
Comparison of worldwide escalator and moving walk safety standards —

Part 1: Rule by rule comparison

*Comparaison des normes mondiales de sécurité des escaliers
mécaniques et trottoirs roulants —*

Partie 1: Comparaison paragraphe par paragraphe

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Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Rule-by-rule comparison.....	1
Annex A (informative) Figures of EN 115-1.....	156
Annex B (informative) Figures of AS 1735 Part 5.....	162
Annex C (informative) Tables mentioned in the column for Japanese codes.....	165
Annex D (informative) Addresses of standardization bodies occupied with the compared codes.....	167
Bibliography.....	168

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 178, *Lifts, escalators and moving walks*.

This second edition cancels and replaces the first edition (ISO/TR 14799-1:2005), which has been technically revised.

ISO/TR 14799 consists of the following parts, under the general title *Comparison of worldwide escalator and moving walk safety standards*:

- *Part 1: Rule by rule comparison*
- *Part 2: Abbreviated comparison and comments*

[Annexes A](#) to [C](#) form an integral part of this part of ISO/TR 14799.

Introduction

At the 1995 Plenary Meeting of ISO/TC 178, the work on a comparison of worldwide standards which includes the American, Australian, European, Russian, and Japanese escalator and moving walk safety code was passed to ISO/TC 178 Working Group (WG) 5 (Resolution Singapore 1995/114). In October 1995, WG 5 was officially formed to carry out the task of preparing a cross reference between the relevant sections of these standards and to analyse the differences on selected subjects. The goal at that time was to prepare a Technical Report which would provide reference information to assist national committees when reviewing and revising individual standards which may initiate a gradual convergence of the technical requirements. In 1996, the study was expanded to include the Korean safety standard.

The content of this part of ISO/TR 14799 is based on the information provided by the WG 5 members acting in personal capacity.

This part of ISO/TR 14799 is intended to aid standards writers in developing their safety requirements and to help standards users understand the basis for the requirements as they are applied throughout the world.

This part of ISO/TR 14799 is not intended to replace existing safety standards which may have been updated. Conclusions are arrived at in some cases, but only where there is unanimity among the various experts. In other cases, the reasons for the divergent views are expressed.

This part of ISO/TR 14799 is intended to be read in conjunction with the various safety standards. Unless approved by the relevant standard writing organizations, the information contained in this part of ISO/TR 14799 does not necessarily represent the opinions of these standards writing organizations (see Annex D for references).

Second edition 2013

This part of ISO/TR 14799 was done with the European Standard EN 115 1:2008 and its amendment A1:2010 as a reference document shown as the only one in its normal sequence. All other codes are not in their normal sequence and logical order. They are structured differently to EN 115 1. The resultant incorrectly leaves the impression of incompleteness of these standards. These standards in their original structure inclusive of their references to other standards and requirements are, however, complete.

This comparison no longer includes the Korean and Russian safety codes as there are intentions at the national level to bring these codes in line with one of the remaining four codes.

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Comparison of worldwide escalator and moving walk safety standards —

Part 1: Rule by rule comparison

1 Scope

This part of ISO/TR 14799 consists of a comparison of the requirements of selected topics as covered by the following worldwide safety standards (excluding local deviations):

- a) Europe (CEN) — EN 115-1, *Safety of escalators and moving walks — Part 1: Construction and installation (Edition 2008 + Amendment A1:2010)*;
- b) North America — ASME A17.1/CSA B44-2010, *Safety Code for Elevators and Escalators*
- c) Australia — AS 1735 *Part 5 for escalators and moving walks (Edition 2003)*;
- d) Japan — Safety requirements mainly comprised of *Building Standard Law Enforcement Order (BSLJ-EO)*, *Notifications of Ministry of Construction (MOC-N)*, *Japan Industrial Standard (JIS)*, and *Japan Elevator Association Standard (JEAS)*.

