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Ships and marine technology — Pilot ladder winch reels

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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 by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 1, *Maritime safety*.

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 — Pilot ladder winch reels

1 Scope

This document specifies requirements and characteristics of ships' pilot ladder winch reels provided with hydraulic, pneumatic, electric, or manual drive. It is applicable to the design and test of pilot ladder winch reels. It does not include requirements for the prime mover used to operate the pilot ladder winch reels.

Pilot ladder winch reels specified in this document are intended to be only used with pilot ladders conforming to ISO 799-1. They are not intended to be used for 'man lifting' activities.

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 3828, *Shipbuilding and marine structures — Deck machinery — Vocabulary and symbols*

IMO Assembly resolution A.1045 (27), *Pilot Transfer Arrangements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3828 and the following 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 https://www.electropedia.org/

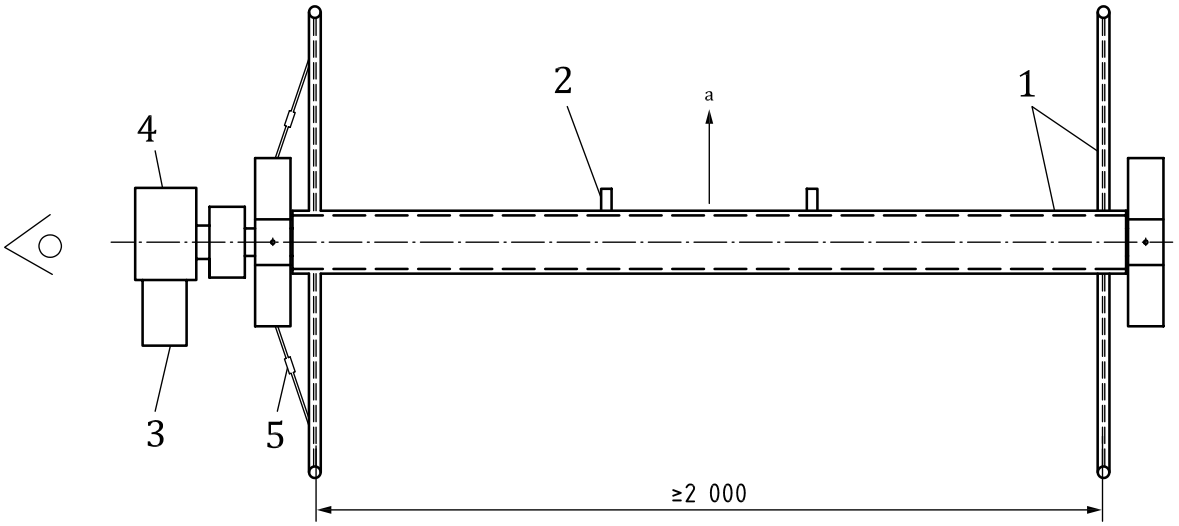
3.1
drum load
working load
maximum rope tension in the rope or ropes at the drum exit, when the pilot ladder winch reel is hoisting an unloaded pilot ladder at the nominal speed, with the rope or ropes wound on the drum in a single layer

3.2
holding load
in static mode of the pilot ladder winch reel, maximum rope tension in the rope or ropes at the drum exit in the innermost layer with a minimum value of twice of the *drum load* (3.1)

3.3
left-hand pilot ladder winch reel
pilot ladder winch reel where the rope-out direction of the drum is on the left-hand side of the drum, in relation to an observer situated on the side of reduction gearbox

Note 1 to entry: See Figure 1.

Dimensions in millimetres



Key

1 drum
2 structure connected to the pilot ladder
3 reduction gear
4 drive
5 anti-rotating locking device
a Rope-out direction.

