SLOVENSKI STANDARD
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Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Posebne izvedbe osebnih in osebno-tovornih dvigal - 70. del: Dostopnost dvigal za osebe, vključ no z invalidi

Safety rules for the construction and installations of lifts - Particular applications for passenger and good passengers lifts - Part 70: Accessibility to lifts for persons including persons with disability

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Besondere Anwendungen für Personen- und Lastenaufzüge - Teil 70: Zugänglichkeit von Aufzügen für Personen einschließlich Personen mit Behinderungen

Regles de sécurité pour la construction et l'installation des élévateurs - Applications particulieres pour les ascenseurs et ascenseurs de charge - Partie 70: Accessibilité aux ascenseurs pour toutes les personnes y compris les personnes avec handicap

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Safety rules for the construction and installations of lifts Particular applications for passenger and good passengers lifts - Part 70: Accessibility to lifts for persons including persons with disability

Règles de sécurité pour la construction et l'installation des élévateurs - Applications particulières pour les ascenseurs et ascenseurs de charge - Partie 70: Accessibilité aux ascenseurs pour tous les usagers y compris les personnes avec handicap

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This European Standard was approved by CEN on 21 November 2002.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 81-70:2003) has been prepared by Technical Committee CEN/TC 10 “Passenger, escalators and moving walks”, the secretariat of which is held by AFNOR.

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).

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 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.

For relationship with EU Directive(s), see informative Annex ZA, 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Annexes A, D, E and G are informative.

Annexes B, C and F are normative.

0 Introduction

0.1 General

This European Standard is a type C standard as stated in EN 1070.

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

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 lifts that have been designed and built according to the provisions of this type C standard.

0.2 Principles

In drawing up this standard the following have been used:

a) the Working Group based its activities on a resolution (CEN/TC 10/1995/7) which added the issue of accessibility to the work programme of CEN/TC 10, namely the necessity of formulating requirements for the accessibility to lifts for persons including persons with disability.

This resolution was the result of a mandate given to CEN as mentioned in the Foreword. It was decided that it would cover the design and construction of cars etc. in such a way that their features would not obstruct or impede access and use by disabled people;

b) the Working Group was composed of representatives of the European Disability Forum, National Standardisation Institutes and the Lift Industry. Data taken into account were:

— demographic developments in Europe;

— the tendency of living independently and its consequences;

— the need for accessibility of buildings;

— the recognition of the existence of a variety of disabilities with different solutions on spatial and orientational levels;

— the combat of discrimination based on disability and age as mentioned in the non-discrimination clause (art 6a) of the Treaty of Amsterdam of the European Union.

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.

The work has led to this standard on the accessibility to lifts for persons, including persons with disability.

General information on accessibility is given in annex A;

c) this standard does not only address the essential safety requirements of the Lift Directive, but additionally states minimum rules for the accessibility to lifts for persons including persons with disability. There may be in some countries regulations for the level of suitability of lifts which cannot be ignored. Typical clauses affected by this are those defining minimum sizes of cars ;

d) this European Standard describes three sizes of lifts offering different levels of accessibility to wheelchair users. The degree of accessibility and usability is provided by dimensions, spatial and technical criteria (see the European Concept for Accessibility referred to in Bibliography).

Further, this European Standard defines the design provisions for the lift and its user interface for the different stages of usage under normal operation.

NOTE Each Member State can, according to its social requirements and economical situation, select the appropriate size of lift from Table 1 as the minimum for a given type of building and define the application by law.

0.3 Assumptions

Intensive studies have been made on the different categories of disabilities to establish related hazards and their risks.

The Standard Rules of the Equalization of opportunities for persons with disabilities adopted by the United Nations General Assembly at its 48th session on 20 December 1993 (resolution 48/96) has also been considered. The requirements in this standard have been drawn up accordingly.

0.4 Negotiations

It is assumed that negotiations have been made for each contract between the customer and the supplier/installer about:

a) the intended use of the lift;

b) temporary activation of features of the lift;

c) environmental conditions;

d) civil engineering problems;

e) other aspects related to the place of installation.

1 Scope

This European Standard specifies the minimum requirements for the safe and independent access and use of lifts by persons, including persons with the disabilities mentioned in annex B, Table B.1.

This European Standard covers lifts with minimum car dimensions according to Table 1 and provided with car doors and landing doors constructed as automatic power operated horizontally sliding doors.

This European Standard considers accessibility to lifts for persons using wheelchairs with maximum overall dimensions defined in EN 12183:1999 and EN 12184:1999.

This European Standard also deals with the additional technical requirements to minimise the hazards listed in clause 4 that arise during the operation of lifts intended to be accessible to disabled users.

