

BS EN 12572-1:2017



BSI Standards Publication

Artificial climbing structures

Part 1: Safety requirements and test methods for ACS with protection points



National foreword

This British Standard is the UK implementation of EN 12572-1:2017. It supersedes BS EN 12572-1:2007 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/136/19, Artificial climbing structures.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2017.
Published by BSI Standards Limited 2017

ISBN 978 0 580 89899 0

ICS 97.220.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2017.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12572-1

January 2017

ICS 97.220.10

Supersedes EN 12572-1:2007

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 relatives aux SAE avec
points d'assurage

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

This European Standard was approved by CEN on 29 October 2016.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2017 CEN All rights of exploitation in any form and by any means reserved
worldwide for CEN national Members.

Ref. No. EN 12572-1:2017 E

Contents

Page

European foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Safety requirements and test methods	6
4.1 Layout and placement of individual protection points	6
4.2 Design of individual top protection points	8
4.2.1 General.....	8
4.2.2 Dimensions.....	8
4.3 Structural integrity.....	9
4.3.1 Structural integrity of an ACS	9
4.3.2 Structural integrity of a protection point connection.....	10
4.4 Impact resistance and deflection of surface elements	10
4.5 Panel insert resistance.....	10
4.6 Proof testing.....	10
4.7 Falling space.....	11
4.8 Free space	11
4.9 Climbing surfaces.....	11
5 Marking.....	11
6 Instruction manual.....	12
7 Technical documentation of ACS	12
Annex A (normative) Effects.....	13
Annex B (normative) Method of calculation of structural integrity	15
Annex C (normative) Load testing of structural integrity of protection point connections	17
Annex D (normative) Impact test of surface elements	18
Annex E (normative) Panel insert resistance test.....	21
Annex F (normative) Proof testing.....	23
Annex G (normative) Inspection and maintenance	26
Bibliography.....	28

European foreword

This document (EN 12572-1:2017) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and 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 July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

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 12572-1:2007.

This standard EN 12572, *Artificial climbing structures*, consists of the following parts:

- *Part 1: Safety requirements and test methods for ACS with protection points*
- *Part 2: Safety requirements and test methods for bouldering walls*
- *Part 3: Safety requirements and test methods for climbing holds*

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 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 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 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*

EN 1998-1, *Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings*

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

3.2 protection point

attachment point on the ACS designed to protect the climber

Note 1 to entry: 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).

3.2.1 individual protection point

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

3.2.2 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 1 to entry: It can be used for top rope or lead climbing.

3.3

attachment point

if permanent quick draws are installed the lower point of the device through which the rope passes

Note 1 to entry: Without permanent quick draws the attachment point is the protection point.

3.4

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 1 to entry: It can be used for top rope or lead climbing.

3.5

span

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

Note 1 to entry: See Figure F.2.

3.6

characteristic load

maximum load that can be generated in normal use

3.7

falling space

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

3.8

free space

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

3.9

hold

removable climbing component used for progression on an ACS or bouldering wall including bigger three dimensional, structural attachment without additional panel insert or other means of hold fixation

Note 1 to entry: It should be noted that holds bigger than size XXL are called macros (see Table 1).

3.10

volume

removable three dimensional, structural attachment with panel insert or other means of hold fixation designed for temporary extension of the climbing surface

3.11

panel insert

point on which a climbing hold is attached

4 Safety requirements and test methods

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 distance x between the placement of the individual protection points (see Figure 1) from height h shall be determined as follows:

- 1 m if $h \leq 4$ m;
- 1,10 m for $h > 4$ m;
- 1,20 m for $h > 5$ m;
- 1,30 m for $h > 6$ m;
- 1,40 m for $h > 7$ m;
- 1,50 m for $h > 8$ m;
- 2,00 m for $h > 10$ m.

The distance x may have a tolerance of 10 %.

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

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) shall 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.

