

July 2022

ICS 27.180; 91.140.90

English Version

Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 44: Lifting appliances in wind turbines

Règles de sécurité pour la construction et l'installation
des ascenseurs - Applications particulières pour les
ascenseurs et les ascenseurs de charge - Partie 44 :
Ascenseurs de chantier pour éolienne

Sicherheitsregeln für die Konstruktion und Installation
von Aufzügen - Besondere Aufzüge für den Transport
von Personen und Gütern - Teil 44: Aufzüge in
Windenergieanlagen

This draft European Standard is submitted to CEN members for formal vote. It has been drawn up by the Technical Committee CEN/TC 10.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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

Contents	Page
European foreword	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms, definitions, symbols and abbreviated terms	9
3.1 Terms and definitions.....	9
3.2 Symbols and abbreviations	11
4 List of significant hazards	13
5 Safety requirements	13
5.1 General.....	13
5.2 Loads and calculations.....	13
5.3 Liftway protection, base enclosure and landing access.....	24
5.4 Base frame.....	36
5.5 Guiding systems and buffers.....	36
5.6 Carrier.....	37
5.7 Drive units.....	40
5.8 Control and limiting devices.....	46
5.9 Electric installations and appliances.....	55
5.10 Safety devices against falling of the lifting appliance	57
6 Verification.....	60
6.1 General.....	60
6.2 Verification tests on each lifting appliance before first use	68
7 Information for use	68
7.1 General.....	68
7.2 User's manual.....	68
7.3 Information for installation and dismantling	70
7.4 Information for maintenance.....	70
7.5 User Information available in the carrier.....	71
7.6 User Information available at the bottom landing	71
7.7 Marking	71
Annex A (normative) Lifting appliance verification tests	74
A.1 General.....	74
A.2 Lifting appliance verification test in as installed configuration.....	75
A.3 Carrier verification test	86
Annex B (normative) Drive unit verification tests.....	88
B.1 General.....	88
B.2 Traction hoist drive	88
B.3 Rack and pinion drive (One drive system)	90
B.4 Rack and pinion system with two redundant drive units	93

Annex C (normative) Overspeed safety device and fall arrest device verification tests.....	96
C.1 General	96
C.2 Overspeed safety devices and fall arrest devices for traction hoist drives	96
C.3 Overspeed safety device for rack and pinion drive.....	101
Annex D (normative) Other verification tests	103
D.1 General	103
D.2 Landing gate and enclosure verification tests	103
Annex E (informative) Evacuation and rescue.....	104
E.1 Introduction	104
E.2 Evacuation scenario.....	104
Annex F (informative) List of significant hazards	105
Annex G (informative) Guidance on calculation methods	108
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered.....	109
Bibliography	112

European foreword

This document (FprEN 81-44:2022) has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

This document is currently submitted to the Formal Vote.

This document is part of the EN 81 series of standards. The structure of the EN 81 series is described in CEN/TR 81-10:2008.

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 EU Directive(s) / Regulation(s).

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

Introduction

This document is a type-C standard as stated in EN ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

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

1 Scope

1.1 This document specifies the safety requirements for the construction and installation of power operated lifting appliances installed permanently for indoor or outdoor service in wind turbines and intended for access to workplaces on wind turbines, including rescue and evacuation procedures. A lifting appliance serves defined landing levels and can move persons to working positions where they are carrying out work (which could be from the carrier) and has a carrier which is:

- a) designed for the transportation of persons and goods;
- b) guided;
- c) travelling vertically or along a path within 15° maximum from the vertical;
- d) supported or sustained by rack and pinion or rope traction drive;
- e) travelling with a speed not more than 0,7 m/s;
- f) able to operate in a temperature range between – 25 °C to + 55 °C.

1.2 This document does not cover hazards related to:

- a) noise;
- b) the use of the lifting appliance for erection or dismantling of the wind turbine;
- c) lightning protection;
- d) use in potentially explosive atmospheres;
- e) electromagnetic compatibility (emission, immunity);
- f) transporting of goods outside the carrier;
- g) the use of combustion engines;
- h) hydraulic and pneumatic drive units;
- i) the use of lifting appliances in floating wind turbines;
- j) the use during earthquakes.

1.3 This document is not applicable to lifting appliances manufactured before the date of its publication.

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 81-20:2020, *Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 20: Passenger and goods passenger lifts*

EN 81-43:2009, *Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 43: Lifts for cranes*

EN 81-50:2020, *Safety rules for the construction and installation of lifts - Examinations and tests - Part 50: Design rules, calculations, examinations and tests of lift components*

EN ISO 13854:2019, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

EN 795:2012, *Personal fall protection equipment - Anchor devices*

EN 894-1:1997+A1:2008, *Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 1: General principles for human interactions with displays and control actuators*

EN 1808:2015, *Safety requirements for suspended access equipment - Design calculations, stability criteria, construction - Examinations and tests*

EN 1991-1-3:2003, *Eurocode 1 - Actions on structures - Part 1-3: General actions - Snow loads*

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

EN 10264-1:2012, *Steel wire and wire products - Steel wire for ropes - Part 1: General requirements*

EN 10264-2:2021, *Steel wire and wire products - Steel wire for ropes - Part 2: Cold drawn non alloy steel wire for ropes for general applications*

EN 10264-3:2012, *Steel wire and wire products - Steel wire for ropes - Part 3: Round and shaped non alloyed steel wire for high duty applications*

EN 10264-4:2012, *Steel wire and wire products - Steel wire for ropes - Part 4: Stainless steel wire*

EN 12385-1:2002+A1:2008, *Steel wire ropes - Safety - Part 1: General requirements*

EN 12385-2:2002+A1:2008, *Steel wire ropes - Safety - Part 2: Definitions, designation and classification*

EN 12385-3:2020, *Steel wire ropes - Safety - Part 3: Information for use and maintenance*

EN 12385-4:2002+A1:2008, *Steel wire ropes - Safety - Part 4: Stranded ropes for general lifting applications*

EN 13001-2:2021, *Crane safety - General design - Part 2: Load actions*

EN 13411-1:2002+A1:2008, *Terminations for steel wire ropes - Safety - Part 1: Thimbles for steel wire rope slings*

EN 13411-2:2001+A1:2008, *Terminations for steel wire ropes - Safety - Part 2: Splicing of eyes for wire rope slings*

EN 13411-3:2004+A1:2008, *Terminations for steel wire ropes - Safety - Part 3: Ferrules and ferrule-securing*

EN 13411-4:2021, *Terminations for steel wire ropes - Safety - Part 4: Metal and resin socketing*

EN 13411-5:2003+A1:2008, *Terminations for steel wire ropes - Safety - Part 5: U-bolt wire rope grips*