NOTE The original Japanese codes were written in Japanese and no official English versions had been released. Listed Japanese codes were carefully translated, but that the original is corresponding to the translation sentence is not guaranteed.

In addition to the above listed standards and other regulations, escalators and moving walks may be required to conform to the requirements of other standards as appropriate. Where ISO/TC 178 was aware of these standards, they are mentioned in [Annex D](#).

2 Rule-by-rule comparison

This comparison is between EN 115-1 and the rules in ASME A17.1/CSA B44, AS 1735 Part 5 and the Japanese Code. There are other standards (see listed in [Clause 1](#)) in the countries concerned that have requirements not shown in the escalator/moving walk standards compared, but address some of the same requirements as EN 115-1.

The principal dimensions (e.g. L_1 , b_8 , h_6) of EN 115-1 can be seen in the figures shown in [Annex A](#).

NOTE 1 EN 115-1 clause numbers in brackets serve only as reference points. They do not exist in the published EN 115-1.

NOTE 2 Where the Australian Standard requirements are given in italics, they only apply to moving walks.

NOTE 3 Where a clause number in parentheses is used, this serves only as a reference point to EN 115-1

Table 1

EN 115-1 (Europe)	A17.1/B44 (North America)	AS 1735 Part 5 (Australia)	Japanese Codes
<p>Introduction</p> <p>This standard is a Type C standard as stated in ISO 12100-1.</p> <p>The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this standard.</p> <p>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.</p> <p>The purpose of this standard is to define safety rules for escalators and moving walks in order to safeguard people and objects against risks of accidents during operation, maintenance and inspection work.</p>	<p>No equivalent statement</p>	<p>—</p>	<p>—</p>
<p>The purpose of this standard is to define safety rules for escalators and moving walks in order to safeguard people and objects against risks of accidents during operation, maintenance and inspection work.</p>	<p>GENERAL</p> <p>This Code is one of the numerous codes and standards developed and published by the American Society of Mechanical Engineers (ASME) under the general auspices of the American National Standards Institute, Inc. (ANSI).</p> <p>The Code is intended to serve as the basis for state, municipal, and other jurisdictional authorities in drafting regulations governing the installation, testing, inspection, maintenance, alteration, and repair of elevators, dumbwaiters, escalators, moving walks, material lifts with automatic transfer devices, wheelchair lifts, and stairway chairlifts. It is also intended as a standard reference of safety requirements for the guidance of architects, engineers, insurance companies, manufacturers, and contractors, and as a standard of safety practices for owners and management of structures where equipment covered in the Scope of the Code is used.</p>	<p>0 Introduction</p> <p>The purpose of this standard is to define safety rules for escalators and passenger conveyors in order to safeguard people and objects against risks of accidents during operation, maintenance and inspection work</p>	

Table 1 (continued)

EN 115-1 (Europe)	A17.1/B44 (North America)	AS 1735 Part 5 (Australia)	Japanese Codes
<p>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.</p>	<p>Safety codes and standards are intended to enhance public health and safety. Revisions result from committee consideration of factors such as technological advances, new data, and changing environmental and industry needs. Revisions do not imply that previous editions were inadequate.</p>		
<p>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.</p> <p>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.</p> <p>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.</p>	<p>No equivalent statement</p>		-

Table 1 (continued)

EN 115-1 (Europe)	A17.1 /B44 (North America)	AS 1735 Part 5 (Australia)	Japanese Codes
—	—	<p>0.1 It is necessary that all components</p> <p>0.1.1 are properly dimensioned, of sound mechanical and electrical construction and made of material with adequate strength and of suitable quality and free from defects; the use of materials with asbestos is not permitted;</p>	<p>BSLJ-EO (Fundamental Principles of Structural Design) Article 36-2</p> <p>In planning the structural design of buildings, columns, beams, floors, walls, etc. shall be arranged effectively according to use, scale, and structural features of the building concerned, as well as the conditions of the land concerned, so that the said building as a whole will be of structure safe from dead load, live load, snow load, wind pressure, ground pressure and water pressure as well as earthquakes or other vibration or shock acting upon the said building.</p> <p>2. Principal parts necessary for structural strength shall be arranged in balance so as to resist any horizontal forces acting upon the building concerned.</p> <p>3 Principal parts of a building necessary for structural strength shall be designed to have rigidity enough to prevent distortion or vibration adversely affecting the use of the said building and toughness enough to prevent sudden destruction.</p>

