

SLOVENSKI STANDARD

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Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Posebna dvigala za prevoz oseb in blaga - 41. del: Navpične dvizne ploščadi za osebe z omejenimi gibalnimi sposobnostmi

Safety rules for the construction and installation of lifts - Special lifts for the transport of persons and goods - Part 41: Vertical lifting platforms intended for use by persons with impaired mobility

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Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen-Spezielle Aufzüge für den Personen- und Gütertransport-Teil 41: Vertikale Plattformaufzüge für Personen mit eingeschränkter Beweglichkeit

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EUROPEAN STANDARD
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**Safety rules for the construction and installation of lifts -
Special lifts for the transport of persons and goods - Part
41: Vertical lifting platforms intended for use by persons
with impaired mobility**

Sicherheitsregeln für die Konstruktion und den Einbau
von Aufzügen-Spezielle Aufzüge für den Personen- und
Gütertransport -Teil 41: Vertikale Plattformaufzüge für
Personen mit eingeschränkter Beweglichkeit

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

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 81-41:2016) 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 CEN Enquiry.

This document will supersede EN 81-41:2010.

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.

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Introduction

The population of Europe is ageing and the prevalence of disability, including disability associated with the ageing process, is increasing. Older people and people with disabilities at present are estimated to number some 80 million people – a large and growing proportion of the European Union population. The changing demography presents both opportunities and challenges for the Union. The economic, social and cultural potential of older people and people with disabilities is underexploited at present. However there is a growing recognition that society needs to exploit this potential for the economic and social benefit of society generally.

This is one of the reasons that led to this standard on vertical lifting platforms for people with impaired mobility being one means to provide accessibility to buildings.

This 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 standard.

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.

The lifting platforms defined in this standard are suitable for type A and type B wheelchairs as defined in EN 12183 and/or EN 12184. The lifting platforms are equally suitable for persons either with or without impaired mobility.

Those items relevant to lifting platforms referenced within EN 81-70 have been included within this standard.

This standard does not only address the essential health and safety requirements of the Machinery Directive, but additionally states minimum rules for the installation of lifting platforms into buildings/constructions. There may be regulations for the construction of building, etc. in some countries which cannot be ignored.

It is essential that minimum passageways conform to national building regulations and are not obstructed by any open door or trap and/or any protection means provided for working areas outside of the enclosed liftway where fitted according to the maintenance instructions.

Assumptions

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

- a) Vertical lifting platforms are installed in both new and existing buildings.
- b) For existing buildings where space is not available, other dimensions may be considered. Local building regulations should be observed.
- c) Liftways contain only that equipment associated with a specific lifting platform. All counterweights or balance weights are in the same liftway as the carrier.
- d) Machinery is not installed within a separate machine room.
- e) 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;

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- 3) general hazards due to hydraulic, pneumatic, etc. equipment are dealt with according to relevant B level standards for common use;
- 4) materials known to be harmful materials, such as asbestos are not to be used as part of the machine.
- f) Components are kept in good repair and working order, in accordance with the maintenance manual, so that the required characteristics remain despite wear.
- g) By design of the load bearing elements, safe operation of the machine is ensured for loads ranging from zero to, the dynamic operating maximum working load and to the maximum static load.
- h) To ensure the safe functioning, the operating temperature range of the equipment will take into account the conditions of the place of use of the machinery, inside the maximum range of ambient temperature between + 5 °C and + 40 °C. For very hot or cold environments extra requirements may be necessary.
- i) Negotiations have been made between the customer and the manufacturer about:
 - 1) environmental conditions;
 - 2) civil engineering problems; see 7.4.1.3;
 - 3) other aspects related to the place of installation;
 - 4) the use and places of use of the machinery;
 - 5) the place of installation allows a safe use for the machine;
 - 6) any additional fire protection requirements;
 - 7) suitability for the user (see Annex B).

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1 Scope

1.1 This draft European Standard deals with safety requirements for construction, manufacturing, installation, maintenance and dismantling of electrically powered vertical lifting platforms affixed to a building structure intended for use by persons with impaired mobility:

- travelling vertically between predefined levels along a guided path whose inclination to the vertical does not exceed 15°;
- intended for use by persons with or without a wheelchair;
- supported or sustained by rack and pinion, rope traction drive, noncircular elastomeric-coated steel suspension members (hereafter called flat belt) traction drive, rope positive drive, chains, toothed belts, screw and nut, guided chain, scissors mechanism or hydraulic jack (direct or indirect);
- with enclosed liftways;
- with a speed not greater than 0,15 m/s;
- with platforms where the carrier is not completely enclosed.

1.2 This draft European Standard deals with all significant hazards relevant to lifting platforms, when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4).

1.3 This draft 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;
- vertical lifting platforms whose primary function is the transportation of goods;
- vertical lifting platforms whose carriers are completely enclosed;
- vertical lifting platforms prone to vandalism;
- hazards occurring during manufacture;
- earthquakes, flooding;
- firefighting, evacuation and behaviour during a fire;
- noise and vibrations;
- the design of concrete, hard core, timber or other foundation or building arrangement;
- the design of anchorage bolts to the supporting structure;
- type C wheelchairs as defined in EN 12183 and/or EN 12184.

