
Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Posebne izvedbe osebnih in osebno-tovornih dvigal - 70. del: Dostopnost dvigal za osebe, vključno z invalidi

Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lift - 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

Règles de sécurité pour la construction et l'installation des ascenseurs - Applications particulières 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 installation of lifts -
Particular applications for passenger and goods passenger
lift - Part 70: Accessibility to lifts for persons including
persons with disability**

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

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

This European Standard was approved by CEN on 12 January 2021 and includes Amendment 1 approved by CEN on 8 May 2022.

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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-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 81-70:2021+A1:2022) 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 January 2023, and conflicting national standards shall be withdrawn at the latest by July 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 8 May 2022.

This document supersedes A1 EN 81-70:2021 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.


In comparison with A1 EN 81-70:2018 A1, the following significant changes have been made:

- Clarification of relationship to other EN 81 standards;
- Information on building related issues deleted;
- Information in assumptions on negotiations deleted;
- Scope editorially modified;
- Normative references updated;
- References to negotiations in Clause 5 deleted;
- Optional use of additional control devices deleted;
- References to EN 81-20 and EN 81-28 deleted in verification table;
- Content of information for use updated;
- Annex ZA is modified;
- Bibliography updated.

A1 The need for this Amendment 1 was based on the following points:

- Modified requirements on luminance contrast by changing from LRV difference to Michelson contrast for symbols to their background;
- Addition of requirement for illumination of control devices;

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— New Annex for guidance on measurement of luminance contrast. 

The content of this document provides the enhanced design rules, examinations and tests for lifts which are intended to be used by persons including persons with disability. This document can only be used in conjunction with the EN 81-20:2020 which gives the basic requirements for passenger and goods passenger lifts.

This document is part of the EN 81 series of standards. The structure of the EN 81 series is described in CEN/TR 81-10:2008.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

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0 Introduction

0.1 General

This document is a type C standard as stated in EN ISO 12100:2010.

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

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

For the revision of this document the following have been considered:

- a) practical experience with the first version of this standard;
- b) market demand for including new technology;
- c) CEN-CENELEC Guide 6;
- d) current legal framework for accessibility and usability, in particular:

The non-discrimination clause (art 6a) based on disability and age of Article 19 of consolidated version 2016 of the Treaty of Lisbon of the European Union requests a new understanding of diversity of users in the built environment, transport and products, similar to that established in information and communication technologies.

The UN Convention on the Rights of Persons with Disabilities with reference also to accessibility in the built environment – considering human diversity, social inclusion and equality for all people - is the first ratified EU agreement on human rights and ratified also by most Member States. It is also the first international legally binding instrument on human rights setting minimum standards for the rights for people with disabilities around the world.

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1 Scope

This document specifies the minimum requirements for the safe and independent access and use of lifts by persons, including persons with disabilities. It covers the needs of persons with disabilities according to Annex A.

NOTE For guidance on solutions for increased accessibility and usability, see Annex D.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 81-20:2020, *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 ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

ISO 4190-5:2006, *Lift (Elevator) installation - Part 5: Control devices, signals and additional fittings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 81-20:2020 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 collective control system

lift control system where required direction of travel is registered on the landing and the destination floor is registered in the car

3.2 destination control system

lift control system where the destination floor is registered on the landing

3.3 accessibility button

means to activate enhanced accessibility features or services for a single trip

4 Significant hazards and barriers to accessibility

This clause contains all significant hazards, hazardous situations and events as far as they are dealt with in this standard, identified by risk assessment as significant for this type of machinery and which require actions to eliminate or reduce the risk (see Table 1).

In this document, barriers to accessibility and additional risks encountered by the person with disability or by the devices used by that person are identified particularly in Table 1, No 8 (ergonomic hazards).

Table 1 — List of significant hazards

No	Hazards listed in EN ISO 12100:2010, Annex B	Relevant clauses
1	Mechanical hazards due to:	
	Crushing	5.3.2.3
	Impact	5.3.2.3
	Slip, trip, fall	5.3.2.4
8	Ergonomic hazards due to:	
	Access	5.2.1, 5.2.2, 5.3.1, 5.3.2.3
	Design or location of indicators, visual and audible display units	5.1.3, 5.4.2.4, 5.4.2.5, 5.4.3.3, 5.4.3.4
	Design, location or identification of control devices	5.1.2, 5.4.2.1, 5.4.2.2, 5.4.2.3, 5.4.3.1, 5.4.3.2
	Effort	5.3.2.1, 5.3.2.2

5 Safety requirements and/or protective measures

5.1 General

5.1.1 Passenger and goods passenger lifts shall comply with the safety requirements and/or protective measures of the following clauses. In addition, passenger and goods passenger lifts shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards which are not dealt with by this document.



5.1.2  Where luminance contrast between adjacent surfaces is required, it shall comply with Table 2.

Table 2 — Requirements for luminance contrast

Clause	Item	Minimum light reflectance value point difference $LRV_1 - LRV_2$	Minimum luminance contrast C_M [%]	Minimum light reflectance value of lighter surface LRV_1	Viewing angle
Table 4, item c)	Active part of push buttons to their surrounding	30	-	-	45° above horizontal
Table 4, item d)	Face plates to their surrounding	30	-	-	Horizontal
Table 4, item j)	Symbols on push buttons to active areas	-	50	50	45° above horizontal
5.4.3.3 c)	Lift designation markings to background	-	50	50	Horizontal

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NOTE 1 For determination of luminance contrast (Michelson contrast C_M) and light reflectance values (LRV), see informative Annex E. For further guidance on contrast, see ISO 21542:2021, 5.3 and Annex E.

