



SLOVENSKI STANDARD

SIST EN 131-6:2015

01-maj-2015

Lestve - 6. del: Teleskopske lestve

Ladders - Part 6: Telescopic ladders

Leitern - Teil 6: Teleskopleitern

Échelles - Partie 6 : Échelles télescopiques

Ta slovenski standard je istoveten z: EN 131-6:2015

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ICS:

97.145

Lestve

Ladders

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en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 131-6

March 2015

ICS 97.145

English Version

Ladders - Part 6: Telescopic ladders

Échelles - Partie 6: Échelles télescopiques

Leitern - Teil 6: Teleskopleitern

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 131-6:2015) has been prepared by Technical Committee CEN/TC 93 "Ladders", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2015, and conflicting national standards shall be withdrawn at the latest by September 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This European Standard is one of a series about ladders. The other standards of this series are listed in Clause 2 and in the Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 131-6:2015 (E)**1 Scope**

This European Standard specifies the general design features, requirements and test methods and defines terms for leaning and standing telescopic ladders.

Ladders with extension elements are not covered by this part of EN 131.

This part of the standard is intended to be used in conjunction with EN 131-1:2007+A1:2011, EN 131-2:2010+A1:2012, EN 131-3:2007 and if applicable EN 131-4:2007.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 131-1:2007+A1:2011, *Ladders - Part 1: Terms, types, functional sizes*

EN 131-2:2010+A1:2012, *Ladders - Part 2: Requirements, testing, marking*

EN 131-3:2007, *Ladders - Part 3: User Instructions*

EN 131-4:2007, *Ladders - Part 4: Single or multiple hinge-joint ladders*

3 Terms and definitions

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For the purposes of this document, the terms and definitions given in EN 131-1 and the following apply.

3.1**telescopic ladder**

ladder consisting of three or more rung/step sections with telescopic stiles

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Note 1 to entry: Ladders with extension elements like in Figure 1 are not covered by this part of EN 131.

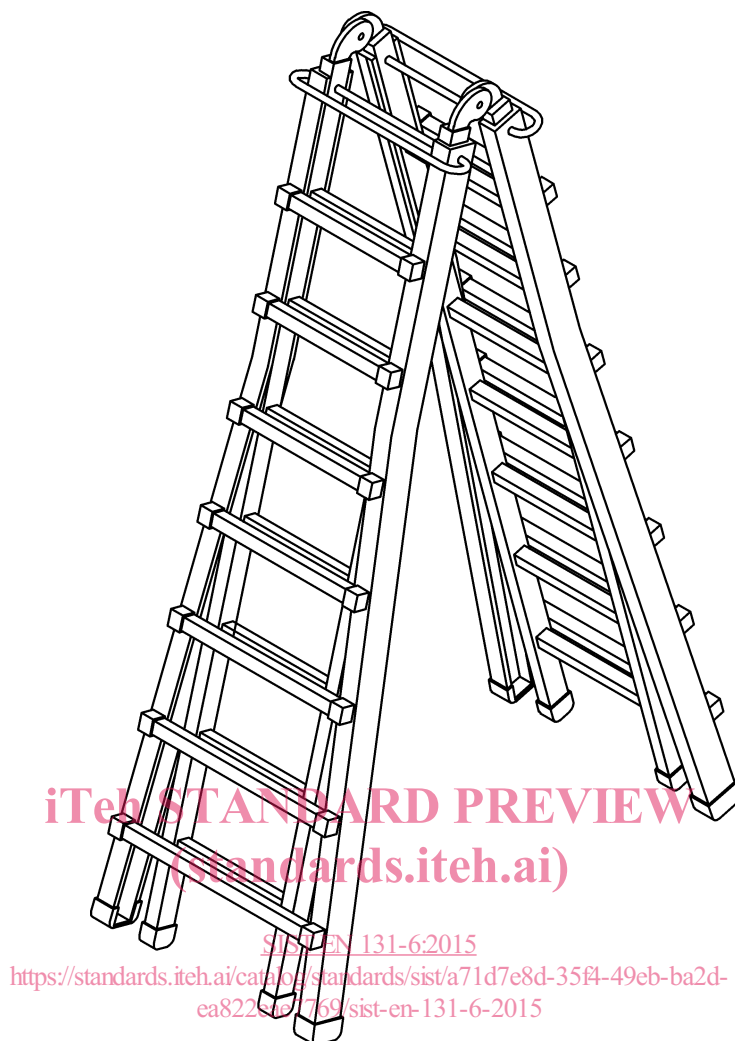


Figure 1 – Extension elements not covered by this part of EN 131

3.2

hinge-joint telescopic ladder

ladder including one or more hinge-joint devices with at least one predetermined lockable position

