



SLOVENSKI STANDARD
SIST EN 17109:2020

01-maj-2020

Gorniška oprema - Vrvni plezalni parki - Individualni varnostni sistem - Varnostne zahteve in preskusne metode

Mountaineering equipment - Individual safety systems for rope courses - Safety requirements and test methods

Bergsteigerausrüstung - Einzelsicherungssysteme für Seilgärten - Sicherheitsanforderungen und Prüfverfahren

Équipement d'alpinisme et d'escalade - Systèmes d'assurance individuels pour parcours acrobatiques en hauteur - Exigences de sécurité et méthodes d'essai

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Ta slovenski standard je istoveten z: EN 17109:2020

ICS:

97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment
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EUROPEAN STANDARD

EN 17109

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2020

ICS 97.220.40

English Version

Mountaineering equipment - Individual safety systems for rope courses - Safety requirements and test methods

Équipement d'alpinisme et d'escalade - Systèmes d'assurance individuels pour parcours acrobatiques en hauteur - Exigences de sécurité et méthodes d'essai

Bergsteigerausrüstung - Individuelle Sicherheitssysteme für Seilgärten - Sicherheitsanforderungen und Prüfverfahren

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 17109:2020) 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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 has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Regulation 2016/425.

For relationship with EU Regulation 2016/425, see informative Annex ZA, which is an integral part of this document.

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EN 17109:2020 (E)**1 Scope**

This document specifies safety requirements and test methods for components of an individual safety system for protection against a fall from height used in permanent and mobile rope courses as defined in EN 15567-1.

The products considered in this standard are not intended to limit, by themselves, the deceleration of the fall of the user, as defined in EN 15567-1. For this requirement, it is essential to consider the whole ropes course system.

Safety lines and harnesses are not covered in this standard.

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 565:2017, *Mountaineering equipment - Tape - Safety requirements and test methods*

EN 12275:2013, *Mountaineering equipment - Connectors - Safety requirements and test methods*

EN 15567-1:2015, *Sports and recreational facilities - Ropes courses - Part 1: Construction and safety requirements*

EN ISO 9227:2017, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227:2017)*

ISO 7000:2004, *Graphical symbols for use on equipment — Registered*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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**ropes course**

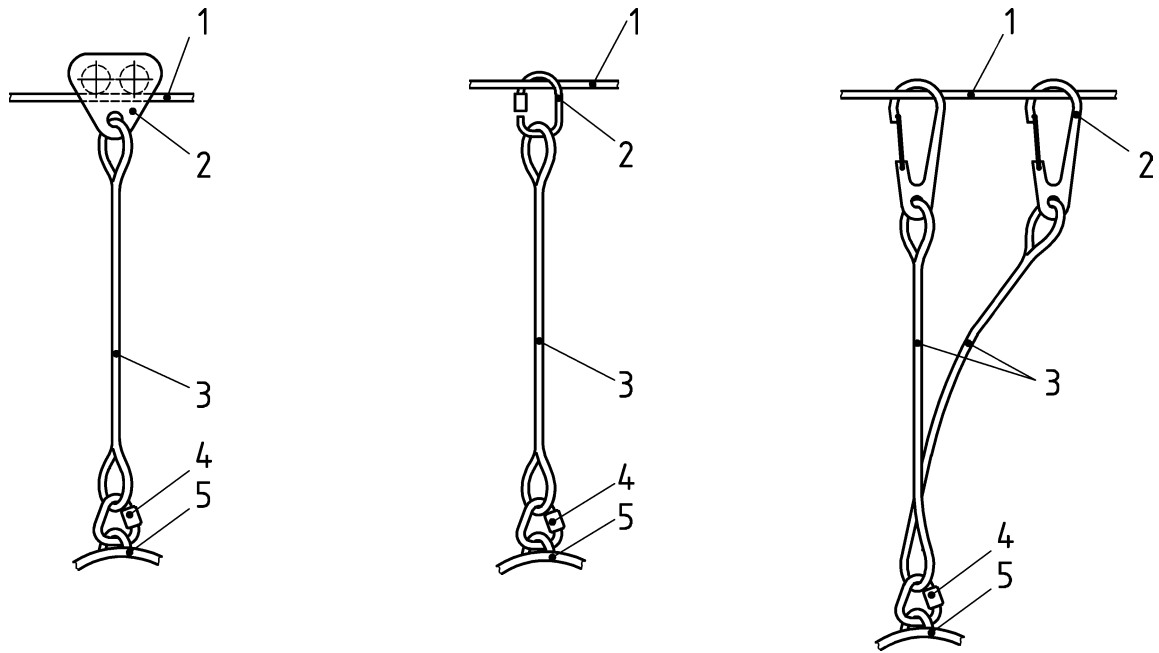
constructed facility with restricted access and requiring supervision consisting of one or more activity systems, support systems and, if needed, an appropriate safety system