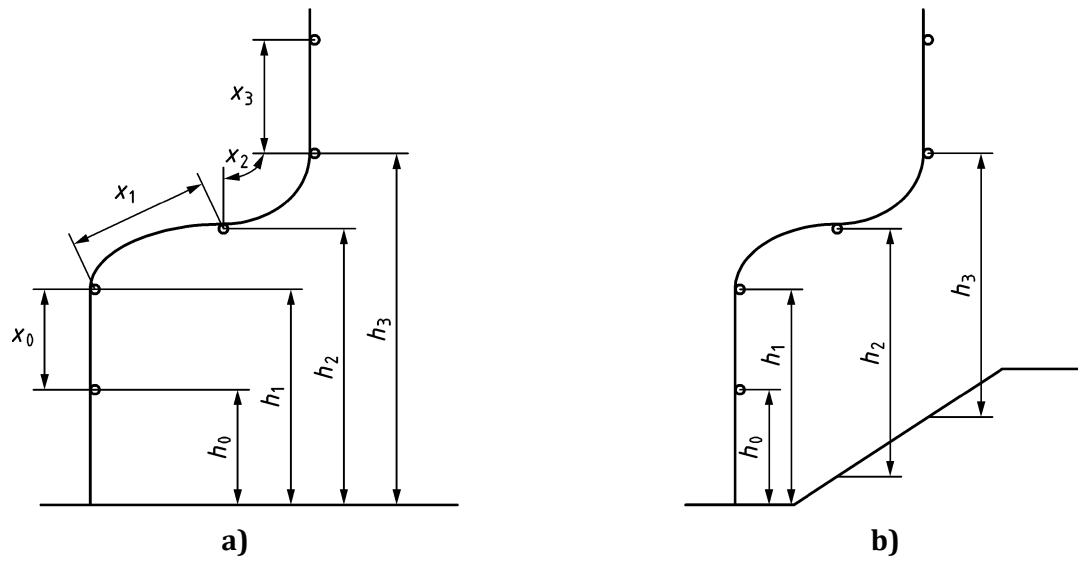


Figure 1 — Layout of protection points

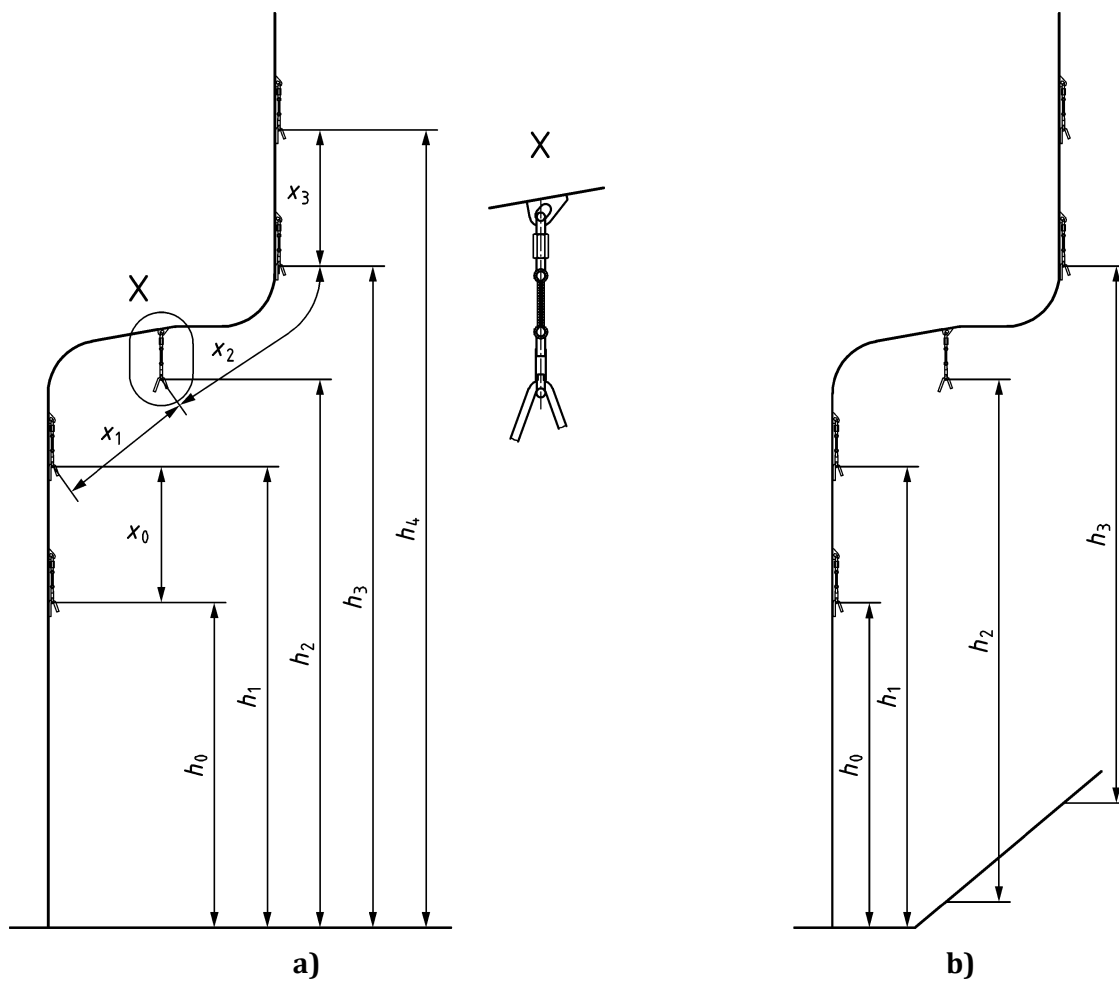


Figure 2 — Design and placement of permanent quick draws

4.2 Design of individual top protection points

4.2.1 General

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.

4.2.2 Dimensions

The minimum dimensions of all protection points and stance points with the exception of individual and collective top protection systems shall be in accordance with Figure 3. Other designs meeting the requirements of Figure 3 are also permissible.

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 4.

Dimensions in millimetres

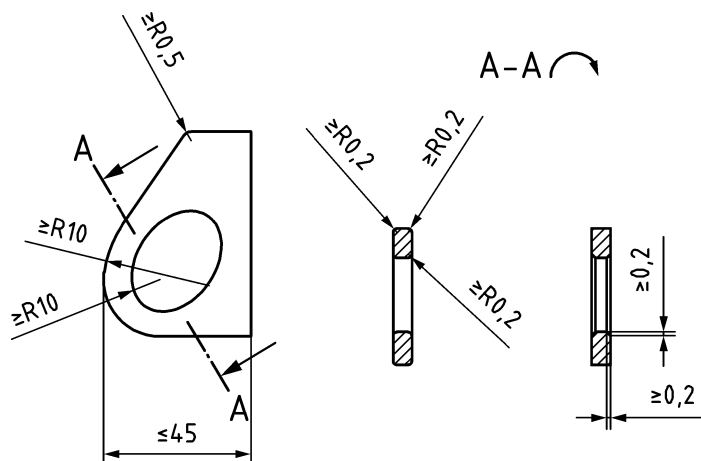


Figure 3 — Design of individual protection points