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Table 1 (continued)

EN 115-1 (Europe)	A17.1/B44 (North America)	AS 1735 Part 5 (Australia)	Japanese Codes
—	—	<p>0.1.2 are kept in good repair and working order. In particular, care shall be taken that the dimensions indicated are maintained despite wear; if necessary, the worn parts shall be replaced.</p>	<p>BSLJ (Maintenance) Article 8-1 The owner, custodian or occupant of a building shall endeavor to maintain the site, structure and building equipment of the building in a state complying with legal requirements.</p> <p>BSLJ (Reports, Inspection, etc.) Article 12-2 The owners of elevatory equipment and those of building equipment other than elevatory equipment (including building equipment installed in buildings of the State, a prefecture, or a city, town or village having building officials) of a building as mentioned in Article 6 paragraph 1 item (1) or any other building specified by Cabinet Order as mentioned in the preceding paragraph and designated by the special administrative agency shall, in accordance with Ministry of Construction Order, have a 1st-class licensed architect/building engineer, 2nd-class licensed architect/building engineer or a qualified person as designated by the Ministry of Construction, periodically inspect the said building equipment, and report the inspection results to the special administrative agency.</p>
—	—	<p>0.2 Where for elucidation of the text, an example is given this shall not be considered as the only possible design. Any other solution leading to the same result is permissible if it is guaranteed that with an equivalent function the same safety level exists.</p>	—
—	<p>PREFACE APPLICATION OF RULES TO NEW TECHNOLOGY Where present Rules are not applicable or do not describe the product or system, the enforcing authority should recognize the need for exercising latitude and granting exceptions where the product or system is equivalent in quality, strength or stability, fire resistance, effectiveness, durability, and safety to that intended by the present Code Rules.</p>	<p>0.3 It is not the purpose of this standard to preclude new developments of escalators and passenger conveyors. A new design shall meet at least the safety requirements of this standard.</p>	—

Table 1 (continued)

EN 115-1 (Europe)	A17.1 /B44 (North America)	AS 1735 Part 5 (Australia)	Japanese Codes
<p>—</p>	<p>1.1 Equipment covered by this Code The provisions of this Code are not intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety to those prescribed by this Code, provided that there is technical documentation to demonstrate the equivalency of the system, method, or device. The specific requirements of this Code may be modified by the authority having jurisdiction based upon technical documentation or physical performance verification to allow alternative arrangements that will assure safety equivalent to that which would be provided by conformance to the corresponding requirements of this Code.</p> <p>Definitions: enforcing authority - See authority having jurisdiction. approved - Acceptable to the authority having jurisdiction. authority having jurisdiction - The organization, office, or individual responsible for approving equipment. Where compliance with this Code has been mandated by law, the "authority having jurisdiction" is the federal, state, or local department or individual so designated in the enacting legislation or administrative regulation.</p>	<p>0.4 Certain escalators and passenger conveyors are subject to special operational conditions. For these cases some additional requirements are defined, marked in this standard with the note "For Public Service Escalators and Public Service Passenger Conveyors". Additional recommendations for that kind of escalators and passenger conveyors are given in Annex D (informative). During the planning stage it should be specified if it will be a public service escalator or public service passenger conveyor (for criteria and definition see 3.9).</p>	<p>—</p>
<p>—</p>	<p>—</p>	<p>0.6 Requirements related to the life of the escalators and passenger conveyors are not included in this standard as it depends on the place of installation and customers' special specifications.</p>	<p>—</p>
<p>—</p>	<p>—</p>	<p>0.7 This standard has been drawn up taking into account in certain cases the imprudent act of the user. However, this standard takes into consideration proper use and not abuse.</p>	<p>—</p>

