



SLOVENSKI STANDARD
oSIST prEN 12841:2020
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**Osebna oprema za varovanje pred padci z višine - Vrvni dostopni sistemi -
Naprave za nastavitve vrvi**

Personal fall protection equipment - Rope access systems - Rope adjustment devices

Persönliche Absturzschutzausrüstung - Systeme für seilunterstützten Zugang -
Seileinstellvorrichtungen

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Équipements de protection individuelle pour la prévention des chutes de hauteur -
Systèmes d'accès par corde - Dispositif de réglage de corde pour maintien au poste de
travail

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ICS:

13.340.60 Zaščita pred padci in zdrsi Protection against falling and
slipping

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EUROPEAN STANDARD
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Personal fall protection equipment - Rope access systems - Rope adjustment devices

Équipements de protection individuelle pour la
prévention des chutes de hauteur - Systèmes d'accès
par corde - Dispositif de réglage de corde pour
maintien au poste de travail

Persönliche Absturzschutzausrüstung - Systeme für
seilunterstützten Zugang - Seileinstellvorrichtungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 160.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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prEN 12841:2020 (E)

European foreword

This document (prEN 12841:2020) has been prepared by Technical Committee CEN/TC 160 “Protection against falls from height including working belts”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12841:2006.

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(s).

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

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Introduction

In rope access systems, rope adjustment devices are used in combination with anchor lines, which could be a working line or a safety line, normally made of ropes conforming to Type A of EN 1891. Rope adjustment devices are intended to be used to link sit harnesses (in accordance with EN 813) or full body harnesses (in accordance with EN 361) to a working line and a safety line to allow access, egress and changes in the work position, to give support and to protect against falls.

Attention is drawn to the limitations of rope adjustment devices. Type A rope adjustment devices are for use on safety lines to prevent a fall in the event of failure of the working line or its components. However, in extreme circumstances, such as failure of the working line or its components during improper use of the system, Type A rope adjustment devices may be called upon to prevent or arrest a limited fall. This is reflected in the test requirements. Type B and C rope adjustment devices are for ascending and descending a working line respectively, but also have a fall prevention function. The design of each type may be incorporated into another when, in every case, they should meet the higher requirements of any common or similar test.

In a rope access system, the worker should always be protected by a Type A rope adjustment device connected to a safety line and a Type B or C rope adjustment device connected to a working line. The two rope adjustment devices with their respective anchor line are all components of the protective system. It is fundamental for the safe use of a rope access system that the worker is always connected to both anchor lines, and that any slack in the anchor lines and connecting lanyards is avoided.

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prEN 12841:2020 (E)**1 Scope**

This document applies to rope adjustment devices intended for use in rope access systems. It specifies the requirements, test methods, marking and manufacturer's instructions and information.

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 362, *Personal protective equipment against falls from a height - Connectors*

EN 363, *Personal fall protection equipment - Personal fall protection systems*

EN 364:1992, *Personal protective equipment against falls from a height - Test methods*

EN 365, *Personal protective equipment against falls from a height - General requirements for instructions for use, maintenance, periodic examination, repair, marking and packaging*

EN 892:2012+A1:2016, *Mountaineering equipment - Dynamic mountaineering ropes - Safety requirements and test methods*

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

3 Terms and definitions

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For the purposes of this document, the terms and definitions given in EN 363 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1
rope adjustment device
component which, when fitted to an anchor line of appropriate diameter and type, will enable the user to vary his or her position along it

Note 1 to entry: to entry: Rope adjustment devices are sub-divided into Types A, B and C. The same rope adjustment device may conform to more than one type.

3.2
anchor line
flexible line connected at least at one end to an anchor point, to provide a means of support or safeguard for a person

NOTE 1 to entry: An anchor line can be a working line or a safety line.

3.3
safety line
anchor line provided as a safeguard

3.4**working line**

anchor line used primarily for support during access, egress and work positioning

3.5**Type A rope adjustment device: safety line adjustment device**

rope adjustment device for a safety line which accompanies the user during changes of position and/or allows adjustment of the safety line, and which locks automatically to the safety line under static or dynamic loading

3.6**Type B rope adjustment device: working line ascender**

manually operated rope adjustment device which, when attached to a working line, locks under load in one direction and slides freely in the opposite direction

NOTE 1 to entry: Type B rope adjustment devices are intended always to be used in conjunction with a Type A rope adjustment device connected to a safety line.

