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Gorniška oprema - Naprave za zaviranje - 1. del: Polavtomatske naprave za zaviranje, varnostne zahteve in preskusne metode

Mountaineering equipment - Braking devices - Part 1: Braking devices with assisted locking, safety requirements and test methods

Bergsteigerausrüstung - Bremsgeräte - Teil 1: Bremsgeräte mit Halbautomatik, sicherheitstechnische Anforderungen und Prüfverfahren

Equipement d'alpinisme et d'escalade - Dispositifs de freinage - Partie 1: Dispositifs de freinage semi-automatiques, exigences de sécurité et méthodes d'essai

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Mountaineering equipment - Braking devices - Part 1: Braking devices with manually assisted locking, safety requirements and test methods

Equipement d'alpinisme et d'escalade - Dispositifs de freinage - Partie 1: Freins d'assurage avec blocage assisté de la main, exigences de sécurité et méthodes d'essai

Bergsteigerausrüstung - Bremsgeräte - Teil 1: Bremsgeräte mit manuell unterstützter Verriegelung, sicherheitstechnische Anforderungen und Prüfverfahren

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Foreword

This document (EN 15151-1:2012) 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of an identical text or by endorsement, at the latest by February 2013, and conflicting national standards shall be withdrawn at the latest by February 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 89/686/EEC.

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

This European Standard, EN 15151 "Mountaineering equipment - Braking devices", consists of:

— Part 1: Braking devices with assisted locking, safety requirements and test methods;

— Part 2: Manual braking devices, safety requirements and test methods.

This European Standard is one of a package of standards for mountaineering equipment (see Annex A).

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies safety requirements and test methods for braking devices with manually assisted locking used in mountaineering, climbing and related activities for belaying, with manually assisted locking function, to protect against falls from a height and/or for abseiling with speed regulation.

This European Standard applies to braking devices which are loaded with one person and which use mountaineering ropes according to EN 892. In case of abseiling and lowering down, this standard also applies to braking devices, used with low stretch kernmantel ropes according to EN 1891. It does not apply to manual braking devices which are addressed in EN 15151-2:2012, nor to fully automatic fixed installations.

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 892, *Mountaineering equipment — Dynamic mountaineering ropes — Safety requirements and test methods*

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

EN 15151-2:2012, *Mountaineering equipment — Braking devices — Part 2: Manual braking devices, safety requirements and test methods*

EN ISO 139:2005, *Textiles — Standard atmospheres for conditioning and testing (ISO 139:2005)*

3 Terms and definitions

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

3.1
braking device
mechanical device, which generates forces on the rope to oppose movement of the rope through the device

3.2
braking device with manually assisted locking
braking device, that produces a change in its geometry once a certain hand braking force is applied to the free end of the rope, such that the hand braking force is amplified to slow down the rope movement through the device until arrest

3.3
panic locking element
integral part of the braking device, which stops the rope moving through the device when abseiling or lowering a body, whereby it may prevent uncontrolled rope movement resulting from user operation beyond the control parameters

