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मानक

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IS 8994 (2004): Shipbuilding and marine structure - Deck machinery - Accommodation ladder winches [TED 19: Marine Engineering and Safety Aids]



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भारतीय मानक

पोत निर्माण और समुद्रीय संरचनाएं — डैक मशीनरी —
एकोमोडेशन — लैडर विन्च
(पहला पुनरीक्षण)

Indian Standard

**SHIPBUILDING AND MARINE STRUCTURES — DECK
MACHINERY— ACCOMMODATION LADDER
WINCHES**

(First Revision)

ICS 47.020.50

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BUREAU OF INDIAN STANDARDS
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NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with with ISO 7364 : 1983 'Shipbuilding and marine structures — Deck machinery — Accommodation ladder winches' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Marine Engineering and Safety Aids Sectional Committee and approval of the Transport Engineering Division Council.

This Indian Standard was first issued in 1978. This revision has been taken up to harmonize it with the latest version of ISO Standard.

The text of the International Standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

CROSS REFERENCES

In this adopted standard reference appears to certain International Standard listed below for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their place, are given below along with their degree of equivalence for the edition indicated.

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 2408 : 1985 Steel wire ropes for general purposes — Characteristics	IS 2266 : 2002 Steel wire ropes for general purposes — Specification	Technically equivalent
ISO 3828 : 1984 Shipbuilding — Deck machinery — Vocabulary	IS 8650 (Parts 1 to 5) 1989 Shipbuilding — Deck machinery — glossary of terms and graphical symbols	do
ISO 5488 : 1979 Shipbuilding — Accommodation ladders	—	—

The Technical Committee responsible for the preparation of this standard has reviewed the provisions of ISO 5488, and has decided that they are acceptable for use in conjunction with this standard.

For BIS Certification Marking, details are available with the Bureau of Indian Standards.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SHIPBUILDING AND MARINE STRUCTURES — DECK MACHINERY— ACCOMMODATION LADDER WINCHES

(First Revision)

1 Scope and field of application

This International Standard specifies requirements and characteristics of lightly powered ships' accommodation ladder winches provided with electric, hydraulic or pneumatic drive, and unpowered ships' accommodation ladder winches.

It does not include requirements for the prime mover used to operate the winch.

2 References

ISO 2408, *Steel wire ropes for general purposes — Characteristics.*

ISO 3828, *Shipbuilding — Deck machinery — Vocabulary.*

ISO 5488, *Shipbuilding — Accommodation ladders.*

3 Definitions

For the purpose of this International Standard, the definitions given in ISO 3828 apply, with the following exceptions.

3.1 nominal size : The nominal size, which corresponds to the drum load as given in the table, is used as a designation of a winch in accordance with this International Standard.

3.2 drum load : The maximum rope tension in the rope or ropes at the drum exit either when the winch is hoisting an unloaded accommodation ladder at the nominal speed, with the rope or ropes wound on the drum in a single layer, or when the winch is placing the accommodation ladder in its stowage position.

3.3 Types of winches (see the figure)

3.3.1 right-hand winch : A winch where the reduction gear or drive of the drum is on the right-hand side of the drum, in relation to an observer situated on the side of the motor or power supply.

3.3.2 left-hand winch : A winch where the reduction gear or drive of the drum is on the left-hand side of the drum, in relation to an observer situated on the side of the motor or power supply.

3.3.3 symmetrical double drum winch : A winch where the reduction gear or drive of the drums is between symmetrically situated drums.

4 Design and operation

4.1 The winches shall be equipped with one or two drums. The drum shall be a split drum where two ropes are to be wound on it.

4.2 The drum length shall be such that the rope can be wound on fully, in not more than three layers.

4.3 The drum diameter shall be not less than 14 times the rope diameter given in the table.

4.4 The flange height shall be such that it will project at least 1,5 rope diameters beyond the outermost layer of the rope.

4.5 Double drum winches intended for double flight accommodation ladders shall be fitted with a suitable device to allow independent holding, hoisting or lowering of each flight.

4.6 The winch shall be provided with a device capable of holding the drum at 1,5 holding load. For powered winches, such device shall automatically operate when the drive is being shut off or if the power fails. Manual lowering and hoisting of the accommodation ladder shall be possible. A self-locking wormgear (or equivalent) may be considered a holding device if agreed between the purchaser and the manufacturer.

4.7 For design purposes the drum shall be based on the use of 6 × 37 galvanized steel wire rope with fibre core of 1 770 N/mm² tensile grade, as specified in ISO 2408. Wire rope diameters are listed in the table. This requirement does not preclude the use of other types of rope in service.

In every case the safety factor of the rope shall be not less than five in relation to the holding load listed in the table.

NOTE — Attention is drawn to the possibility of national authorities requiring a safety factor of more than five. The relevant figures for a safety factor of six are shown in brackets in the table.

4.8 The winch shall be designed to ensure that all bearing surfaces and corresponding component parts of the winch are lubricated during operation.