[SOURCE: EN 15567-1:2015, 3.1 modified: Note 1 deleted]

3.2**individual safety system****ISS**

component(s) connecting the harness to the safety line for protection against fall from height consisting of mobile connecting device(s), lanyard(s) and a connecting system to the harness which may be supplied as a pre-assembled product, or supplied by one or more manufacturer(s) and may be assembled by a user to make an ISS

EXAMPLE See Figure 1

**Key**

- 1 safety line
- 2 mobile connecting device
- 3 lanyard
- 4 connecting system to the harness
- 5 harness

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Figure 1 — Example of ISS

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3.3**safety line**

flexible or rigid, horizontal, vertical or sloping, continuous or discontinuous device used as a protection against falling from a height

Note 1 to entry: In this standard, any part of a rope course where the mobile connecting device (MCD) is intended to be connected is considered as safety line (e.g. safety line, anchor point, fall arrester, integrated trolley/rail systems).

[SOURCE: EN 15567-1:2015, 3.13, modified: Note 1 included]

3.4**mobile connecting device****MCD**

part of the ISS which is used to connect it to the safety line and allows the user to move along the safety line

EXAMPLE Shuttles, pulleys, connectors.

3.5**lanyard**

part of the ISS connecting the MCD to the connecting system to the harness

EN 17109:2020 (E)**3.6****category A MCD**

self-closing device which is not automatically self-locking

EXAMPLE Self-closing or screw gate connector.

3.7**category B MCD**

self-locking device

EXAMPLE Self-locking connector.

3.8**category C MCD**

interlocking device designed to reduce the likelihood of unintentional detaching from the safety system

3.9**category D MCD**

interlocking device designed to prevent unintentional detaching from the safety system

3.10**category E MCD**

device that is permanently attached during operation and can only be opened with a tool

3.11**connecting system to the harness (standards.iteh.ai)**

device which connects the lanyard to the harness

3.12**safety line supports**

supports on which the MCD can transit

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Note 1 to entry: These supports could be (non-exhaustive list): fittings junction between ropes, switch brackets, terminal brackets, mobile anchor points

4 Safety requirements**4.1 Design and construction**

For category E MCD, the lanyard, excluding the attachment loop, shall not pass through the opening of the MCD.

All the connections within reach of the user, between

- the MCD and the lanyard,
- the lanyard and the connecting system to the harness,
- the connecting system to the harness and the harness

shall be openable only by a tool.

A lark's foot connection is considered as non-openable. When connections between the lanyard and the MCD are made by a lark's foot, the loop of the lark's foot connection on the MCD shall be short enough in order to avoid disassembly of the lanyard when the MCD is connected to the safety line (see Figure 2).

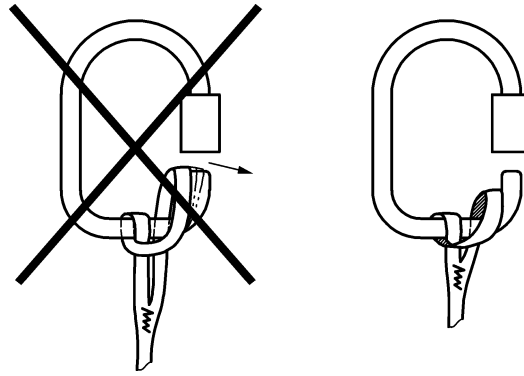
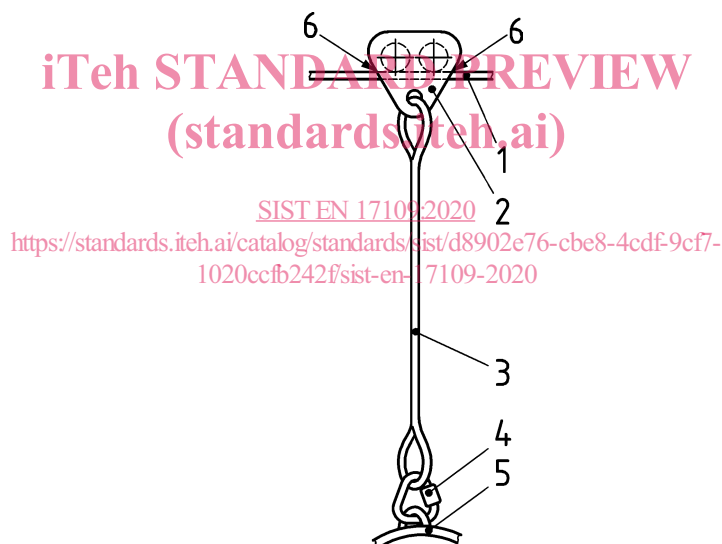


Figure 2 — Size of the loop of the lark's foot connection

Parts of the ISS, which can come in contact with the user's body, shall be free from burrs and sharp edges.

