

SINGAPORE STANDARD Code of practice for design, installation and maintenance of escalators and moving walks

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SINGAPORE STANDARD

Code of practice for design, installation and maintenance of escalators and moving walks

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Co-opted Member	:	Mr Chong Weng Hoe	Individual Capacity

The Technical Committee on Building Facilities and Services, appointed by the Electrical and Electronic Standards Committee and responsible for the preparation of this standard, consists of representatives from the following organisations:

		Name	Capacity
Chairman	:	Er. Kenneth Liu	Member, Electrical and Electronic Standards Committee
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		Mr Jack Tay/ Mr Foo Ming Yann	Singapore Electrical Trades Association
		Dr Zhou Yi	Institution of Engineers, Singapore
Co-opted Member	:	Mr K Seshadri	Individual Capacity

The Working Group on Lifts, Escalators and Passenger Conveyors, appointed by the Technical Committee to assist in the preparation of this standard, comprises the following experts who contribute in their *individual capacity*:

Convenor	:	Er. Adeline Koh
Deputy Convenor	:	Mr Song Yew Kee*
Members	:	Er. Cheah Sek Cheong Er. Goh Mun Choon Mr Thomas Goh Siew Huat Mr Alfred Lee Kok Wee Mr Lee Wee Keong
		Er. Leong Shee Kok Er. Lum Chong Chuen Er. Phuah Cheng Kok Mr Quah Eng Hing

*Served till March 2016

Members : Mr Tan Chek Sim Mr Wan Tai Gan

The organisations in which the experts of the Working Group are involved are:

Association of Consulting Engineers Singapore Building and Construction Authority Housing & Development Board Institution of Engineers, Singapore JTC Corporation Land Transport Authority Singapore Civil Defence Force Singapore Institute of Architects Singapore Lift and Escalator Contractors and Manufacturers Association Singapore Manufacturing Federation

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National Foreword

This Singapore Standard was prepared by the Working Group on Lifts, Escalators and Passenger Conveyors appointed by the Technical Committee on Electrical and Electronic Products under the purview of the Electrical and Electronic Standards Committee.

This is a revision of CP 15 : 2004 that was based on the previous EN 115 : 1995. This Code is also re-designated as SS 626.

This Code is a modified adoption of EN 115-1:2008+A1:2010 – "Safety of escalators and moving walks – Part 1: Construction and installation" including its Amendment 1. It is adopted with permission of CEN, Avenue Marnix 17, 1000 Brussels.

Attention is drawn to the following:

- 1. Where applicable, refer to the IEC standard if the EN standard is an adoption of the IEC standard.
- 2. Certain modifications due to national requirements are given in Annex ZB. To facilitate identification, the affected text of the EN Standard which was changed within this standard is indicated by a left marginal bar adjacent to it.
- 3. The comma has been used throughout as a decimal marker whereas in Singapore Standards it is a practice to use a full point on the baseline as the decimal marker

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

NOTE

- 1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions.
- 2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR.
- 3. Compliance with a SS or TR does not exempt users from any legal obligations.

Introduction

This standard is a Type C standard as stated in EN ISO 12100-1.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this standard.

When the provisions of this 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.

The purpose of this standard is to define safety requirements for escalators and moving walks in order to safeguard people and objects against risks of accidents during installation, operation, maintenance and inspection work.

The contents of this standard are based on the assumption that persons using escalators and moving walks are able to do so unaided. However, physical and sensory abilities in a population can vary over a wide range, escalators and moving walks are also likely to be used by persons with a range of other disabilities.

Some individuals, in particular older people, might have more than one impairment. Some individuals are not able to use an escalator or moving walk independently and rely on assistance/support being provided by a companion. Furthermore some individuals can be encumbered by objects or be responsible for other persons, which can affect their mobility. The extent to which an individual is incapacitated by impairments and encumbrances often depends on the usability of products, facilities and the environment.

The use of wheelchairs on escalators and moving walks can lead to dangerous situations which cannot be mitigated by machine designs and therefore should not be permitted.

The use of lifts is the preferred method of vertical travel for most people with disabilities and in particular wheelchair users and persons with guide dogs.

Additional signs should be provided to indicate the location of other facilities, these facilities should be in close proximity to the escalators and moving walks and easy to find.

It is assumed that negotiations have been made for each contract between the customer and the supplier/installer (see also Annex A) about:

- a) intended use of the escalator or moving walk;
- b) environmental conditions;
- c) civil engineering problems;
- d) other aspects related to the place of installation.

If escalators or moving walks are intended to be operated under special conditions, such as directly exposed to the weather or explosive atmosphere, or in exceptional cases serve as emergency exits, appropriate design criteria, components, materials and instructions for use should be used that satisfy the particular conditions.

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Code of practice for design, installation and maintenance of escalators and moving walks

1 Scope

1.1 This standard is applicable for new escalators and moving walks (pallet or belt type) as defined in Clause 3.

This standard deals with all significant hazards, hazardous situations and events relevant to escalators and moving walks when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4).

