DD ISO/TS 22559-2:2010

BSI Standards Publication

Safety requirements for lifts (elevators)

Part 2: Safety parameters meeting the global essential safety requirements (GESRs)

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This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards.*

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into an international Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

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 secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Safety requirements for lifts (elevators) —

Part 2: Safety parameters meeting the global essential safety requirements (GESRs)

Exigences de sécurité des ascenseurs —

Partie 2: Paramètres de securité repondant aux exigences essentielles de sécurité globale des ascenseurs

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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

ISO/TS 22559-2 was prepared by Technical Committee ISO/TC 178, *Lifts, escalators and moving walks.*

ISO/TS 22559 consists of the following parts, under the general title *Safety requirements for lifts (elevators)*:

— *Part 1: Global essential safety requirements (GESRs)*

— *Part 2: Safety parameters meeting the global essential safety requirements (GESRs)*

The following parts are under preparation:

— *Part 3: Global conformity assessment procedures (GCAP) — General requirements*

— *Part 4: Global conformity assessment procedures (GCAP) — Certification and accreditation requirements*

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Introduction

This part of ISO/TS 22559 was prepared in response to the need to set global safety parameters for lifts (elevators).

The objective of ISO/TS 22559 (all parts) is to:

a) define a common global level of safety for all people using, or associated with, lifts (elevators);

b) facilitate innovation of lifts (elevators) not designed according to existing local, national or regional safety standards, while maintaining equivalent levels of safety. If such innovations become state of the art, they can be integrated into the detailed local safety standard at a later date;

c) help remove trade barriers.

ISO/TS 22559-1 establishes global essential safety requirements (GESRs) for lifts (elevators) by addressing hazards and risks that can be encountered on a lift (elevator). The GESRs, however, state only the safety objectives of a lift (elevator).

This part of ISO/TS 22559 provides guidance and criteria for achieving conformance with safety requirements of GESRs by specifying global safety parameters (GSPs) for use and implemention, where applicable, in a lift (elevator) to eliminate hazards or mitigate safety risks addressed in the GESRs. However, GSPs are not mandatory.

Clause 4 describes the approach and methodology used in the development of this part of ISO/TS 22559. Clause 5 gives instructions for the use and implementation of GSPs. The GSPs are presented in Clause 6 in the sequence of GESRs in ISO/TS 22559-1.

This part of ISO/TS 22559 is a product safety standard in accordance with ISO/IEC Guide 51.

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Safety requirements for lifts (elevators) —

Part 2:
Safety parameters meeting the global essential safety requirements (GESRs)

1 Scope

1.1 This part of ISO/TS 22559:

a) specifies global safety parameters (GSPs) for lifts (elevators), their components and their functions;

b) complements the system and methods specified in ISO/TS 22559-1 for mitigating safety risks that can arise in the course of the operation and use of, or work on, lifts (elevators).

NOTE Hereinafter, the term “lift” is used instead of the term “elevator”.

1.2 This part of ISO/TS 22559 is applicable to lifts that can

a) be located in any permanent and fixed structure within or attached to a building, except lifts located in

   1) private residences (single family units), or

   2) means of transport, e.g. ships,

b) have any

   3) rated load, size of load-carrying unit (LCU) and speed, and

   4) travel distance and number of landings,

c) be affected by fire in the load-carrying unit, earthquakes, weather or floods,

d) be foreseeably misused (e.g. overloaded), but not vandalized.

1.3 This part of ISO/TS 22559 does not specifically cover

a) all the needs of users with disabilities[1)], or

b) risks arising from

   1) work on lifts under construction, during testing, or during alterations and dismantling,

   2) use of lifts for firefighting and emergency evacuation,

   3) vandalism,

   4) fire outside the LCU,

   5) explosive atmosphere,

   6) transportation of dangerous goods.

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1) Although the GESRs mentioned in this part of ISO/TS 22559 have been identified and evaluated by risk assessment, not all disabilities or combinations of disabilities of users have necessarily been addressed.

