
**Ships and marine technology — Single
rungs and rungs for dog-step ladders**

*Navires et technologie maritime — Échelons simples et échelons pour
marchepieds*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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 8, *Ship design*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 15, *Inland navigation vessels*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 9519:1990), which has been technically revised.

The main changes are as follows:

- the title has been changed;
- the types and the scope of application have been extended;
- the dimensions of rungs have been extended;
- the steel grade of material has been specified;
- the requirements of surface treatment, appearance and tolerance have been specified;
- the inspection requirements have been added.

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.

Ships and marine technology — Single rungs and rungs for dog-step ladders

1 Scope

This document specifies the types, structure, dimensions, technical requirements, inspection and designation of single rungs and rungs for dog-step ladders, fitted to the vertical panel or masts of ships or other marine structures.

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 630-2, *Structural steels — Part 2: Technical delivery conditions for structural steels for general purposes*

ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

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

dog-step ladder

ladder formed by two or more rungs

4 Classification

4.1 Types

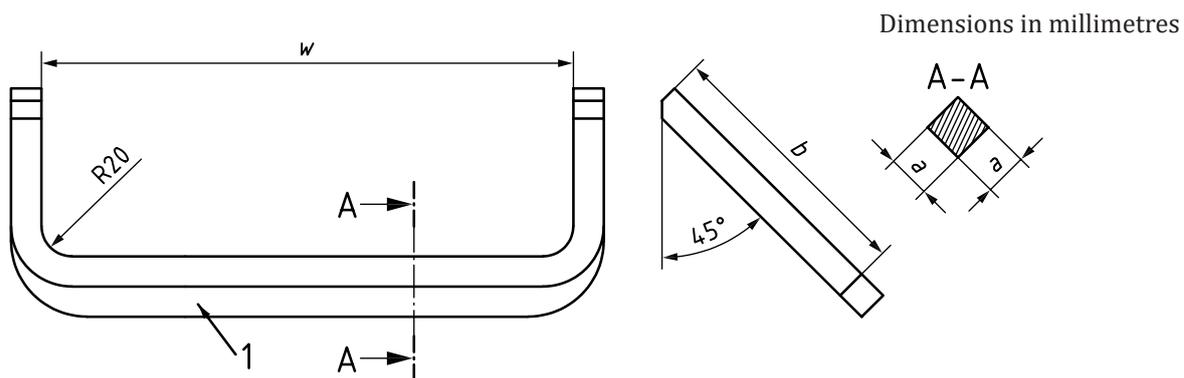
Rungs are classified into the following three types according to purpose and structure:

- a) Type A/B: for vertical panel or masts with a diameter of more than 300 mm;
- b) Type C: for masts with a diameter of no more than 300 mm.

4.2 Structure and dimensions

4.2.1 Structure

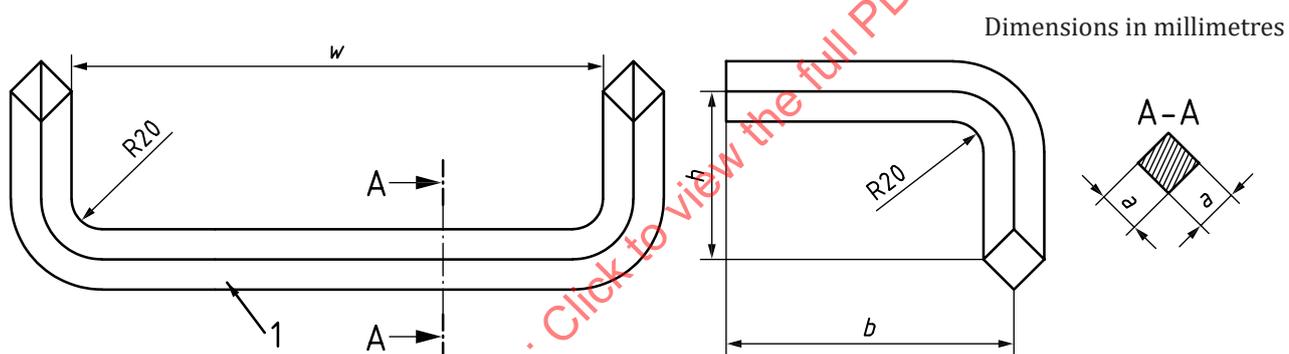
The structure of the rungs is shown in [Figure 1](#), [Figure 2](#) and [Figure 3](#).



