
**Ships and marine technology — Pilot
ladders —**

**Part 1:
Design and specification**

Navires et technologie maritime — Échelles de pilote —

Partie 1: Conception et spécification

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ISO 799-1:2019

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Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Materials.....	1
4.1 Wooden parts.....	1
4.2 Side ropes.....	1
4.2.1 General arrangement.....	1
4.2.2 Alternative side rope arrangement.....	2
4.3 Metallic materials.....	2
4.4 Step fixtures.....	2
4.5 Plastic materials.....	2
4.6 Quality of materials.....	2
4.7 Rope seizing.....	2
5 Construction.....	3
6 Testing and inspection.....	9
6.1 Prototype test for approval.....	9
6.2 Product inspection.....	11
7 Designation.....	11
8 Marking.....	12
9 Production tests and examinations.....	12
10 Maintenance.....	12
Annex A (normative) Production tests and inspections.....	14

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 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 1, *Lifesaving and fire protection*.

This first edition of ISO 799-1 cancels and replaces ISO 799:2004, which has been technically revised. This first edition takes into account new designs and manufacturing methods for pilot ladders, which have entered the market since 2004.

A list of all parts in the ISO 799 series can be found on the ISO website.

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

This document is intended to supplement existing IMO requirements for pilot ladders. Since IMO instruments do not include specific requirements for prototype testing of pilot ladders for approval, the tests included in this document are in excess of the existing IMO requirements. The reservation and inclusion of these tests was considered necessary in order to provide a means of ensuring conformance of pilot ladders with the performance requirements prescribed in IMO instruments and in this document.

This document can be used for independent acceptance of a pilot ladder complying with SOLAS, in which case certification must be issued from a signatory state of SOLAS.

NOTE ISO 799 is incorporated by reference and footnoted in the International Convention on Safety of Life at Sea (SOLAS) Chapter V Regulation 23.2.3.

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Ships and marine technology — Pilot ladders —

Part 1: Design and specification

1 Scope

This document specifies requirements for pilot ladders of a ship, which are provided to enable a maritime pilot to embark and disembark from a ship safely against a vertical portion of the ship's hull. It is applicable to merchant ships which embark and disembark maritime pilots with the ship underway.

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 209:2007, *Aluminium and aluminium alloys — Chemical composition*

ISO 877-2:2009, *Plastics — Methods of exposure to solar radiation — Part 2: Direct weathering and exposure behind window glass*

ISO 1181:2004, *Fibre ropes — Manila and sisal — 3-, 4- and 8-strand ropes*

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

ISO 15510:2014, *Stainless steels — Chemical composition*

3 Terms and definitions

No terms and definitions are listed in this document.

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/>

4 Materials

4.1 Wooden parts

Each wooden part shall be made of hardwood (ash, oak, beech, teak, and other hardwood having equivalent properties) free from knots. Wood shall not be treated or coated with paint, varnish or other coatings, which either change the friction coefficient or hide the natural grain.

4.2 Side ropes

4.2.1 General arrangement

Each side rope shall be mildew-resistant manila rope meeting ISO 1181:2004, Quality 1, or a spun thermoset polyester rope with a polypropylene core of a colour that contrasts with the spun polyester.

Each side rope shall have a breaking strength of at least 24 kN, and the specification of the diameter of side ropes should be 20 mm (63 mm circumference).

4.2.2 Alternative side rope arrangement

Alternative side ropes of synthetic material may be used if they:

- a) meet the breaking strength and size requirements of [4.2.1](#);
- b) are at least as resistant to elongation under load as the standard ropes described in [4.2.1](#);
- c) have an exterior surface suitable to be grasped by bare hands, similar to manila or spun polyester;
- d) are of a thermoset polymer, resistant to deterioration from ultraviolet light; and
- e) provide a visual indication of excessive wear, similar to the spun polyester/polypropylene construction described in [4.2.1](#).

4.3 Metallic materials

4.3.1 Each metal fastener shall be made of material which is inherently corrosion-resistant, or treated to be corrosion-resistant.

4.3.2 Each ferrous metal part, which is not stainless steel, shall be coated in accordance with ISO 1461.

4.3.3 Each stainless steel part shall be of a marine grade alloy with a corrosion resistance at least equal to grade "4401-316-00I" in ISO 15510:2014.

4.3.4 Each aluminium part shall be 5 254 alloy, or other grade containing not more than 0,06 % copper, in accordance with ISO 209:2007.

4.3.5 Metals in contact with each other shall be galvanically compatible, or insulated to prevent galvanic corrosion in a marine environment.

4.4 Step fixtures

Step fixtures for securing each step of a ladder shall have rope seizing or purpose made arrangement such as solid nylon clamp blocks or hardwood clamp blocks to prevent the fasteners from loosening. Cable ties, u-clamps, worm driven clips are unacceptable.

4.5 Plastic materials

Each plastic material shall be of a type that retains at least 30 % of its original tensile strength and at least 80 % of its original impact strength when subjected to the one-year outdoor weathering test described in Method A of ISO 877-2:2009.

