



SLOVENSKI STANDARD
oSIST prEN 958:2022

01-december-2022

Gorniška oprema - Sistemi za absorpcijo energije pri zahtevnem varovanem planinstvu (via ferrata) - Varnostne zahteve in preskusne metode

Mountaineering equipment - Energy absorbing systems for use in klettersteig (via ferrata) climbing - Safety requirements and test methods

Bergsteigerausrüstung - Fangstoßdämpfer für die Verwendung auf Klettersteigen (Via Ferrata) - Sicherheitstechnische Anforderungen und Prüfverfahren

Équipement d'alpinisme et d'escalade - Absorbéur d'énergie utilisé en via ferrata - Exigences de sécurité et méthodes d'essai

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ICS:

97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment
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English Version

Mountaineering equipment - Energy absorbing systems for use in klettersteig (via ferrata) climbing - Safety requirements and test methods

Équipement d'alpinisme et d'escalade - Absorbeur
d'énergie utilisé en via ferrata - Exigences de sécurité
et méthodes d'essai

Bergsteigerausrüstung - Fangstoßdämpfer für die
Verwendung auf Klettersteigen (Via Ferrata) -
Sicherheitstechnische Anforderungen und
Prüfverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 136.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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prEN 958:2022 (E)**European foreword**

This document (prEN 958:2022) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 958:2017.

In comparison with EN 958:2017, the main changes are:

- a) in the scope, energy absorbing systems (EAS) according to this document have been limited to users over 14 years old weighing not less than 40 kg (total weight without equipment) and no more than 120 kg (total weight including the equipment) and the use is limited on via ferrata according to EN 16869:2017;
- b) modification of the maximum impact force in 4.2.3 a);
- c) modification of the mass in 4.2.3 b);
- d) modification of the test apparatus and the test method for the dynamic performance;
- e) the manufacturer’s instructions and information take into account the previous modifications and add the EAS disinfection.

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 Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

1 Scope

This document specifies safety requirements and test methods for energy absorbing systems (EAS) for use in climbing on a via ferrata according to EN 16869:2017, for users over 14 years old weighing not less than 40 kg (total weight without equipment) and no more than 120 kg (total weight including the equipment).

NOTE This document is one of a package of standards for mountaineering equipment, see Annex A.

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 892:2012+A2:2021, *Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods*

EN 1891:1998, *Personal protective equipment for the prevention of falls from a height — Low stretch kernmantel ropes*

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

EN ISO 2307:2019, *Fibre ropes — Determination of certain physical and mechanical properties (ISO 2307:2019)*

ISO 6487:2015¹, *Road vehicles — Measurement techniques in impact tests — Instrumentation*

ISO 7000:2019, *Graphical symbols for use on equipment — Registered symbols*

3 Terms and definitions

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

3.1

via ferrata

route, generally on rocky terrain, consisting of a fixed climbing installation including a safety line where the user is not supervised

[SOURCE: EN 16869:2017, 3.1]

Note 1 to entry: The mere presence of a wire cable/rope on a mountain route does not constitute a via ferrata (e.g. Hörnli Ridge on Matterhorn).

¹ As impacted by ISO 6487:2015/AMD 1:2017.

prEN 958:2022 (E)**3.2****safety line**

flexible or rigid, horizontal, vertical or sloping, continuous or discontinuous installation, used as protection against fall from a height and possible progression aid

[SOURCE: EN 16869:2017, 3.4]

3.3**energy absorbing system****EAS**

device connecting the climber to the safety line, using an energy absorber to limit the impact forces on the climber and the fixed installation

Note 1 to entry: See Figure 1.

3.4**energy absorber**

part of the EAS which limits the impact force during a climber's fall

Note 1 to entry: See Figure 1.

3.5**braking length**

increase in the distance between the connection to the safety line and the connection to the harness after the climber's fall

3.6**initial arrangement**

original configuration of an un-activated energy absorber

3.7**arm**

part of the EAS between the energy absorber and the connecting device to the safety line of the via ferrata; an arm may be elasticated or non-elasticated

Note 1 to entry: See Figure 1.

3.8**elasticated arm**

arm with a static elongation of the arm material, as measured in 5.1.4, > 5 %

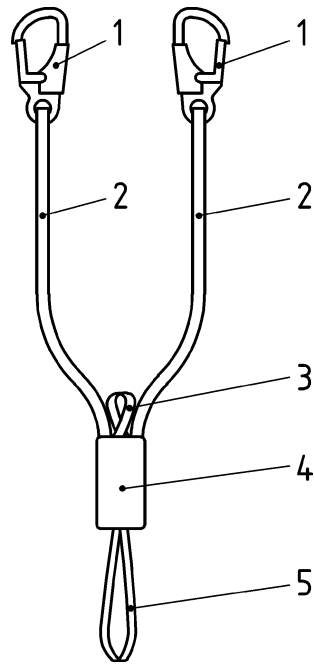
3.9**rest attachment point**

part of the EAS intended to temporary connect the user via an additional connector to the safety line or to the anchor points of the via ferrata to permit a rest of the climber

Note 1 to entry: See Figure 1.

