



SLOVENSKI STANDARD
SIST EN 12572-1:2007

01-julij-2007

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Artificial climbing structures - Part 1: Safety requirements and test methods for ACS with protection points

Künstliche Kletteranlagen - Teil 1: Sicherheitstechnische Anforderungen und Prüfverfahren für KKA mit Sicherungspunkten

Structures artificielles d'escalade - Partie 1 : Exigences de sécurité et méthodes d'essai relatives aux SAE avec points d'assurage

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Ta slovenski standard je istoveten z: EN 12572-1:2007

ICS:

97.220.10 Športni objekti Sports facilities

SIST EN 12572-1:2007 en;fr;de

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ICS 97.220.10

English Version

Artificial climbing structures - Part 1: Safety requirements and test methods for ACS with protection points

Structures artificielles d'escalade - Partie 1: Exigences de sécurité et méthodes d'essai pour SAE avec points de protection

Künstliche Kletteranlagen - Teil 1: Sicherheitstechnische Anforderungen und Prüfverfahren für KKA mit Sicherungspunkten

This European Standard was approved by CEN on 24 February 2007.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 12572-1:2007) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and recreational equipment”, 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of an identical text or by endorsement, at the latest by October 2007, and conflicting national standards shall be withdrawn at the latest by October 2007.

This standard consists of a number of parts as follows:

EN 12572-1, *Artificial climbing structures — Part 1: Safety requirements and test methods for ACS with protection points*

prEN 12572-2, *Artificial climbing structures — Part 2: Safety requirements and test methods for bouldering walls*

prEN 12572-3, *Artificial climbing structures — Part 3: Safety requirements and test methods for climbing holds*

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

This European Standard specifies the safety requirements and test methods for artificial climbing structures with protection points (hereafter referred to as ACS).

This European Standard is applicable for ACS in normal use for sport climbing.

This European Standard is not applicable to ice climbing, dry tooling and playground equipment.

2 Normative references

The following referenced documents are indispensable for the application 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 1991-1-3, *Eurocode 1 — Actions on structures — Part 1-3: General actions — Snow loads*

EN 1991-1-4, *Eurocode 1 : Actions on structures — Part 1-4: General actions — Wind actions*

EN 1991-1-5, *Eurocode 1 : Actions on structures — Part 1-5: General actions — Thermal actions*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

artificial climbing structure (ACS)

sports equipment consisting of a purpose-built climbing structure, which shows various construction characteristics, and is designed for various uses in sport climbing objectives and is not reserved for a particular age group

3.2

protection point

attachment point on the ACS designed to protect the climber

NOTE It can be permanent (cannot be removed with tools, e.g. a glue in anchor) or non-permanent (removable with tools, e.g. a hanger).

3.3

individual protection point

intermediate protection point used to safeguard a climber in his/her progress on the ACS

3.4

individual top protection point

protection point which is fixed at the top of a climbing line and which is designed to take the rope of one climber

NOTE It can be used for top rope or lead climbing.

3.5

collective top protection system

protection system which is fixed at the top of a climbing line and which is designed to take the ropes of several climbers at once

NOTE It can be used for top rope or lead climbing.

3.6 individual base protection point

anchor point which is fixed to the base area of the ACS and which is designed either to secure a belayer controlling the rope of a lead-climber or as an anchor for a self belay system or as an anchor for a protection system

3.7 stance

position on an ACS consisting of two or more individual protection points linked together, where the climber can stop, protect him/herself and his/her fellow climber can join him/her before continuing the climb from the stance

3.8 span (see Figure F.2)

part of a collective top rope system measured between two consecutive supports or attachments

3.9 characteristic load

maximum load that can be generated in normal use

3.10 falling space

space on or around the ACS that can be occupied by the user during a fall

3.11 free space

space around the ground projection of the ACS that can be occupied by a climbing, a lowering, spotting or belaying user

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4 Safety requirements and test methods

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4.1 Layout and placement of individual protection points

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

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

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

however, x shall not exceed:

1 m if $h \leq 5$ m;
2 m if $h \geq 5$ m

where

h is the distance between the point and the ground measured vertically, in metres, beneath the point in all cases.

For slabs with an inclination of more than 5° the maximum distance x shall be always 1 m (see Figure 3).

For protection points, the maximum distance shall be measured from the lowest internal point of the attachment point.

