



SLOVENSKI STANDARD

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Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Dvigala, namenjena samo za prevoz tovora - 31. del: Dostopna tovorna dvigala

Safety rules for the construction and installation of lifts - Lifts for the transport of goods only - Part 31: Accessible goods only lifts

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Aufzüge für den Gütertransport - Teil 31: Betretbare Güteraufzüge

Règles de sécurité pour la construction et l'installation des élévateurs - Élévateurs pour le transport d'objets seulement - Partie 31 : Monte-charges accessibles

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Safety rules for the construction and installation of lifts - Lifts for the transport of goods only - Part 31: Accessible goods only lifts

Règles de sécurité pour la construction et l'installation
des élévateurs - Élévateurs pour le transport d'objets
seulement - Partie 31 : Monte-charges accessibles

Sicherheitsregeln für die Konstruktion und den Einbau
von Aufzügen - Aufzüge für den Gütertransport - Teil
31: Betretbare Güteraufzüge

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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Contents

	Page
European foreword.....	6
Introduction	8
1 Scope	13
2 Normative references	14
3 Terms and definitions	17
4 Safety requirements and/or protective measures	23
4.1 General.....	23
4.2 Lift well	23
4.2.1 General provision.....	23
4.2.2 Well enclosure.....	24
4.2.3 Inspection doors – inspection traps – access doors – access traps	24
4.2.4 Ventilation of the well and machinery spaces	25
4.2.5 Walls, floor and ceiling of the well, machinery spaces and pulley rooms	25
4.2.6 Strength of the walls.....	26
4.2.7 Strength of the pit floor	27
4.2.8 Construction and clearances of the walls of lift wells and landing doors facing carrier entrance.....	27
4.2.9 Protection of any spaces located below the well	28
4.2.10 Protection in the well	28
4.2.11 Headroom and pit	28
4.2.12 Exclusive use of the well, machine and pulley rooms	32
4.2.13 Lighting of the well and machinery spaces	33
4.2.14 Alarm device	33
4.2.15 Equipment in the pit.....	34
4.3 Machinery spaces.....	34
4.3.1 General provisions.....	34
4.3.2 Access	36
4.3.3 Construction and equipment of machinery spaces and of pulley rooms.....	37
4.4 Landing doors.....	38
4.4.1 General provisions.....	38
4.4.2 Height, width, sills of entrances at landings.....	38
4.4.3 Doors.....	39
4.4.4 Locking and closed landing door check	42
4.4.5 Locking and emergency unlocking	42
4.4.6 Electrical safety device for proving the landing doors closed	45
4.5 Carrier, counterweight and balancing weight	45
4.5.1 Carrier	45
4.5.2 Counterweight and balancing weight	50
4.5.3 Protection for traction sheaves, pulleys and sprockets	50
4.5.4 Protection of machinery	52
4.6 Suspension, unintended carrier movement and excessive speed protection.....	52
4.6.1 Suspension means.....	52
4.6.2 Protections against free fall, excessive speed, unintended carrier movement and creeping of the carrier.....	54
4.7 Guiding systems, mechanical stops and final limit switches.....	62

4.7.1	General provision concerning guiding system.....	62
4.7.2	Guiding of the carrier, counterweight or balancing weight.....	63
4.7.3	Loads, stresses and deflections	63
4.7.4	Fixed stops and buffers.....	64
4.7.5	Final limit switches.....	65
4.8	Lift machine and associated equipment.....	66
4.8.1	General provisions	66
4.8.2	Lift machines for traction and positive drive	66
4.8.3	Lift machine for hydraulic drive.....	71
4.9	Electric installations and appliances.....	81
4.9.1	General provision	81
4.9.2	Contactors, contactor relays, components of safety circuits	82
4.9.3	Protection of electrical equipment	83
4.9.4	Main switches.....	84
4.9.5	Electric wiring.....	85
4.10	Protection against electric faults; failure analysis; controls; priorities.....	87
4.10.1	Failure analysis and electric safety devices.....	87
4.10.2	Controls; priorities.....	91
5	Verification of the safety requirements and/or protective measures	96
5.1	Verification and tests	96
5.2	Verification of design	96
5.3	Verification tests before putting into use	101
6	Information for use.....	101
6.1	General	101
6.2	Notices, markings and operating instructions.....	101
6.2.1	General provisions	101
6.2.2	Rating plate.....	102
6.2.3	Carrier.....	102
6.2.4	Landings.....	102
6.2.5	Machinery spaces.....	103
6.2.6	Well.....	103
6.2.7	Safety components	103
6.2.8	Electrical identification	104
6.2.9	Alarm device.....	104
6.2.10	More than one lifts in one machine room.....	104
6.2.11	Emergency lowering valve	104
6.2.12	Hand pump.....	104
6.2.13	Reduced headroom clearances.....	105
6.2.14	Reduced clearances in the pit	105
6.3	Instruction handbook	106
6.3.1	General	106
6.3.2	Minimum contents of the instruction handbook	106
6.3.3	Verifications and tests	111
6.3.4	Verifications and tests after important modifications or accidents	111
6.4	Logbook.....	111
Annex A	(normative) List of electric safety devices	113
Annex B	(informative) Technical documentation.....	115
B.1	General	115
B.2	Technical details and plans.....	115

prEN 81-31:2022 (E)

