

საქართველოს სტანდარტი

სახანძრო და სამაშველო მაღალა ასაწევი საჰაერო მოწყობილობები -
გადაადგილებული კიბეები რიგითი მოძრაობებით - უსაფრთხოებისა და
შესრულების მოთხოვნები და საგამოცდო მეთოდები

საქართველოს სტანდარტებისა და მეტროლოგიის
ეროვნული სააგენტო
თბილისი

საინფორმაციო მონაცემები

1 შემუშავებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს სტანდარტების დეპარტამენტის მიერ

2 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს 2019 წლის 20 დეკემბრის № 102 განკარგულებით

3 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 14044:2014 “სახანძრო და სამაშველო მაღალა ასაწევი საჰაერო მოწყობილობები - გადაადგილებული კიბეები რიგითი მოძრაობებით - უსაფრთხოებისა და შესრულების მოთხოვნები და საგამოცდო მეთოდები”

4 პირველად

5 რეგისტრირებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2019 წლის 20 დეკემბერი №268-1.3-016764

დაუშვებელია წინამდებარე სტანდარტის სრული ან ნაწილობრივი კვლავწარმოება, ტირაჟირება და გავრცელება სსიპ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს ნებართვის გარეშე

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

English Version

High rise aerial appliances for fire and rescue service use -
Turntable ladders with sequential movements - Safety and
performance requirements and test methods

Moyens élévateurs aériens à l'usage des services de secours et de lutte contre l'incendie - Échelles pivotantes à mouvements séquentiels - Prescriptions de sécurité et de performances et méthodes d'essais

Hubrettungsfahrzeuge für die Feuerwehr - Drehleitern mit aufeinander folgenden (sequenziellen) Bewegungen (Halbautomatik-Drehleitern) - Sicherheits- und Leistungsanforderungen sowie Prüfverfahren

This European Standard was approved by CEN on 26 October 2013.

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, 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

Foreword..... 4

Introduction 7

1 Scope 8

2 Normative references 8

3 Terms and definitions, symbols and abbreviated terms 9

4 List of significant hazards 20

5 Requirements 28

5.1 Safety requirements and/or measures 28

5.1.1 General..... 28

5.1.2 Requirements in respect of stability..... 29

5.1.3 Requirements relating to the strength of the turntable ladder 41

5.1.4 Verification of vehicle performance by functional testing 43

5.1.5 Requirements relating to function 44

5.1.6 Requirements relating to noise 71

5.2 Performance requirements 72

5.2.1 Operational requirements 72

5.2.2 Requirements demanded by national regulations 72

5.2.3 Overall maximum dimensions 73

5.2.4 Maximum gross laden mass 73

5.2.5 Radio interference 74

6 Designation 75

7 Information for use 75

7.1 General..... 75

7.2 Instruction handbook 75

7.2.1 General..... 75

7.2.2 Operating instruction 75

7.2.3 Transport, handling and storage information..... 77

7.2.4 Information on commissioning 77

7.2.5 Machine details 77

7.2.6 Maximum loads in the rescue cage and/or on the ladder set 78

7.2.7 Maintenance information for use by trained personnel..... 78

7.2.8 Special working methods or conditions 78

7.2.9 Periodical examinations and tests..... 78

7.3 Marking 79

Annex A (informative) Example of table reporting the stability tests 81

Annex B (normative) Operating time..... 82

Annex C (informative) List of nominal reaches in several European countries applicable to turntable ladders..... 83

Annex D (informative) Verification and reception tests 85

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC 89

Bibliography 90

საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

Figures

| | |
|---|----|
| Figure 1 — Example of boundary | 14 |
| Figure 2 — Jacking width | 15 |
| Figure 3 — Designation of ladder set sections | 19 |
| Figure 4 — Example of forces acting on turntable ladder | 30 |
| Figure 5 — Resulting force of the working load..... | 31 |
| Figure 6 — Surface exposed to the wind | 32 |
| Figure 7 — Minimum required residual force related to jacking width..... | 34 |
| Figure 8 — Maximum and minimum jacking width..... | 35 |
| Figure 9 — Test position without rescue cage..... | 39 |
| Figure 10 — Test position with rescue cage | 39 |
| Figure 11 — Static tilt angle δ for turntable ladders | 48 |
| Figure 12 — Maximum angle of elevation..... | 50 |
| Figure 13 — Relative positions of hand and guard-rails..... | 52 |
| Figure 14 — Impact simulation on the rescue cage | 55 |
| Figure 15 — Rung alignment..... | 62 |
| Figure 16 — Minimum dimensions of ladder sections | 65 |
| Figure 17 — Rung spacing dimensions | 65 |
| Figure 18 — Winding diameter..... | 69 |
| Figure 19 — Diagram of minimum unaffected zones | 74 |
| Figure 20 — Example of a warning label for the number of person permissible in the rescue cage..... | 80 |

