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STN	**Bezpečnostné požiadavky na zariadenia určené na osobnú lanovú dopravu Pohony a ostatné mechanické zariadenia**	**STN EN 13223+A1** 27 3020

Safety requirements for cableway installations designed to carry persons - Drive systems and other mechanical equipment

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/23

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English Version

Safety requirements for cableway installations designed to carry persons - Drive systems and other mechanical equipment

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Entraînements et autres dispositifs mécaniques

Sicherheitsanforderungen an Seilbahnen für den Personenverkehr - Antriebe und weitere mechanische Einrichtungen

This European Standard was approved by CEN on 18 November 2014 and includes Amendment 1 approved by CEN on 23 October 2022.

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

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Foreword

This document (EN 13223:2015+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of an identical text or by endorsement, at the latest by June 2023, and any conflicting national standards shall be withdrawn at the latest by June 2023.

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 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 the essential requirements of Regulation (EU) 2016/424.

For the relationship with Regulation (EU) 2016/424, see informative Annex ZA, which is an integral part of this document.

This document supersedes EN 13223:2015 .

With respect to EN 13223:2004, the following significant amendments have been made:

— In Clause 1, an addition about employee protection has been added.

— In Clause 3, terms and conditions have been removed.

— In 4.2.2, clauses l) and p) have been defined more precisely.

— In 6.2.6, the requirement for the interruption of the power flow to the main drive motor has been amended.

— In 6.3.1, the requirement for the speed of the auxiliary drive has been removed.

— In 6.8.4, it has been defined more precisely that only the safety components must be calculated with the mentioned safety factors.

— 6.9.2.3 has been expanded.

— In 7.3.1, the requirement has been narrowed in terms of the need for monitoring the types of control systems.

— In 8.2.2, the allowable difference in the speed value has been defined with 10 % of the nominal speed.

— In 8.3.2, the response effect of the 10 % overspeed trigger has been defined more precisely.

— In 8.3.3, the response effect of the 20 % overspeed trigger has been defined more precisely.

— In 8.4.2, the reference to Appendix A has been removed.

— 8.4.3 has been rewritten to uniformly define the safety requirement for braking systems.

— In 8.6.7, the requirement for sufficient static friction has been added.

— In 8.6.9, the monitoring requirement has been extended to all DC motors.

— 9.1.1 has been expanded.

— In 9.1.2, the requirement for the minimum delay has been redefined.

— 9.1.3 has been clarified.

— 9.3.1 has been clarified.

— In 9.3.6, the requirement of 20 % overspeed trigger has been removed.

— In 9.4, the reference standards for pneumatic systems have been added.

— 10.3.4 has been defined more precisely.

— 11.7.2 has been defined more precisely.

— 11.8.7 has been defined more precisely.

— In 11.9.1, the reference to the appendices has been removed.

— In 12.1.3, content has been revised. The safety factor for calculating fatigue has been defined.

— In 12.2.6, the requirement has been extended to all sheaves.

— In 12.2.8, the response effect of the monitoring has been defined more precisely. The requirement for evacuation ropes has been defined.

— 13.1.2 has been redrafted. The slip resistance has been defined.

— In 14.2 the requirement for evacuation ropes has been defined.

— 14.3 has been redrafted.

— 15.1.2 has been defined more precisely.

— In 17.1.1.4, the requirement was removed that the devices must be located in the stations.

— 17.8.3 has been defined more precisely.

— 17.9 has been clarified.

— In 18.1.1.2, the exceptions have been expanded to the station area of all types of systems.

— In 18.1.1.3, the exceptions have been expanded to the station area of aerial ropeways.

— In 18.1.1.4, the requirement for new and unformed linings has been applied.

— In 18.1.3.5, the option of using an appropriate safety device has been introduced.

— In 18.2.3, the requirement has been expanded to the entire track rope shoe.

— In 18.2.8, the option has been introduced to not require rope catching devices on the track rope shoes.

— 18.2.10 has been clarified.

— In 18.3.2 the requirement has been removed, because the reference to EN 12929-1 is sufficient.

— 20.3.2 has been redrafted.

— Annex A has been changed to “Informative”. The content of Table A. 1 has been revised.

— Annex B has been changed to “Informative”. The content of Table B. 1 has been revised.

— Annex ZA has been revised.

