



SLOVENSKI STANDARD

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Safety rules for the construction and installation of lifts - Existing lifts - Part 80: Rules for the improvement of safety of existing passenger and goods passenger lifts

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Bestehende Aufzüge - Teil 80: Regeln für die Erhöhung der Sicherheit bestehender Personen- und Lastenaufzüge

Regles de sécurité pour la construction et l'installation des ascenseurs - Ascenseurs existants - Partie 80: Regles pour l'amélioration de la sécurité des ascenseurs et des ascenseurs de charge existants

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91.140.90 Öçã aããV^[^Áq]} ã^ Lifts. Escalators

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Safety rules for the construction and installation of lifts - Existing lifts - Part 80: Rules for the improvement of safety of existing passenger and goods passenger lifts

Règles de sécurité pour la construction et l'installation des ascenseurs - Ascenseurs existants - Partie 80: Règles pour l'amélioration de la sécurité des ascenseurs et des ascenseurs de charge existants

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Bestehende Aufzüge - Teil 80: Regeln für die Erhöhung der Sicherheit bestehender Personen- und Lastenaufzüge

This European Standard was approved by CEN on 3 November 2003.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

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EN 81-80:2003 (E)**Foreword**

This document (EN 81-80:2003) 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 June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

Regulations concerning the safety upgrading of existing lifts vary from member state to member state and have not, to date, been harmonised at either international or European level.

CEN/CENELEC have embarked on a programme of work to produce a series of related machinery and lift safety standards as part of the process of European harmonisation. This standard both makes use of and refers to EN 292 parts 1 and 2 and most of the EN 81 series of standards (see clause 2).

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

Annexes A and B are informative.

This document includes a Bibliography.

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.

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Introduction

Background of this standard

More than 3 million lifts are in use today in EU and EFTA and almost 50 % were installed more than 20 years ago. Existing lifts were installed to the safety level appropriate at that time. This level is less than today's state of the art for safety.

New technologies and social expectations have led to today's state of the art for safety. This has led to the situation today of different levels of safety across Europe causing accidents. However, users and authorised persons expect a common acceptable level of safety.

In addition, there is a growing trend for people to live longer and for disabled people to expect access and design for all. Therefore it is especially important to provide a safe means of vertical transport for disabled and elderly persons without supervision.

Lift attendants and in many cases building caretakers are not so common anymore, so it is important that relevant safety features for the rescue of trapped persons should be provided.

Furthermore the life cycle of a lift is longer than most other transportation systems and building equipment, which therefore means that lift design, performance and safety can fall behind modern technologies. If existing lifts are not upgraded to today's state of the art of safety the number of injuries will increase (especially in buildings which can be accessed by the general public).

With the freedom of movement of people within the EU for both users and authorised persons, familiarisation with the different installations is becoming more and more difficult.

Approach of this standard

This standard

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- categorises various hazards and hazardous situations, each of which has been analysed by a risk assessment;
- is intended to provide corrective actions to progressively and selectively improve, step by step, the safety of all existing passenger and goods passenger lifts towards today's state of the art for safety;
- enables each lift to be audited and safety measures to be identified and implemented in a step by step and selective fashion according to the frequency and severity of any single risk;
- lists the high, medium and low risks and corrective actions which can be applied in separate steps in order to eliminate the risks.

Other designs to previous national regulations or standards, providing they have an equivalent safety level, may be acceptable.

Use of this standard

This standard can be used as a guideline for:

- a) national authorities to determine its own programme of implementation in a step by step process via a filtering process (see annex A) in a reasonable and practicable¹⁾ way based on the level of risk (e.g. extreme, high, medium, low) and social and economic considerations;
- b) owners to follow their responsibilities according to existing regulations (e.g. Use of Work Equipment Directive);

1) "Reasonable and practicable" is defined as follows: "In deciding what is reasonably practicable the seriousness of a risk to injury should be weighted against the difficulty and cost of removing or reducing that risk. Where the difficulty and costs are high, and a careful assessment of the risk shows it to be comparatively unimportant, action may not need to be taken. On the other hand where the risk is high, action should be taken at whatever cost."

