



**SLOVENSKI STANDARD**  
**SIST EN 12929-2:2015+A1:2023**

**01-januar-2023**

---

**Varnostne zahteve za žičniške naprave za prevoz oseb - Splošne zahteve - 2. del:  
Dodatne zahteve za dvovrvne nihalne žičnice brez vravnih zavor (vključno z  
dopolnilom A1)**

Safety requirements for cableway installations designed to carry persons - General requirements - Part 2: Additional requirements for reversible bicable aerial ropeways without carrier truck brakes

Sicherheitsanforderungen an Seilbahnen für den Personenverkehr - Allgemeine Bestimmungen - Teil 2: Ergänzende Anforderungen an Zweiseil-Pendelbahnen ohne Tragseilbremse

Prescriptions de sécurité pour les installations à câbles destinées au transport de personne - Dispositions générales - Partie 2: Prescriptions complémentaires pour les téléphériques bicâbles à va et vient sans frein de chariot

**Ta slovenski standard je istoveten z: EN 12929-2:2015+A1:2022**

---

**ICS:**

45.100            Oprema za žičnice            Cableway equipment

**SIST EN 12929-2:2015+A1:2023**            en,fr,de



EUROPEAN STANDARD

EN 12929-2:2015+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2022

ICS 45.100

Supersedes EN 12929-2:2015

English Version

Safety requirements for cableway installations designed to carry persons - General requirements - Part 2: Additional requirements for reversible bicable aerial ropeways without carrier truck brakes

Prescriptions de sécurité pour les installations à câbles destinées au transport de personne - Dispositions générales - Partie 2: Prescriptions complémentaires pour les téléphériques bicâbles à va et vient sans frein de chariot

Sicherheitsanforderungen an Seilbahnen für den Personenverkehr - Allgemeine Bestimmungen - Teil 2: Ergänzende Anforderungen an Zweiseil-Pendelbahnen ohne Trageilbremse

This European Standard was approved by CEN on 18 November 2014 and includes Amendment 1 approved by CEN on 18 August 2022.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



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

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

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>3</b>
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>4 Symbols and abbreviations</b> .....	<b>7</b>
<b>5 General requirements</b> .....	<b>7</b>
<b>5.1 Application of this Standard</b> .....	<b>7</b>
<b>5.2 Safety principles</b> .....	<b>7</b>
<b>5.2.1 General</b> .....	<b>7</b>
<b>5.2.2 Hazard scenarios</b> .....	<b>7</b>
<b>5.2.3 Safety measures</b> .....	<b>8</b>
<b>6 Measures to ensure the integrity of the haul rope loop</b> .....	<b>8</b>
<b>7 Measures intended to prevent incidents during operation</b> .....	<b>11</b>
<b>8 Requirements relating to the attachment of the carrier to the haul rope</b> .....	<b>12</b>
<b>Annex ZA (informative) Relationship between this European Standard and the essential requirements of the EU Directive 2000/9/EC relating to cableway installations designed to carry persons</b> .....	<b>14</b>
 <a href="https://standards.iteh.ai/catalog/standards/sist/26237b99-d3df-46a9-b0ee-11b8e38635b/sist-en-12929-2-2015-a1-2023">SIST EN 12929-2:2015+A1:2023</a> <a href="https://standards.iteh.ai/catalog/standards/sist/26237b99-d3df-46a9-b0ee-11b8e38635b/sist-en-12929-2-2015-a1-2023">https://standards.iteh.ai/catalog/standards/sist/26237b99-d3df-46a9-b0ee-11b8e38635b/sist-en-12929-2-2015-a1-2023</a>	
<b>Tables</b>	
<b>Table 1 — Events which compromise the integrity of the haul rope loop</b> .....	<b>7</b>
<b>Table 2 — Events during operation which may represent a hazard when there is no carrier truck brake, even though the haul rope loop remains intact</b> .....	<b>8</b>
<b>Table 3 — Time intervals for inspection of the haul rope</b> .....	<b>9</b>
<b>Table ZA.1 — Correspondence between this European Standard and Directive 2000/9/EC relating to cableway installations designed to carry persons</b> .....	<b>14</b>

## European foreword

This document (EN 12929-2:2015+A1:2022) has been prepared by Technical Committee CEN/TC 242 “Safety requirements for cableway installations designed to carry persons”, the secretariat of which is held by AFNOR.

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 April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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 the EU Directive(s) / Regulation(s).

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

This document includes Amendment 1 approved by CEN on 18 August 2022.