Tables

| | |
|---|----|
| Table 1 — List of significant hazards | 20 |
| Table 2 — Safety factors for load calculations | 32 |
| Table 3 — Test cases for verification method 2..... | 37 |
| Table 4 — Functional Safety and Performance Level..... | 56 |
| Table 5 — Functional requirements for ladder set main control console | 58 |
| Table 6 — Dimensions | 65 |
| Table 7 — Determination of factor c | 68 |
| Table 8 — Determination of factor h_1 for the following construction unit..... | 69 |
| Table 9 — Determination of factor h_2 for the following construction unit..... | 69 |
| Table 10 — Nominal reaches..... | 72 |
| Table 11 — Overall maximum dimensions in travel position | 73 |
| Table 12 — Maximum gross laden mass | 73 |
| Table 13 — Masses taken into consideration in the calculation of gross laden mass | 73 |
| Table A.1 — Example of table reporting the stability tests..... | 81 |
| Table B.1 — Determination of the operating time..... | 82 |
| Table C.1 — Nominal reaches of turntable ladders in several European countries..... | 83 |
| Table D.1— Verifications and reception tests | 85 |

Foreword

This document (EN 14044:2014) has been prepared by Technical Committee CEN/TC 192 "Fire and rescue service equipment", the secretariat of which is held by BSI.

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 July 2014, and conflicting national standards shall be withdrawn at the latest by July 2014.

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 held responsible for identifying any or all such patent rights.

This document supersedes EN 14044:2005+A1:2009.

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(s).

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

The significant changes with respect to the previous edition of EN 14044 are as follows:

- a) ladder class > 30 to 56 added;
- b) terms and definitions for turntable ladder with sequential movements, rescue height, supported boundary, jacking width and load per person reworded, for dead man's device, working position and boundary added and for special boundary of use deleted;
- c) calculation of the working load and of diverse force revised;
- d) fatigue stress analysis completely revised;
- e) static stability revised and depends on the jacking width with defined residual forces;
- f) verification of static stability and dynamic stability revised;
- g) functional requirements revised;
- h) requirement for audible alarm at low battery voltage added;
- i) verification relating to the strength of the turntable ladder at the boundary of free-standing use with a_{max} revised;
- j) verification relating to the strength of the turntable ladder at the boundary of free-standing use (without or with rescue cage) deleted;
- k) verification relating to turntable ladders constructed to be operated only with the rear axle suspension fully or partially locked revised;
- l) requirement that loaded ladder shall maintain its position for 10 min with a variation less than 150 mm added;
- m) at least 100 mm difference at relative positions for the suspension locking device added;
- n) static tilt angle added;

საინფორმაციო ნაწილი. სრული ტექსტის სახსრად შეიძლება სტანდარტი.

- o) requirements on hand and guard-rails of the rescue cage revised and a requirement relating to aperture size added;
- p) requirements for anchoring points in the rescue cage for personal protective equipment against falling added;
- q) requirements relating to access doors and door locking devices in the rescue cage fully revised;
- r) requirements and verification revised relating to attachment systems for turntable ladders with a removable rescue cage;
- s) working light requirements revised;
- t) safety related parts of the control system according to category 1 or 2 of EN 954-1 changed to performance level (PL) according to EN ISO 13849-1;
- u) general normative reference to CEN/TS 15989 for the symbols on the control console added and all figures and tables with symbols deleted;
- v) requirements for the main control console added, that movement via the control lever of the rescue cage control console shall only take place after unlocking the emergency stop control in the rescue cage;
- w) indicator (e.g. display) to show the actual values of ladder length, ladder extension and elevation angle together with the maximum achievable values added;
- x) requirement revised relating to access from the ground to the ladder set (either directly (e.g. access ladder) or indirectly (e.g. deck));
- y) voice communication revised;
- z) rung alignment revised;
- aa) requirement revised relating to transmission systems (safety factors) and cable drums (grooves or devices preventing the cable running off the drum);
- bb) safety requirements related to electromagnetic phenomena and requirements relating to noise revised;
- cc) recommendation to use dependability management systems added;
- dd) precision of designation;
- ee) instruction handbook revised;
- ff) list of all known nominal reaches in several European countries applicable to turntable ladders in Annex C added;
- gg) list of verification and reception tests in Annex D with short description of requirement/test added;
- hh) Annex ZA deleted relating to the relationship between this European Standard and the Essential Requirements of the replaced EU Directive 98/37/EC;
- ii) Normative references revised: withdrawn standards EN 418, EN 457, EN 954-1, EN 982, EN 1050, EN ISO 12100-1:2003, EN ISO 12100-2:2003 have been deleted, CEN/TS 15989, EN ISO 4413, EN ISO 7731, EN ISO 12100:2010, EN ISO 13849-1, EN ISO 13850 have been added, and EN 1846 (all parts) as well as EN 60204-1 have been updated regarding dated reference;
- jj) Bibliography revised;

kk) content of standard editorially revised.

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

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

Introduction

This European Standard is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this European Standard.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.