International Standard 5488

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Shipbuilding — Accommodation ladders

Construction navale — Échelles de coupée

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5488 was developed by Technical Committee ISO/TC 8, *Shipbuilding*, and was circulated to the member bodies in July 1978.

It has been approved by the member bodies of the following countries :

Australia	Ireland	Poland
Austria	Italy	Romania
Belgium	Japan	Spain
Bulgaria	Korea, Dem. P. Rep. of	United Kingdom
Czechoslovakia	Korea, Rep. of	Yugoslavia
Finland	Mexico	
India	Netherlands	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

France	Sweden
Germany, F. R.	USSR
Norway	

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Shipbuilding — Accommodation ladders

1 Scope and field of application

This International Standard specifies requirements and the method of test for accommodation ladders used on merchant ships (excluding passenger ships) to enable persons to embark and disembark safely. The requirements are applicable to either single-flight or multi-flight ladders.

2 References

ISO/R 630, *Structural steels.*

ISO/R 209, *Composition of wrought products of aluminium and aluminium alloys — Chemical composition (per cent).*

3 Types

3.1 Revolving-platform ladder

The ladder, of single-flight or multi-flight construction, is hinged from an upper revolving platform and is capable of being varied in direction and inclination between the ship and the lower access level.

The ladder may be supported by steel wire ropes or chains from the lower suspension point or by rollers fixed to the bottom of the ladder (see figures 1 and 2).

3.2 Fixed-platform ladder

The ladder is hinged from a fixed anchorage, and is capable of being varied in inclination between the ship and the lower access level.

This ladder is supported by steel wire ropes or chains from suspension point(s) in the lower part of the ladder (see figures 1 and 2). This ladder may also be of single-flight or multi-flight construction.

4 Definitions

4.1 Nominal length, L_1 :

4.1.1 For a single-flight ladder, the distance from the centre of the top pin to the centre of the lower platform holding pin (see figure 1).

4.1.2 For a multi-flight ladder, the sum of the lengths L_3 and L_4 of the separate flights measured from the centre of the top pin to the centre of the lower pin in each case (see figure 2).

4.2 design length, L_2 : The maximum distance between supporting points for each separate flight (see figures 1 and 2).

4.3 width, b : The effective width of the walking surface (see figure 3).

4.4 handrail height, a : The vertical height of the upper surface of the handrail, measured from the highest point of the standing surface presented by the steps when the ladder is horizontal (see figure 3).

5 Dimensions

5.1 Nominal length, L_1

The range of nominal lengths shall be :

- 3,6 to 7,2 m in 0,6 m increments;
- 7,2 to 21,6 m in 1,2 m increments;
- 21,6 to 30,6 m in 1,8 m increments.

5.2 Width, b

The width, b, of all ladders shall be 600 mm.

5.3 Distance between steps

The distance between the steps measured along the line tangential to the step noses shall be 300 mm.

5.4 Handrail height, a

The top handrail height, a, as defined in 4.4 shall be not less than 1 000 mm. An intermediate rail at mid-height shall be provided (see figure 3).

6 Construction

6.1 Design

6.1.1 Minimum angle of use

Ladders of both types shall be designed for safe operation in a horizontal position.

6.1.2 Maximum angle of use

With the steps horizontal, the ladder shall operate safely at an angle of 55° from the horizontal.

6.1.3 Design loading

The ladders shall be designed to support a uniform load equivalent to 735 N on every step when the ladder is in a horizontal position.

6.1.4 Step design

Individual steps shall be designed to withstand a central point load of 735 N.

6.1.5 Design loading for access and intermediate platforms

The platforms shall be designed to support a uniform loading of 4 000 N/m^2. The framework and supporting structure of the upper and intermediate platforms shall in addition be designed to carry the weight of the suspended ladder together with the design load given in 6.1.3.

6.1.6 Design loading for handrail

Handrails and supports shall be designed for a side loading at the upper handrail of 500 N/m without permanent deformation.

6.1.7 Support points

All support points (pivots, rollers, etc.) and suspension points (lugs, brackets, etc.) shall be of adequate strength to support the weight of the ladder plus the loading stipulated in 6.1.3.