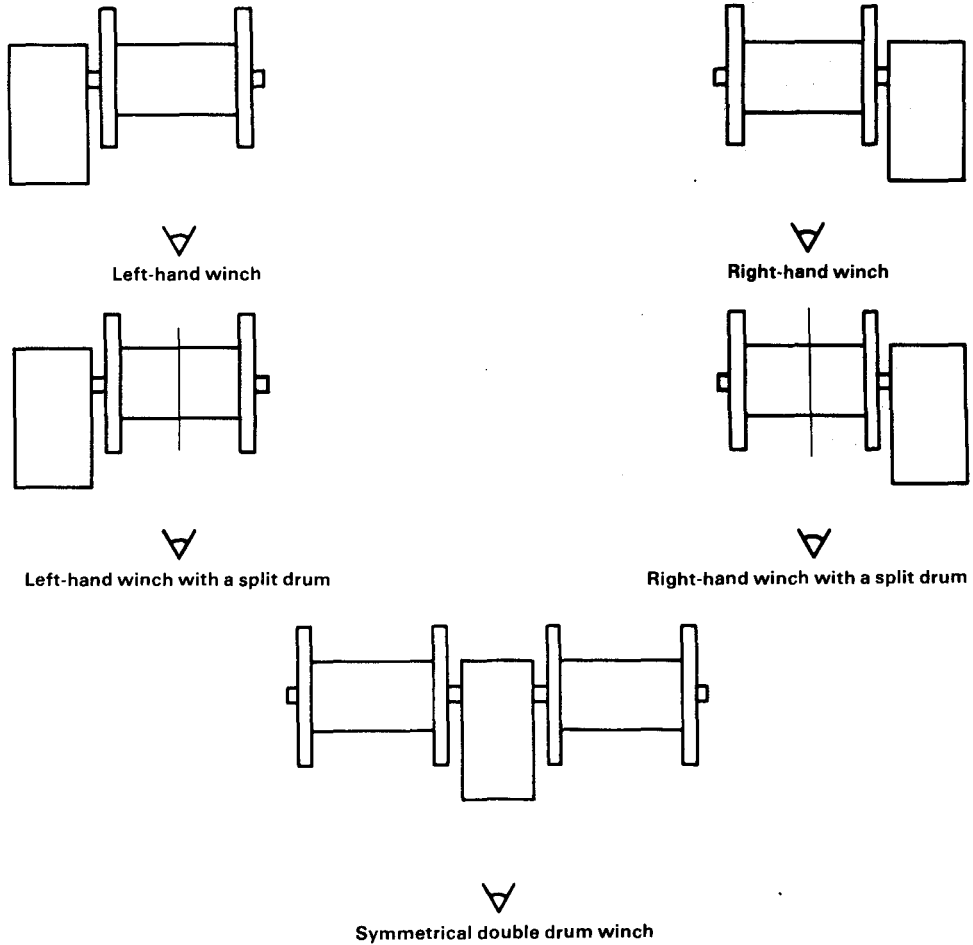


Figure — Examples of accommodation ladder winches

4.9 Stresses in component parts of the winch being acted upon with the drum load and holding load shall not exceed 0,4 times the 0,2 % proof stress of the material.

4.10 The winch shall be fitted with a local emergency stop.

4.11 If agreed between the purchaser and manufacturer, the accommodation ladder winch may be provided with a speed control on the drive for hoisting and lowering.

4.12 Lightly powered winches shall be also provided with manual drive.

4.13 The operator shall be protected against the possibility of being struck by a revolving crank handle.

4.14 Electrical equipment shall be installed in accordance with IEC Publications.

5 Characteristics

5.1 The characteristics of the winch shall be as listed in the table.

5.2 For lightly powered winches the nominal speed of hoisting the accommodation ladder shall be not less than 0,1 m/s.

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

Table — Performance data

1	2	3	4	5
Nominal size	Drum load ¹⁾	Holding load ¹⁾	Minimum rope strength ¹⁾ (= 5 (6) × holding load) ²⁾	Steel wire rope diameter ^{2) 3)}
	kN	kN	kN	mm
5	5	15	75 (90)	12 (13)
6	6,3	18	90 (108)	13 (16)
8	8	25	125 (150)	16 (18)
10	10	30	150 (180)	18 (20)
12	12,5	37,5	188 (225)	20 (22)
16	16	48	240 (288)	22 (24)

1) For winches working with two ropes the listed values are the sum of the forces on each rope.

2) In columns 4 and 5, a holding load safety factor of five is given, with a safety factor of six indicated in brackets.

3) The rope diameter is given for winches working with one rope only.

6 Designation

Accommodation ladder winches conforming to this International Standard shall be designated as follows, in the order given :

- accommodation ladder winch;
- the number of this International Standard;
- type of drive (E - electric, H - hydraulic, P - pneumatic, U - unpowered);
- nominal size (according to the table);
- type of winch (R - right-hand, L - left-hand, and D - single drum, DD - split drum, or 2DS - symmetrical double drum).

Example :

Designation of an electrically driven accommodation ladder winch of nominal size 12, right-hand, with a single split drum :

Accommodation ladder winch ISO 7364-E-12-R-DD

Additional information shall be given, for example the type of current (AC or DC), voltage, frequency and if possible pressure (bar) in hydraulic and pneumatic systems.

7 Acceptance tests (individual)

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

7.1 Test without load

The winch shall be run without load for 10 min continuously, 5 min in each direction. The temperature of bearings shall be checked.

7.2 Drum load test

The winch shall be run under drum load through two lowering and hoisting cycles, the length of the rope paid out being not less than one-third of the drum capacity.

The following shall be checked :

- a) oil-tightness;
- b) power input;
- c) speed obtained;
- d) presence of abnormal noise;
- e) correct operation of the control brake.

7.3 Static test under 1,5 holding load

A load equivalent to the 1,5 holding load shall be applied, with the rope wound in a single layer on the drum. The holding device shall prevent rotation of the drum when subjected to this load.

7.4 On board test and inspections

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

- a) twice hoisting the accommodation ladder up to its full height and lowering it (tested as in 7.2);
- b) holding a static load for the complete accommodation ladder unit loaded as specified in ISO 5488 paragraph 6.1.3.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

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