

საქართველოს სტანდარტი

უსაფრთხოების მოთხოვნები საბაგრო გზის მონტაჟისათვის ადამიანების
გადასაცვანად - გადამზიდავები - ნაწილი 1: მომჭერები, გადამზიდავი
სატვირთო მანქანები, მუხრუჭების განლაგება, მგზავრთა სალონები, სკამები,
ვაგონები, ტექნიკური მომსახურების გადამზიდავები, საბუქსირე კაუჭი

საინფორმაციო მონაცემები

1 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს 2018 წლის 11 მაისის № 54 და 2018 წლის 7 მარტის № 14 განკარგულებებით

2 მიღებულია თავფურცლის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 13796-1:2017 „უსაფრთხოების მოთხოვნები საბავშრო გზის მონტაჟისათვის ადამიანების გადასაცვანად - გადამზიდავები - ნაწილი 1: მომჭერები, გადამზიდავი სატვირთო მანქანები, მუხრუჭების განლაგება, მგზავრთა სალონები, სკამები, ვაგონები, ტექნიკური მომსახურების გადამზიდავები, საბუქსირე კაუჭი“

3 პირველად

4 რეგისტრირებულია საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2018 წლის 11 მაისი №268-1.3-013342

აკრძალულია ამ სტანდარტის გადაცემა მესამე პირებისათვის ან/და მისი სხვა ფორმით გავრცელება

English Version

Safety requirements for cableway installations designed to carry persons - Carriers - Part 1: Grips, carrier trucks, on-board brakes, cabins, chairs, carriages, maintenance carriers, tow-hangers

Prescriptions de sécurité pour les installations à câbles transportant des personnes - Véhicules - Partie 1 : Attaches, chariots, freins embarqués, cabines, sièges, voitures, véhicules de maintenance, agrès

Sicherheitsanforderungen an Seilbahnen für den Personenverkehr - Fahrzeuge - Teil 1: Befestigungen am Seil, Laufwerke, Fangbremsen, Kabinen, Sessel, Wagen, Instandhaltungsfahrzeuge, Schleppvorrichtungen

This European Standard was approved by CEN on 8 December 2014.

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



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

European foreword5

1 Scope8

2 Normative references8

3 Terms and definitions9

4 Symbols and abbreviations 11

5 General requirements 11

5.1 Application of the standard..... 11

5.2 Safety principles 12

5.2.1 General 12

5.2.2 Hazard scenarios 12

5.2.3 Safety measures 12

6 Basic requirements..... 13

6.1 Technical documents to be supplied 13

6.1.1 List of safety components 13

6.1.2 Drawings and parts lists 13

6.1.3 Certificates 14

6.1.4 Calculations 14

6.1.5 Self-weight weighing report 14

6.1.6 Operating manual 14

6.2 Actions and effects of the environment 14

6.2.1 Self-weight (G) 14

6.2.2 Useful load (Q) 14

6.2.3 Wind action (F_w) 15

6.2.4 Gripping force (F_F) 16

6.2.5 Opening and closing force (O) 16

6.2.6 Reaction force when entering the station (R) 17

6.2.7 Reaction force when passing round a sheave (U) 17

6.2.8 Force due to haulage rope support (F_s) 17

6.2.9 Damping moment (M_Y) 17

6.2.10 Torsional moment (M_Z) 17

6.2.11 Force due to impact on guides (H_{Y2}) 17

6.2.12 Force due to impacts resulting from the action of the carrier truck brake (H_{X2}) 17

6.2.13 Force due to the action of the on-board brake (Q_F) 17

6.2.14 Longitudinal force due to the passengers (H_{X1}) 18

6.2.15 Transverse force due to the passengers (H_{Y1}) 18

6.2.16 Snow and frost actions..... 18

6.2.17 Force due to impact against buffers (A_X) 19

6.2.18 Action caused by the gradient of the ropes (F_N) 19

6.2.19 Force transverse to the track (F_Y) 19

6.3 Verifications 19

6.3.1 General 19

6.3.2 Static verifications 20

6.3.3 Fatigue verification 29

6.4 Materials 36

6.4.1 General 36

6.4.2 Steels 36

6.4.3 Welded components 36

6.5 Construction principles 36

6.6 Production tests 37

6.7 Fire prevention and firefighting 37

7 End fixings for ropes and grips 38

7.1 General 38

საინფორმაციო ნაწილი. სრული ტექსტის სახანავედ შეიძლება სტანდარტი.