4.6 Quality of materials

Each part of a ladder shall be free of splinters, burrs, sharp edges, corners, projections, or other defects that could injure a person using the ladder.

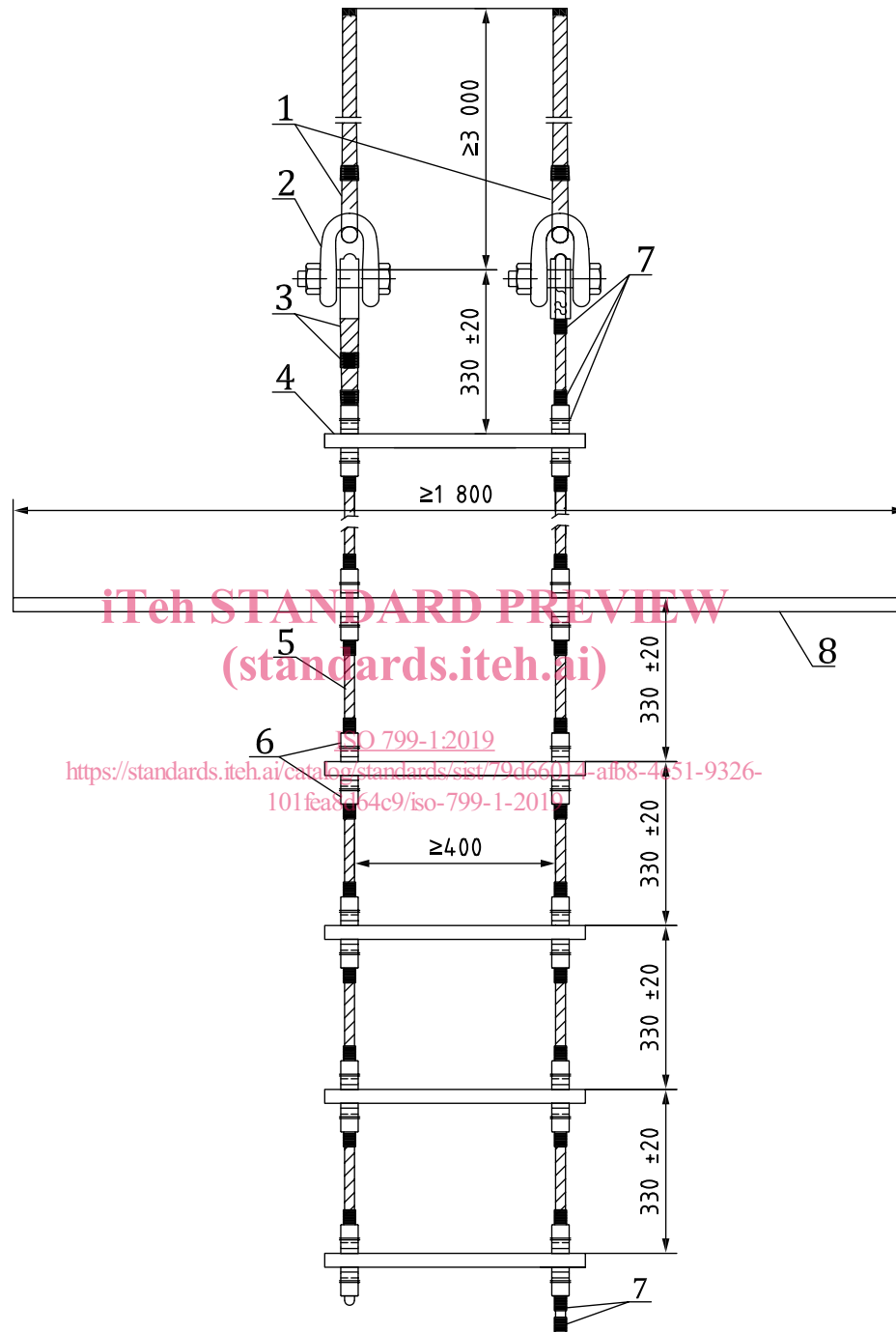
4.7 Rope seizing

Seizing, shall consist of three-ply tarred marline of minimum breaking strength 800 N, and with a minimum diameter of 4 mm, or other suitable material of equivalent strength and diameter. All seizings shall be figure-of-eight racking seizings, minimum length of seizing 32 mm.

5 Construction

5.1 [Figure 1A](#) provides construction details for pilot ladders.

Dimensions in millimetres



Key

- | | | | |
|---|--|---|---------------|
| 1 | securing rope alternative arrangements | 5 | side rope |
| 2 | shackle | 6 | step fixture |
| 3 | splice and rope seizing | 7 | rope seizing |
| 4 | step | 8 | spreader step |

Figure 1A — Construction details of pilot ladder

5.2 Each step in the ladder shall be supported by side ropes. Each side of the ladder shall consist of a continuous loop of rope with the joint above the top step or below the bottom step.

5.3 Each of the side ropes shall:

- a) be wholly continuous rope without any knots, joints or splices except as specified in 5.4.
- b) not be painted or otherwise coated or covered.