If permanent quick draws are installed, the maximum distance shall be measured from lower quick draw end to lower quick draw end. A permanent quick draw (e.g. chain secure element, Maillon Rapide) has to be disassembled from the climbing wall by means of tools (see Figure 2).

Protection points attached with bolts shall be secured, so they cannot come undone, e.g. with lock nuts.

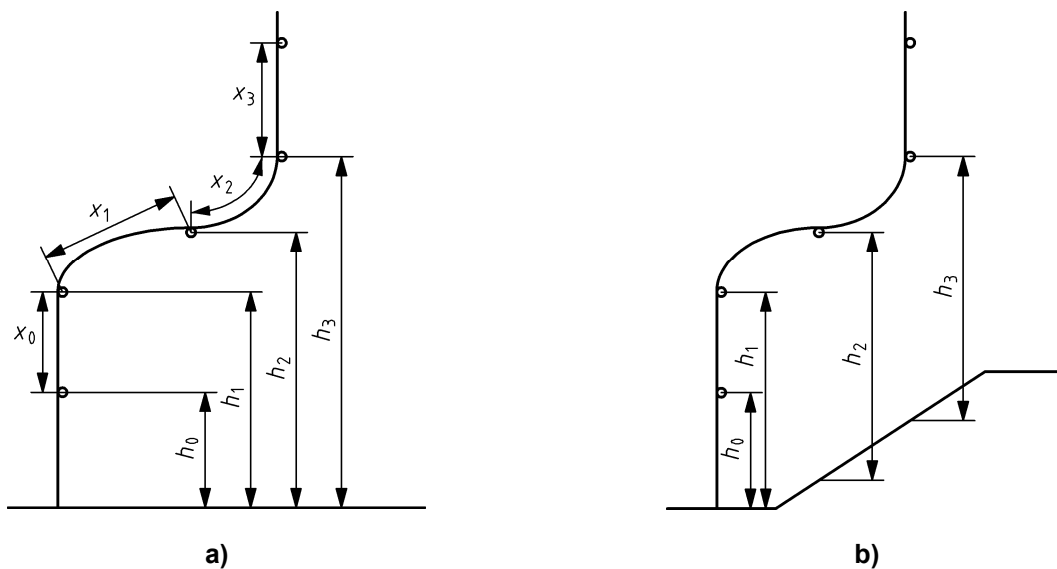


Figure 1 — Layout of protection points

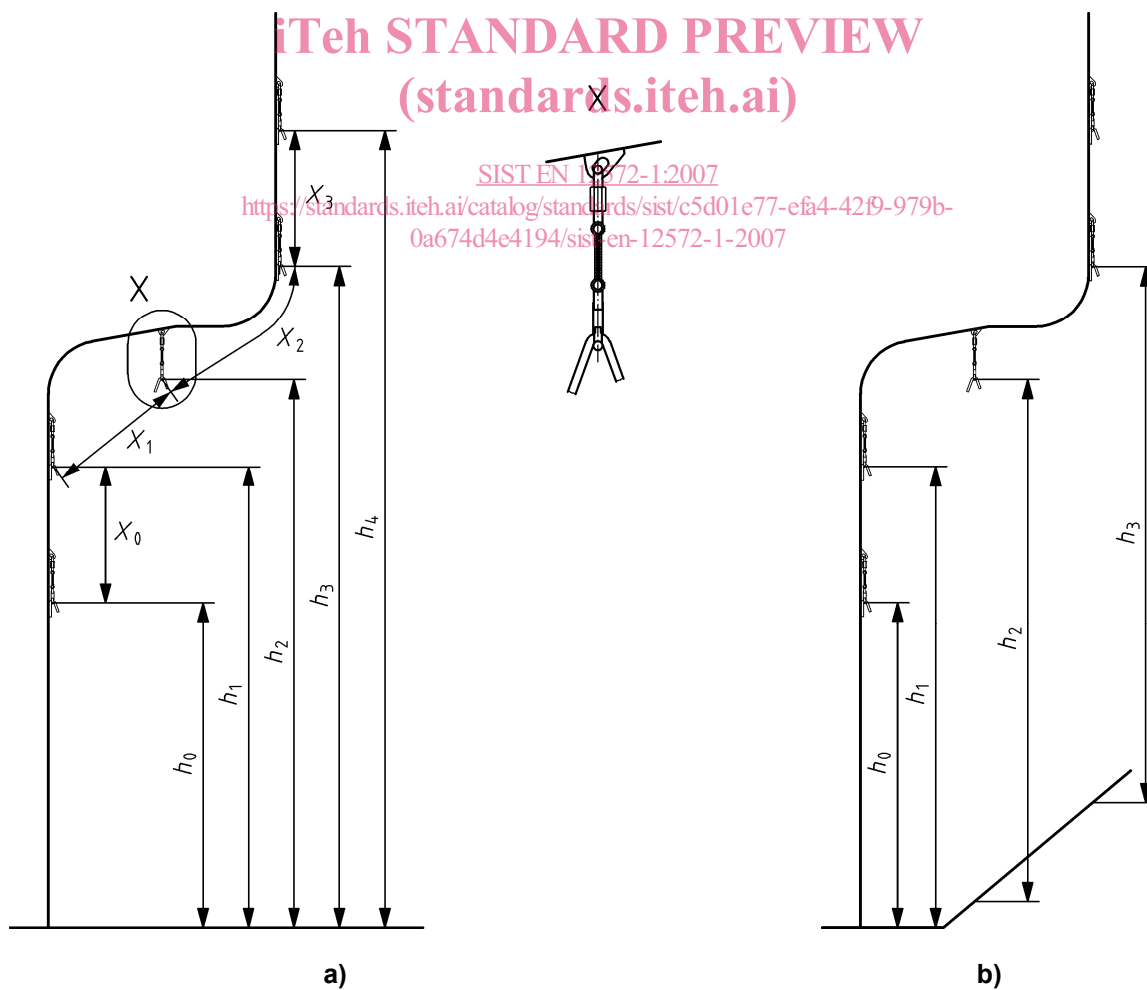


Figure 2 — Design and placement of permanent quick draws

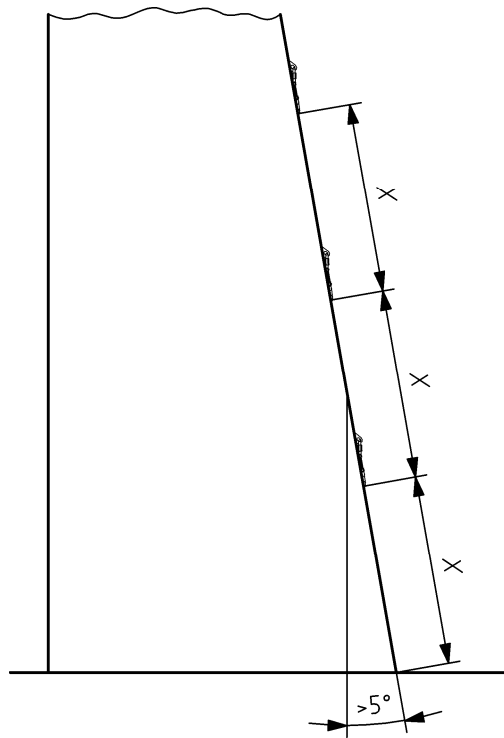


Figure 3 — Design and layout of protection points on slabs

4.2 Design of individual top protection points

The rope shall not be able to escape from the top protection points at an untimely moment, e.g. single-snap-gate karabiner is not sufficient.

Individual top protection points shall be attached to the structure by two or more points of fixation. Each fixation point shall be calculated as a protection point.

Each link between the fixing points shall have a resistance greater than or equal to each of the points which it joins together; this resistance shall be verified by either calculation (see Annex A), or a document of compliance, or tests as defined in Annex C.

4.3 Dimensions

The dimensions of all protection points and stance points with the exception of individual and collective top protection systems shall be in accordance with Figure 4.

The bar or device over or through which the rope passes in either a collective top protection system or an individual top protection point shall be rounded in accordance with Figure 5.