7.2	Haulage rope drum end fixing	38
7.2.1	General.....	38
7.2.2	Haulage rope end clamps on fixing drum.....	38
7.2.3	Drum grooves	38
7.2.4	Coefficients of friction	38
7.3	Drum fixing of a continuous haulage rope	39
7.4	Socket end fixings (dry/cast sockets).....	39
7.4.1	General.....	39
7.4.2	Conical bush for cast socket	40
7.5	Aerial ropeway grips (excluding chapeaux de gendarme).....	41
7.5.1	General.....	41
7.5.2	Fixed grips	44
7.5.3	Detachable grips.....	45
7.6	Chapeau de gendarme	46
7.6.1	General.....	46
7.6.2	Design requirements.....	46
7.6.3	Verifications	46
7.6.4	Coefficients of friction	47
7.7	Grips for towing ropes.....	47
7.7.1	General.....	47
7.7.2	Fixed grips	48
7.7.3	Detachable bush grips	49
8	Carrier trucks for aerial ropeways	49
9	Chassis of funicular railways	50
10	On-board brakes.....	51
10.1	Automatic application	51
10.2	Manual application.....	51
10.3	Verifications of the brake.....	51
11	Cabins, chairs and other carriers of aerial ropeways	52
11.1	General.....	52
11.1.1	Space envelopes.....	52
11.1.2	Carrier equipment.....	52
11.2	Cabins.....	53
11.2.1	General.....	53
11.2.2	Cabins for reversible aerial ropeways.....	57
11.2.3	Cabin doors	58
11.3	Rescue carriers.....	58
11.4	Chairs	58
11.4.1	General.....	58
11.4.2	Seats, backs and armrests	59
11.4.3	Safety bars and footrests.....	59
11.4.4	Hoods	60
12	Carriages for funicular railways	62
12.1	General.....	62
12.2	Carriage doors	65
12.2.1	General.....	65
12.2.2	Doors for carriages with attendant	65
12.2.3	Doors for carriages without attendant.....	65
13	Maintenance vehicles	66
13.1	General.....	66
13.2	Space envelopes.....	66
13.3	Identification plate	67
13.4	Dimensioning of the carrier	67
14	Tow-hangers	67
14.1	General.....	67

14.2 Rods and springboxes..... 67
14.3 T-bars and platters 68
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2000/9/EC relating to cableway installations designed to carry persons..... 70
Bibliography 74

საინფორმაციო ნაწილი. სრული ტექსტის სახსრად შეიძინეთ სტანდარტი.

European foreword

This European Standard (EN 13796-1:2017) 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, by September 2017 at the latest, and all conflicting national standards shall be withdrawn no later than September 2017.

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

This document supersedes EN 13796-1:2005.

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 2000/9/EC.

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

EN 13796 comprises the following parts under the general title *Safety requirements for cableway installations designed to carry persons – Carriers*:

- *Part 1: Grips, carrier trucks, on-board brakes, cabins, chairs, carriages, maintenance carriers, tow-hangers*
- *Part 2: Slipping resistance test for grips*
- *Part 3: Fatigue tests.*

The main changes to the previous edition of EN 13796-1 are the following:

- in 6.2.3, the subclause has been reorganized to clarify its application, and the force coefficient values for verifying the effects of wind have been changed;
- in 6.2.15, 11.2.1.1, 11.2.1.2 and 12.1.2, the calculation of the walls and the definition of the loads to be taken into consideration for this calculation have been changed to take account of service experience and so as not to differentiate the dimensioning of the walls based on the position of the passengers (seated or standing);
- in 6.3.3.2.2 a) 2) and 6.3.3.2.3, clarifications of the dynamic stresses have been provided to be taken into account when carriers pass through stations;
- addition of 6.7 concerning fire prevention and firefighting;
- in 7.2.2.3, the subclause was rewritten to clarify its application;
- in 7.3.4, the tolerances on the geometry of the grooves of the haulage rope fixing drum are made consistent with those relating to the rope diameters defined in EN 12385-8;
- in 7.4.2.3, the taper angle values have been changed to comply with the values in the EN 12927 series;

- in 7.6.2.6, the tolerances on the geometry of the chapeau de gendarme drum grooves have been changed to comply with 7.2.3.1;
- in 9.3, the conditions for verifying the load on one of the wheels of a chassis of a funicular railway have been clarified, so that they are not limited solely to braking with the on-board brake;
- in 10.1 a), determination of the triggering threshold for the on-board brake in the event of failure of a haulage rope is clarified;
- in 11.2.1.1, a requirement was added regarding the material used for the glazing of the cabins, which shall not be dangerous in the event of breakage;
- in 11.4.1.2, a clarification regarding chairs has been added for the transport of persons with reduced mobility with their specific equipment;
- in 12.1.3, a paragraph has been added regarding accessibility for wheelchair passengers in order to be consistent with 11.2.1.4;
- in Annex ZA, the table has been supplemented.

This document forms part of the standards programme approved by the CEN Technical Board (CEN/BT) on safety requirements for cableway installations designed to carry persons. This programme comprises the following standards:

- EN 1907, *Safety requirements for cableway installations designed to carry persons — Terminology*
- EN 12929 series, *Safety requirements for cableway installations designed to carry persons — General requirements*
- EN 12930, *Safety requirements for cableway installations designed to carry persons — Calculations*
- EN 12927 series, *Safety requirements for cableway installations designed to carry persons — Ropes*
- EN 1908, *Safety requirements for cableway installations designed to carry persons — Tensioning devices*
- EN 13223, *Safety requirements for cableway installations designed to carry persons — Drive systems and other mechanical equipment*
- EN 13796 series, *Safety requirements for cableway installations designed to carry persons — Carriers*
- EN 13243, *Safety requirements for cableway installations designed to carry persons — Electrical equipment other than for drive systems*
- EN 13107, *Safety requirements for cableway installations designed to carry persons — Civil engineering works*
- EN 1709, *Safety requirements for cableway installations designed to carry persons — Pre-commissioning inspection, maintenance and operational inspection and checks*
- 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*

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

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