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2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 14119, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

ISO 14120:2002, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

ISO 14122-2:2001, *Safety of machinery — Permanent means of access to machinery — Part 2: Working platforms and walkways*

ISO 14122-3:2001, *Safety of machinery — Permanent means of access to machinery — Part 3: Stairs, stepladders and guard-rails*

ISO 14122-4, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders*

ISO 14798:2009, *Lifts (elevators), escalators and moving walks — Risk assessment and reduction methodology*

ISO 15534-1, *Ergonomic design for the safety of machinery — Part 1: Principles for determining the dimensions required for openings for whole-body access into machinery*

ISO 15534-2, *Ergonomic design for the safety of machinery — Part 2: Principles for determining the dimensions required for access openings*

ISO 15534-3, *Ergonomic design for the safety of machinery — Part 3: Anthropometric data*

ISO 22199, *Electromagnetic compatibility — Product family standard for lifts, escalators and moving walks — Emission*

ISO 22200 *Electromagnetic compatibility — Product family standard for lifts, escalators and moving walks — Immunity*

ISO/TS 22559-1:2004, *Safety requirements for lifts (elevators) — Part 1: Global essential safety requirements (GESRs)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
authorized person
person with authorization to access restricted lift areas [e.g. machinery spaces, lift well (hoistway), pit and LCU top] and to work therein, for the purpose of inspecting, testing, repairing, and maintaining the lift or for rescuing users from a stalled load-carrying unit (LCU)

[ISO/TS 22559-1:2004, definition 3.1]

3.2
cause
circumstance, condition, event, or action that in a hazardous situation contributes to the production of an effect

[ISO 14798:2009, definition 2.1]

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3.3
counterweight
mass that contributes traction in the case of a traction lift, or mass that saves energy by balancing all or part of the mass of the LCU (car) and the rated load

[ISO/TS 22559-1:2004, definition 3.5]

3.4
door
landing or LCU mechanical device (including devices that partially or fully enclose the opening) used to secure an LCU or landing entrance

3.5
effect
result of a cause in the presence of a hazardous situation

[ISO 14798:2009, definition 2.2]

3.6
electromagnetic compatibility
EMC
degree of immunity to incident electromagnetic radiation and level of emitted electromagnetic radiation of electrical apparatuses

3.7
essential safety requirement
ESR
requirement intended to eliminate or sufficiently mitigate the risk of harm to users, non-users and authorized persons using, or associated with, lifts

3.8
fully loaded load-carrying unit
fully loaded LCU
LCU (car) with its rated load

3.9
global essential safety requirement
GESR
globally agreed upon essential safety requirement

See 3.7.

3.10
global safety parameter
GSP
globally agreed upon safety parameter

See 3.33.

3.11
harm
physical injury or damage to the health of people, or damage to property or the environment

[ISO/IEC Guide 51:1999, definition 3.3] [ISO 14798:2009, definition 2.3]

3.12
harmful event
occurrence in which a hazardous situation results in harm

[ISO/IEC Guide 51:1999, definition 3.4] [ISO 14798:2009, definition 2.4]

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3.13
hazard
potential source of harm

[ISO/IEC Guide 51:1999, definition 3.5] [ISO 14798:2009, definition 2.5]

3.14
hazardous situation
circumstance in which people, property or the environment are exposed to one or more hazards

[ISO/IEC Guide 51:1999, definition 3.6] [ISO 14798:2009, definition 2.6]

3.15
well (GB)
hoistway (US)
travel path(s) of the LCU and related equipment, plus the spaces below the lowest landing and above the highest landing

3.16
hoistway enclosure (US)
well enclosure (GB)
fixed structural elements that isolate the well (hoistway) from all other areas or spaces

3.17
landing
floor, balcony or platform used to receive and discharge persons or goods (freight) from the LCU

3.18
life cycle
period of usage of a component or a lift system

[ISO 14798:2009, definition 2.7]

3.19
lift (GB)
elevator (US)
lifting appliance intended to transport persons with or without goods or freight by means of a power-operated load-carrying unit that is guided by a fixed guiding system from one landing to another, at an angle of more than 75° to the horizontal

NOTE 1 This term does not include mobile or other working platforms or baskets, or lifting appliances used in the course of construction of buildings or structures.

