dimensions and particulars in accordance with Table 1 and Figure 1.

6 Materials

The materials of the following components shall be used for manufacturing the recessed bitts:

— Type 75 and type 100: weldable steel casting having a yield point of not less than 235 N/mm^2.

— Type 110 and type 150: weldable steel casting having a yield point of not less than 350 N/mm^2.

— Type 135 and type 180: weldable steel casting having a yield point of not less than 430 N/mm^2.

7 Construction

7.1 The welding connections to the hull shall be guaranteed reliable transmission of the maximum loading of the recessed bitts to hull construction without any plastic deformation or cracks.

7.2 The hull construction which the recessed bitts are installed on shall be reinforced by carlings, stiffeners, etc.

7.3 The recessed bitts shall be considered as a part of the hull side shell construction.

8 Manufacturing and inspection

8.1 All surfaces of the recessed bitts, including welding, 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 recessed bitts shall be coated externally with an anti-corrosion protective finish.

9 Marking

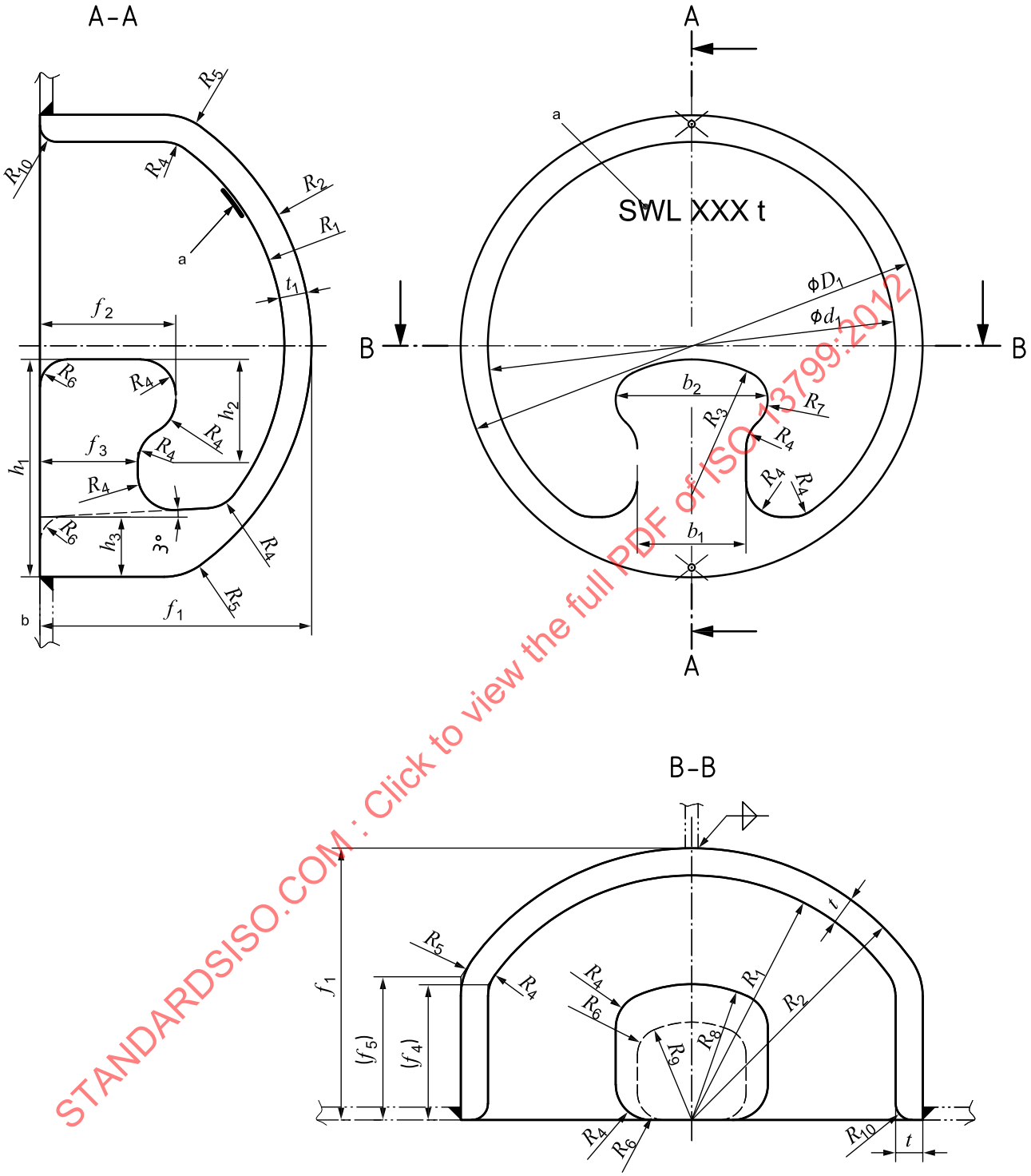
9.1 The safe working load (SWL) for the intended use for the recessed bitts shall be noted in the towing and mooring plan available on board for the guidance of the shipmaster as specified in MSC/Circ.1175.