3.7**Type C rope adjustment device: working line descender**

manually operated, friction inducing rope adjustment device which allows the user to achieve a controlled downward motion and a stop, with hands off, anywhere on the working line

NOTE 1 to entry: Type C rope adjustment devices are intended always to be used in conjunction with a Type A rope adjustment device connected to a safety line.

3.8**attachment point**

primary point of connection to the rope adjustment device, as described by the manufacturer in the manufacturer's instructions and information

3.9**release prevention**

mechanism or method to prevent the rope adjustment device from accidentally releasing the anchor line

3.10**connecting element**

element or combination of elements, which forms the link between a Type A rope adjustment device and the fall arrest attachment point of the full body harness conforming to EN 361

Note 1 to entry: to entry: Examples of a connecting element are a connector, a lanyard and/or energy dissipating element.

3.11**arrest distance** **H_{AD}**

vertical distance measured between the initial and final positions of the test mass in the dynamic performance test of the Type A rope adjustment device

NOTE 1 to entry: The arrest distance is expressed in metres.

prEN 12841:2020 (E)**3.12****braking force** F_{max}

maximum force measured at the anchor point during the braking period of the dynamic performance test of the Type A rope adjustment device

NOTE 1 to entry: The braking force is expressed in kilonewtons.

3.13**locking distance** H_{LD}

vertical distance measured between the initial and final positions of the rope adjustment device in the dynamic strength test

Note 1 to entry: to entry: The locking distance is expressed in metres.

3.14**descent control element**

integral element of the Type C rope adjustment device, normally operated by hand, used to control the velocity of descent down the descent line

3.15**hands-free locking element**

integral part or function of the descent control element of a Type C rope adjustment device which completely stops the descent and thereby prevents an uncontrolled descent or a fall if the user fails to engage the rope adjustment device

3.16**panic-locking element**

integral part or function of the descent control element of a Type C rope adjustment device which completely stops the descent and thereby prevents an uncontrolled descent or a fall if the user panics and operates the rope adjustment device beyond its intended descent control parameters

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3.17**maximum rated load**

maximum mass of the person, including tools and equipment carried, as specified by the manufacturer

Note 1 to entry: to entry: Maximum rated load is expressed in kilograms.

[SOURCE: EN 353-1:2014, 3.11]

3.18**minimum rated load**

minimum mass of the person, excluding tools and equipment carried, as specified by the manufacturer

Note 1 to entry: to entry: Minimum rated load is expressed in kilograms.

[SOURCE: EN 353-1:2014, 3.12]

4 Requirements

4.1 General requirements for all Types

4.1.1 Compatibility

4.1.1.1 Release prevention

The rope adjustment device shall be designed so that the rope adjustment device can only be detached from or attached to each anchor line as listed in the manufacturer's instructions and information by at least two consecutive deliberate manual actions, when tested in accordance with 5.3.2.1.

4.1.1.2 Placement

When tested in accordance with 5.3.2.2, the rope adjustment device shall not unintentionally slide more than 300 mm along each anchor line as listed in the manufacturer's instructions and information.

4.1.2 Edge design

When checked in accordance with 5.3.3, the rope adjustment device shall not have sharp or rough edges that can cause injury to the user.

4.1.3 Corrosion resistance

After testing in accordance with 5.3.4, metal parts of the rope adjustment device shall show no evidence of corrosion of the base metal which could affect its function, e.g. the correct operation of moving elements and locking function. White scaling or tarnishing is acceptable if the function is not impaired.

NOTE Conformity to this requirement does not imply suitability for use in highly corrosive environments, e.g. offshore, chemical plants.

4.1.4 Marking and information

Marking of the rope adjustment device shall be in accordance with Clause 6.

Instructions and information shall be supplied with the rope adjustment device in accordance with Clause 7.

4.2 Specific requirements for Type A rope adjustment devices

4.2.1 Connecting elements

The length of the connecting element for Type A rope adjustment devices shall not exceed 1 m, when measured in accordance with 5.4.1, and shall be within $\pm 5\%$ of the length given in the manufacturer's instructions and information, see Clause 7 c).

4.2.2 Free movement

Type A rope adjustment devices shall allow intentional movement in both directions on each anchor line as listed in the manufacturer's instructions and information when tested in accordance with 5.4.2.1 and 5.4.2.2.