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

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1.4 This draft European Standard is not applicable to Vertical Lifting Platforms intended for use by persons with impaired mobility which are manufactured before the date of its publication as an EN.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 81-20:2014, *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 81-50:2014, *Safety rules for the construction and installation of lifts — Examinations and tests — Part 50: Design rules, calculations, examinations and tests of lift components*

EN 81-58, *Safety rules for the construction and installation of lifts — Examination and tests — Part 58: Landing doors fire resistance test*

EN 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

HD 384.6.61 S1, *Electrical installations of buildings — Part 6: Verification — Chapter 61: Initial verification*

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

EN 12015, *Electromagnetic compatibility — Product family standard for lifts, escalators and moving walks — Emission*

EN 12016, *Electromagnetic compatibility — Product family standard for lifts, escalators and moving walks — Immunity*

EN 12183, *Manual wheelchairs — Requirements and test methods*

EN 12184, *Electrically powered wheelchairs, scooters and their chargers — Requirements and test methods*

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

EN 12600:2002, *Glass in building — Pendulum test — Impact test method and classification for flat glass*

EN 13411 (all parts), *Terminations for steel wire ropes — Safety*

EN 16005:2012, *Power operated pedestrian doorsets — Safety in use — Requirements and test methods*

EN 50214, *Flat polyvinyl chloride sheathed flexible cables*

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

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

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

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

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

EN 60947-1:2007, *Low-voltage switchgear and controlgear — Part 1: General rules (IEC 60947-1:2007)*

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)*

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)*

EN 61249-2 (all parts), *Materials for printed boards and other interconnection structures — Part 2: Sectional specification set for reinforced base materials, clad and unclad (IEC 61249-2 series)*

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

EN 61800-5-2:2007, *Adjustable speed electrical power drive systems — Part 5-2: Safety requirements — Functional (IEC 61800-5-2:2007)*

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

EN ISO 7010:2012, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2011)*

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13850, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850)*

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 6336 (all parts), *Calculation of load capacity of spur and helical gears*

ISO 7000:2014, *Graphical symbols for use on equipment — Registered symbols*

ISO 13050, *Synchronous belt drives — Metric pitch, curvilinear profile systems G, H, R and S, belts and pulleys*

IEC 60417:2002 DB, *Graphical symbols for use on equipment — 12-month subscription to regularly updated online database comprising all graphical symbols published in IEC 60417*

3 Terms and definitions

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

3.1

balancing weight

mass which saves energy by balancing all/or part of the mass of the unloaded lifting platform

3.2

carrier

part of the lifting platform by which persons are supported in order to be lifted or lowered

3.3

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

3.4

counterweight

mass which ensures traction

3.5

down direction valve

electrically controlled valve in a hydraulic circuit for controlling the descent of the lifting platform

3.6

drive unit

unit, including the motor, that drives and stops the lifting platform

3.7

electric safety chain

total of the electric safety devices, which can either be switches or safety circuits, connected in series with each other

3.8

electrical safety circuit

electrical or electronic circuit with an equivalent degree of safety to a switch containing electrical safety contacts

3.9

electrical safety contact

contact in which the separation of the circuit breaking elements is made by positive means

3.10

electrical safety device

either an electrical switch incorporating one or more electrical safety contacts, or a safety circuit

3.11

enclosed liftway

space in which the lifting platform and any counterweight or balancing weight travels and which is fully bounded by the bottom of the pit and a solid enclosure (but not necessarily a roof) and landing doors

3.12**existing building**

building which has been previously occupied and constructed prior to the requirement for a lifting platform

3.13**final limit device**

electrical safety device operated by the lifting platform in the event of over-travel of the normal operation stop

3.14**full load pressure**

static pressure exerted on the piping directly connected to the jack, the platform with the rated load being at rest at the highest landing level

3.15**guide rail**

rigid components that provide guiding for the platform

3.16**guided chain**

chain which can be either fixed or moving, and which is completely guided over its entire length such that it can transmit a load either in thrust or tension

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3.17**guided chain system**

platform supported, raised and lowered by means of one or more guided chain transmission units

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3.18**impaired mobility**

difficulty in using stairs because of impairment

Note 1 to entry: Examples of persons with impaired mobility include, but are not restricted to: wheelchair users, persons with pushchair, persons with walking difficulties, persons using walking aids, carers for persons with impaired mobility and/or children with impaired mobility and elderly persons.

3.19**lifting platform**

device permanently installed to serve predefined landings comprising a guided platform whose characteristics are primarily intended to permit the access of persons with impaired mobility

3.20**load carrying nut**

internally threaded component which carries the load in conjunction with a screw

3.21**maximum static load**

possible static overload based on platform area, or maximum working load, whichever is highest

3.22**maximum working load**

rated load + overload of one person