Key

- 1 rung
- a* side length of section of square bar
- b* depth of rung
- w* width of rung

Figure 1 — Example of structure of type A

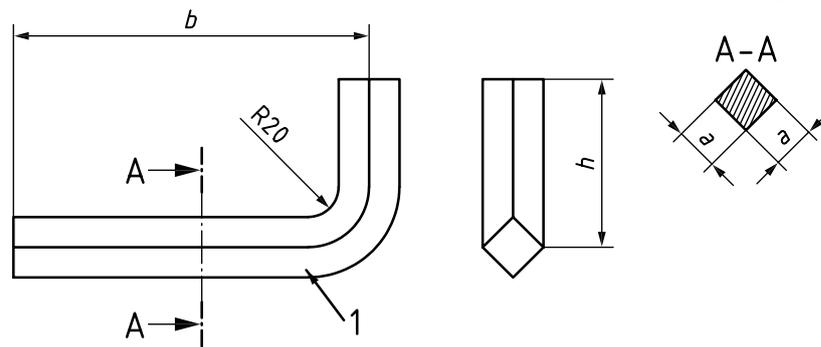


Key

- 1 rung
- a* side length of section of square bar
- b* depth of rung
- w* width of rung
- h* height of rung

Figure 2 — Example of structure of type B

Dimensions in millimetres



Key

- 1 rung
- a side length of section of square bar
- b depth of rung
- h height of rung

Figure 3 — Example of structure of type C

4.2.2 Dimensions

The dimensions of the rungs are shown in [Table 1](#).

Table 1 — Dimensions of rungs

Dimensions in millimetres

Type	Dimension			Theoretical weight	
	Width, w	Depth, b	Height, h	kg	
				Length, $a = 20$	Length, $a = 22$
A	300	210	—	2,4	2,9
		252		2,7	3,2
		280		2,8	3,4
	350	210		2,5	3,1
		252		2,8	3,4
		280		2,9	3,6
	400	210		2,7	3,3
		252		3,0	3,6
		280		3,1	3,8
B	300	150	50	2,2	2,7
		180		2,4	2,9
		200		2,5	3,1
	350	150		2,4	2,9
		180		2,6	3,1
		200		2,7	3,3
	400	150		2,5	3,0
		180		2,7	3,2
		200		2,8	3,4

NOTE This table is based on ISO 1035-2:1980, Table 1.

Table 1 (continued)

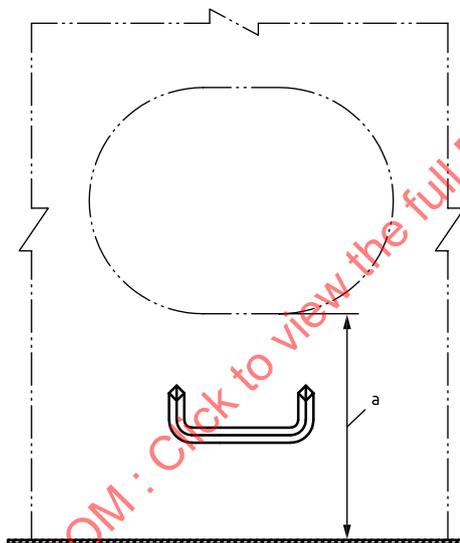
Type	Dimension			Theoretical weight	
	Width, w	Depth, b	Height, h	kg	
				Length, $a = 20$	Length, $a = 22$
C	—	150	65	0,7	0,9
		180		0,8	1,0
		200		0,9	1,1

NOTE This table is based on ISO 1035-2:1980, Table 1.

5 Usage diagram

5.1 Usage diagram of single rung

The usage diagram of a single rung is shown in [Figure 4](#).



^a A single rung shall be fitted when the distance is more than 600 mm.

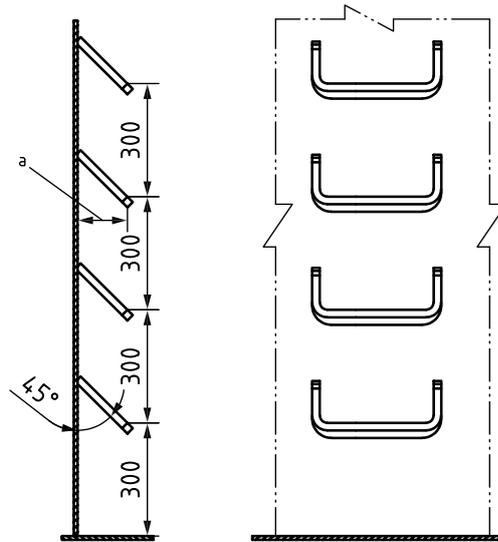
Figure 4 — Example of diagram of single rung

5.2 Configuration of single rung

5.2.1 Type A

The dog-step ladder formed by a type A rung is shown in [Figure 5](#).

