AS 1735.4:2020
EN 81-3:2000+A1:2008

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Lifts, escalators and moving walks

Part 4: Safety rules for the construction and installation of lifts — Electric and hydraulic service lifts

This Australian Standard is the identical adoption of EN 81-3:2000+A1:2008, with the permission of the European Committee for Standardization — CEN, Rue de la Science 23, B — 1040 Brussels, Belgium.

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Preface

This Standard was prepared by the Standards Australia Committee ME-004, Lift Installations, to supersede AS 1735.4—1986, *Lifts, escalators and moving walks Known as the SAA Lift Code, Part 4: Service lifts — Power operated.*

The objective of this document is to specify the safety rules for the construction and installation of permanently installed new electric service lifts with traction or positive drive, or hydraulic service lifts defined as lifting equipment, serving defined landing levels, having a car, the interior of which is regarded as inaccessible to persons on account of its dimensions and means of construction, suspended by ropes or chains or supported by a ram and moving between rigid vertical guide rails or guide rails whose inclination to the vertical does not exceed 15° and driven electrically or hydraulically.

This document covers—

(a) service lifts with rated load not exceeding 300 kg and is not intended to move persons; and

(b) safety requirements for service lifts with rated speeds up to 1 m/s.

This document does not cover—

(i) service lifts with drives other than stated in Clause 1.1;

(ii) important modifications (see Annex E) to a service lift installed before this document is brought into application;

(iii) lifting appliances, such as paternosters, mines lifts, theatrical lifts, appliances with automatic caging, skips and hoists for building and public works sites, ships' hoists, platforms for exploration or drilling at sea, construction and maintenance appliances;

(iv) installations where the inclination of the guide rails to the vertical exceeds 15°;

(v) safety during transport, installation, repairs and dismantling of service lifts;

(vi) use of glass for the walls of the well, for the car and for the landing doors including the vision panels; and

(vii) noise, vibrations and fire propagation in service lifts.

This document is identical with, and has been reproduced from, EN 81-3:2000+A1:2008, *Safety rules for the construction and installation of lifts — Part 3: Electric and hydraulic service lifts.*

As this document has been reproduced from an International Standard, the following applies:

(A) In the source text "this European Standard" should read "this document".

(B) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms "normative" and "informative" are used in Standards to define the application of the appendices or annexes to which they apply. A "normative" appendix or annex is an integral part of a Standard, whereas an "informative" appendix or annex is only for information and guidance.

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Foreword

This document (EN 81-3:2000+A1:2008) 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 2009, and conflicting national standards shall be withdrawn at the latest by January 2009.

This document includes Amendment 1, approved by CEN on 2008-06-29.

This document supersedes EN 81-3:2000.

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

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

⟨A1⟩ For relationship with EC Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. ⟨A1⟩

This standard is part of the EN 81- series of standards “Safety rules for the construction and installation of lifts“.

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

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Introduction

0.1 General

0.1.1 The object of this standard is to define safety rules related to service lifts with a view to safeguarding persons and objects against the risk of accidents associated with the user-, maintenance- and emergency operation of service lifts[1)]

0.1.2 A study has been made of the various aspects of incidents possible with service lifts in the following areas:

0.1.2.1 Risks possible due to:

a) shearing;

b) crushing;

c) falling;

d) impact;

e) trapping;

f) fire;

g) electric shock;

h) failure of material due to:

   1) mechanical damage,

   2) wear,

   3) corrosion.

0.1.2.2 Persons to be safeguarded:

a) users;

b) maintenance and inspection personnel;

c) persons outside the service lift well and the machine room, if any.

0.1.2.3 Objects to be safeguarded:

a) loads in car;

b) components of the service lift installation;

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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. The issued interpretations are available from National Standard Bodies.

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c) building in which the service lift is installed.

0.2 Principles

In drawing up this standard the following have been used.

0.2.1 This standard 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 service lift manufacture or because in the case of service lift utilisation the requirements may be more stringent than elsewhere.

0.2.2 This standard does not only address the essential safety requirements of the Machinery Directive, but additionally states minimum rules for the installation of service lifts into buildings/constructions. There may be in some countries regulations for the construction of buildings, etc. which cannot be ignored.

Typical clauses affected by this are those defining minimum values for the height of the machine room and for their access doors dimensions.

0.2.3 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 easily be attached.

0.2.4 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 service lifts.