Rotating parts of MCD with pulleys shall be unreachable by the fingers. Any hole through which the pulley wheel(s) can be reached during use shall not allow a pin of 8 mm diameter ($\pm 0,1$ mm) to go through. This requirement is not applicable to the space between pulley wheel(s) and safety line (see Figure 3, key 6).



Key

- 1 safety line
- 2 MCD
- 3 lanyard
- 4 connecting system to the harness
- 5 harness
- 6 space between pulley wheel(s) and safety line

Figure 3 — Spaces between pulley wheel(s) and safety line

If any pulley wheel(s) axle is secured by nuts or screws, the nuts and/or screws shall be locked and secured by means other than friction.

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Where stitching is used to provide safety and strength (e.g. in joints) it shall be possible to inspect it and the stitching shall contrast with the textile element in colour or surface appearance. The MCD shall be designed to ensure that the loading is in pre-determined direction(s).

Only for category E, the connection between the lanyard and the MCD shall not be able to be placed into the opening of the MCD without a tool.

The functioning of the MCD system shall be in accordance with the information supplied by the manufacturer (see Clause 7) and the category or categories as described in 3.6 to 3.10.

4.2 Manual extraction test for categories C, D and E

Only for MCD which are used on cable safety lines when tested in accordance with 5.2, the MCD shall not be able to be removed from the cable.

4.3 Static strength**4.3.1 Function under a test load (only for MCD with pulleys)**

For MCD with pulleys, when tested in accordance with 5.3.2, the pulley wheel(s) of the MCD shall be able to rotate 10 times in both directions (see Figure 6).

If the MCD is one-directional, then the requirement is only for the intended direction.

4.3.2 Deformation test for MCD

This test applies to MCD of category E and to other categories, where relevant.

When tested in accordance with 5.3.3 when the load is released, the permanent deformation of the MCD opening shall be less than 0,5 mm.

4.3.3 Static strength test for all ISS with all categories of MCD

When tested in accordance with 5.3.4, the load shall not be released.

4.3.4 MCD transversal static strength test

This test applies to MCD of category E and to other categories, if relevant.

When tested in accordance with 5.3.5, the MCD shall not release the load.

4.4 Locking devices of the opening of the MCD

When the opening of the MCD is closed by a locking device, the side gate test of EN 12275:2013 shall be carried out and its respective requirement met (see EN 12275:2013, 4.2.3.2).

If the MCD is closed by a locking device which is not at the place of the opening, both the face gate test and the side gate test of EN 12275:2013 shall be carried out on the locking device and their requirements shall be met (see EN 12275:2013, 4.2.3.1 and 4.2.3.2).

4.5 Stability of tape

If the lanyard is made of woven tape not conforming to EN 565:2017, 4.1, when tested in accordance with 5.1, the weft yarn of the tape shall not be released from the tape sample.

4.6 Corrosion resistance

When tested in accordance with 5.6, there shall be no corrosion of the metal parts material that would affect their functional operation, e.g. the correct operation of moving elements. The presence of tarnishing and white scaling is acceptable.

5 Test methods

5.1 Design and construction

Check by visual examination and/or measuring, that the requirements of 4.1 are met.

For category E MCD, pre-assembled with a lanyard, check by measurement that the minimum thickness of the lanyard, excluding the attachment loop, is at least 2 mm greater than the opening of the MCD.

5.2 Manual extraction test for categories C, D and E

Introduce by hand the extremity of one side of the MCD opening between two strands of the cable recommended in the information supplied by the manufacturer (see Clause 7). By manually rotating the MCD along the lay of strands, check that the MCD cannot be removed from the cable (see Figure 4).

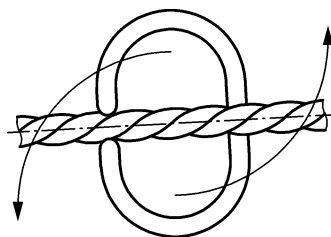


Figure 4 — Example of manual extraction test

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5.3 Static tests

5.3.1 General

The foreseeable loading position(s) should be agreed both by the notified body and the manufacturer. Each test shall be carried out on a new sample.

For 5.3.3 and 5.3.4, all the loading positions indicated in the instructions for use shall be tested. Also all the tests shall be repeated for any additional foreseeable loading position (see Figure 5).