1.2 This standard does not deal with hazards arising from seismic activities.

1.3 This document is not applicable to escalators and moving walks which were manufactured before the date of its publication. It is, however, recommended that existing installations be adapted to this standard.

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.

EN 1929-2, Basket trolleys — Part 2: Requirements, tests and inspection for basket trolleys with or without a child carrying facility, intended to be used on passenger conveyors

EN 1929-4, Basket trolleys — Part 4: Requirements and tests for basket trolleys with additional goods carrying facility(ies), with or without a child carrying facility, intended to be used on passenger conveyors

EN 1993-1-1, Eurocode 3: Design of steel structures — Part 1-1: General rules and rules for buildings

EN 10025-1, Hot rolled products of structural steels — Part 1: General technical delivery conditions

EN 10025-2, Hot rolled products of structural steels — Part 2: Technical delivery conditions for nonalloy structural steels

EN 10025-3, Hot rolled products of structural steels — Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels

EN 10025-4, Hot rolled products of structural steels — Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels

EN 10025-5, Hot rolled products of structural steels — Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

EN 10025-6, Hot rolled products of structural steels — Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition

EN 10083-1, Steels for quenching and tempering — Part 1: General technical delivery conditions

EN 10083-2, Steels for quenching and tempering — Part 2: Technical delivery conditions for non alloy steels

EN 10083-3, Steels for quenching and tempering — Part 3: Technical delivery conditions for alloy steels

EN 12015, Electromagnetic compatibility — Product family standard for lifts, escalators and moving walks — Emission

EN 12016, Electromagnetic compatibility — Product family standard for lifts, escalators and moving walks — Immunity

EN 13015:2001, Maintenance for lifts and escalators - Rules for maintenance instructions

EN 13501-1:2007, Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests

EN 60068-2-6:1995, Environmental testing — Part 2: Tests — Tests Fc: Vibration (sinusoidal) (IEC 60068-2-6:1995 + Corrigendum 1995)

EN 60068-2-14, Environmental testing — Part 2: Tests — Test N: Change of temperature (IEC 60068-2-14:1984 + A1:1986)

EN 60068-2-27:1993, Basic environmental testing procedures — Part 2: Tests — Test Ea and guidance: Shock (IEC 60068-2-27:1987)

EN 60068-2-29, Basic environmental testing procedures — Part 2: Tests; Test Eb and guidance: Bump (IEC 60068-2-29:1987)

EN 60204-1:2006, Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)

EN 60269-1, Low-voltage fuses - Part 1: General requirements (IEC 60269-1:2006)

EN 60439-1:1999, Low-voltage switchgear and controlgear assemblies — Part 1: Type-tested and partially type-tested assemblies (IEC 60439 1:1999)

EN 60529, Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)

EN 60664-1:2007, Insulation coordination for equipment within low-voltage systems — Part 1: *Principles, requirements and tests (IEC 60664-1:2007)*

EN 60947-4-1, Low-voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters; *Electromechanical contactors and motor-starters (IEC 60947-4-1:2000)*

EN 60947-5-1, Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2003)

EN 61249 series, Materials for printed boards and other interconnecting structures (IEC 61249 series)

EN 61558-1:2005, Safety of power transformers, power supplies, reactors and similar products — Part 1: General requirements and tests (IEC 61558-1:2005)

EN 62061, Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)"

EN 62326-1, Printed boards — Part 1: Generic specification (IEC 62326-1:2002)

EN ISO 12100-1:2003, Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)

EN ISO 12100-2:2003, Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)

EN ISO 13850, Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)

EN ISO 13857:2006, Safety of machinery — Safety distances to prevent hazard zones being reached by the upper and lower limbs (ISO 13857:2008)

ISO 3864-1, Graphical symbols — Safety colours and safety signs - Part 1: Design principles for safety signs in workplaces and public areas (Note: Corrected and reprinted in 2003-12)

ISO 3864-3, Graphical symbols — Safety colours and safety signs — Part 3: Design principles for graphical symbols for use in safety signs

HD 21.3 S3, Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 3: Non-sheathed cables for fixed wiring (IEC 60227-3:1993, modified)

HD 21.4 S2, Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 4: Sheathed cables for fixed wiring

HD 21.5 S3, Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 5: Flexible cables (cords) (IEC 60227-5:1979, modified)

HD 22.4 S4, Cables of rated voltages up to and including 450/750 V and having crosslinked insulation — Part 4: Cords and flexible cables

HD 60364-4-41, Low-voltage electrical installations — Part 4-41: Protection for safety — Protection against electric shock (IEC 60364- 4-41:2005, modified)

IEC 60747-5-5, *Semiconductor devices* — *Discrete devices* — *Part 5-5: Optoelectronic devices* — *Photocouplers* (NOTE: This standard is intended to be published unmodified as an EN 60747-5-5.)

Singapore Standard SS CP 5, Code of practice for electrical installations