This document supersedes A1 EN 12929-2:2015 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

In comparison to EN 12929-2:2004, the following main changes have been made:

- In 6.3, the requirement has been removed that stipulates that for the tension safety factor the haul rope loop shall comply with 1,2 times the value of the tension safety factor for haul ropes of bicable reversible aerial ropeways with carrier track brakes in accordance with EN 12930, as the value established from this was only slightly above 4,5. The requirement for the maximum tension safety factor was clarified on the area of the long splicing.
- In 6.4 b) 1), the value for the smallest permissible tension safety factor has been adapted to comply with the state of the art.
- In 6.6, the requirement has been removed that stipulates that the device shall be available for the MRT inspection of the installation, as this is not safety-related.
- The previous Clauses 6.13, 6.14, 6.17, 6.20, 6.22, 6.27, 7.3, 7.7, 7.8, 7.9 and 8.6 have been deleted without replacement, as there was no safety-relevant justifications for supplementary requirements with regard to bicable aerial ropeway with carrier track brakes.
- In 6.13, the alternative has been removed regarding taking into consideration the actually executed transverse sway options.
- In 7.2, the increased requirement on the groove depth of the rollers of the carrier truck has been removed, as the transverse sway movement of the carrier truck was restricted.
- In 7.3, the value for the assumed longitudinal sway has been slightly reduced to the value that is assumed in accordance with EN 12929-1 and the formula adapted.

**EN 12929-2:2015+A1:2022 (E)**

- In 7.6, the requirement on the equipment for bringing the cableway system to a standstill from the cabin have been redefined.
- In 8.2, the value for the safety has been reduced, as in 8.1 a redundant execution is required and therefore in the event of a system failure a safety of 1,5 is still provided. The terms and definitions have been adapted to EN 13796-1.
- In 8.4, the terms and definitions have been adapted to EN 13796-1.
- In 8.6, the requirements on the gripping force for reducing the diameter of the haul rope has been modified by 20 %, as the former regulation contained disproportionately high requirements for the execution of the grip.
- In Annex A, the A-deviation for Germany has been removed.
- In Annex ZA, the relationships with the basic requirements of the Directive 2000/9/EC have been adapted to the new numbering.

**A1** In comparison to EN 12929-2:2015, the Annex A on A-deviations has been removed. **A1**

EN 12929 with the generic title “Safety requirements for cable way installations designed to carry persons – General requirements” consists of the following parts:

- *Part 1: Requirements for all installations*
- *Part 2: Additional requirements for reversible bicable aerial ropeways without carrier truck brakes*

This document belongs to the standards programme which was ratified by CEN/TC 242. This programme includes the following standards:

- 1) EN 1907 – *Terminology*
- 2) EN 12929 (all parts) – *General requirements*
- 3) EN 12930 *Calculations*
- 4) EN 12927 (all parts) – *Ropes*
- 5) EN 1908 – *Tensioning devices*
- 6) EN 13223 – *Drive systems and other mechanical equipment*
- 7) EN 13796 (all parts) – *Carriers*
- 8) EN 13243 – *Electrical equipment other than for drive systems*
- 9) EN 13107 – *Civil engineering works*
- 10) EN 1709 – *Precommissioning inspection, maintenance, operational inspection and checks*
- 11) EN 1909 – *Recovery and evacuation*
- 12) EN 12397 – *Operation*
- 13) EN 12408 — *Quality assurance*

Together these form a series of Standards regarding design, manufacture, erection, maintenance and operation of all cableway installations designed to carry persons.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 12929-2:2015+A1:2023](https://standards.iteh.ai/catalog/standards/sist/26237b99-d3df-46a9-b0ee-11b8e38fc25b/sist-en-12929-2-2015a1-2023)

<https://standards.iteh.ai/catalog/standards/sist/26237b99-d3df-46a9-b0ee-11b8e38fc25b/sist-en-12929-2-2015a1-2023>

**EN 12929-2:2015+A1:2022 (E)****1 Scope**

This document specifies additional safety requirements for bicable reversible aerial ropeways without carrier truck brakes. This document is applicable to the various types of cableway installations and takes into account their environment.

This Part of EN 12929 contains:

- additional requirements relating to the integrity of the haul rope loop;
- additional requirements intended to prevent specific operational incidents;
- requirements concerning the attachment of the carriers to the haul rope.

This document does not apply to cableway installations for transportation of goods nor to lifts.