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- c) maintenance companies and/or inspection bodies to inform the owners on the safety level of their installations;
- d) owners to upgrade the existing lifts on a voluntary basis in accordance with c) if no regulations exist.

In making an audit of an existing lift installation annex B can be used to identify the hazards and corrective actions in this standard. However, where a hazardous situation is identified which is not covered in this standard a separate risk assessment should be made. This risk assessment should be based on ISO/TS 14798 (see bibliography).

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1 Scope

1.1 This European Standard gives rules for improving the safety of existing lifts with the aim of reaching an equivalent level of safety to that of a newly installed lift by the application of today's state of the art for safety.

NOTE Due to situations such as the building design etc. it may not be possible in all cases to reach today's state of the art for safety.

1.2 This standard applies for permanently installed

- electric lifts, with traction or positive drive;
- hydraulic lifts

serving defined landing levels, having a car designed for the transportation of persons or persons and goods and moving between guide rails inclined not more than 15° to the vertical.

1.3 This standard includes the improvement of safety of existing passenger and goods passenger lifts for:

- a) users;
- b) maintenance and inspection personnel;
- c) persons outside the well, machine room and the pulley room (but in their immediate vicinity);
- d) any authorised persons.

1.4 This standard is not applicable to:

- a) lifts with drive systems others than those defined in EN 81-1 or EN 81-2;
- b) lifting appliances such as paternosters, mine lifts, theatre lifts, appliances with automatic caging, skips, lifts and hoists for building and public works sites, ships' hoists, platforms for exploration or drilling at sea, construction and maintenance appliances;
- c) installations where the inclination of the guide rails to the vertical exceeds 15°;
- d) safety during transport, installation, repairs and dismantling of lifts;
- e) fire fighting operation.

However, this standard can usefully be taken as a reference basis.

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).

NOTE All the parts of EN 81 are normative for terms and definitions purposes.

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 81-21, *Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 21: New passenger and goods lifts in existing buildings.*

EN 81-28, *Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 28: Remote alarm on passenger and goods passenger lifts.*

EN 81-70:2003, *Safety rules for the construction and installations of lifts - Particular applications for passenger and good passenger lifts - Part 70: Accessibility to lifts for persons including persons with disability.*

prEN 81-71, *Safety rules for the construction and installation of lifts - Particular applications to passenger lifts and goods passenger lifts - Part 71: Vandal resistant lifts.*

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prEN 81-73, *Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lifts - Part 73: Behaviour of lifts in the event of fire.*

EN 294:1992, *Safety of machinery - Safety distance to prevent danger zones being reached by the upper limbs.*

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

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1070:1998 and the EN 81 series of standards apply.

Terms and definitions specifically needed for this European Standard are added below:

3.1**authorised person**

person with a permission from the owner of the installation to perform defined activities

3.2**existing lift**

lift which is in service at the disposal of its owner

3.3**levelling accuracy**

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

3.4**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

3.5**owner of the installation**

natural or legal person who has the power of disposal of the installation and takes the responsibility for its operation and use

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4 List of significant hazards

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessments as significant for existing lifts and which require action to eliminate or reduce the risk.

4.1 Significant hazards dealt with by this standard

Table 1 — List of significant hazards

Nr.	Hazard/Hazardous situation	Relevant clauses in this standard
1	Presence of harmful materials	5.1.4
2	No or limited accessibility for disabled persons	5.2.1
3	Drive system with bad stopping/levelling accuracy	5.2.2
4	No or inadequate vandal resistance	5.3
5	No or inadequate control functions in case of fire	5.4
6	Well enclosures with perforate walls	5.5.1.1
7	Partially enclosed well with too low enclosure	5.5.1.2
8	Inadequate locking devices on access doors to well and pit	5.5.2
9	Inadequate vertical surface below landing door sills	5.5.3