NOTE This standard can be used as guidance for upgrading existing lifts in line with the recommendation of the European Commission dated 8th of June, 1995 (95/216/EC) concerning improvements to safety of existing lifts.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 81-1:1998, *Safety rules for the construction and installation of lifts - Part 1: Electric lifts.*

EN 81-2:1998, *Safety rules for the construction and installation of lifts - Part 2: Hydraulic lifts.*

prEN 81-5:1999, *Safety rules for the construction and installation of lifts and service lifts - Part 5: Screw lifts.*

prEN 81-6:1999, *Safety rules for the construction and installation of lifts and service lifts - Part 6: Guided chain lifts.*

prEN 81-7:1999, *Safety rules for the construction and installation of lifts and service lifts - Part 7: Rack and pinion lifts.*

prEN 81-21:1998, *Safety rules for the construction and installation of lifts – Part 21: New passenger and goods passenger lifts in existing buildings.*

prEN 81-28:2000, *Safety rules for the construction and installation of lifts - Part 28: Remote alarms on passenger and goods passenger lifts.*

EN 292-2:1991, *Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications.*

EN 1070:1998, *Safety of machinery – Terminology.*

EN 12183:1999, *Manually propelled wheelchairs – Requirements and test methods.*

EN 12184:1999, *Electrically powered wheelchairs, scooters and their chargers – Requirements and test methods.*

EN 13015:2001, *Maintenance for lifts and escalators – Rules for maintenance instructions.*

ISO 7000:1989, *Graphical symbols for use on equipment - Index and synopsis.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 81-1:1998, EN 81-2:1998, prEN 81-5:1999, prEN 81-6:1999, prEN 81-7:1999, prEN 81-28:2000, EN 13015:2001, EN 1070:1998 and the following apply.

Additional definitions needed for this standard are added below.

3.1
stopping accuracy
maximum vertical distance between car sill and landing sill at the moment when a car is stopped by the control system at its destination floor and the doors reach their fully open position

3.2
levelling accuracy
maximum vertical distance between car sill and landing sill during loading or unloading of the lift

3.3
push button control system
a lift control system used for single lifts where the lift only has one button on each landing and only serves one car or landing call at a time

3.4
collective control system
a control system used for single lifts or multiple lifts where the system has the ability to accept several car calls and remember them so they are answered in a logical sequence and has the ability to accept any landing calls and distribute them to the lifts to ensure the best service to users

3.5
destination control system
a lift control system used for single lifts or multiple lifts where a destination call (target floor) is registered on the landing

3.6
temporary activation control
a means to activate features or services for a single trip

4 Significant hazards and barriers to accessibility

This clause contains all significant hazardous situations, and events as far as they are dealt with in this standard, identified by risk assessment as significant for this type of lift and which require actions to eliminate or reduce the risk.

In this standard barriers to accessibility and additional risks encountered by the person with disability or by the devices used by that person are identified in annex C.

NOTE Hazards resulting from allergic reactions to persons to persons are not addressed in this standard, but advice on such hazards is given in annex D. Furthermore recommendations regarding certain design provisions for visually impaired persons are given in annex E.

5 Safety requirements and/or protective measures

5.1 General

The requirements of EN 81-1:1998, EN 81-2:1998, prEN 81-5:1999, prEN 81-6:1999, prEN 81-7:1999, prEN 81-21:1998, prEN 81-28:2000 and EN 13015:2000 apply with the deviations or additional requirements elaborated below.

5.2 Entrances - Door opening

5.2.1 Entrance clear opening shall be at least 800 mm.

NOTE National regulations can require more than 800 mm (see Introduction) - Type 2 lifts should be provided with an entrance clear opening of 900 mm, according to ISO 4190-1:1999 (series B) and type 3 lifts with a clear opening of 1100 mm according to the same standard (see Table 1).

The car and landing doors shall be constructed as automatic power operated horizontally sliding doors.

5.2.2 Obstacle-free accessibility on the landing floors is required on all eligible floors (see Introduction, Negotiations).

5.2.3 The control system shall allow for the door dwell time to be adjustable to suit the conditions where the lift is installed (normally between 2 s and 20 s). Means to reduce this time shall be installed e.g. by using a door close button in the car. The means of the adjustment shall not be accessible to users.

5.2.4 The protection device as required by 7.5.2.1.1.3 of EN 81-1:1998 and EN 81-2:1998 shall cover the opening over the distance between at least 25 mm and 1 800 mm above the car door sill (e.g. light curtain). The device shall be a sensor which prevents physical contact between the user and the leading edges of the closing door panel(s).

5.3 Car dimensions, equipment in the car, stopping/levelling accuracy

5.3.1 Car dimensions

Inside dimensions of cars with a single entrance or with two opposite entrances shall be chosen in accordance with Table 1 (see Introduction, Negotiations)

Car dimensions shall be measured between the structural car walls. Any decorative finishes of a wall that reduces the minimum car dimensions given by Table 1 shall not exceed 15 mm in thickness.

Any car with adjacent entrances shall have a width and depth appropriate to allow a wheelchair user to enter and leave the car.