6.1.8 Safety factor

The allowable stress used in the design of the ladder, with the loading specified in 6.1.3, shall be determined by applying a safety factor of 2 to the yield point for steel and to the 0,2 % proof stress for aluminium.

6.2 Materials

The principal side members of the ladder shall be constructed from steel or aluminium in accordance with the table, but alternative materials may be used for these and other components provided that they are at least as suitable in all respects for the intended duty and are equally acceptable to the purchaser.

Table — Materials

Steel	ISO/R 630, Fe 42A or equivalent
Aluminium	ISO/R 209, Al Mg4 or Al Si1 Mg or other suitable alloy

7 Testing

7.1 Procedure

A prototype of each design of ladder shall be tested in a horizontal position, simply supported at the ends of the design length L_2 (see figure 4), to prove the longitudinal strength and to measure maximum deflection. In the case of multi-flight ladders, each separate flight shall be tested in a similar manner.

The ladder shall be loaded with a load equivalent to 735 N on every step.

7.2 Measurement and examination

7.2.1 The maximum deflection of each flight of a ladder when loaded shall not exceed the following :

$\frac{L_2}{100}$ for steel

$\frac{L_2}{75}$ for aluminium

7.2.2 After removal of the test load, the ladder shall be carefully examined to ensure that there are no signs of failure to the structure and that no permanent deformation has taken place.

