

MAURITIAN
STANDARD

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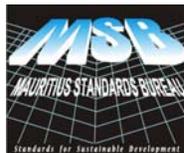
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**Safety rules for the construction and
installation of lifts –**

Part 3: Electric and hydraulic service lifts

ICS: 91.140.90



Mauritius Standards Bureau
Moka

GR 22

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National foreword

This Mauritian Standard is identical with the European Standard **EN 81-3: 2000** – *Safety rules for the construction and installation of lifts – Part 3: Electric and hydraulic service lifts*. It was adopted by the Mauritius Standards Bureau in 2011 on the recommendation of the **Mechanical Standards Committee** and approval of the **Standards Council** on 02 February 2011. It was notified in the Government Gazette on 26 February 2011*.

For the purposes of this standard the following changes should be made:

- (i) the words “European Standard” should be replaced by “Mauritian Standard”,
- (ii) the “decimal comma” to be replaced by “decimal point”.

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Contents

Page

Foreword.....	5
Introduction	6
0.1 General.....	6
1 Scope	9
2 Normative references	10
3 Terms and definitions	11
4 Units and symbols	15
4.1 Units	15
4.2 Symbols	15
5 Service lift well.....	16
5.1 General provisions	16
5.2 Well enclosure.....	16
5.3 Walls, floor and ceiling of the well.....	17
5.4 Protection of any spaces located below the car, the counterweight or the balancing weight.....	17
5.5 Protection in the well.....	17
5.6 Headroom and pit	18
5.7 Exclusive use of the service lift well.....	19
6 Machine rooms.....	19
6.1 General provisions	19
6.2 Access	19
6.3 Construction and equipment of machine rooms.....	20
7 Landing doors	21
7.1 General provisions	21
7.2 Strength of doors and their frames.....	21
7.3 Height and width of entrances	22
7.4 Sills, guides, door suspension.....	22
7.5 Protection in relation to door operation	22
7.6 Local lighting and 'car here' signal lights	23
7.7 Locking and closed landing door check	23
8 Car, counterweight and balancing weight	26
8.1 Height of car.....	26
8.2 Available car area and rated load.....	26
8.3 Walls, floor and roof of the car.....	26
8.4 Apron and automatic bridging sills	26
8.5 Car entrance	27
8.6 Car doors	27
8.7 Protection during operation of doors.....	27
8.8 Counterweight and balancing weight.....	28
9 Suspension, precautions against free fall, descent with excessive speed and creeping of the car	28
9.1 Suspension.....	28
9.2 Sheave, pulley, drum and rope diameter ratios, rope/chain terminations.....	29
9.3 Rope traction.....	29
9.4 Winding up of ropes for positive drive service lifts	30
9.5 Distribution of load between the ropes or the chains.....	30
9.6 Protection for traction sheaves, pulleys and sprockets.....	30

9.7	Precautions against free fall, descent with excessive speed, creeping of the car and against free fall of the counterweight or balancing weight.....	31
9.8	Safety gear	32
9.9	Tripping means for safety gear	33
10	Guide rails, buffers and final limit switches	35
10.1	General provisions concerning guide rails	35
10.2	Guiding of the car, counterweight or balancing weight	36
10.3	Buffers and fixed stops for car and counterweight	36
10.4	Car and counterweight buffers	36
10.5	Final limit switches.....	37
11	Clearances between the car and wall facing the car entrance	38
11.1	General provision	38
11.2	Clearance between car and wall facing the car entrance.....	38
12	Lift machine	38
12.1	General provision	38
12.2	Service lift machines for electric service lifts	38
12.3	Machine, jack and other hydraulic equipment for hydraulic service lifts	41
13	Electric installations and appliances	49
13.1	General provisions	49
13.2	Contactors, relay-contactors, components of safety circuits	50
13.3	Protection of motors	51
13.4	Main switches	51
13.5	Electric wiring	52
13.6	Lighting and socket outlets.....	53
14	Protection against electric faults; controls; priorities.....	54
14.1	Failure analysis and electric safety devices.....	54
14.2	Controls.....	59
15	Notices, markings and operating instructions	60
15.1	General provisions	60
15.2	Rated load and vendor's name	60
15.3	Car roof.....	61
15.4	Machine rooms	61
15.5	Well	62
15.6	Overspeed governor	62
15.7	Pit	62
15.8	Electrical identification	63
15.9	Unlocking key for landing doors	63
15.10	Locking devices.....	63
15.11	Groups of lifts	63
15.12	Tank	63
16	Examinations - Tests - Register - Maintenance.....	63
16.1	Examinations and tests	63
16.2	Register	64
16.3	Vendor information	64
Annex A (normative) List of the electric safety devices		66
Annex B (normative) Unlocking triangle		67
Annex C (informative) Technical dossier		68
C.1	Introduction.....	68
C.2	General	68
C.3	Technical details and plans.....	68
C.4	Electric schematic diagrams and hydraulic circuit diagrams	69
Annex D (normative) Examinations and tests before putting into service.....		70
D.1	Examinations	70
D.2	Tests and verifications.....	70

Annex E (normative) Periodical examinations and tests, examinations and tests after an important modification or after an accident	73
E.1 Periodical examinations and tests (normative)	73
E.2 Examinations and tests after important modifications or after accidents (informative)	73
Annex F (informative) Construction of walls of service lift wells and landing doors facing a car entrance	75
Annex G (normative) Electronic components - Failure exclusion	76
Annex H (normative) Calculations of rams, cylinders, rigid pipes and fittings	84
H.1 Calculation against over pressure	84
H.2 Calculations of the jacks against buckling	87
Annex J (informative) Information to the owner/user of a service lift	92
J.1 Means of access to machine room entrance of the service lift	92
J.2 Maintenance work carried out from a step of a ladder	92
Annex ZA (informative)  Relationship between this European Standard and the Essential Requirements of EC Directive 98/37/EC 	93
Annex ZB (informative)  Relationship between this European Standard and the Essential Requirements of EC Directive 2006/42/EC 	94
Bibliography	95

PREVIEW

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** and **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.

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 lifts¹⁾

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;

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.

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;

- 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).

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 m², 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;