〈A1〉 This European Standard is part of a series of standards on safety requirements for cableway installations designed to carry persons. This series consists of the following standards:

— EN 1907, *Terminology*

— EN 12929 (all parts) , *General requirements*

— EN 12930, *Calculations*

— EN 12927, *Cables*

— EN 1908, *Tensioning devices*

— EN 13223, *Drive systems and other mechanical equipment*

— EN 13796 (all parts), *Carriers*

— EN 13243, *Electrical equipment other than for drive systems*

— EN 13107, *Civil engineering works*

— EN 1709, *Pre-commissioning inspection, maintenance, operational inspections and checks*

— EN 1909, *Recovery and evacuation*

— EN 12397, *Operation*

— EN 12408, *Quality control*

— EN 17064, *Prevention and fight against fire*

All of these standards form a single package for the planning, manufacture, assembly, maintenance and operation of cableway installations designed to carry persons. 〈A1〉

In respect of ski-tows, the drafting of this document has been guided by the works of the International Organisation for Transportation by Rope (OITAF).

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, 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.

1 Scope

This European Standard specifies safety requirements for the mechanical and electrical devices of the drive system and other mechanical devices for cableway installations designed to carry persons. This standard is applicable to the various types of installations and takes into account their environment.

This European Standard applies to the design, manufacture, installation, maintenance and operation of the mechanical and electrical devices of the drive system and other mechanical devices for cableway installations designed to carry persons.

It includes requirements concerning the prevention of accidents and the protection of workers without prejudice to the application of national regulations.

National regulations regarding building or construction or that are designed to protect particular groups of people, remain unaffected.

It does not apply to installations for the transportation of goods, or to lifts.

Clauses 6 to 11 apply to the mechanical and electrical devices of the drive system.

Clauses 12 to 20 apply to other mechanical devices.

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.

[A1] EN 1709:2019, *Safety requirements for cableway installations designed to carry persons – Precommissioning inspection, maintenance and operational inspections and checks*

[A1] EN 1907:2017 [A1], *Safety requirements for cableway installations designed to carry persons – Terminology*

EN 1908:2015, *Safety requirements for cableway installations designed to carry persons – Tensioning devices*

[A1] EN 1909:2017 [A1], *Safety requirements for cableway installations designed to carry persons – Recovery and evacuation*

[A1] EN 1993 1-1:2005 [A1], Eurocode 3*: Design of steel structures – Part 1-1: General rules and rules for buildings*

[A1] EN 10204:2004 [A1], *Metallic products – Types of inspection documents*

[A1] EN 12397:2017 [A1], *Safety requirements for cableway installations designed to carry persons – Operation*

[A1] EN 12408:2004 [A1], *Safety requirements for cableway installations designed to carry persons – Quality control*

[A1] EN 12927:2019 [A1], *Safety requirements for cableway installations designed to carry persons – Ropes*

EN 12929-1:2015, *Safety requirements for cableway installations designed to carry persons – General requirements – Part 1: Requirements for all installations*

EN 12929-2:2015, *Safety requirements for cableway installations designed to carry persons – General requirements – Part 2: Additional requirements for reversible bi-cable aerial ropeways without carrier truck brakes*

EN 12930:2015, *Safety requirements for cableway installations designed to carry persons – Calculations*

EN 13107:2015, *Safety requirements for cableway installations designed to carry persons – Civil engineering works*

EN 13243:2015, *Safety requirements for cableway installations designed to carry persons – Electrical equipment other than for drive systems*

prEN 13796-1:2017, *Safety requirements for cableway installations designed to carry persons – Carriers – Part 1: Grips, carrier trucks, on-board brakes, cabins, chairs, carriages, maintenance carriers, towhangers*

EN 13796-2:2017, *Safety requirements for cableway installations designed to carry persons – Carriers – Part 2: Slipping resistance test for grips*

EN 13796-3:2017, *Safety requirements for cableway installations designed to carry persons – Carriers – Part 3: Fatigue tests*

ISO 898-1:2013, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 1: Bolts, screws and studs with specified property classes – Coarse thread and fine pitch thread*

ISO 898-2:2012, *Fasteners – Mechanical properties of fasteners made of carbon steel and alloy steel – Part 2: Nuts with specified property classes – Coarse thread and fine pitch thread*

ISO 898-3:2018, *Mechanical properties of fasteners made of carbon steel and alloy steel – Part 3: Flat washers with specified property classes*

EN ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

EN ISO 5817:2014, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) – Quality levels for imperfections (ISO 5817:2014)*

EN ISO 9606-1:2019, *Qualification testing of welders — Fusion welding — Part 1: Steels* (ISO 9606-1)

ISO 281:2007, *Rolling bearings — Dynamic load ratings and rating life*

ISO 6336:2019 (all parts), *Calculation of load capacity of spur and helical gears*