Dimensions in millimetres

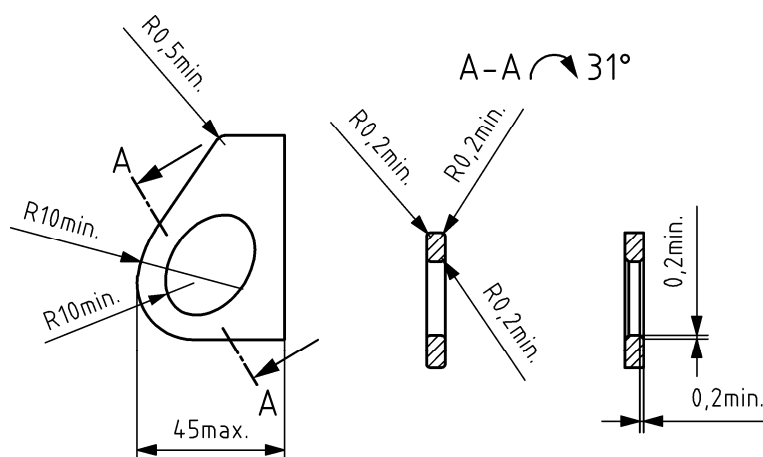


Figure 4 — Design of individual protection points

Dimensions in millimetres

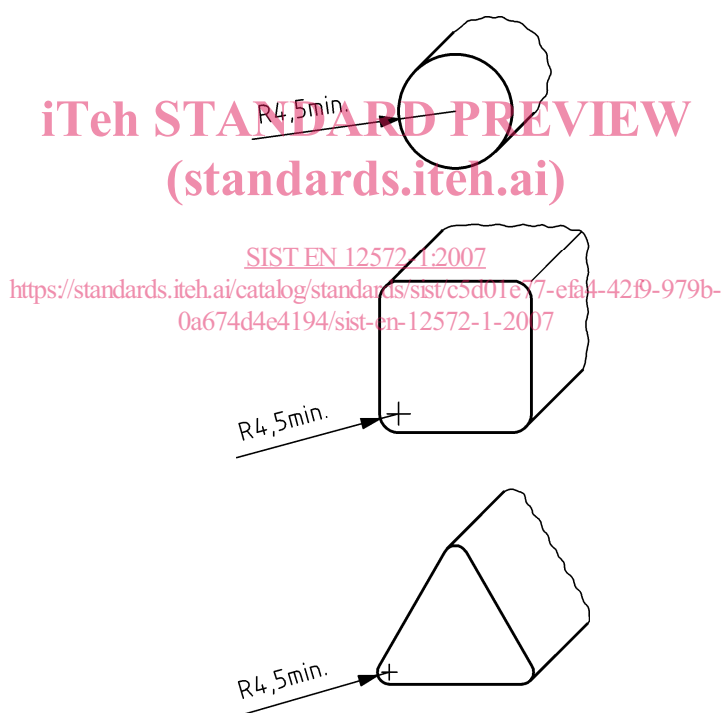


Figure 5 — Rounding of parts

4.4 Structural Integrity

4.4.1 Structural integrity of an ACS

The structural integrity and stability of an ACS shall be justified by calculation using the characteristic loads given in Table A.1, in accordance with Annexes A, B and Figure 6.

Ensure that the structure (e.g. building, concrete platform, ground) can safely accommodate the loads imposed by the ACS.

Permanent protection points shall be calculated in accordance with Annexes A and B (e.g. glued protection points in concrete walls).

Non permanent protection points shall have a breaking strength in the main load direction of a minimum of 20 KN.

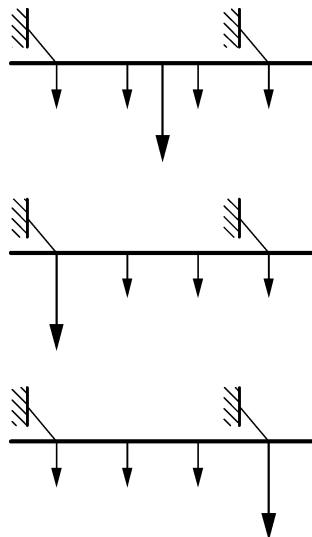


Figure 6 — Placement of the loads on collective protection systems

4.4.2 Structural integrity of a protection point connection

All elements of an ACS shall be justified by calculation, however in exceptional cases for protection point connections only (the assembly that attaches the actual protection point to the sub frame), a load test as described in Annex C is acceptable as a method of evaluation.

After applying the design load to the protection point connection there shall be no permanent deformation. After applying the breaking load to the protection point connection there shall be no breakage.

4.5 Impact resistance of surface elements

When tested in accordance with Annex D, there shall be no breaking or splitting of any surface element.

4.6 Hold insert resistance

When tested in accordance with Annex E, there shall be no breaking out or loosening of any surface material or hole insert.

4.7 Proof testing

When tested in accordance with Annex F, after settling under load there shall be no breaking, tearing or destruction of the elements after testing.

4.8 Falling space

Within the falling space there shall not be any obstacle which could lead to a hazard to the user. This does not apply to climbing structures or the floor, see Figure 7. The horizontal falling space shall be 2 m behind, 1,5 m either side and 8 m below the protection points.