Table 1 (continued)

EN 115-1 (Europe)	A17.1/B44 (North America)	AS 1735 Part 5 (Australia)	Japanese Codes
<p>It is assumed that negotiations have been made for each contract between the customer and the supplier/installer (see also Annex A) about:</p> <ul style="list-style-type: none"> 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. <p>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.</p>	<p>Outdoor escalators</p> <p>6.1.8.1/6.2.8.1 Weatherproofing. Escalators/moving walks shall be so constructed that exposure to the weather will not interfere with normal operation.</p> <p>6.1.8.1.1/6.2.8.1.1 The escalator/moving walk equipment and its supports shall be protected from corrosion.</p> <p>6.1.8.1.2/6.2.8.1.2 Electrical equipment shall be provided with a degree of protection of at least Type 4 construction as specified in NEMA 250, and wiring shall be identified for use in wet locations in accordance with NFPA 70 or CSA C22.1 as applicable (see Part 9).</p> <p>6.1.8.2/6.2.8.2 Precipitation. A cover, directly over the horizontal projection of the escalator/moving walk, shall be provided. The cover shall extend outward from the centerline of the handrail so that a line extended from the edge of the cover to the centerline of the handrail forms an angle of not less than 15 deg from the vertical.</p>	<p>0.5.2 If escalators or passenger conveyors have 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 shall be used that satisfy the particular conditions.</p> <p>In addition, it is recommended that for escalators and passenger conveyors which otherwise would be exposed to weather conditions, the customer provides a roof and enclosure.</p>	<p>JEAS 520 Installation for outdoor condition</p> <p>2. Description</p> <p>2.1 Classification of the outdoor type and the semi-outdoor type escalator</p> <p>The escalator without overhead roof or whose line connecting the roof edge and the escalator forms an angle of less than 30° to the vertical line, is classified as the outdoor type (Refer to Fig. 1) and the escalator with above angle of not less than 30° and not more than 70° is classified as the semi-outdoor type (Refer to Fig. 2).</p> <p>2.2 Considerations in construction</p> <p>As to the outdoor type and the semi-outdoor type escalators, the following considerations by the building side are required. It is also recommended that a roof be furnished especially in case of rainfall or snowfall where the treads are slippery and the passengers may lose their balances when getting on and off with the use of umbrellas.</p> <p>(1) The landings of the escalator should be installed higher than the surrounding floors so that rainwater or snow may not flow into the inside of the escalator and the drainage slope as well as the drainage should be provided. (Refer to Fig. 3)</p> <p>(2) An equipment for releasing water accumulated inside of the lower pit of the escalator should be furnished. Further, as drained water is mixed with oil, dust or pebbles, a proper filtering device at the external drain is required and measures to prevent any adverse flow are recommended. (Refer to Fig. 4)</p> <p>(3) In consideration of the use during night time etc., lighting fixtures are necessary to be equipped for the passengers to be able to see where they are stepping well.</p> <p>(4) At the pull-in end of the power source for the escalator, necessary protection measures are required.</p> <p>(5) The supervisory panel for supervision, TV camera or the like are preferable to be furnished.</p>
	<p>6.1.8.2.1/6.2.8.2.1 When the escalator/moving walk is subjected to blowing snow or freezing rain, heating systems shall be operated to prevent accumulation of snow or ice on the steps/treadway, landings and skirt deflector devices / . The heating systems operation shall be thermostatically controlled and independent of the escalator/moving walk operation.</p> <p>6.1.8.2.2/6.2.8.2.2 Drains suitable for all weather conditions shall be provided to prevent the accumulation of water.</p> <p>6.1.8.3/6.2.8.3 Slip Resistance. Landing plates and complates shall be designed to provide a secure foothold when wet.</p>		