B.3	Electric diagrams and hydraulic diagrams.....	116
Annex C (normative) Verifications and tests before putting into use.....		117
C.1	General.....	117
C.2	Tests and verifications.....	117
C.3	Tests and verifications in case of reduced clearances in pit and/or headroom	121
Annex D (informative) Periodical verifications and tests, verifications and tests after an important modification or after an accident.....		123
D.1	Periodical verifications and tests.....	123
D.2	Verifications and tests after an important modification or after an accident	123
Annex E (normative) Safety components and safety devices – Test procedures for verification		125
E.1	General provisions.....	125
E.2	Landing door locking devices	126
E.3	Safety gear	130
E.4	Overspeed governor.....	136
E.5	Safety circuits containing electronic components	138
E.6	Rupture valve/one-way restrictor.....	141
E.7	Buffers.....	145
E.8	Pre-triggered stopping system.....	148
Annex F (informative) Construction of walls of accessible goods only lift well and landing doors facing a carrier entrance.....		153
Annex G (normative) Calculations of rams, cylinders, rigid pipes and fittings		154
G.1	Calculations against over pressure.....	154
G.2	Calculations of the jacks against buckling.....	155
Annex H (informative) Information to the user/owner of an accessible goods only lift.....		160
H.1	General.....	160
H.2	Means of access to machinery space entrance of the accessible goods only lift	160
H.3	Maintenance work carried out from a step of a ladder.....	160
Annex I (normative) Electronic components – Failure exclusion.....		162
Annex J (normative) Headroom and pit.....		168
J.1	General.....	168
J.2	Reduced clearances in the headroom.....	168
J.3	Reduced clearances in the pit.....	173
Annex K (informative) Building interfaces		178
K.1	General provisions.....	178
K.2	Support of guide rails	178
K.3	Ventilation of well and machinery spaces.....	178

Annex L (informative) List of significant hazards.....	180
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered.....	183
Bibliography	189

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prEN 81-31:2022 (E)**European foreword**

This document (prEN 81-31:2022) 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 81-31:2010.

This document is part of the EN 81 series of standards “Safety rules for the construction and installation of lifts”. This is the second edition.

The main changes with respect to the previous edition (EN 81-31:2010) are listed below:

- Requirements have been updated, taking into account EN 81-20:2020, EN 81-50:2020 and EN 81-21:2009+A1:2012. Specifically: definitions; strength of the doors, screens, partitions; unintended carrier movement; refuge spaces; inspection operation; rope's retainers; balustrade; lighting.
- The scope has been amended. Specifically: excluded overlapping with EN 1570, by use of rigid guide rails only; excluded scissor lifts; removed travel limit for Type A; non-addressed energy dissipation type buffers.
- Requirements and verifications have been added for: refuge spaces; clamping devices; pawl devices; automatic power operated doors; progressive safety gears.
- Improvements in safety due to changes in proven technology and in the state of the art have been made. Specifically: working spaces; electrical equipment; emergency electrical operation; performance levels; ropes and terminations; existing buildings; impact factors; buffer with non-linear characteristics; alarm system.
- The reported errors have been eliminated. Specifically: hydraulic formulae;
- The text has been clarified. Specifically: pulley room; extreme position of the carrier in the well; use in limited / not limited access area; ingress in / egress from the well;
- The references to other standards have been updated, according to the progress in that field. All standards now include a date;
- Wording has been amended. Specifically: from “uncontrolled movement” to “unintended movement”; from “manual operation” to “emergency operation”; from “safety space” to “refuge space”; from “load carrying unit” to “carrier”; from “vendor” to “manufacturer”; from “laboratory” to “examiner”;
- The informative Annex “List of significant hazards” has been added;
- The informative Annex “Building interface” has been added;
- Annex ZA has been updated with regard to the European Commission mandate M/396.

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.

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Introduction

0.1 General

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

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in the drafting process of this document.

The accessible goods only lift installation concerned and 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 machines that have been designed and built according to the provisions of this type-C standard.