NOTE 2 On shiny and direct reflective surfaces, unfavourable reflections can reduce luminance contrast. Light colour tones for ceiling and wall surfaces, diffuse reflective materials and a wide light distribution prevent disturbing reflections on the control devices. 

5.1.3 When an audible signal or voice announcement is required, the sound level shall be adjustable between 35 dB(A) and at least 65 dB(A) to suit the site conditions. In noisy environments (e.g. on landings in train stations) the maximum sound level shall be adjustable up to 80 dB(A). The means of adjustment shall be accessible only to authorized persons.

5.2 Entrances – Door openings

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

The clear opening width shall be at least 800 mm for type 1 cars, 900 mm for type 2, type 3 and type 4 cars and 1 100 mm for type 5 cars. In existing buildings, the clear opening width shall be at least 800 mm for type 2 cars.

5.2.2 The door dwell time shall be adjustable at least between 2 s and 20 s to suit the conditions where the lift is installed. The means of adjustment shall be accessible only to authorized persons.

NOTE A door dwell time of at least 6 s is needed for persons with reduced mobility (see also 5.4.2.2.3).

A door close button may be provided to reduce the door dwell time.

5.3 Car dimensions and equipment in the car**5.3.1 Car dimensions**

The inside dimensions of cars with a single entrance or with two opposite or two adjacent entrances shall be chosen in accordance with Table 3.

Car dimensions shall be measured between the structural car walls. Decorative finishes on each wall that reduce the minimum car dimensions given by Table 3 shall not exceed 15 mm in thickness.

There shall be no additional features attached to the car walls below a height of 800 mm which may restrict the accommodation and turning of passengers using wheelchairs or passengers with other walking aids. This would particularly be the case for type 1 and type 2 cars restricting the minimum depth and for type 4 cars restricting the smaller minimum dimension.

Table 3 — Minimum car dimensions for cars with a single entrance or two entrances

	Minimum car dimensions ^a	Accessibility level	Building types, usage	Remarks
Type of car 1	Car width: 1 000 mm Car depth: 1 300 mm (450 kg)	This car accommodates one wheelchair user without an accompanying person.	Shall only be used in existing buildings where building constraints do not permit the installation of a type 2 car.	Type 1 provides only limited accessibility for persons using a manual wheelchair as described in EN 12183:2014 or an electrically powered wheelchair of class A described in EN 12184:2014. This type also provides accessibility for persons using walking aids (e.g. a walking stick) and for persons with sensory and intellectual disabilities.
2	Car width: 1 100 mm Car depth: 1 400 mm (630 kg)	This car accommodates one wheelchair user and an accompanying person.	Shall be the minimum size for new buildings.	Type 2 provides accessibility for persons using a manual wheelchair as described in EN 12183:2014 or an electrically powered wheelchair of class A or B as described in EN 12184:2014. This type also provides accessibility for persons using walking aids (e.g. walking sticks, crutches or rollators). Passengers with wheelchairs or walking aids are unlikely to be able to turn around in this type of car and have to leave the car backwards.
3	Car width: 1 100 mm Car depth: 2 100 mm (1 000 kg)	This car accommodates one user with a wheelchair of class C and some other passengers. It also allows transport of stretchers.	Recommended size for cars in public areas (e.g. outdoor facilities, stations, etc.) and for cars where transport of wheelchairs of class C shall be provided	Type 3 provides accessibility for persons using a manual wheelchair as described in EN 12183:2014 or an electrically powered wheelchair of class A, B or C described in EN 12184:2014. It also provides accessibility for persons using a manual wheelchair with tractor unit (propulsion attachment). When cars of this type are configured with two opposite entrances this can provide straight through circulation from the main entrance to different floor levels.

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Type of car	Minimum car dimensions ^a	Accessibility level	Building types, usage	Remarks
1	Car width: 1 000 mm Car depth: 1 300 mm (450 kg)	This car accommodates one wheelchair user without an accompanying person.	Shall only be used in existing buildings where building constraints do not permit the installation of a type 2 car.	Type 1 provides only limited accessibility for persons using a manual wheelchair as described in EN 12183:2014 or an electrically powered wheelchair of class A described in EN 12184:2014. This type also provides accessibility for persons using walking aids (e.g. a walking stick) and for persons with sensory and intellectual disabilities.
4	Car width: 1 600 mm Car depth: 1 400 mm or Car width: 1 400 mm Car depth: 1 600 mm (1 000 kg)	This car accommodates one wheelchair user and a few other passengers. It also allows a wheelchair to be rotated within the car.	Shall be the minimum size for cars with doors on adjacent walls ^b .	Type 4 provides accessibility for persons using a manual wheelchair as described in EN 12183:2014 or an electrically powered wheelchair of class A or B as described in EN 12184:2014. Type 4 provides sufficient space for most wheelchairs users and for passengers with walking aids.
5	Car width: 2 000 mm Car depth: 1 400 mm or Car width: 1 400 mm Car depth: 2 000 mm (1 275 kg)	This car accommodates one wheelchair user and several other passengers. It also allows a wheelchair to be rotated within the car.		Type 5 provides accessibility for persons using a manual wheelchair as described in EN 12183:2014 or an electrically powered wheelchair of class A, B or C as described in EN 12184:2014. Type 5 provides sufficient turning space for persons using wheelchairs of class A or B and for persons using walking aids (e.g. walking frames, rollators, etc.).
^a The car width is defined as the horizontal distance between the inner surface of the structural walls of the car, measured parallel to the front entrance. The car depth is defined as the horizontal distance between the inner surfaces of the structural walls of the car, measured perpendicular to the width. ^b The distances between doors and adjacent car walls as shown in Figure 1 should be as large as possible.				