
**Ships and marine technology — Ship's
mooring and towing fittings — Universal
fairleads with upper roller**

*Navires et technologie maritime — Corps-morts et ferrures de
remorquage de navires — Chaumards universels avec rouleau supérieur*

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Contents	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification	1
4.1 Type	1
4.2 Nominal sizes	1
5 Dimensions	2
6 Materials	2
7 Construction	2
8 Manufacturing and inspection	2
9 Marking	2
Annex A (informative) Basis for strength assessment of universal fairleads	15
Bibliography	18

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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.

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 13733 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 4, *Outfitting and deck machinery*.

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Introduction

The universal fairlead is a type of ship's mooring fitting installed on board to lead the mooring rope from the ship's inboard to outboard.

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Ships and marine technology — Ship's mooring and towing fittings — Universal fairleads with upper roller

1 Scope

This International Standard specifies the design, size and technical requirements for universal fairleads with upper roller(s) installed to lead the mooring rope of a ship.

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

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4 Classification

4.1 Type

Depending on the construction, universal fairleads are to be classified as the following four types:

- type 4R: with one rope-passing opening;
- type 5RL: with one rope-passing opening with additional guide roller on left side;
- type 5RR: with one rope-passing opening with additional guide roller on right side;
- type 7R: with two rope-passing openings.

4.2 Nominal sizes

The nominal sizes, D_n , of universal fairleads are denoted by reference to the outside diameter of the main roller in millimetres, in terms of the nearest number drawn from a basic series of preferred numbers. For the universal fairleads having the same roller diameter, the alphabetical character is followed by nominal size for the different SWL.

The nominal sizes are:

140, 160, 180, 200, 250, 300A, 300B, 400A, 400B and 400C.

5 Dimensions

Universal fairleads have dimensions and particulars in accordance with Tables 1, 2, 3 and 4, and Figures 1, 2, 3, 4 and 5.

6 Materials

The materials of the following components are to be used for manufacturing the universal fairleads:

- Frame and other plates: weldable steel plates having a yield point of not less than 235 N/mm² except frame with rope guide for nominal size 400A, 400B and 400C shall be made of weldable steel plates having a yield point of not less than 315 N/mm².
- Roller: weldable steel plates having a yield point of not less than 235 N/mm² except rollers for nominal size 400A, 400B and 400C shall be made of weldable steel plates having a yield point of not less than 315 N/mm², or equivalent steel tubes.
- Axle: carbon steel having a yield point of not less than 345 N/mm².
- Bush: brass or bronze or equivalent.

7 Construction

7.1 The rollers of the universal fairleads shall be constructed from steel tubes or formed from plate.

7.2 The foundation of the universal fairleads shall be determined by the manufacturer. The foundation and welding connections to the hull shall be guaranteed reliable transmission of the maximum loading of the universal fairleads to hull construction without any plastic deformation or cracks.

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8 Manufacturing and inspection

8.1 All surfaces of the universal fairleads, 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 universal fairleads shall be coated externally with an anti-corrosion protective finish.

8.4 All rotating parts shall be provided with greasing.

9 Marking

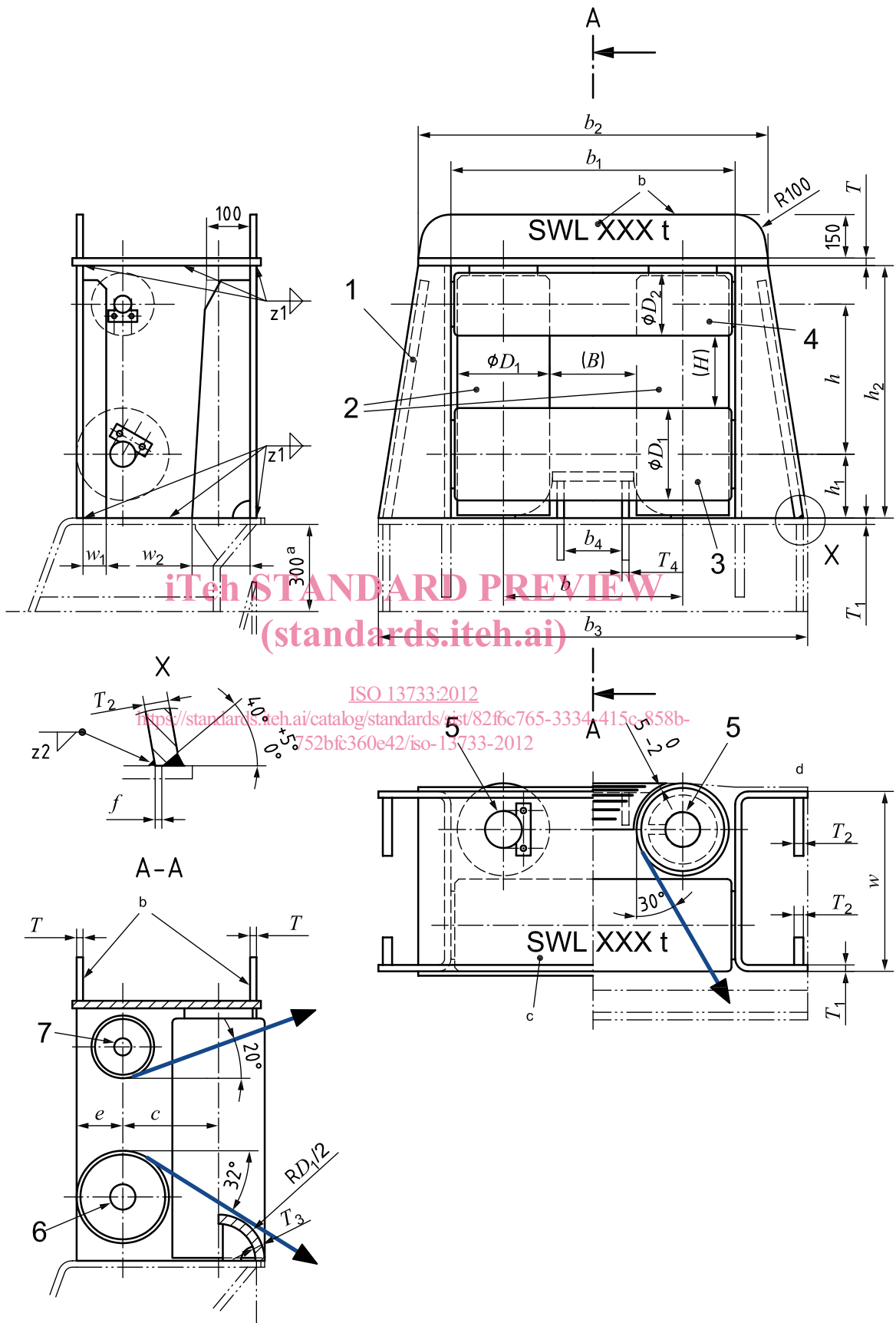
9.1 The safe working load (SWL) intended for the use of the universal fairleads shall be noted in the towing and mooring plan available on board for the guidance of the shipmaster as specified in MSC/Circ.1175.

