



SLOVENSKI STANDARD

SIST EN 12572:2002

01-september-2002

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Artificial climbing structures - Protection points, stability requirements and test methods

Künstliche Kletteranlagen - Sicherungspunkte, Anforderungen an die Stabilität und Prüfverfahren

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Structures artificielles d'escalade - Points d'assurage, exigences de stabilité et méthodes d'essai

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EUROPEAN STANDARD

EN 12572

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EUROPÄISCHE NORM

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English version

Artificial climbing structures - Protection points, stability requirements and test methods

Structures artificielles d'escalade - Points d'assurage,
exigences de stabilité et méthodes d'essai

Künstliche Kletteranlagen - Sicherungspunkte,
Anforderungen an die Stabilität und Prüfverfahren

This European Standard was approved by CEN on 5 December 1998.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 136 "Equipements de sports, d'aires de jeux et autres équipements de loisirs", 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 June 1999, and conflicting national standards shall be withdrawn at the latest by June 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This standard specifies the requirements and tests relating only to the protection points and the stability for artificial climbing structures (hereafter referred to as ACS). This standard does not apply to the surrounding area.

This standard is applicable when an ACS is in normal use and relates especially to the techniques and protection methods used during progress on the structure.

This standard is not applicable to playground equipment (see EN 1176-1 to 1176-7).

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1176-1

Playground equipment – Part 1: General safety requirements and test methods

EN 1176-2

Playground equipment – Part 2: Additional specific safety requirements and test methods for swings

EN 1176-3

Playground equipment – Part 3: Additional specific safety requirements and test methods for slides

EN 1176-4

Playground equipment – Part 4: Additional specific safety requirements and test methods for runways

EN 1176-5

Playground equipment – Part 5: Additional specific safety requirements and test methods for carousels

EN 1176-6

Playground equipment – Part 6: Additional specific safety requirements and test methods for rocking equipment

EN 1176-7

Playground equipment – Part 7: Guidance on installation, inspection, maintenance and operation

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 artificial climbing structure (ACS): Sports equipment consisting of a purpose-built climbing structure, which displays different construction characteristics, and is designed for different use objectives and not reserved for a particular age group.

3.2 protection point: An attachment point on the ACS designed to protect the climber.

This protection point can be used during progress on the ACS. It can be fixed or movable.

3.3 individual protection point: A protection point used to safeguard a climber in his/her progress on the ACS.

3.4 individual top rope system: A protection system which is fixed at the top of the climbing section and which is designed to take the rope for one climber.

3.5 collective top rope system: A protection system which is fixed at the top of the climbing sections and which is designed to take the ropes of several climbers at once.

3.6 individual ground protection point: An anchoring point which is fixed to the ground at the base of the ACS and which is designed either to secure a belayer controlling the rope of a lead-climber or as a ground anchor for a self belaying system or as a fixing point for a protection system.

3.7 collective ground protection system: A protection system which is fixed to the ground at the base of the ACS and which is designed to secure belayers controlling the ropes of lead-climbers, or as a ground anchor for self belaying systems.

3.8 stance: A position on the ACS constituted by either a single point or two points linked together where the climber can stop, protect him/herself and his/her fellow climber who can join him/her before continuing the climb from the stance.

3.9 span (see figure D.2): Part of a collective top rope system measured between two consecutive supports or attachments.

3.10 climbing section (see figure 1): Part of the surface of an ACS defined by two vertical planes.