3.10**extension lanyard**

fibre rope, part of the test apparatus for the dynamic test of this document fibre rope characterized as described in 5.2.3.3 and used for the purpose of dynamic testing as described in 5.2.4.3

**Key**

- | | | | |
|---|------------------------------------|---|---------------------------------------|
| 1 | connecting device (to via ferrata) | 4 | energy absorber |
| 2 | arm | 5 | harness attachment point (to climber) |
| 3 | rest attachment point | | |

Figure 1 — Example of an energy absorbing system

4 Safety requirements

4.1 Design

4.1.1 Construction

4.1.1.1 General

All load bearing connections shall be designed so that they cannot be altered or disassembled by the user, with the exception of removable connecting devices. EAS shall not have any sharp or rough edges that could cut, abrade or cause injury to the user.

4.1.1.2 Distance between the two arm extremities

When measured in accordance with 5.1.2, the distance between the two extremities of the arms (without connecting devices) shall be $\geq 1\,000$ mm, unless there is only a single arm.

4.1.1.3 Overall length of EAS

When measured in accordance with 5.1.3, the length of the energy absorbing system without connecting devices shall be $\leq 1\,500$ mm.

4.1.1.4 Elastic arm elongation

When measured in accordance with 5.1.4, the elongation shall be $> 5\%$.

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4.1.2 Connecting device

If the connecting device is a connector according to EN 12275:2013, it shall be a type K connector.

If an EAS is not fitted with a connector of type K according to EN 12275:2013, refer to the information supplied by the manufacturer of the EAS (see Clause 7).

4.1.3 Connection to the safety line

There shall be at least two arms intended for attachment to the safety line, unless designed for a continuous system which does not permit disconnection of the EAS from the safety line (except at entry and exit points), where just one arm could be used.

4.1.4 Initial arrangement

The initial arrangement of the energy absorber shall be designed in such a way that it can easily be checked by visual examination by the user.

4.1.5 Rest attachment point

The rest attachment point shall activate the energy absorber in case of fall.

4.2 Operation of the EAS

4.2.1 General

Table 1 summarizes the dynamic performance requirements of the EAS, which are described in detail in 4.2.3 to 4.2.4.

Table 1 — Summary of dynamic test requirements of the EAS

Symbol	Test 1	Test 2	Test 3	Test 4
M	40 kg	80 kg	80 kg	120 kg
<i>EAS wet or dry</i>	Dry	Dry	Dry	Wet
<i>Arm (s)</i>	The two arms connected	The two arms connected	If arms are identical, test only one arm. If not identical, test each arm.	Most constraining (configuration with the maximum braking length)
F_{\max}	4 kN	6 kN	6 kN	8 kN
L_{\max}	< 2 200 mm	< 2 200 mm	< 2 200 mm	< 2 200 mm
<p>M: rigid steel mass. F_{\max}: max. allowable impact force during dynamic test. L_{\max}: max. braking length.</p>				

4.2.2 Force to initiate operation

When tested in accordance with 5.2.4.2, the static force to initiate operation of the EAS shall be greater than 1,3 kN (see Table 2).

4.2.3 Dynamic performance

The requirements of the dynamic tests 1, 2 and 3 shall be fulfilled (see Table 1).

- a) When tested in accordance with 5.2.4.3 with a rigid steel mass of 40 kg the maximum impact force shall not exceed 4 kN and the maximum braking length shall not exceed 2 200 mm.
- b) When tested in accordance with 5.2.4.3 with a rigid steel mass of 80 kg the maximum impact force shall not exceed 6 kN and the maximum braking length shall not exceed 2 200 mm.

4.2.4 Dynamic strength of the EAS under wet conditions

After conditioning the selected sample according to 5.2.4.4, when tested in accordance with 5.2.4.3, using a rigid steel mass of 120 kg, the maximum impact force shall not exceed 8 kN, and the maximum braking length shall not exceed 2 200 mm.

4.3 Static strength of the energy absorbing system

4.3.1 General

Table 2 summarizes the static strength requirements of the EAS, which are described in detail in 4.3.2 to 4.3.5.

Table 2 — Summary of static test requirements of the EAS

Symbol	Minimum static strength kN
F_{init}	1,3
F_{stat}	12
$F_{stat-elastic\ arm}$	12
$F_{stat\ non-elastic\ arm}$	15
$F_{rest\ ap}$	12
F_{init} : minimum static strength to initiate operation F_{stat} : minimum static strength of whole system after dynamic tests $F_{stat-elastic\ arm}$: minimum static strength after fatigue test of elasticated arm $F_{stat\ non-elastic\ arm}$: minimum static strength of non-elastic arm $F_{rest\ ap}$: minimum static strength of rest attachment point	

4.3.2 Static strength of the whole system

When tested in accordance with 5.3.1 after being subjected to the dynamic test in accordance with 5.2.4.3, the EAS shall withstand a static force greater than 12 kN (see Table 2).