Dimensions in millimetres



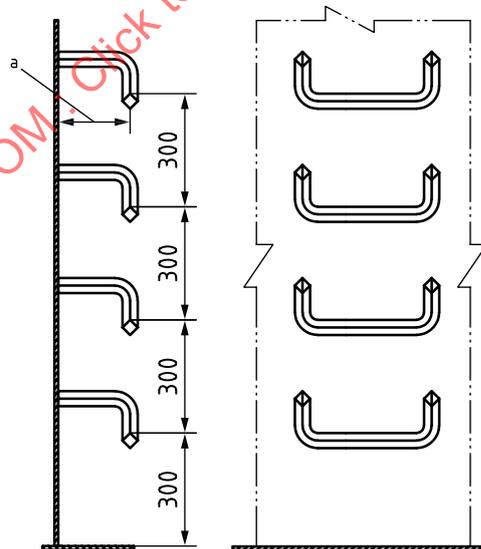
a The distance shall be no less than 150 mm.

Figure 5 — Example of dog-step ladder formed by type A

5.2.2 Type B

The dog-step ladder formed by a type B rung is shown in [Figure 6](#).

Dimensions in millimetres



a The distance shall be no less than 150 mm.

Figure 6 — Example of dog-step ladder formed by type B rung

5.3 Type C

The dog-step ladder formed by a type C rung is shown in [Figure 7](#).

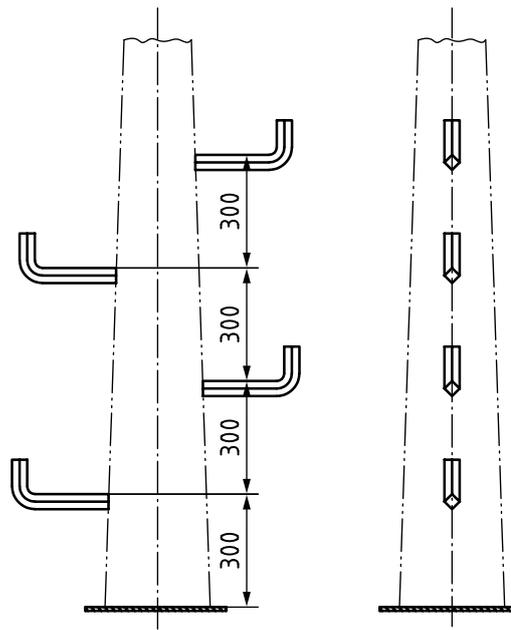


Figure 7 — Example of dog-step ladder formed by type C rung

6 Technical requirement

6.1 Material

The rungs shall be made of steel meeting the requirements of ISO 630-2, the grade of the material shall not be lower than S235.

6.2 Surface treatment

The rungs shall have a protective surface coating that is compatible with their location.

The rungs fitted in the ballast tank shall comply with performance standard for protective coating (PSPC) requirements. All free edges shall be rounded to R2 mm, and hot-dip galvanizing should be applied after de-rusting and surface cleaning. The galvanized coating thickness of the rungs shall be in accordance with ISO 1461.

6.3 Appearance

The arc and sharp corner of the rung shall be smooth without burr, and the surface of rung shall be with no dents, crack etc.

6.4 Tolerance

Tolerance for width of rungs is ± 2 mm (see ISO 2768-1). The tolerance of the rung weight shall not exceed 4 % of the theoretical weight in [Table 1](#).

7 Inspection

7.1 Surface treatment

Check the de-rusting state visually and measure the thickness of the hot dip galvanized coating.

7.2 Appearance

Check the appearance visually.

7.3 Tolerance

Measure the size and weight of the rung with general measuring tools and calculate the tolerance.

8 Designation

The rungs conforming to this document shall be designated in the delivery note as follows:

- a) ISO 9519;
- b) type of rung;
- c) dimension.

EXAMPLE

The designation for a type-A rung with the width at 300 mm and depth at 280 mm, made of square bar with section side length at 20 mm is as follows:

Rung ISO 9519 - A300-20-280

The designation for a type-C rung with the depth at 180 mm, made of square bar with the section side length at 20 mm is as follows:

Rung ISO 9519 - C180-20

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