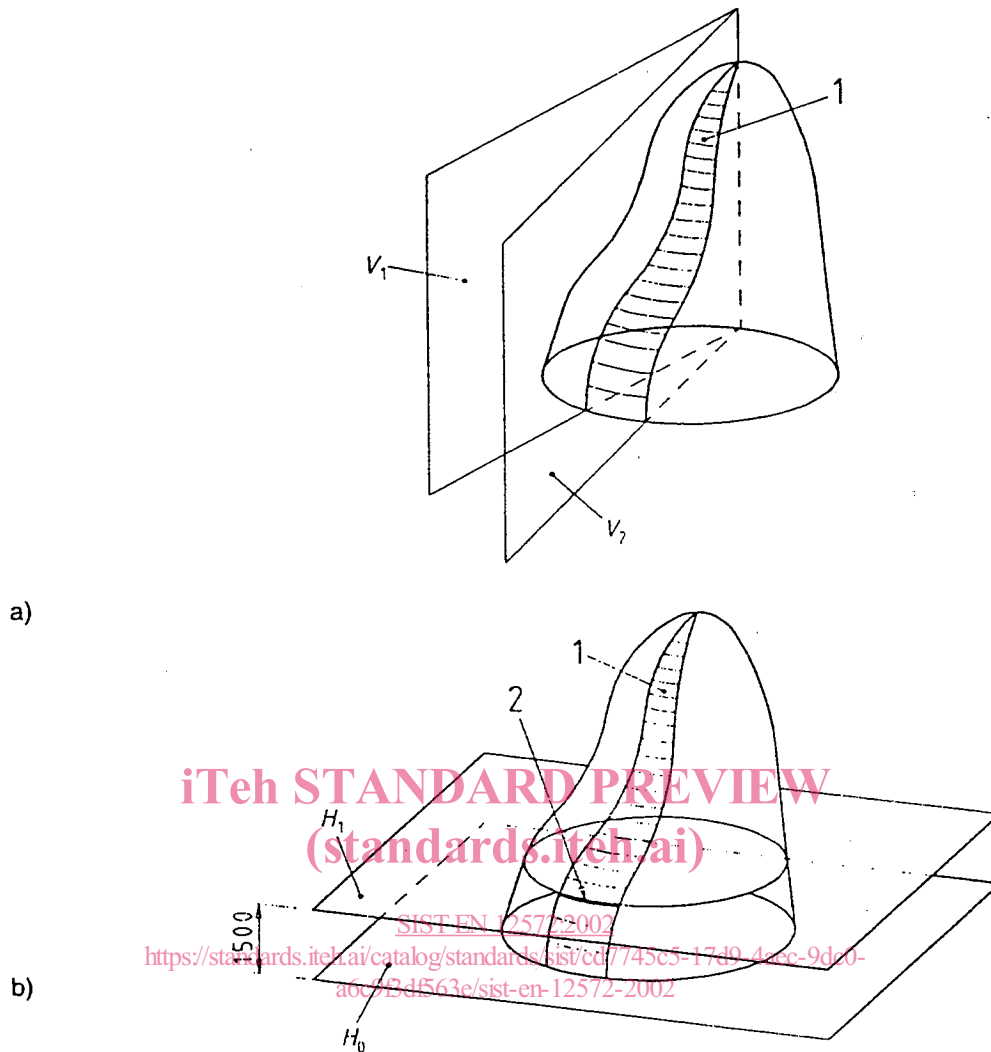
3.11 nominal load: The maximum load that can be generated in normal use.

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Dimensions in millimetres



- 1 climbing section
- 2 width of the route
- V_1, V_2 vertical planes
- H_1 horizontal plane
- H_0 horizontal plane of the ground

Figure 1: Climbing section

4 Requirements

4.1 Layout and placement of individual protection points

The maximum distance x for the placement of the individual protection point which follows the point situated at the height of h (see figure 2) shall be determined by using the formula (1)