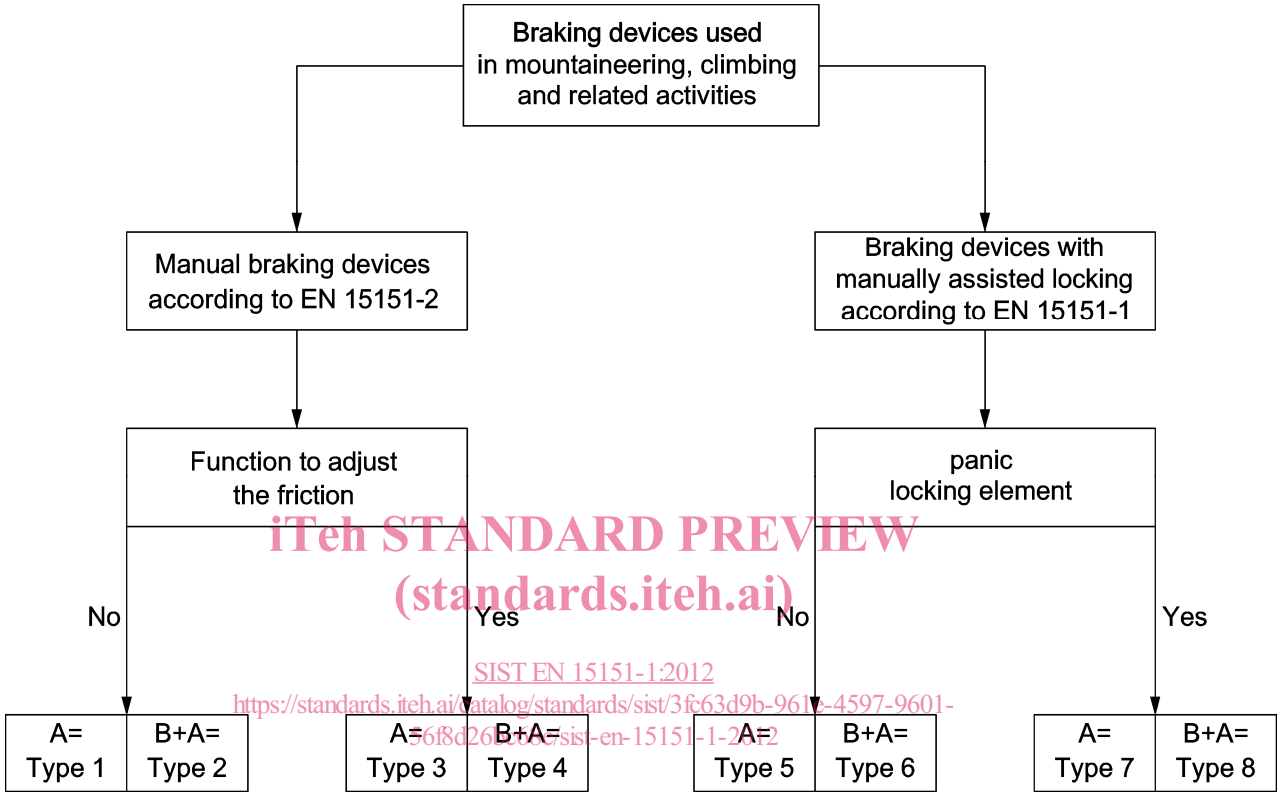
3.4
attachment point
part of the braking device, which is required and intended for the attachment of a connector to connect the user according to the information supplied by the manufacturer

Note 1 to entry: For information on connectors, see EN 12275 or EN 362.

4 Classification

4.1 General

Figure 1 gives the classification of braking devices used in mountaineering, climbing and related activities. Braking devices with manually assisted locking are classified according to 4.2. Manual braking devices are defined in EN 15151-2:2012, 4.2.