0.2.5 Negotiations have been made between the customer and the manufacturer, or his authorised representative, about:

a) the intended use of the service lift;

b) environmental conditions;

c) civil engineering problems;

d) other aspects related to the place of installation, e.g. presence of unsupervised children.

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

0.2.6 This standard does not address the health and safety of domestic animals.

0.3 Assumptions

Possible risks have been considered of each component that may be incorporated in a complete service lift installation.

Rules have been drawn up accordingly.

0.3.1 Components are:

a) designed in accordance with usual engineering practice and calculation codes, taking into account all failure modes;

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b) of sound mechanical and electrical construction;

c) made of materials with adequate strength and of suitable quality;

d) be free of defects.

Harmful materials, such as asbestos are not used.

0.3.2 Components, and where appropriate well and machine room, are kept in good repair and working order, so that the required dimensions remain fulfilled despite wear.

0.3.3 Components will be selected and installed so that foreseeable environmental influences and special working conditions do not affect the safe operation of the service lift.

0.3.4 By design of the load bearing elements, a safe operation of the service lift is assured for loads ranging from 0 % to 100 % of the rated load.

0.3.5 The requirements of this standard regarding electrical safety devices are such that the possibility of a failure of an electric safety device complying with all the requirements of the standard needs not to be taken into consideration.

0.3.6 Users have to be safeguarded against their own negligence and unwitting carelessness when using the service lift in the intended way.

0.3.7 Persons are not moved inside the well.

0.3.8 If in the course of maintenance work a safety device, normally not accessible to the users, is deliberately neutralised, safe operation of the service lift is no longer assured, but compensatory measures will be taken to ensure users safety in conformity with maintenance instructions.

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

0.3.9 For horizontal forces, the following have been used:

a) static force: 300 N;

b) force resulting from impact: 1000 N;

reflecting the values that one person can exert.

0.3.10 With the exception of the items listed below, a mechanical device built according to good practice and the requirements of the standard will not deteriorate to a point of creating hazard without the possibility of detection.

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 a component associated with the main drive elements and the traction sheave;

e) rupture in the hydraulic system (jack excluded);

f) small leakage in the hydraulic system (jack included).

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0.3.11 The possibility of devices against free fall or descent with excessive speed not setting, should the car free fall from the lowest landing, before the car strikes the buffer(s) is considered acceptable.

0.3.12 When the speed of the car is linked to the electrical frequency of the mains up to the moment of application of the mechanical brake the speed is assumed not to exceed 115 % of the rated speed or a corresponding fractional speed.

0.3.13 From the definition (**3 Terms and definitions**), service lifts are regarded as inaccessible for users.

0.3.13.1 The well is regarded as inaccessible to maintenance personnel if either any opening giving access to the well has dimensions, one of which does not exceed 0,30 m or regardless of their dimensions:

a) the depth of the well does not exceed 1 m,

b) the area of the well does not exceed 1 m^2, and

c) provisions are taken to enable easy maintenance from outside.

0.3.13.2 The machine room is regarded as accessible to maintenance personnel if:

a) the openings giving access have a minimum size of 0,60 m x 0,60 m, and

b) the height of the machine room is at least 1,80 m.

0.3.14 Means of access are provided for the hoisting of heavy equipment (see **0.2.5** and **6.3.4**).

1 Scope

1.1 This standard specifies the safety rules for the construction and installation of permanently installed new electric service lifts with traction or positive drive, or hydraulic service lifts defined as lifting equipment, serving defined landing levels, having a car, the interior of which is regarded as inaccessible to persons on account of its dimensions and means of construction, suspended by ropes or chains or supported by a ram and moving between rigid vertical guide rails or guide rails whose inclination to the vertical does not exceed 15° and driven electrically or hydraulically.

This standard covers service lifts with rated load not exceeding 300 kilogrammes and not intended to move persons.

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

1.3 This standard does not cover:

a) service lifts with drives other than stated in **1.1**;

b) important modifications (see **annex E**) to a service lift installed before this standard is brought into application;

c) lifting appliances, such as paternosters, mines lifts, theatrical lifts, appliances with automatic caging, skips and hoists for building and public works sites, ships' hoists, platforms for exploration or drilling at sea, construction and maintenance appliances;

d) installations where the inclination of the guide rails to the vertical exceeds 15°;

e) safety during transport, installation, repairs and dismantling of service lifts;

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