BSI Standards Publication

Safety rules for the construction and installation of lifts — Lifts for the transport of goods only

Part 31: Accessible goods only lifts

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National foreword

This British Standard is the UK implementation of EN 81-31:2024. It supersedes BS EN 81-31:2010, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MHE/4, Lifts, hoists and escalators.

A list of organizations represented on this committee can be obtained on request to its committee manager.

This publication has been prepared under a mandate given to the European Standards Organizations by the European Commission and the European Free Trade Association. It is intended to support requirements of the EU legislation detailed in the European Foreword. A European Annex, usually Annex ZA or ZZ, describes how this publication relates to that EU legislation.

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European foreword

This document (EN 81-31:2024) 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of an identical text or by endorsement, at the latest by May 2025 and conflicting national standards shall be withdrawn at the latest by November 2026.

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 supersedes EN 81-31:2010.

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 81-21:2022. 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 have been made for: dimensions of working areas; 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 normatively referenced standards now are dated;

— 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 addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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.

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, Türkiye and the United Kingdom.

0 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, inspection, maintenance and emergency operation of accessible goods only lifts.[1]

a) Persons to be safeguarded:

   1) users;

   2) maintenance and inspection personnel;

   3) persons at the landings of the accessible goods only lift and in the machinery space(s) and pulley room(s), if any.

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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.

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

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

0.3.3 This document considers a building that has characteristics in accordance with Annex K.

0.4 Assumption

0.4.1 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.

0.4.2 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.

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

0.4.4 The accessible goods only lifts are not intended to transport persons inside the carrier.

0.4.5 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).

0.4.6 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.

0.4.7 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.

0.4.8 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.

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 users (see 3.57), 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.

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 m^2;

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 without a roof, 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 are to be considered in special cases (operation subject to ATEX rules, operational in environmental conditions not addressed by this standard, 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;