0.2 General provision

0.2.1 The object of this document is to define safety rules related to the construction and installation of accessible goods only lifts, with a view to safeguarding persons and objects against the risk of accidents associated with the use, maintenance and emergency operation of accessible goods only lifts.¹⁾

a) Persons to be safeguarded:

- 1) users;
- 2) competent and authorized persons, e.g. maintenance and inspection personnel;
- 3) persons in the immediate surrounding area of the accessible goods only lift well and the machinery space(s) and pulley room(s), if any.

¹⁾ Within CEN/TC 10 an interpretation committee has been established to answer questions about the spirit in which the experts have drafted the various clauses of this standard. All such interpretations are published within CEN TS 81-11:2011 until incorporated by amendment into the standards concerned.

b) Property to be safeguarded:

- 1) loads in carrier;
- 2) components of the accessible goods only lift installation;
- 3) building in which the accessible goods only lift is installed;
- 4) the immediate surrounding area of the accessible goods only lift installation.

0.2.2 A study has been made of the various possible hazards with accessible goods only lifts, see Annex L.

0.2.3 This document does not address the health and safety of animals.

0.3 Principles used

0.3.1 This document does not repeat all the general technical rules applicable to every electrical, mechanical, or building construction including the protection of building elements against fire.

It has, however, seemed necessary to establish certain requirements of good construction, either because they are peculiar to accessible goods only lifts manufacture or because in the case of accessible goods only lifts utilization the requirements may be more stringent than elsewhere.

0.3.2 This document addresses the Essential Health and Safety Requirements of the Annex I of Machinery Directive 2006/42/EC, and additionally states minimum rules for the installation of accessible goods only lifts into buildings/constructions.

Some countries can have regulations for the construction of buildings or protection from fire which cannot be ignored.

Typical clauses affected by this are those defining minimum values for the height of the machine and pulley rooms, for their access doors dimensions and for protection from fire.

0.3.3 When the weight, size and/or shape of components prevent them from being moved by hand, they are:

- a) either fitted with attachments for lifting gear, or
- b) designed so that they can be fitted with such attachments (e.g. by means of threaded holes), or
- c) shaped in such a way that standard lifting gear can be attached.

0.3.4 As far as possible the standard sets out only the requirements that materials and equipment have to meet in the interests of safe operation of accessible goods only lifts.

0.4 Assumption

0.4.1 Information have been exchanged between the customer and the manufacturer, or their authorized representative, and agreement reached about:

- a) the intended use of the accessible goods only lift;
- b) the type and mass of any handling devices intended to be used;

prEN 81-31:2022 (E)

- c) environmental conditions, such as temperature, humidity, exposure to sun or wind, snow, corrosive atmosphere;
- d) civil engineering problems (for example, building regulations);
- e) other aspects related to the place of installation, e.g. presence of unsupervised children.

See also Annex H (information about access and maintenance with ladders).

0.4.2 Relevant risks have been considered for each component that may be incorporated in a complete accessible goods only lift installation.

Rules have been drawn up accordingly.

Components are:

- a) designed in accordance with usual engineering practice and calculation codes, taking into account all failure modes;
- b) of sound mechanical and electrical construction;
- c) made of materials with adequate strength and of sound quality;
- d) free of defects;
- e) free from harmful materials, e.g. asbestos.

0.4.3 Components are kept in good repair and working order, so that the required dimensions remain fulfilled despite wear. All accessible goods only lift components are considered as requiring inspection to ensure safe continued operation during their use.

NOTE Components not requiring maintenance (e.g. maintenance free, sealed for life) are still required to be available for inspection.

0.4.4 Components are selected and installed so that foreseeable environmental influences and special working conditions do not affect the safe operation of the accessible goods only lift.

0.4.5 By design of the load bearing elements, a safe normal operation of the accessible goods only lift is ensured for loads ranging from 0 % to 100 % of the rated load, plus any designed overload capacity (see 4.10.2.6).

0.4.6 The requirements of this document are such that the possibility of a failure of an electric safety device or a safety component complying with all the requirements of this document needs not to be taken into consideration.

0.4.7 Users have to be safeguarded against their own negligence and unwitting carelessness when using the accessible goods only lift in the intended way.

A user may, in certain cases, make one imprudent act. The possibility of two simultaneous acts of imprudence and/or the abuse of instructions for use is not considered.

0.4.8 Persons are not transported inside the carrier.

0.4.9 If in the course of maintenance work a safety device, normally not accessible to the user, is deliberately neutralized, safe operation of the accessible goods only lift is no longer ensured, but compensatory measures will be taken to ensure users safety in conformity with maintenance instructions.

