

**Liftide valmistamise ja paigaldamise ohutuseeskirjad.  
Eriliftid Inimeste ja kauba transpordiks. Osa 43:  
Kraanade liftid**

Safety rules for the construction and installation of lifts -  
Special lifts for the transport of persons and goods - Part 43:  
Lifts for cranes

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 81-43:2009 sisaldab Euroopa standardi EN 81-43:2009 ingliskeelset teksti.

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ICS 53.020.20; 91.140.90

English Version

## Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 43: Lifts for cranes

Règles de sécurité pour la construction et l'installation des ascenseurs - Ascenseurs particuliers destinés au transport des personnes et des matériaux - Partie 43: Ascenseurs pour appareils de levage à charge suspendue

Sicherheitsregeln für die Konstruktion und Installation von Aufzügen - Besondere Aufzüge für den Transport von Personen und Gütern - Teil 43: Kranführeraufzüge

This European Standard was approved by CEN on 10 April 2009.

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## Foreword

This document (EN 81-43:2009) has been prepared by Technical Committee CEN/TC 10 "Lifts, escalators and moving walks", 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of an identical text or by endorsement, at the latest by November 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

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 is part of the EN 81 series of standards: "*Safety rules for the construction and installation of lifts*". This is the first edition.

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 Directives 98/37/EC and 2006/42/EC.

For relationship with EU Directives, see informative Annexes ZA and ZB, which are integral parts of this document.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

This document is one of a series of standards produced by CEN/TC 10/SC 1 as part of the CEN programme of work to produce machinery safety standards.

This document is a Type C standard as stated in EN ISO 12100:2003.

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

This document gives details for the complete installation.

In order to achieve a safe installation of a lift on a crane negotiations shall take place between the manufacturer of the lift and the crane user organisation about the interfaces (e.g. lift way protection, supporting structure, power supplies, suitability of alarm devices) regarding the responsibility for the supply of these requirements.

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."

## 1 Scope

**1.1** This document specifies the safety requirements for the construction and installation of power operated lifts attached to cranes and intended for access to workplaces on cranes, by authorised persons. This includes intended use, erection, dismantling, inspection and maintenance. The lift serves defined landing levels and has a load carrying unit which is:

- a) designed for the transportation of persons and goods;
- b) guided;
- c) travelling vertically or along a path within 15 degrees maximum from the vertical;
- d) supported by rack and pinion or suspended by steel wire ropes;
- e) travelling with a speed not more than 1,0 m/s for permanent lifts and not more than 0,4 m/s for temporary lifts.

**1.2** This document identifies hazards as listed in Clause 4 which arise during the various phases in the life of such equipment and describes methods for the elimination or reduction of these hazards when used as intended by the manufacturer.

**1.3** This document does not specify the additional requirements for:

- a) operation in severe conditions (e.g. extreme climates, strong magnetic fields);
- b) lightning protection;
- c) operation subject to special rules (e.g. potentially explosive atmospheres);

**NOTE** Directive 94/9/EC concerning equipment and protective systems intended for use in potentially explosive atmospheres can be applicable to the type of machine or equipment covered by this European Standard. The present standard is not intended to provide means of complying with the essential health and safety requirements of Directive 94/9/EC.

- d) electromagnetic compatibility (emission, immunity);
- e) handling of loads the nature of which could lead to dangerous situations;
- f) the use of combustion engines;
- g) hydraulic drive units;
- h) hazards occurring during manufacturing process;
- i) hazards occurring as a result of being erected over a public road;
- j) earthquakes;
- k) noise (see also Directive on noise emissions from machines used outdoors (2000/14/EC)).

**1.4** This standard is not applicable to:

- a) builders hoists according to EN 12158-1:2000, EN 12158-2:2000 and EN 12159:2000;



- b) elevating control stations according to EN 14502-2:2005+A1:2008;
- c) lifts according to EN 81-1:1998;
- d) work platforms carried on the forks of fork trucks;
- e) work platforms;
- f) funiculars;
- g) lifts specially designed for military purposes;
- h) mine lifts;
- i) theatre elevators.

**1.5** This standard deals with the complete lift design but excludes the design of the crane. It includes the base frame and base enclosure but excludes the design of any concrete, hard core, timber or other foundation arrangement. It includes the design of mast ties and the design of anchorage parts between the mast tie and the crane structure. This standard also includes the design of the landing gates and their fixings.

## 2 Normative references

The following referenced documents are indispensable for the application 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 81-1:1998, *Safety rules for the construction and installation of lifts — Part 1: Electric lifts*

EN 349:1993+A1:2008, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

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

EN 1037:1995+A1:2008, *Safety of machinery — Prevention of unexpected start-up*

EN 1088:1995+A2:2008, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 1808:1999, *Safety requirements on suspended access equipment — Design calculations, stability criteria, construction — Tests*

EN 1999-1-1:2007, *Eurocode 9: Design of aluminium structures — Part 1-1: General structural rules*

EN 12159:2000, *Builders hoists for persons and materials with vertically guided cages*

EN 13001-2:2004, *Cranes — General design — Part 2: Load actions*

CEN/TS 13001-3-1:2004, *Cranes — General design — Part 3-1: Limit states and proof of competence of steel structures*

EN 13586:2004+A1:2008, *Cranes — Access*

EN 60204-32:2008, *Safety of machinery — Electrical equipment of machines — Part 32: Requirements for hoisting machines (IEC 60204-32:2008)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP-Code) (IEC 60529:1989)*

EN 60947-4-1:2001, *Low-voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters — Electromechanical contactors and motor-starters (IEC 60947-4-1:2000)*

EN 60947-5-1:2004, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2003)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)*

EN ISO 14121-1:2007, *Safety of machinery — Risk assessment — Part 1: Principles (ISO 14121-1:2007)*

ISO 3864-1:2002, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas*

ISO 4309:2004, *Cranes — Wire ropes — Care, maintenance, installation, examination and discard*

ISO 6336-1:2006, *Calculation of load capacity of spur and helical gears — Part 1: Basic principles, introduction and general influence factors*

ISO 6336-2:2006, *Calculation of load capacity of spur and helical gears — Part 2: Calculation of surface durability (pitting)*

ISO 6336-3:2006, *Calculation of load capacity of spur and helical gears — Part 3: Calculation of tooth bending strength*

ISO 6336-5:2003, *Calculation of load capacity of spur and helical gears — Part 5: Strength and quality of materials*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100-1:2003 and the following apply.

#### 3.1

##### **lift**

machine with a car which is guided and intended for transport between different levels

#### 3.2

##### **working load/rated load**

maximum load which the lift has been designed to carry in service

#### 3.3

##### **rated speed**

travelling speed of the car in m/s for which the equipment has been designed

#### 3.4

##### **wire rope lift**

lift which uses wire rope as the load suspension system