Figure 1 — Top view of a left-hand pilot ladder winch reel

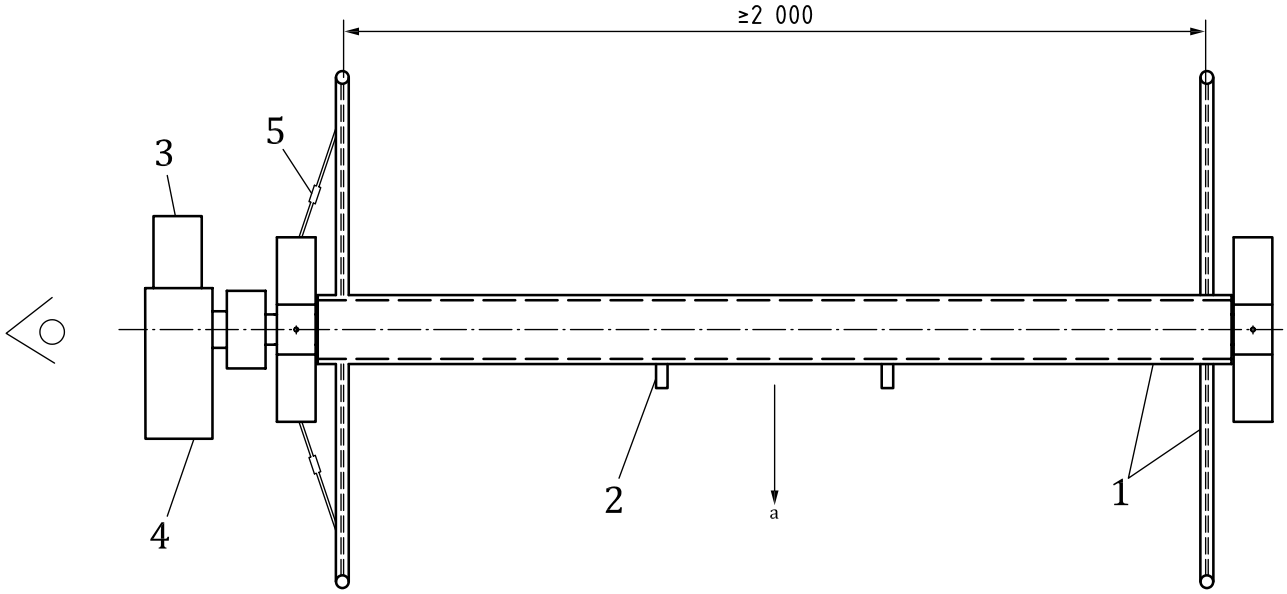
3.4
nominal size
designation of a pilot ladder winch reel corresponding to the *drum load* (3.1)

Note 1 to entry: See Table 1.

3.5
right-hand pilot ladder winch reel
pilot ladder winch reel where the rope-out direction of the drum is on the right-hand side of the drum, in relation to an observer situated on the side of the reduction gearbox

Note 1 to entry: See Figure 2.

Dimensions in millimetres



Key

1 drum
2 structure connected to the pilot ladder
3 reduction gear
4 drive
5 anti-rotating locking device
a Rope-out direction.

Figure 2 — Top view of a right-hand pilot ladder winch reel

4 Design

4.1 The drum of pilot ladder winch reels shall be provided with a structure connected to the pilot ladder.

4.2 Pilot ladder winch reels can be divided into two types, i.e. right-hand pilot ladder winch reels and left-hand pilot ladder winch reels, which are arranged respectively on the right and left sides of the midship.

4.3 The drum shall be able to wind the pilot ladder on the drum without damaging the spreader steps of the pilot ladder. The length of drum shall be not less than 2,0 m. See Figure 1 and Figure 2.

4.4 The pilot ladder winch reel shall be able to accommodate the entire pilot ladder. Any ropes (heaving line, manrope, etc.) other than the pilot ladder itself shall not be rolled into the drum.

4.5 The pilot ladder winch reel may be fixed or may move within a fixed track.

4.6 Pilot ladder winch reels may be manually operated or, alternatively, powered by either electrical, hydraulic, or pneumatic means.

4.7 Manually-operated pilot ladder winch reels should be provided with a brake or other suitable arrangements to control the lowering of the pilot ladder and to lock the pilot ladder winch reel in position

once the pilot ladder is lowered into position. The self-locking device can be a self-locking worm gear (or similar type of mechanism) locking mechanism.

4.8 The pilot ladder winch reel shall be equipped with a device capable of braking 1,5 times the holding load. In the case of a power-driven pilot ladder winch reel, this device shall automatically act when the drive is stopped or the power source is shut off. A self-locking worm gearbox (or similar type of mechanism) can be considered a holding device if agreed between the purchaser and the manufacturer.

4.9 All pilot ladder winch reels shall be provided with measures to prevent disoperation due to mechanical failure or human error.

4.10 Pilot ladder winch reels driven electrically, hydraulically or pneumatically shall be provided with safety devices that can cut off the power source of the pilot ladder winch reel and thus lock the pilot ladder winch reel in the hoisting, lowering, or moving positions.

4.11 Pilot ladder winch reels driven hydraulically or pneumatically shall be provided with a clearly marked lever or handle that can lock the pilot ladder winch reel in a neutral position.

4.12 The pilot ladder winch reel shall also be locked by using mechanical devices or locking pins. The locking mechanism is intended as an anti-rotating locking device for the drum only and is not intended to form part of the securing method for the ladder.

4.13 Pilot ladder winch reels driven by a power source shall be equipped with manual emergency operation devices able to l hoist and lower or move the pilot ladder when the power source is lost.