3.3

rung/step section

section of ladder that consists of one rung/step connected to two telescopic stiles

3.4

rung/step bracket

part that attaches the rung/step to the stile

3.5

rung/step section locking mechanism

mechanism that locks a rung/step section

3.6

locking indicator

mechanism or part that indicates that one rung/step section or part of one rung/step section is locked/unlocked

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3.7

locking pin

part that locks each rung/step section and that is engaged when the locking mechanism is locked

3.8

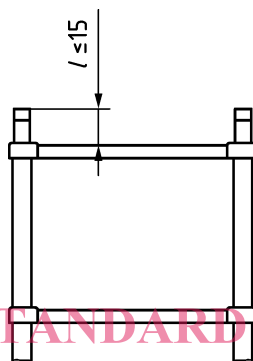
top bar

connection between the upper parts of the two stiles where the distance between the topmost connection and the upper end of the ladder is less than, or equal to, 15 mm

Note 1 to entry: See Figure 2.

Note 2 to entry: If the distance between the end of the stiles and the upper connection of the two stiles do fulfill the requirement of l_3 , as defined in EN 131-1:2007+A1:2011, 3.37, it should be considered as a rung/step (see Figure 3).

Dimensions in millimetres



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Figure 2 — Top bar

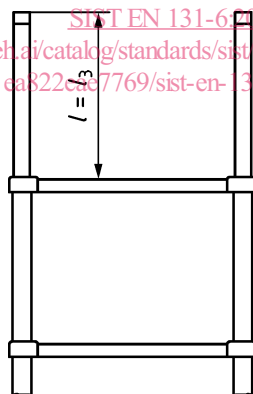


Figure 3 — Rung/step

3.9

protection against squeezing

mechanism or part that minimizes the risk of squeezing when the ladder is shortened

Note 1 to entry: For example brake system.

3.10

release function

function which releases the locking mechanism

3.11

base section

section starting from the lower end of the ladder

3.12**ascendable part**

part of the ascending leg consisting only of fully extended rung/step sections

3.13**storage position**

position where none of the rung/step sections are extended

4 Functional dimensions**4.1 General dimensions**

Dimensions are given in EN 131-1:2007+A1:2011.

4.2 Specific dimensions

The inner width b_1 shall be measured at the upper edge of the shortest rung. The outside width b_2 shall be measured at the outside of the contact points to the ground.

l_3 shall be minimum $0,5 l_5$ and maximum $l_5 + 15$ mm measured in the middle line between the stiles.

5 Requirements**5.1 General requirements**

The drawings in this part of EN 131 are examples only and products do not need to correspond. However, dimensions are binding.

For other requirements EN 131-2:2010+A1:2012, Clause 4 requirements apply.

5.2 Distance between rungs/steps

When the ladder is in use position the rungs/steps allowed to stand on shall always be equally spaced in accordance with EN 131-1:2007+A1:2011.

In the position of use the construction shall not allow different distances between the rungs/steps with a tolerance of ± 2 mm in the ascendable part of the ladder and ensure that the rung/step sections that are not extended shall be stacked on top of the ladder.

It shall not be possible for the user to alter these distances without manipulation.

5.3 Additional requirements for the top of leaning ladders

The top of the ladder has to be designed in a way that a 2-point area of contact between the top of the ladder and a vertical plane can be assured.

5.4 Locking of the rung/step sections

The ladder has to be designed in way that all extended rung/step sections are locked when the ladder is in the using position.

Every rung/step section shall have a locking mechanism for each stile. Each locking mechanism shall visibly indicate whether it is locked or unlocked.

NOTE Visible indication can for example be a coloured area or a visible locking pin.

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It shall be clear if the locking mechanisms are in locked position or not when visually examining the erected ladder standing in front of the ladder holding on to it.

5.5 Design

Screws and nuts shall be secured against loosening, for example by means of self-locking or mechanically locked safety mechanisms.

It shall not be possible to separate rung/step sections without using tools.

The design shall seek to minimize the existence of shearing and squeeze points and where they do exist to minimize the shearing and squeezing effects as far as practicable.

NOTE 1 Shear or squeeze points exist if the distance between two accessible parts relative to each other is less than 25 mm and more than 7 mm in any position during movement (see EN 581-1).