Nr.	Hazard/Hazardous situation	Relevant clauses in this standard
10	Counterweight/balancing weight without safety gear in case of accessible spaces below well	5.5.4
11	No or inadequate partition of counterweight/ balancing weight travel path	5.5.5
12	No or inadequate pit screen for several lifts in the same well	5.5.6.1
13	No or inadequate partition for several lifts in the same well	5.5.6.2
14	Insufficient safety spaces in headroom and pit	5.5.7
15	Unsafe pit access	5.5.8
16	No or inadequate stopping devices in the pit or in the pulley room	5.5.9
17	No or inadequate lighting of the well	5.5.10
18	No alarm system in pit and on car roof	5.5.11
19	No or unsafe means of access to machine and pulley room	5.6.1
20	Slippery floor in machine or pulley room	5.6.2
21	Insufficient clearances in machine room	5.6.3
22	No or inadequate protection on different levels in machine pulley room	5.6.4
23	Inadequate lighting in machine or pulley room	5.6.5
24	Inadequate means of handling equipment	5.6.6
25	Perforate landing doors and car doors	5.7.1
26	Inadequate design of landing door fixings	5.7.2
27	Inadequate glass in doors	5.7.3
28	No or inadequate protection against dragging of fingers on sliding car or landing doors with glass	5.7.4
29	No or inadequate lighting on landing doors	5.7.5
30	No or inadequate protective devices on power operated doors	5.7.6
31	Unsafe locking device of landing door	5.7.7
32	Unlocking of landing door without a special tool	5.7.8.1
33	Well enclosure with perforate walls near door locks	5.7.8.2
34	No automatic closing device on sliding doors	5.7.9
35	Inadequate link between panels of landing doors	5.7.10
36	Inadequate fire resistance of landing doors	5.7.11
37	Car door moving with open landing door	5.7.12
38	Large car area in relation to rated load	5.8.1
39	Inadequate length of car apron	5.8.2
40	Car without doors	5.8.3
41	Unsafe locking of car roof trap door	5.8.4
42	Insufficient strength of car roof	5.8.5
43	No or inadequate balustrade on car	5.8.6
44	Insufficient ventilation in car	5.8.7
45	Inadequate lighting in car	5.8.8.1

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Nr.	Hazard/Hazardous situation	Relevant clauses in this standard
46	No or inadequate emergency lighting in car	5.8.8.2
47	No or inadequate protection means on sheaves, pulleys and sprockets against injury	5.9.1
48	No or inadequate protection against rope/chains leaving the sheaves, pulleys or sprockets	5.9.1
49	No or inadequate protection means on sheaves, pulleys or sprockets against introduction of objects	5.9.1
50	No or inadequate safety gear and/or overspeed governor on electric lifts	5.9.2
51	No or inadequate slack rope switch for governor rope	5.9.3
52	No protection means against ascending car overspeed on traction drive lifts with counterweight	5.9.4
53	Inadequate design of lift machine for electric lifts	5.9.4, 5.12.1
54	No or inadequate protection against free fall, overspeed and creeping on hydraulic lifts	5.9.5
55	Counterweight or balancing weight guided by 2 wire ropes	5.10.1
56	No or inadequate buffers	5.10.2
57	No or inadequate final limit switches	5.10.3
58	Large gap between car and wall facing the car entrance	5.11.1
59	Excessive distance between car door and landing door	5.11.2
60	No or inadequate emergency operation system	5.12.2
61	No shut-off valve	5.12.3
62	No independent starting contactors	5.12.4
63	No or inadequate slack rope/chain device	5.12.5
64	No run-time limiter	5.12.6
65	No or inadequate low pressure device	5.12.7
66	Insufficient protection against electric shock and/or marking of electrical equipment; missing notices	5.13.1
67	No or inadequate protection on lift machine motor	5.13.2
68	No lockable main switch	5.13.3
69	No protection against phase reversal	5.14.1
70	No or inadequate inspection control station and stopping device on car roof	5.14.2
71	No or inadequate alarm device	5.14.3
72	No or inadequate communication system between machine room and car (travel height > 30 m)	5.14.4
73	No or inadequate load control on car	5.14.5
74	Missing notices, markings and operating instructions	5.15

4.2 Significant hazards not dealt with by this standard

- Fire in well, machine room and pulley room;
- environmental conditions including e.g. earthquake and flooding;