4.2.3 Static strength

Type A rope adjustment devices shall withstand a force of 15 kN for 3 min, when tested on an anchor line in accordance with 5.5.3.

For Type A rope adjustment devices that have more than one attachment point specified by the manufacturer, each attachment point shall be tested.

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The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.

4.2.4 Dynamic performance

When tested in accordance with 5.6.2, with a rigid steel mass of 100 kg or a mass equivalent to the maximum rated load, whichever is the greater, and with a rigid steel mass equivalent to the minimum rated load, the maximum braking force F_{\max} shall not exceed 6 kN and the arrest distance H_{AD} shall not exceed $2L+1$ m, with L = length of the connecting element of the rope adjustment device.

The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.

4.2.5 Dynamic strength and residual strength

When tested in accordance with 5.6.3, with a rigid steel mass of 100 kg or a mass equivalent to the maximum rated load, whichever is the greater, the Type A rope adjustment device shall not release the initial test mass and shall hold a residual load of 3 kN. The locking distance H_{LD} shall not exceed 2 m.

The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.

4.3 Specific requirements for Type B rope adjustment devices**4.3.1 Free movement**

Type B rope adjustment devices shall allow intentional movement along each anchor line as listed in the manufacturer's instructions and information when tested in accordance with 5.4.2.1 and 5.4.2.3.

4.3.2 Release prevention function

When the rope adjustment device is tested in accordance with 5.4.3.2 at a load of 400 N, the anchor line shall not become detached from the rope adjustment device. The requirement shall be fulfilled for each anchor line as listed in the manufacturer's instructions and information

When the rope adjustment device is tested in accordance with 5.4.3.3 at a load of 2 000 N, the anchor line shall not become detached from the rope adjustment device. The requirement shall be fulfilled for each anchor line as listed in the manufacturer's instructions and information

4.3.3 Minimum working strength

Type B rope adjustment devices shall withstand a force of 4 kN for 3 min with a maximum slippage of 100 mm when tested on an anchor line in accordance with 5.5.2.

No part of the Type B rope adjustment device shall show any signs of permanent deformation that would affect its function, and the anchor line shall not show any signs of tearing or breaking.

For Type B rope adjustment devices that have more than one attachment point specified by the manufacturer, each attachment point shall be tested to this requirement.

The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.

4.3.4 Dynamic strength and residual strength

When tested in accordance with 5.6.4, with a rigid steel mass of 100 kg or a mass equivalent to the maximum rated load, whichever is the greater, the Type B rope adjustment device shall not release the initial test mass and shall hold a residual load of 3 kN. The locking distance H_{LD} shall not exceed 2 m.

The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.

4.4 Specific requirements for Type C rope adjustment devices

4.4.1 Hands-free locking element

Type C rope adjustment devices shall incorporate a hands-free locking element which enables the user to stop, hands-off, anywhere on the anchor line, when tested in accordance with 5.7.4.1 and 5.7.4.2.

4.4.2 Minimum working strength

Type C rope adjustment devices on an anchor line, with the hands-free locking element enabled, shall withstand a force of 3 kN for 3 min with a maximum slippage of 300 mm when tested in accordance with 5.5.2.

No part of the Type C rope adjustment device shall show any signs of permanent deformation that would affect its function, and the anchor line shall not show any signs of tearing or breaking.

For Type C rope adjustment devices that have more than one attachment point specified by the manufacturer, each attachment point shall be tested to this requirement.

The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.

4.4.3 Static strength

Type C rope adjustment devices shall withstand a force of 12 kN for 3 min when tested on an anchor line in accordance with 5.5.3. (standards.iteh.ai)

For Type C rope adjustment devices that have more than one attachment point specified by the manufacturer, each attachment point shall be tested to this requirement.

The descent control element of Type C rope adjustment devices shall withstand a force of 450 N when tested in accordance with 5.5.3.

The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.

4.4.4 Dynamic strength and residual strength

When tested in accordance with 5.6.4, with a rigid steel mass of 100 kg or a mass equivalent to the maximum rated load, whichever is the greater, the Type C rope adjustment device shall not release the initial test mass and shall hold a residual load of 3 kN.

The rope adjustment device shall be tested on each anchor line as listed in the manufacturer's instructions and information.