$$x = \frac{(h + 2,0)}{5} \quad (1)$$

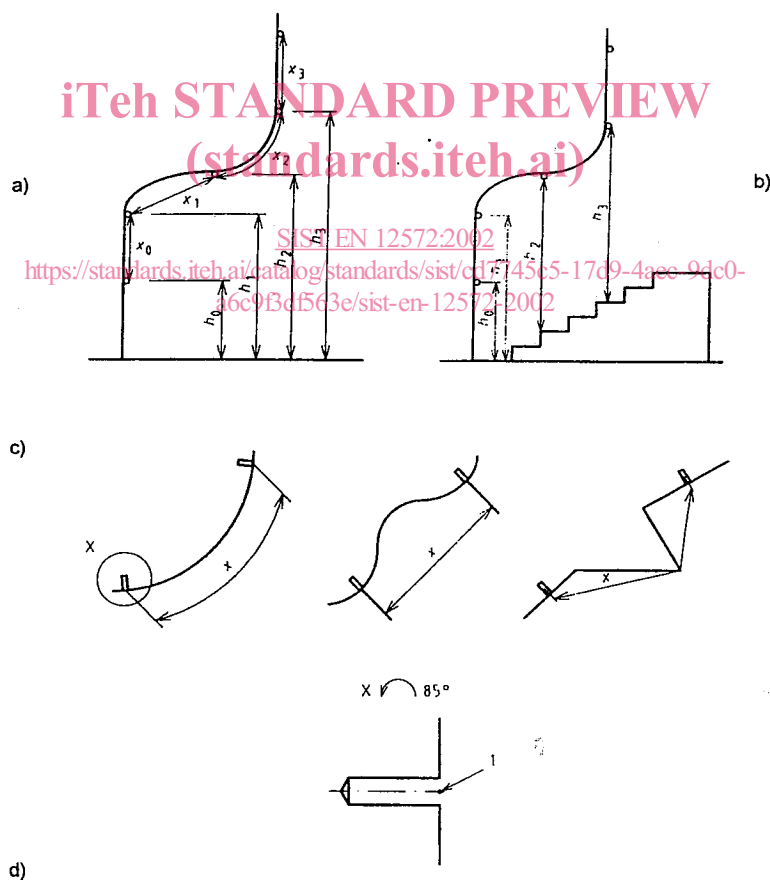
where

h is the distance between the point and the ground or an obstacle, whichever is the closest, measured vertically, in metres, beneath the point in all cases.

For permanent protection points, the maximum distance shall be measured from the lowest internal point of the attachment point (see figure 2c)).

If there are protection points, the maximum of the first point shall not exceed 3,10 m.

For removable protection points, the maximum distance shall be measured from centre to centre of the implantation points at 90° to the surface of the ACS (see figures 2c) and 2d)).



1 reference point for measurement

Figure 2: Layout and placement of protection points

4.2 Geometrical requirements

All protection points and stance points with the exception of those located at the top of the climbing sections shall be in accordance with figure 3.

The bar or device over or through which the rope passes in either a collective or individual top rope system shall be rounded in accordance with figure 4.

Dimensions in millimetres

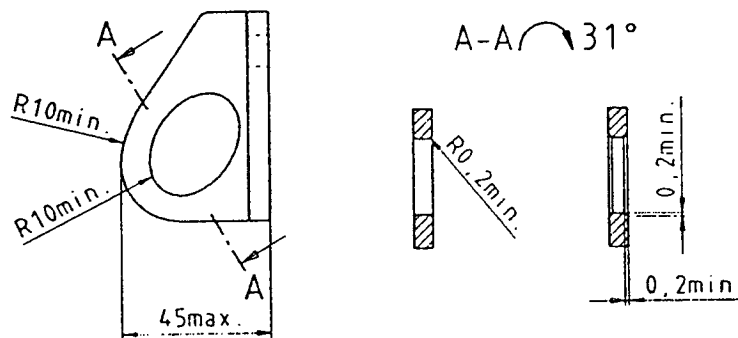


Figure 3: Protrusion of individual protection point

Dimensions in millimetres

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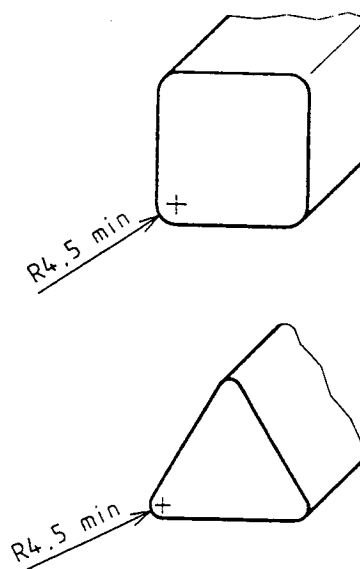