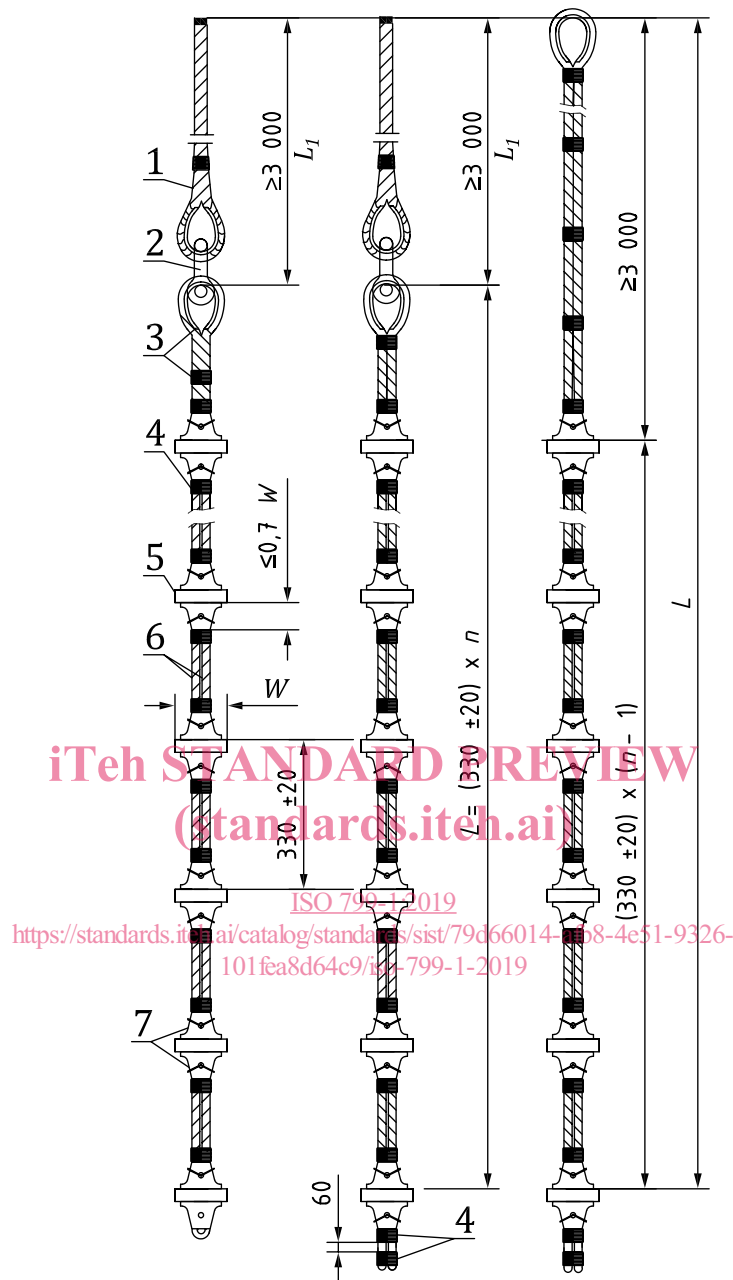
5.4 Unless a special arrangement is needed to secure the ladder to an accommodation ladder, pilot ladder winch reel, or other custom installation, the ends of the side ropes shall be finished as follows.

- a) If the ends of the side ropes terminate just above the top step (highest step), they shall round a thimble and the end shall be joined with a short splice.
- b) The side ropes shall not have fittings or form loops at the bottom of the ladder that can be used to attach additional ladder sections or tripping lines.
- c) If the ends of the side ropes on each side terminate just beneath the lowest step, the rope ends shall be securely fastened or otherwise treated to prevent fraying. The rope ends shall pass through the holes in the lowest step and use similar step fixtures as the other steps. A rope seizing, as per the other steps, shall be made immediately under step fixtures. A second rope seizing shall be provided 60 mm under the first seizing, see [Figure 1B](#). The loose ends of the rope shall be whipped as close as possible to the second rope seizing to protect against fraying. An accepted method is a 25 mm whipping. The loose ends of the rope shall be as short as possible, but not less than 50 mm below the second seizing and under no circumstances can loops be allowed.
- d) The ends of each side rope, which do not terminate in a splice or fitting, shall be served, whipped or otherwise treated to prevent fraying.

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Dimensions in millimetres



Key

- | | | | |
|---|--|-------|-------------------------------|
| 1 | securing rope alternative arrangements | 7 | step fixture |
| 2 | shackle | L_1 | length of securing rope |
| 3 | splice and rope seizing | L | length of ladder |
| 4 | rope seizing | W | width of the step |
| 5 | step | n | number of steps in the ladder |
| 6 | side rope | | |

Figure 1B — Ladder construction using rope seizing and step fixtures and alternative securing rope arrangements at top of ladder

5.5 Each side rope shall pass through a separate hole in each step. The centre of each hole shall be at least 50 mm from the short edge of the step as shown in [Figure 2](#). Alternative arrangements using slots