# Liftide valmistamise ja paigaldamise ohutuseeskirjad. Inimeste ja kaupade transportimiseks mõeldud eriotstarbelised liftid. Osa 40: Liikumispuudega inimestele mõeldud trepiliftid ja kaldega liftiplatvormid

Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 40: Stairlifts and inclined lifting platforms intended for persons with impaired mobility

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

| | |
|---|---|
| Käesolev Eesti standard EVS-EN 81-40:2008 sisaldab Euroopa standardi EN 81-40:2008 ingliskeelset teksti. | This Estonian standard EVS-EN 81-40:2008 consists of the English text of the European standard EN 81-40:2008. |
| Standard on kinnitatud Eesti Standardikeskuse 10.11.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas. | This standard is ratified with the order of Estonian Centre for Standardisation dated 10.11.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation. |
| Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 29.10.2008. | Date of Availability of the European standard text 29.10.2008. |
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EUROPEAN STANDARD

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English Version

# Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 40: Stairlifts and inclined lifting platforms intended for persons with impaired mobility

Règles de sécurité pour la construction et l'installation des élévateurs - Élévateurs spéciaux pour le transport des personnes et des charges - Partie 40 : Ascensièges et plates-formes élévatrices inclinées à l'usage des personnes à mobilité réduite

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Spezielle Aufzüge für den Personen- und Gütertransport - Teil 40: Treppenschrägaufzüge und Plattformaufzüge mit geneigter Fahrbahn für Behinderte

This European Standard was approved by CEN on 25 July 2008.

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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 Management Centre has the same status as the official versions.

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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**



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## Foreword

This document (EN 81-40:2008) 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 April 2009, and conflicting national standards shall be withdrawn at the latest by April 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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship with EC Directive(s), see informative Annex ZA and B, which is an integral part 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 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 document.

The stairlifts defined in this European Standard are suitable for type A and type B wheelchairs as defined in EN 12183 and/or EN 12184.

When provisions of this type C standard are different from those which are stated in type A and type 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.

**Assumptions**

With the aim of clarifying the intentions of the standard and avoiding doubts when reading it, the following assumptions were made when producing it:

a) components without specific requirements are:

   1) designed in accordance with the usual engineering practice and calculation codes, including all failure modes;

   2) of sound mechanical and electrical construction;

b) general electrical hazards are dealt with according to B level electrical safety standards;

c) components are kept in good repair and working order, in accordance with the maintenance manual, so that the required characteristics remain despite wear;

d) by design of the load bearing elements, a safe operation of the machine is assured throughout the entire maximum working load range;

e) a mechanical device built according to good practice and the requirements of the standard, will not deteriorate to a point of creating a hazard without the possibility of detection;

f) to ensure the safe functioning, the operating temperature range of the equipment has to take into account the conditions of the place of use of the machinery, inside the range of ambient temperature between 0 °C and +40 °C.

Negotiation occurs between the manufacturer (the person applying the CE mark) and the user concerning the specificity of the use and places of use of the stairlift:

g) suitability for user (see Annex C);

h) the place of installation allows a safe use for the machine;

i) any additional fire protection requirements.

# 1 Scope

**1.1** This European Standard deals with safety requirements for construction, manufacturing, installation, maintenance and dismantling of electrically operated stairlifts (chair, standing platform and wheelchair platform) affixed to a building structure, moving in an inclined plane and intended for use by persons with impaired mobility:

— travelling over a stair or an accessible inclined surface;

— intended for use by one person;

— whose carriage is directly retained and guided by a guide rail or rails;

— supported or sustained by rope (5.4.4), rack and pinion (5.4.5), chain (5.4.6), screw and nut (5.4.7), friction traction drive (5.4.8), and guided rope and ball (5.4.9).

**1.2** The standard 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 European standard does not specify the additional requirements for:

— operation in severe conditions (e.g. extreme climates, strong magnetic fields);

— lightning protection;

— operation subject to special rules (e.g. potentially explosive atmospheres);

— handling of materials the nature of which could lead to dangerous situations;

— use of energy systems other than electricity;

— hazards occurring during manufacture;

— earthquakes, flooding, fire;

— type C wheelchairs as defined in EN 12183 and/or EN 12184;

— evacuation during a fire;

— stairlifts for goods only;

— concrete, hardcore, timber or other foundation or building arrangement;

— design of anchorage bolts to the supporting structure.

NOTE For the actual type of machinery, noise is not considered a significant nor relevant hazard.

**1.4** This document is not applicable to power operated stairlifts which are manufactured before the date of publication of this document by CEN.

## 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, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

EN 12385-4, *Steel wire ropes — Safety — Part 4: Stranded ropes for general lifting applications*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements* (IEC 60204-1:2005, modified)

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

EN 60664-1:2007, *Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests (IEC 60664-1:2007)*

EN 60695-11-10, *Fire hazard testing — Part 11-10: Test flames — 50 W horizontal and vertical flame test methods (IEC 60695-11- 10:1999)*

EN 60747-5 (all parts), *Discrete semiconductor devices and integrated circuits — Part 5: Optoelectronic devices*

EN 60947-1:2004, *Low-voltage switchgear and controlgear — Part 1: General rules (IEC 60947- 1:2004)*

EN 60947-4-1, *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, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2003)*

EN 60950-1, *Information technology equipment — Safety — Part 1: General requirements (IEC 60950-1:2005, modified)*

EN 61249-2-1, *Materials for printed boards and other interconnecting structures — Part 2.1: Reinforced base materials, clad and unclad — Phenolic cellulose paper reinforced laminated sheets, economic grade, copper-clad (IEC 61249-2-1:2005)*

EN 61508-2, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2:2000)*

EN 61508-3, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 3: Software requirements (IEC 61508-3:1998)*

EN 61558-1:2005, *Safety of power transformers, power supplies, reactors and similar products — Part 1: General requirements and tests (IEC 61558-1:2005)*

EN 62326-1, *Printed boards — Part 1: Generic specification (IEC 62326-1:2002)*

EN ISO 9773, *Plastics — Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source (ISO 9773:1998)*

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 13850, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*

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

ISO 606, *Short-pitch transmission precision roller and bush chains, attachments and associated chain sprockets*

ISO 9772, *Cellular plastics — Determination of horizontal burning characteristics of small specimens subjected to a small flame*

ISO 7000:2004, *Graphical symbols for use on equipment — Index and synopsis*

IEC 60417-DB-12M (2002-10), *Graphical symbols for use on equipment*

IEC 60617 (all parts), *Graphical symbols for diagrams*

## 3 Terms and definitions

For the purposes of this document, the definitions given in EN ISO 12100-1 and EN 81-1 and the following apply.

**3.1**
**barrier arm**
bar or similar device so arranged as to provide protection against persons falling from a stairlift

**3.2**
**brake**
mechanism employed to bring the stairlift to a stop and hold it in position

**3.3**
**carriage**
mobile trolley which is retained, supported and guided by one or more rails, upon which a chair, platform or other purpose-made adaptation to carry the user is supported and securely attached

**3.4**
**competent person**
person, suitably trained and qualified by knowledge and practical experience, and provided with the necessary instructions to enable the required work to be carried out safely

**3.5**
**drive system**
arrangements that cause the carriage to move under power

**3.6**
**drive unit**
unit including the motor that drives and stops the stairlift

**3.7**
**driving nut**
internally threaded component that acts in conjunction with a screw to produce linear motion of the carriage

**3.8**
**driving screw**
externally threaded driving component that acts in conjunction with a nut