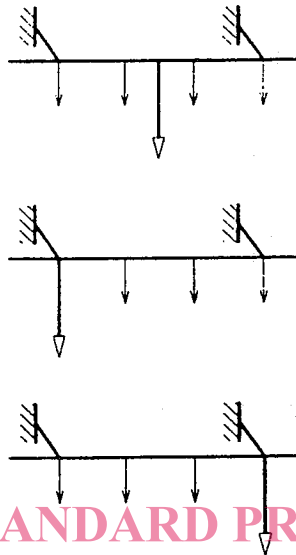
Figure 4: Rounding of parts

4.3 Strength of the components of the ACS

The strength of the components of the ACS shall be justified by one of the following methods:

- by calculation using the calculation loads of table 1 in accordance with annex A and the figures 5 and 6;
- if a) is not possible, by laboratory breaking tests in accordance with annex B.

When tested in accordance with annex B, there shall be no breakage or tearing of the elements.



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Figure 5: Placement of the calculation loads on collective top rope system

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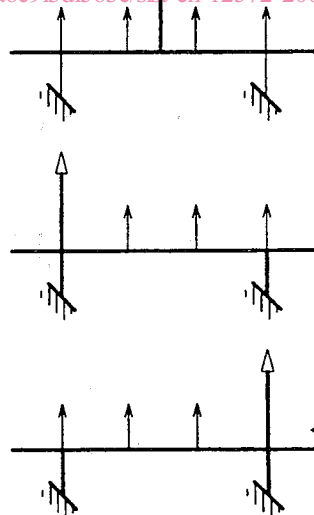


Figure 6: Placement of the loads on collective ground protection systems

Table 1: Loads

	Nominal load	Proof test load	Calculation load*)	Calculation load*) stability	Minimum breaking load****)
	(kN)	(kN)	(kN)	(kN)	(kN)
Normal load of a climber	0,8		1,2	1,2**)	
Load produced by a climbing team on an individual top rope system	2,5		3,8	3,8	
Load produced by a climbing team on a ground protection point	1,4		2,1		
Individual protection point	6,6	8,0	10,0	10,0	20,0
Individual top rope system	6,6	8,0	10,0	3,8	20,0
Collective top rope system	(n-1) 2,5 +6,6	8,0	(n-1) 3,8 +10,0**)	(n-1) 3,8 +10,0	(n-1) 7,5 +20,0
Anchor for stance designed with one protection point	12,0	8,0	18,0	18,0	36,0
Anchor for linked stance designed with more than one protection point linked together	6,6	8,0	10,0	10,0	20,0
Individual ground protection point	4,0	4,0	6,0		12,0
Collective ground protection system	(n-1) 1,4 +4,0	4,0	(n-1) 2,1 +6,0***)	–	(n-1) 4,2 +2,0

*) nominal load multiplied by a factor of 1,5 before applying any other industrial weighting coefficient

***) for ACS without protection points

****) for the collective top rope system the loads are applied throughout each span as shown by annex D

*****) only use during test carried out in accordance with annex B

n: number of climbing sections on a span

Based on experiments it is impossible to have two or more climbers create a peak impact force simultaneously due to a fall.

NOTE: The proof testing only acts as a verification of good installation practice and cannot replace the calculations.

4.4 Impact test of surface elements

When tested in accordance with annex C, there shall be no breaking or splitting of the surface element.