**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 1709, *Safety requirements for cableway installations designed to transport persons — Precommissioning inspection and instructions for maintenance and operational inspection and checks*

EN 1907, *Safety requirements for cableway installations designed to carry persons — Terminology*

EN 1908, *Safety requirements of cableway installations designed to carry persons — Tensioning devices*

EN 1909, *Safety requirements for cableway installations designed to carry persons — Recovery and evacuation*

EN 12397, *Safety requirements for cableway installations designed to carry persons — Operation*

EN 12408, *Safety requirements for cableway installations designed to carry persons — Quality assurance*

EN 12927 (all parts), *Safety requirements for cableway installations designed to carry persons — Ropes*

EN 12929-1, *Safety requirements for cableway installations designed to carry persons — General requirements — Part 1: Requirements for all installations*

EN 12930, *Safety requirements for cableway installations designed to carry persons — Calculations*

EN 13107, *Safety requirements for cableway installations designed to carry persons — Civil engineering works*

EN 13223, *Safety requirements for cableway installations designed to carry persons — Drive systems and other mechanical equipment*

EN 13243, *Safety requirements for cableway installations designed to carry persons — Electrical equipment other than for drive systems*

EN 13796 (all parts), *Safety requirements for cableway installations designed to carry persons — Carriers*



### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1907 apply.

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

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

### 4 Symbols and abbreviations

Symbols and abbreviations are explained with the formula to which they apply throughout this document.

## 5 General requirements

### 5.1 Application of this Standard

The requirements of this document, together with those of EN 1709, EN 1908, EN 1909, EN 12397, EN 12408, EN 12927 (all parts), EN 12929-1, EN 12930, EN 13107, EN 13223, EN 13243 and EN 13796 (all parts) apply to bi-cable reversible aerial ropeways without carrier truck brakes.

### 5.2 Safety principles

#### 5.2.1 General

The safety principles in accordance with EN 12929-1 apply.

In addition, the following hazard scenarios and safety measures relative to the scope of this document are to be taken into consideration.

#### 5.2.2 Hazard scenarios

The events listed in Tables 1 and 2 in particular may result in a hazardous situation which may be avoided or limited by means of the safety requirements in this document. Check the completeness of the list of hazard scenarios as per the safety study in accordance with EN 12929-1.

**Table 1 — Events which compromise the integrity of the haul rope loop**

Hazard scenario	Other relevant Standards
rupture of haul rope	EN 12930, EN 12927 (all parts)
deropement of haul rope	EN 12929-1
unacceptable reduction in rope tension	EN 1908
unacceptable increase in rope tension	EN 1908
overlapping of haul rope	EN 12929-1
contact with ropes other than the track rope	
failure of support system for the haul rope loop	EN 13223
effect of aircraft	EN 12929-1
twist of haul rope	
damage to haul rope due to atmospheric influences (e.g. lightning, corrosion)	EN 13243

**Table 2 — Events during operation which may represent a hazard when there is no carrier truck brake, even though the haul rope loop remains intact**

Hazard scenario	Other relevant Standards
failure of attachment of carrier to haul rope	EN 13796-1
failure of entry monitoring	EN 13243
loss of traction to drive sheave	EN 12929-1, EN 12930, EN 13223
derailment of carrier when stationary in extreme operating conditions	EN 13796-1
obstacle on line	
obstacle in station area	EN 13223
movement of carrier during an evacuation procedure	
twist of haul rope	
problems during correction of haul rope overlap	

### 5.2.3 Safety measures

This document contains the measures required to avoid or limit the hazard scenarios listed in 5.2.2.

## 6 Measures to ensure the integrity of the haul rope loop

**6.1** The integrity of the haul rope and the support system for the haul rope loop shall be ensured in all operating situations.

**6.2** The haul rope system shall be arranged as a continuous loop.

**6.3** When verifying the haul rope loop in accordance with EN 12930, the tension safety factor shall be at least 4,5; the tension safety factor may not exceed the 20,0 in the long splicing.

**6.4** Without prejudice to the requirements of 6.3, the tension safety factor shall correspond to the values below, with the calculation being carried out by one of the methods listed below according to whether or not the system and dimensioning of the attachment to the carrier requires that slipping of the haul rope on the grip shall be taken into account if the carrier becomes caught on a fixed obstacle on the line or in a station:

- a) if slipping does not have to be taken into account, the tension safety factor shall be at least 2,0 throughout the whole time of coming to a stop;
- b) if slipping has to be taken into account:
  - 1) the tension safety factor shall be at least 2,5 with respect to the greatest calculated slipping resistance of the grip, and
  - 2) the tension safety factor shall be at least 2,0 with respect to the greatest measured slipping resistance of the grip.