It is assumed that maintenance personnel are instructed and work according to the instructions.

0.4.10 Horizontal forces and energies to consider are indicated in the applicable clauses of the standard. Typically, where not otherwise specified in this document, the energy exerted by a person results in an equivalent static force of:

- a) 300 N;
- b) 1 000 N where impact can occur.

0.4.11 With the exception of the items listed below, a mechanical device built according to good practice and the requirements of this document will not deteriorate to a point of creating hazard without the possibility of detection, provided that all of the instructions given by the manufacturer have been duly applied.

The following mechanical failures are considered:

- a) breakage of the suspension;
- b) uncontrolled slipping of the ropes on the traction sheave;
- c) breakage and slackening of all linkage by auxiliary ropes, chains and belts;
- d) failure of one of the mechanical components of the machine brake which takes part in the application of the braking action on the drum or disk;
- e) failure of a component associated with the main drive elements and the traction sheave;
- f) rupture in the hydraulic system (jack excluded);
- g) small leakage in the hydraulic system (jack included).

0.4.12 The possibility of devices providing protection against free fall or descent with excessive speed not engaging, should the carrier free fall from a stationary position at the lowest landing, before the carrier strikes the buffer(s) or fixed stop(s) is considered acceptable.

0.4.13 When the speed of the carrier is linked to the electrical frequency of the mains, the speed is assumed not to exceed 115 % of the rated speed or a corresponding lower speed where specified in this document for inspection operation, re-levelling, emergency operation.

0.4.14 To ensure the correct functioning of the equipment in the well and machinery space(s), the ambient temperature in these spaces is assumed to be maintained between +5 °C and +40 °C.

To achieve this, the well and machinery space(s) may be ventilated, taking into consideration the national building regulations.

0.4.15 The fixing system of guards, used specifically to provide protection against mechanical, electrical or any other hazards by means of a physical barrier, which have to be removed during regular maintenance and inspection, remains attached to the guard or to the equipment, when the guard is removed.

prEN 81-31:2022 (E)

0.4.16 The location of the accessible goods only lift to be such that users using the accessible goods only lift have means available to them, to access the different landing levels served, either a staircase or a means for the transportation of persons.

0.4.17 Where more than one person is working at the same time for maintenance/inspection on an accessible goods only lift, an adequate means of communication between these persons is ensured.

0.4.18 The operational clearances specified in the standard are maintained not only during the verification and tests before the lift is put into use, but also throughout the life of the lift.

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1 Scope

1.1 This document specifies the safety rules for new accessible goods only lifts with traction, positive or hydraulic drive, permanently installed and only used by instructed persons (users), serving fixed and permanent landing levels, having a carrier made of a single load carrying area, designed for the transportation of goods only, moving along a fixed path by rigid guide rails and inclined not more than 15° to the vertical, with rated speed not exceeding 1 m/s.

This document covers accessible goods only lifts with rated load exceeding 300 kg and not intended to transport persons, on account of controls not operable from inside the carrier.

1.2 For the purpose of this document, a goods only lift carrier is regarded as accessible where one of the following conditions is satisfied:

- a) floor area of the carrier is greater than 1,0 m²;
- b) depth of the carrier is greater than 1,0 m;
- c) clear height of the carrier is greater than 1,20 m.

In case the carrier is a platform, it is considered accessible when the clear height of the landing doors is greater than 1,20 m.

1.3 Two types of accessible goods only lifts are addressed:

- a) Type A, where the intended use is bound to the maximum rated speed of 0,30 m/s;
- b) Type B, where the intended use is bound to the maximum rated speed of 1,0 m/s.

1.4 In addition to the requirements of this document, supplementary requirements have to be considered in special cases (potentially explosive atmosphere, extreme climate conditions, seismic conditions, transporting dangerous goods, etc.).

1.5 This document does not cover:

- a) accessible goods only lifts:
 - 1) with more than one lift machine;
 - 2) where loading and unloading is automated, or the carrier floor is fitted with mobile devices (e.g. rollers) for loading and unloading purposes;
 - 3) intended to carry bulk loads (such as loose sand, gravel, etc.);
 - 4) with drive systems other than those stated in 4.8;
- b) lifting tables according to EN 1570-1 and EN 1570-2;
- c) lifting appliances, such as appliances with more than one carrier, skips, goods only lifts for construction sites, for underground applications, mine winding gear, goods only lifts on seagoing vessels and mobile offshore units, construction and maintenance appliances in wind turbines, goods only lifts specially designed and constructed for research purposes for temporary use in laboratories, goods only lifts specially designed and constructed for military or police purposes;
- d) safety during operation of transport, erection, repairs and dismantling of accessible goods only lifts;