Table 1 — Minimum car dimensions for cars with a single entrance or two opposite entrances

Type of lift	Minimum car dimensions [a]	Accessibility level	Remarks
1	450 kg Car width : 1 000 mm Car depth : 1 250 mm	This car accommodates one wheelchair user.	Type 1 ensures accessibility to persons using a manual wheelchair described in EN 12183 or electrically powered wheelchair of class A described in EN 12184.
2	630 kg Car width : 1 100 mm Car depth : 1 400 mm	This car accommodates one wheelchair user and an accompanying person.	Type 2 ensures accessibility to persons using a manual wheelchair described in EN 12183 or an electrically powered wheelchair of class A or B described in EN 12184. Class B wheelchairs are intended for some indoor environments and capable of navigating some outdoor obstacles.
3	1 275 kg Car width : 2 000 mm Car depth : 1 400 mm	This car accommodates one wheelchair user and several other users. It also allows a wheelchair to be rotated in the car.	Type 3 ensures accessibility to persons using a manual wheelchair described in EN 12183 or an electrically powered wheelchair of class A, B or C described in EN 12184. Class C wheelchairs are not necessarily intended for indoor use but are capable of travelling over longer distances and navigating outdoor obstacles. Type 3 provides sufficient turning space for persons using wheelchairs of class A or B and walking aids (walking frames, rollators etc.).

[a] Car width is the horizontal distance between the inner surface of the structural walls, measured parallel to the front entrance.

Car depth is the horizontal distance between the inner surface of the structural walls, measured perpendicular to the width.

5.3.2 Equipment in the car

5.3.2.1 At least on one side wall of the car a handrail shall be installed. The gripping part of this handrail shall have cross-sectional dimensions between 30 mm and 45 mm with a minimum radius of 10 mm. The free space between the wall and the gripping part shall be minimum 35 mm. The height of the top edge of the gripping part shall be within (900 ± 25) mm from the car floor.

The handrail shall be interrupted where the car operating panel is located on the same wall in order to avoid obstructing buttons or controls.

The projecting ends of handrails shall be closed and turned towards the wall to minimise the risk of injury.

5.3.2.2 Where a tip-up seat is provided (see Introduction, Negotiations) it shall have the following characteristics:

a) seat height from the floor: (500 ± 20) mm;

b) depth: (300 – 400) mm;

c) width (400 – 500) mm;

d) ability to support of load of 100 kg.

5.3.2.3 In case of a car size of Table 1, type 1 and type 2, where a user of a wheelchair cannot turn it around, a device (e.g. a small mirror) shall be installed to enable this user to observe obstacles behind them when moving backwards out of the car. Where a glass mirror is used it shall be safety glass.

Where any wall of the car is substantially mirrored or covered with a reflective surface, measures shall be taken to avoid creating optical confusion for users with visual impairment (e.g. decorated glass, or a minimum vertical distance of 300 mm between the floor and the bottom edge of the mirror, etc.).

5.3.3 Stopping/levelling accuracy

Under intended use:

— the stopping accuracy of the car shall be ± 10 mm;

— a levelling accuracy of ± 20 mm shall be maintained.

5.4 Control devices and signals

Design provisions for control devices and signals are given in Table 2.

NOTE Guidance on other devices, exceeding the requirements in 5.4, such as the design of extra large (XL) control devices (see Introduction, Negotiations) is given in annex G.

5.4.1 Landing control devices

5.4.1.1 Where a push button type system is used, it shall meet the requirements in Table 2.

5.4.1.2 Where a keypad system is used (see Introduction, Negotiations) it shall meet the requirements in annex F.

5.4.1.3 Where temporary activation control is provided (see Introduction, Negotiations) the activation device shall be marked with the international symbol for Provision for the Disabled (see ISO 7000:1989, Symbol-n° 0100).

5.4.1.4 Landing control devices shall be mounted adjacent to the landing doors in case of a single lift.

For group lifts, having common management of landing calls, the minimum number of control devices shall be as follows:

— one per face for lifts facing each other (opposite lifts);

— one for maximum four (4) adjacent lifts (if the control device is located between two lifts).

5.4.2 Car control devices

5.4.2.1 The push buttons used for the operation of the lift shall be identified as follows:

a) floor buttons : identified by symbols : -2, -1, 0, 1, 2, etc.;

b) alarm button : yellow with bell-shaped symbol;

c) door ”re-open” button : identified by the symbol ◁I▷;

d) door close button : identified by the symbol ▷I◁.

NOTE See EN 81-1:1998 and EN 81-2:1998, 15.2.3.

5.4.2.2 Car buttons shall meet the requirements in Table 2 and be arranged as follows:

a) the centreline of alarm and door buttons shall be located at a minimum height of 900 mm above the car floor;

b) the call buttons shall be placed above the alarm and door buttons;

c) the order of the call buttons for a single horizontal row shall be from left to right. The order of call buttons for a single vertical row shall be from the bottom to the top and for multiple vertical rows from left to right and then from the bottom to the top.