NOTE 2 See ISO/TR 11071-1:2004, Clause 2, for use of the term “lift” versus the term “elevator” in current national standards for lifts.

[ISO/TS 22559-1:2004, definition 3.19]

3.20
load-carrying unit
LCU
car
part of a lift designed to carry persons and/or other goods for the purpose of transportation

[ISO/TS 22559-1:2004, definition 3.20]

3.21
machinery space
space inside or outside the well (hoistway), which contains the lift's mechanical equipment, and can also contain electrical equipment used directly in connection with the lift

NOTE This space can also contain the electric driving machine, the hydraulic machine or means for emergency operation.

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3.22
maintenance
process of examination, lubrication, cleaning, adjustment and routine replacement of lift parts to ensure the safe and intended functioning of the lift and its components after completion of the installation and throughout its life cycle

3.23
non-user
person in the vicinity of a lift, but not intending to access or use the lift

3.24
overload
overloaded
load in the LCU that exceeds the rated load of the lift

3.25
platform
part of the LCU that accommodates persons and load for the purpose of transportation

3.26
protective measures
means used to reduce risk

NOTE Protective measures include risk reduction by inherently safe design, protective devices, personal protective equipment, information for use and installation and training.

[ISO/IEC Guide 51:1999, definition 3.8] [ISO 14798:2009, definition 2.8]

3.27
rated load
load that the lift is designed and installed to transport

3.28
relative movement
situation where a lift component moves in the vicinity of another lift component that is stationary or that moves at a different speed or in a different direction

NOTE This can also occur in a situation where a lift component moves in the vicinity of a structure where persons can be present.

EXAMPLE Building floor surrounding the lift well (hoistway).

3.29
risk
combination of the probability of occurrence of harm and the severity of that harm

[ISO/IEC Guide 51:1999, definition 3.2] [ISO 14798:2009, definition 2.10]

3.30
risk analysis
systematic use of available information to identify hazards and to estimate the risk

[ISO/IEC Guide 51:1999, definition 3.10] [ISO 14798:2009, definition 2.11]

3.31
risk assessment
overall process comprising a risk analysis and a risk evaluation

[ISO/IEC Guide 51:1999, definition 3.12] [ISO 14798:2009, definition 2.12]

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3.32
risk evaluation
consideration of the risk analysis results to determine if the risk reduction is required

[ISO 14798:2009, definition 2.13]

3.33
safety parameter
SP
quantitative unit, the value of which, in the form of numerical values or references to International Standards or other standards, provides a level of safety consistent with that provided by relevant standards in current use in the lift industry and good engineering practices

3.34
scenario
sequence of a hazardous situation, cause and effect

[ISO 14798:2009, definition 2.14]

3.35
severity
level of potential harm

[ISO 14798:2009, definition 2.15]

3.36
transportation
process in the course of which persons enter, or goods are moved into, an LCU, which is then lifted or lowered to another landing, where the person exits, or goods are removed from, the LCU

3.37
travel path
path and related space between the lift terminal landings within which an LCU travels

NOTE For “space” above and below terminal landings, see 3.15.

3.38
uncontrolled movement
situation where

— the LCU moves when, according to the design of the lift, it was to remain stationary, or

— the LCU travels at a speed that is beyond the control of the means designed and intended to control the LCU speed during the lift operation

EXAMPLE 1 The LCU starts to move away from a landing while the users are entering or leaving the LCU due to failure or breakdown of lift components, such as the speed control or brake system.

EXAMPLE 2 The LCU speed exceeds its designed speed or does not decelerate or stop as intended due to failure or breakdown of lift components, such as the speed control or brake system.

3.39
user
person using the lift for the purpose of normal transportation, without any help or supervision, including a person carrying goods and a person using a specially dedicated operating system to transport goods or loads

NOTE An example of use of a specially dedicated operating system is “independent service” for transport of hospital patients, whereby the operation of the lift is under the sole control of the patient's attendant.

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