SLOVENSKI STANDARD
SIST EN 131-6:2019

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Nadomešča:
SIST EN 131-6:2015

Lestve - 6. del: Teleskopske lestve

Ladders - Part 6: Telescopic ladders

Leitern - Teil 6: Teleskopleitern

Échelles - Partie 6 : Échelles téléscopiques

Ta slovenski standard je istoveten z: EN 131-6:2019

ICS:

97.145	Lestve	Ladders

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EUROPEAN STANDARD

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Ladders - Part 6: Telescopic ladders

Échelles - Partie 6: Échelles télescopiques

Leitern - Teil 6: Teleskopleitern

This European Standard was approved by CEN on 26 November 2018.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

European foreword

This document (EN 131-6:2019) 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of an identical text or by endorsement, at the latest by August 2019, and conflicting national standards shall be withdrawn at the latest by August 2019.

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

This document supersedes EN 131-6:2015.

In comparison with the previous edition, the following technical modifications have been made:

a) strength test in position of use;

b) durability test for the complete ladder added;

c) asymmetrical bending test added;

d) requirements specified in more detail and aligned with the EN 131 series.

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 organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document 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, EN 131-2, EN 131-3 and if applicable EN 131-4.

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.

EN 131-1:2015, *Ladders — Part 1: Terms, types, functional sizes*

EN 131-2:2010+A2:2017, *Ladders — Part 2: Requirements, testing, marking*

EN 131-3:2018, *Ladders — Part 3: Marking and user instructions*

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

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
telescopic ladder
ladder consisting of three or more rung/step sections with telescopic stiles

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

3.7
locking pin
part that locks each rung/step section and that is engaged when the locking mechanism is locked

3.8
protection against squeezing
mechanism or part that minimizes the risk of squeezing when the ladder is shortened

3.9
release function
function which releases the locking mechanism

3.10
base section
section starting from the lower end of the ladder

3.11
ascendable part
part of the ascending leg consisting only of fully extended rung/step sections

3.12
storage position
position where none of the rung/step sections are extended

3.13
locking mechanism
system that retains the rungs in the desired position of use

4 Functional dimensions

4.1 General dimensions

Dimensions are given in EN 131-1.

4.2 Specific dimensions

For leaning telescopic ladders dimension l_3 is not applicable providing l_6, see 4.3, is fulfilled. If l_6 is not fulfilled l_3 shall begreater than 0,5 l_5 and less than l_5 + 15 mm measured along a line in the middle of the stiles.

4.3 Top rung clearance l_6

The dimension l_6 is the horizontal clearance between the top rung and any obstruction (specifically the wall) when the ladder is in its position of use.

The dimension l_6 is the horizontal distance between the top rung and the wall when measured with the ladder in its position of use at any angle between 65° and 75° (see Figure 1). This shall not be less than 35 mm and not more than 300 mm. The minimum clearance between the top rung and any obstruction shall be 35 mm in any case.

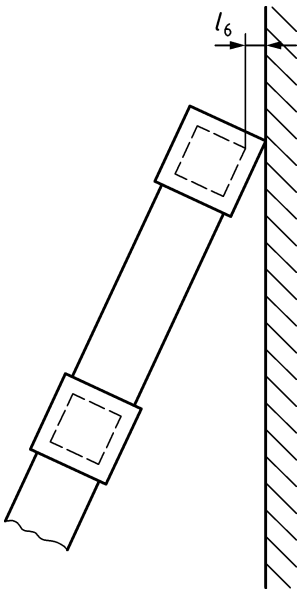

Figure 1 — Top rung clearance l_6

4.4 Outside width b_4

The dimension b_4 is the outside width measured to the outside of the stiles at its widest part at the bottom of the ladder, see Figure 2.

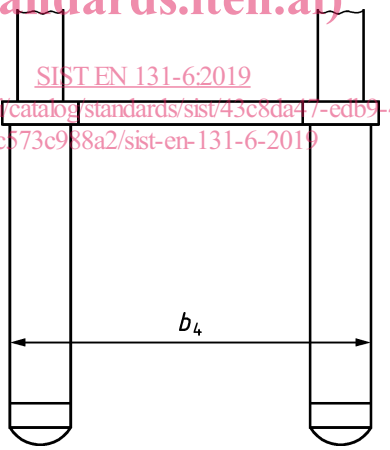

Figure 2 — Outside width b_4

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+A2:2017, Clause 4 applies.

5.2 Distance between rungs/steps

When the ladder is in its position of use the rungs/steps allowed to stand on shall always be equally spaced in accordance with EN 131-1:2015, 4.1.

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 at the top of the ladder.

Manufacturer shall take all necessary precautions to prevent these distances been altered without manipulation and the use of tools.

5.3 Additional requirements for the top of leaning ladders

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

5.4 Locking of the rung/step sections

The ladder shall be designed in way that all extended rung/step sections are locked when the ladder is in the position of use.

Every rung/step section shall have a locking mechanism for each stile. With the ladder in position of use it shall be clearly visible to the user that all of the locking mechanisms are locked or unlocked.

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

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 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 when the ladder is used in accordance to the user instructions.

Protection against squeezing can be ensured by a breaking function that reduces any impact load on the user's hands when the ladder is collapsed according to the manufacturer's instruction. If a permanent breaking 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.

5.6 Base width b_2

The minimum permanently available base width b_2 for leaning ladders with a length l_1 of 3 000 mm or more shall be derived from:

$$b_2 = b_4 + 0{,}1 \times l_1$$

Where b_4 is the outside width of the stiles at the bottom of the ladder excluding any rung/step brackets, see 4.4.

6 Testing

6.1 General

Telescopic ladders shall be tested to and comply with the requirements defined in EN 131-6.

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. The second test can be carried out on a new ladder.

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

6.2 Ladder preconditioning

6.2.1 General

Ladders for testing shall be preconditioned according to 6.2.2.

After preconditioning the following requirement shall be met:

— no rupturing of parts shall be observed;

— the release function and/or locking indicator shall work correctly;

— the locking mechanism shall work correctly;

— there shall be no relative movement between the connectors and the rungs/steps;

— permanent deformation is only acceptable providing the ladder remains fully functional and it does not impair the fitness for use, or safety, of the ladder;

— the complete ladder shall be fit for use;

— the protection system against squeezing or entrapment shall be fully functional.

The ladder shall pass all the test from test block A, see Annex A

6.2.2 Drop test

Place the extended ladder in vertical position. Let the ladder fall in the direction of use from vertical to horizontal position on a flat concrete floor 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

The test shall be carried out on the complete ladder. The test shall be carried out on the maximum extended ladder according to the manufacturer's instruction.

Where the ascendable side cannot be determined by the construction of the product the ladder shall be tested twice. For the second test the ladder shall be rotated 180 ° about the longitudinal axis. The second test can be carried out on a new ladder.