The unlocking and sliding in of the ladder shall be possible in a safe way. The ladder shall be designed in a way that squeezing between the rungs/steps is avoided.

NOTE 2 Protection against squeezing can be assured by a permanent braking function of the ladder or by a special stop or distance device. If a permanent braking function is used a typical time for collapsing a section of 300 mm is 1,5 s if the movement is uniform.

If only a distance device is used for protection against squeezing between the rung/steps this device shall be located at least 80 mm from the manufacturers recommended position of the user's hands during collapse of the ladder.

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6 Testing**6.1 General**

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For all tests, unless otherwise stated in the particular test, the following tolerances apply:

± 1 mm for longitudinal measurements;

± 5 mm for the measurement of the distance between the supports and the overhanging length;

± 1° for the measurement of angles;

± 1 % for static forces and torque.

Tests shall be performed at a temperature between 15° C and 25° C.

Where the ascendable side cannot be determined by the construction of the product, or where it is a multiple part combination ladder, the ladder shall be tested twice regarding 6.3 and 6.4. Conduct strength test and bending test on one side then rotate the ladder 180° about the longitudinal axis and repeat 6.3 and 6.4.

Inspect the ladder before testing to confirm condition and operation of all parts by fully extend the ladder.

Perform drop test according to 6.2 as preconditioning for each ladder, with the exception of test block D (bottom stile end test) and F (feet pull test), see Annex A.

6.2 Drop test

Place the extended ladder in vertical position. Let the ladder fall in the direction of use from vertical to horizontal position by its own weight. Repeat the test with ladder rotated 180° about the longitudinal axis.

Bring the ladder back to storage position.

6.3 Strength test of stiles

Extend the ladder to its maximum length. The test shall be carried out on the complete ladder. In the case of combination ladders the test shall be carried out on the complete extended ladder. Sectional ladders shall be tested at full length with all permitted pieces. The test shall be carried out without supporting legs if not permanently fixed to the ladder.

The ladder shall be placed horizontally on supports situated 200 mm from each end of the ladder.

If it is not possible to use the 200 mm distance it is allowed to reduce the distance equally at the top and the bottom.

The supports shall be cylindrical with diameters between 25 mm and 100 mm and one shall be free to rotate the other shall be fixed.

The loads shall be applied on $2/3$ of the length between the supports, measured from the support of the base section, and equally to both stiles over a width of 100 mm while it has to be taken care that an applying by jerks is avoided. The measurements shall be taken at the same point as the load has been applied.

A pre-load of 500 N shall be applied for a duration of 1 min. The position of the ladder after removal of the pre-load is the origin for measurement.

A test load F of 1100 N (see Figure 4) shall be applied for the duration of 1 min. The measurement shall be taken 1 min after removing the test load. The permanent deformation f of the ladder shall not exceed 0,1 % of the distance l between the supports. (standards.iteh.ai)

For standing ladders, the test load F shall be determined by the formula

$$F = 2\,600\text{ N} \times \cos \alpha$$

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but not less than 1000 N

where α = manufacturer's designed angle of use.

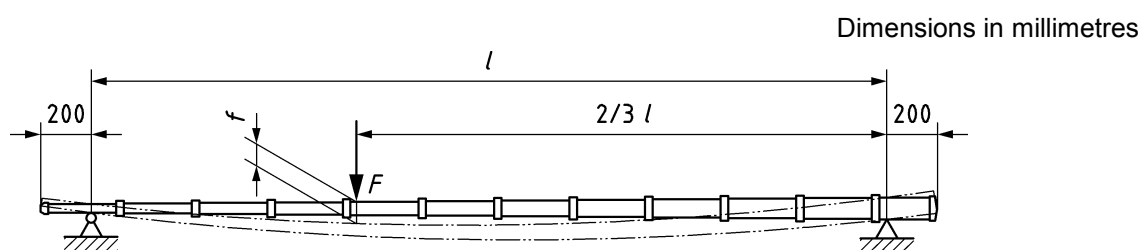


Figure 4 — Strength and bending test

6.4 Bending test of the stiles

Extend the ladder to its maximum length. The test shall be carried out on the complete ladder. In the case of combination ladders the test shall be carried out on the complete extended ladder. Sectional ladders shall be tested at full length with all permitted pieces. The test shall be carried out without supporting legs if not permanently fixed to the ladder.

The ladder shall be placed horizontally on supports situated 200 mm from each end of the ladder.