OHUTUSNÕUDED INIMESTE TRANSPORTIMISEKS MÕELDUD KÖISTEEPAIGALDISTELE. AJAMISÜSTEEMID JA MUUD MEHAANILISED SEADMED

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

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13223:2015 sisaldab Euroopa standardi EN 13223:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 13223:2015 consists of the English text of the European standard EN 13223:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 08.07.2015.	Date of Availability of the European standard is 08.07.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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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.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Foreword

This document (EN 13223:2015) has been prepared by Technical Committee CEN/TC 242 “Safety requirements for passenger transportation by rope”, 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of an identical text or by endorsement, at the latest by January 2016, and any conflicting national standards shall be withdrawn at the latest by January 2016.

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 supersedes EN 13223:2004.

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 EU Directive 2000/9/EG.

For the relationship with EU Directive 2000/9/EG, see informative Annex ZA, which is an integral part of this document.

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.

This European Standard is part of a series of standards on safety requirements for cableway installations designed for passenger transport. This series consists of the following standards:

— EN 1907, relating to *Terminology*

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

— EN 12930, relating to *Calculations*

— EN 12927 (all parts), relating to *Cables*

— EN 1908, relating to *Tensioning devices*

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

— EN 13796 (all parts), relating to *Carriers*

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

— EN 13107, relating to *Civil engineering works*

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

— EN 1909, relating to *Recovery and evacuation*

— EN 12397, relating to *Operation*

— EN 12408, relating to *Quality control*

Together these form a series of standards applicable to the design, manufacture, installation, maintenance and operation of all cableway installations designed for passenger transport.

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).

In accordance with CEN-CENELEC Internal Regulations, the national standards institutes of the countries listed below are required to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, FYR Macedonia, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, 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.

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

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

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

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

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

EN 10204, *Metallic products – Types of inspection documents*

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

EN 12408, *Safety requirements for cableway installations designed to carry persons – Quality control*

EN 12927 (all parts), *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, *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 13243:2015, *Safety requirements for cableway installations designed to carry persons – Electrical equipment other than for drive systems*

prEN 13796-1:2012, *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, *Safety requirements for cableway installations designed to carry persons – Carriers – Part 2: Slipping resistance test for grips*

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

EN ISO 898 (all parts), *Mechanical properties of fasteners made of carbon steel and alloy steel (ISO 898, all parts)*

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

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

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

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

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

3 Terms and definitions

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

3.1
automatic operation
whole route, which is controlled automatically from the control console and which in special circumstances can be partly influenced from the control points

3.2
manual control
whole route, which is controlled solely by the operator at the control console

3.3
electrical stop
emergency main drive motor
emergency auxiliary drive motor
bringing the cableway to a standstill by interrupting the respective safety circuit by means of an emergency stop with the aid of the main drive motor or the auxiliary drive motor

3.4
emergency stop using service brake
process in which, after the appropriate safety circuits have been broken, the service brake is applied and the energy flow to the main or auxiliary motor is interrupted

3.5
emergency stop using safety brake
process in which, after one of the appropriate safety circuits has been broken or by mechanical tripping, the safety brake is applied and the energy flow to the main motor interrupted