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

9.3 The universal fairleads are to 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



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Key

- 1 frame with rope guide
 - 2 vertical rollers with housing and washers
 - 3 lower horizontal roller with washers
 - 4 upper horizontal roller with washers
 - 5 vertical axles with stopper
 - 6 lower horizontal axle with stoppers
 - 7 upper horizontal axle with stoppers
- a Height of seat shall be determined in accordance with the hull construction design.
- b For nominal size 250 and above.
- c For nominal size between 140 and 200 only.
- d Side shell.

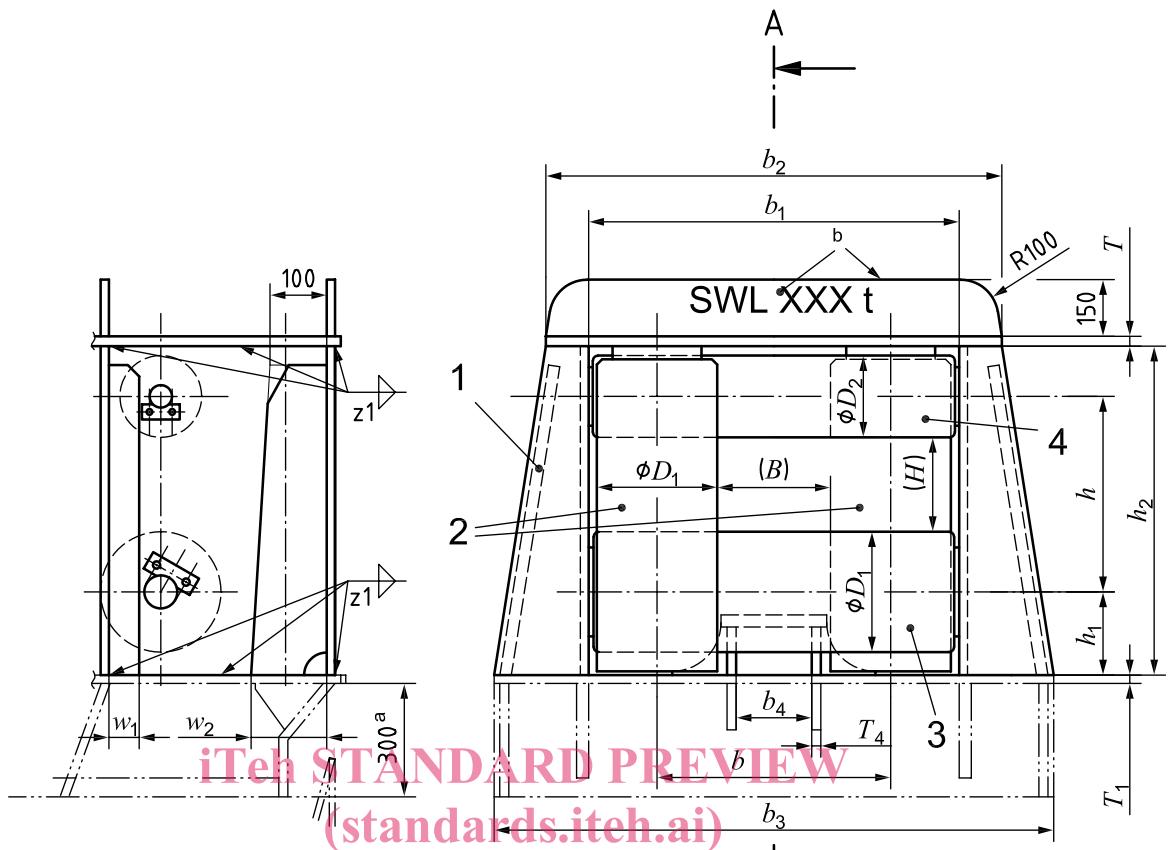
Figure 1 — Assembly of type 4R universal fairleads

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Dimensions in millimetres



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