4.14 Pilot ladder winch reels shall be designed to ensure that the bearing surfaces and relative sliding or rotating parts are well lubricated during operation.

4.15 Pilot ladder winch reels shall not contain any materials that contain asbestos.

5 Performance

5.1 The performance of pilot ladder winch reels shall meet the requirement of mechanical securing specified in IMO Assembly Resolution A.1045 (27).

5.2 The performance of pilot ladder winch reels shall be as specified in Table 1.

5.3 For powered pilot ladder winch reels, the speed in the innermost layer should be no more than 0,16 m/s to prevent damage due to excessive speed.

5.4 It shall be possible to continuously overload the drive of the pilot ladder winch reel by 1,5 times the drum load, for 2 min, when the pilot ladder is being hoisted, without causing failure.

5.5 When the pilot ladder is being hoisted or lowered and the emergency stop of the pilot ladder winch reel is engaged, the pilot ladder winch reel shall stop instantly and reliably.

5.6 The pilot ladder winch reel shall not be used to support the pilot ladder, and the pilot ladder shall be secured to a strong point, independent of the pilot ladder winch reel.

Table 1 — Performance data for pilot ladder winch reels

Nominal size[b] kN	Drum load[a] kN	Holding load[a] kN	Static load test under 1,5 times the holding load (see 6.4) kN
1,5	1,5	3	4,5

[a] For pilot ladder winch reels working with two ropes, the listed values are the sum of the force on each rope.

[b] For the nominal size, the listed values are the sum of the weight of the pilot ladder and the weight of the ropes, excluding the weight of a pilot.

NOTE Pilot ladder winch reels with other performance data can also be accepted upon the approval of relevant departments, such as the ship owner and designers.

6 Acceptance tests (individual)

6.1 General

The pilot ladder winch reel shall be tested as a complete unit, i.e. with the prime mover, drum, gearing and controls. The results of the tests shall be recorded in a certificate.

6.2 Operation test

During the test, the powered pilot ladder winch reels shall be run without load for 10 min continuously, 5 min in each direction. The pilot ladder winch reel operation shall be normal.

6.3 Drum load test

6.3.1 The rope shall be used to lift a load equivalent to the drum load on the drum. Start the pilot ladder winch reel to lower the rope for about 1,5 m. Keep stationary for 15 min. The pilot ladder winch reel shall be failure-free.

6.3.2 The rope shall be used to lift a load equivalent to 1,5 times the drum load on the drum. Start the pilot ladder winch reel to lift the overload, and continuous drive for 2 min. The results shall conform to the requirements of 5.4.

6.3.3 During the drum load test, when the pilot ladder is hoisted or lowered, the emergency stop shall be tested once. The results shall conform to the requirements of 5.5.

6.3.4 The following shall be checked:

a) oil-tightness;

b) input current or working pressure or hydraulic flow;

c) nominal speed;

d) presence of abnormal noise; and

e) correct operation of the control brake.

6.4 Static load test under 1,5 times the holding load

The rope shall be used to lift a load equivalent to 1,5 times the holding load on the drum. The brake shall prevent rotation of the drum when subjected to this load.

6.5 On-board test and inspections

The pilot ladder winch reel shall be tested as a part of the complete pilot ladder unit. The minimum extent of the test shall be as follows.

a) The whole pilot ladder on the winch reel shall be lowered, and then be hoisted to wound on the winch reels drum. The pilot ladder shall be lowered and hoisted twice. The pilot ladder shall be hoisted and lowered smoothly, stored conveniently, and it shall brake safely and reliably. The results shall conform to the requirements of 5.5.

b) Apply a static load of 1,5 times the holding load for the complete pilot ladder winch reel. The results shall conform to the requirements of 5.4.

7 Marking

On the side of the power source, pilot ladder winch reels conforming to this document shall be marked with the following.

a) Safety operation specifications or points for attention.

b) Direction indication of the rope-out direction of the drums.

c) The nameplate shall be marked with the following information:

1) name of the product;

2) name and label of the manufacturer;

3) type and “ISO 24136” and “SOLAS”;

NOTE Type includes drive mode (E for electric, P for pneumatic, H for hydraulic, U for manual), reel forms (R for right-hand, L for left-hand) and nominal size.

EXAMPLE An electric right-hand pilot winch reel with nominal size of 1,5 kN shall be marked as:

Pilot winch reel-ISO 24136-1.5-ER-SOLAS

4) drum load and holding load;

5) motor power;

6) the year of manufacture of the pilot ladder winch reel;

7) identification of the approved maritime safety administration, along with any approval indications required by that administration; and

8) where used, identification of an approved organization acting on behalf of the maritime safety administration.