9.2 The actual SWL on board shall be determined by considering the reinforcement around the recessed bitts, and it shall be marked on the towing and mooring plan. The actual SWL shall not be over the SWL indicated in this International Standard.

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

EXAMPLE SWL XXX t

Dimensions in millimetres



a SWL marking.

b Side shell.

NOTE 1 Bitt welding method to hull connection is to be approved by Classification Society.

NOTE 2 Centre marking by punching for easy installation.

Figure 1 — Recessed bitts

Table 1 — Dimensions and SWL of recessed bitts

Dimensions in millimetres

Nominal size D_n	D_1	d_1	b_1	b_2	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8
850	850	750	200	280	450	500	250	65	115	50	55	250
920	920	812	216	300	490	544	270	70	124	55	60	270
Nominal size D_n	R_9	R_{10}	t_1	f_1	f_2	f_3	f_4	f_5	h_1		h_2	h_3
850	180	30	50	500	250	180	248,7	263,4	400		190	110
920	195	30	54	544	270	195	274,3	290,4	430		205	110

Nominal size D_n	Type	Material (minimum yield strength)	SWL (kN)	SWL (t)	Calculated weight (kg)
850	Type 75	235 N/mm^2	736	75	770
	Type 110	350 N/mm^2	1 079	110	770
	Type 135	430 N/mm^2	1 324	135	770
920	Type 100	235 N/mm^2	981	100	826
	Type 150	350 N/mm^2	1 472	150	826
	Type 180	430 N/mm^2	1 766	180	826

[a] The SWL is the maximum applicable rope tension.

The SWLs shown in this table are for reference only. These are based on the loadings as mentioned in Annex A.

[b] The calculated weight is for reference only.

Annex A
(informative)

Basis for strength assessment of recessed bitts (Casting type)

A.1 General

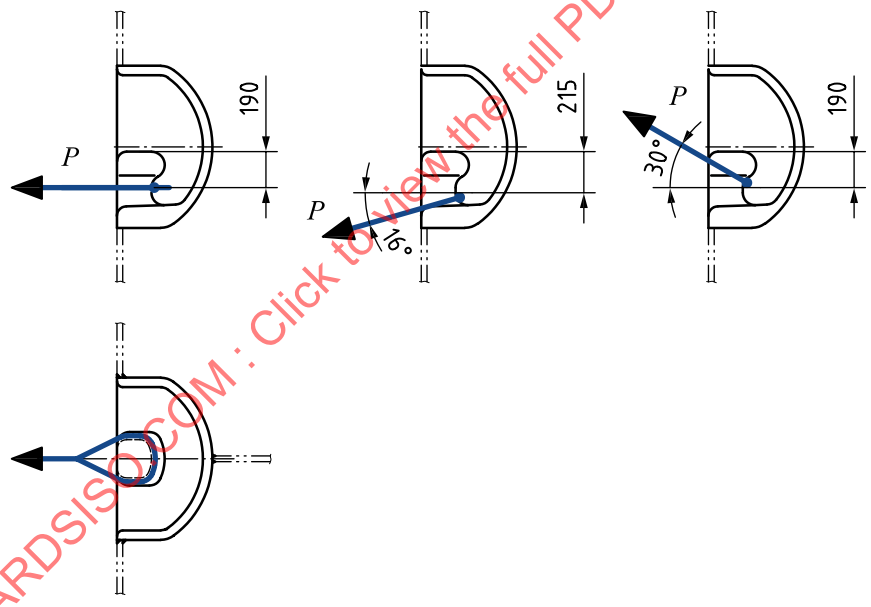
The strength of the recessed bitts was evaluated by finite element model analysis and determined based on the following design criteria.

A.2 Loading

A.2.1 The recessed bitts are to be designed to withstand the loads imposed by the towing ropes.

A.2.2 The recessed bitts are to be designed to withstand the following load case.

They are to be designed to withstand the combined load produced by P imposed as below positions.



Key

P towing force

Figure A.1 — Combined loads by towing rope

A.3 Load and stress criterion

Under the SWL, the following stress criterion was adopted.

— The combined stress is limited to 85 % of the yield stress of the material.