Key
A abseiling
B belaying

Figure 1 — Classification of braking devices

4.2 Braking device with manually assisted locking

4.2.1 Type 5: devices for abseiling without a panic locking element;

4.2.2 Type 6: devices for belaying and abseiling without a panic locking element;

4.2.3 Type 7: devices for abseiling with a panic locking element;

4.2.4 Type 8: devices for belaying and abseiling with a panic locking element.

5 Safety requirements

5.1 General

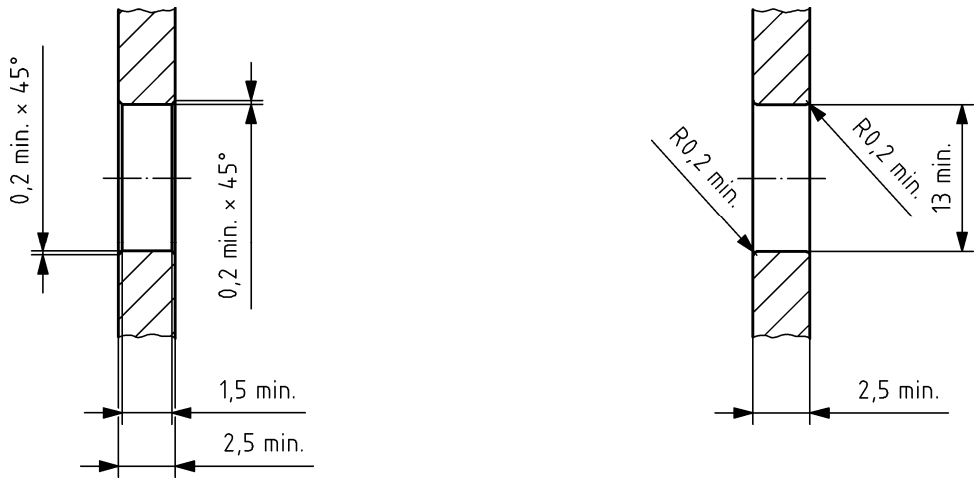
5.1.1 An overview of the requirements related to the various types of braking device with manually assisted locking is given in Table 1. Requirements for manual braking devices are given in EN 15151-2.

Table 1 — Overview of requirements related to various types of braking devices with manually assisted locking

Clause	Requirements	Rope diameter/ rope type	Type 5	Type 6	Type 7	Type 8
5.1	General	—	x	x	x	x
5.2	Blocking load	Minimum/maximum EN 892 and/or EN 1891	x	x	x	x
5.3	Static strength	Minimum/maximum EN 892	x	x	x	x
5.4	Dynamic performance when belaying	Minimum/maximum EN 892	—	x	—	x

5.1.2 The attachment point or points shall be capable of accommodating a bar of a diameter of $\left(13\ ^{+0,1}_{0}\right)$ mm. The edges of all openings shall be as shown in Figure 2.

Dimensions in millimetres



a) bevelled edges **b) rounded edges**

Figure 2 — Edges of openings

5.1.3 Braking devices shall not have any sharp or rough edges that may cut, abrade or otherwise damage ropes or cause injury to the user.

5.1.4 When in use as described in the information supplied by the manufacturer, it shall not be possible to detach the rope from the device without at least two consecutive deliberate manual actions.

5.1.5 Braking devices shall be designed to operate with ropes in the diameter range as specified in the information supplied by the manufacturer.

5.2 Blocking load

This requirement shall apply to braking devices types 5 to 8.

When tested in accordance with 6.5, the test shall be carried out with ropes of the minimum diameter of each type of rope specified in the manufacturer's instructions for use. The braking device shall be blocked in a hands-free position and loaded with a force of $\left(2\ {}^{+0,1}_{\ \ 0}\right)$ kN, and shall sustain the load for $\left(1\ {}^{+0,5}_{\ \ 0}\right)$ min with a maximum slippage of 300 mm of the rope through the braking device. After these tests, there shall be no damage to the braking device or to the rope. Check by visual examination.

The test shall be repeated with ropes of the maximum diameter of each type of rope specified in the manufacturer's instructions for use. If the device is intended for use with twin ropes, it shall be tested with two strands.

When (a) panic locking element(s) is (are) present, the same requirement shall be met for each activated panic locking element(s).

5.3 Static strength

This requirement shall apply to braking devices types 5 to 8.

When tested with the minimum and maximum rope diameter in accordance with 6.6.2, with the braking device blocked, the braking device shall withstand a force of $\left(8\ {}^{+0,5}_{\ \ 0}\right)$ kN applied to each attachment point of the device for $\left(60\ {}^{+5}_{\ 0}\right)$ s and shall not break or release the loaded rope.

If the device is intended for use with twin ropes, it shall be tested with two strands.

5.4 Dynamic performance when belaying

This requirement shall apply to braking devices types 6 and 8.

When tested in accordance with 6.7, the falling mass shall not be released. The average slippage of the rope through the braking device, calculated from the results of three tests, shall not exceed 1 500 mm measured on the loaded side of the rope. The maximum value of any of the three tests shall not exceed 1 800 mm. Check that the test mass can be lowered to the ground in accordance with the information supplied by the manufacturer.

If the device is intended for use with twin ropes, it shall be tested with two strands.