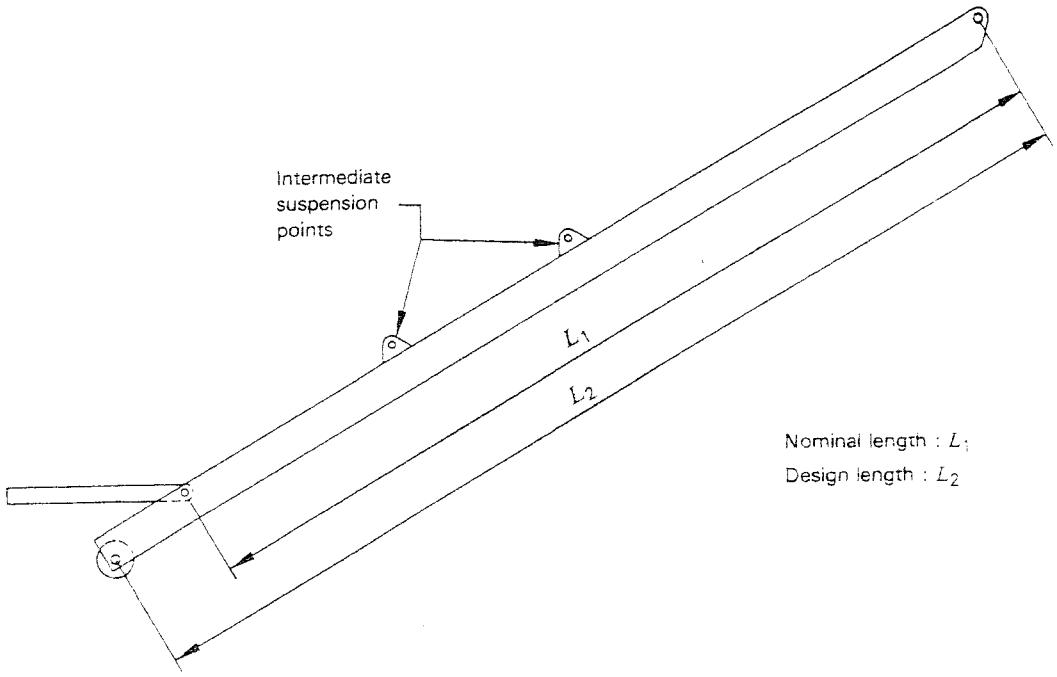


Figure 1 — Single-flight ladder

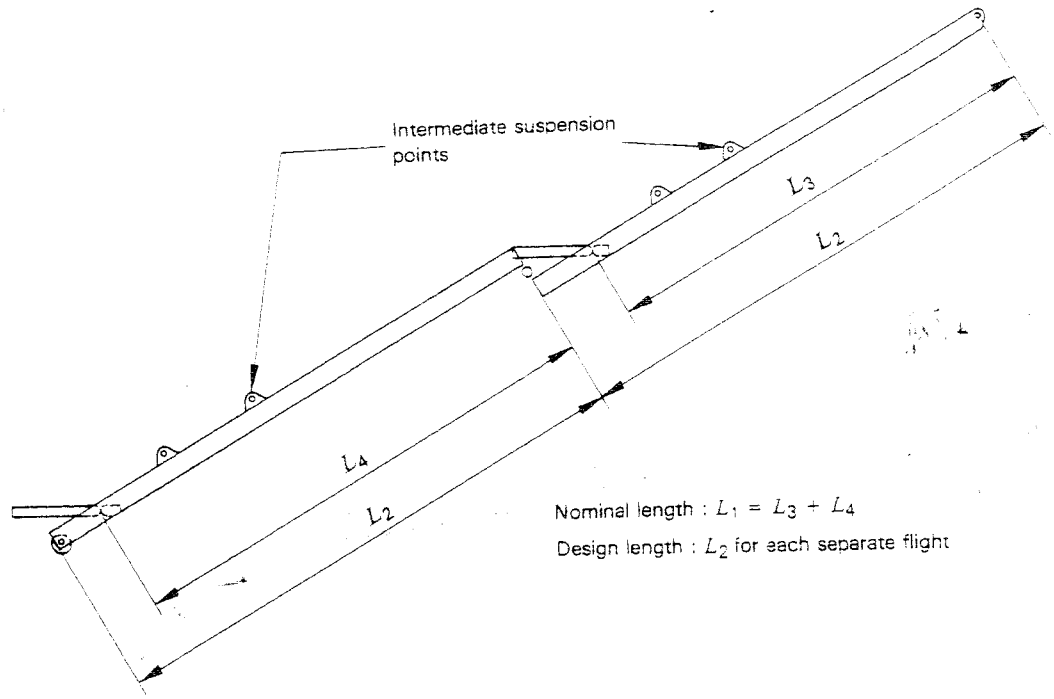
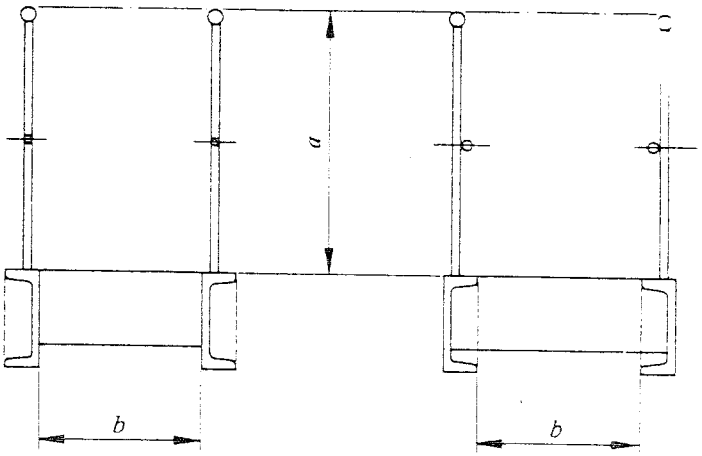


Figure 2 — Multi-flight ladder



NOTE — The sections shown are examples only.

Figure 3 — Minimum width, b, and handrail height, a

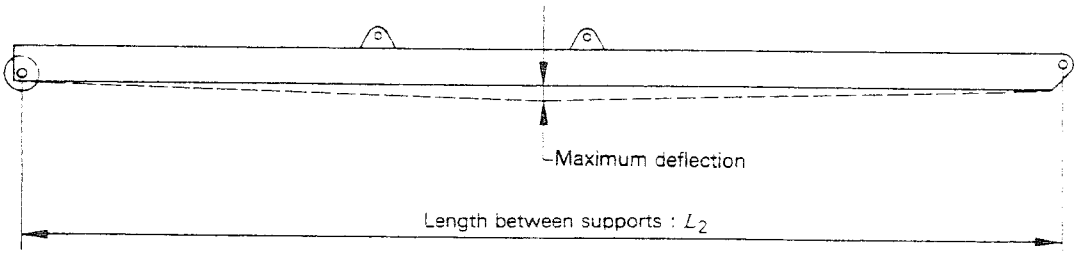


Figure 4 — Method of testing for each separate flight