



Lifts, escalators and moving walks

Part 5: Escalators and moving walks

AS 1735.5:2015, Lifts, escalators and moving walks, Part 5: Escalators and moving walks, is an identical adoption of EN 115-1:2008, Safety of escalators and moving walks, Part 1: Construction and installation, and is reproduced with the permission of CEN, Avenue Marnix 17, B-1000 Brussels, Belgium. All exploitation rights of the European Standards in any form and by any means are reserved world-wide to CEN and its National Members, and no reproduction may be undertaken without express permission in writing by CEN through Standards Australia Limited.



This Australian Standard® was prepared by Committee ME-004, Lift Installations. It was approved on behalf of the Council of Standards Australia on 18 February 2015. This Standard was published on 27 March 2015.

The following are represented on Committee ME-004:

- Association of Consultants in Access Australia
 - Australian Building Codes Board
 - Australian Chamber of Commerce and Industry
 - Australian Elevator Association
 - Australian Industry Group
 - Australian Institute of Building Surveyors
 - Communications, Electrical and Plumbing Union—Electrical Division
 - Engineers Australia
 - Lift Engineering Society of Australia
 - Property Council of Australia
 - Safe Work Australia
-

This Standard was issued in draft form for comment as DR AS 1735.5:2014.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

Lifts, escalators and moving walks

Part 5: Escalators and moving walks

First published as part of AS CA3—1935.
Tenth edition 1953.
AS CA3—1953 revised and redesignated in part as AS CA3.5—1970.
AS CA3.6 first published 1970.
AS CA3.5—1970 revised and redesignated as AS 1735.5—1975.
AS CA3.6—1970 revised and redesignated as AS 1735.6—1975.
Fourth edition AS 1735.5—1996.
Fourth edition AS 1735.6(Int)—1996.
AS 1735.5—1996 and part of AS 1735.6(Int)—1996 revised, amalgamated and redesignated as AS 1735.5—2001.
Seventh edition 2015.

COPYRIGHT

© Standards Australia Limited

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968.

Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 76035 007 9

PREFACE

This Standard was prepared by the Standards Australia Committee ME-004, Lift Installations, to supersede AS 1735.5—2003, *Lifts, escalators and moving walks, Part 5: Escalators and moving walks (BS EN 115:1995, MOD)*.

The objective of this Standard is to deal with significant hazards and risks associated with the installation, operation, maintenance and inspection relevant to escalator and moving walk designs.

This Standard is identical with, and has been reproduced from EN 115-1:2008, *Safety of escalators and moving walks, Part 1: Construction and installation*, and its Amendment 1:2010, which has been incorporated into the source text.

As this Standard is reproduced from an International Standard, the following applies:

- (a) In the source text ‘this Standard’ should read ‘this Australian Standard’.
- (b) A full point substitutes for a comma when referring to a decimal marker.

None of the normative references in the source document have been adopted as Australian or Australian/New Zealand Standards.

For wiring of escalators or moving walks see AS/NZS 3000, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

CONTENTS

1	Scope	6
2	Normative references	6
3	Terms and definitions - Symbols and abbreviations	8
3.1	Terms and definitions	8
3.2	Symbols and abbreviations	11
4	List of significant hazards	13
4.1	General.....	13
4.2	Mechanical hazards	13
4.3	Electric hazards	14
4.4	Radiation hazards	14
4.5	Fire hazard.....	14
4.6	Hazards generated by neglecting ergonomic principles in machinery design.....	15
4.7	Hazard generated by failure of control circuit.....	15
4.8	Hazards generated by break-up during operation	15
4.9	Slipping, tripping and falling hazards.....	15
4.10	Hazards specific for this type of machine.....	16
5	Safety requirements and/or protective measures	16
5.1	General.....	16
5.2	Supporting structure (truss) and enclosure	16
5.3	Steps, pallets, belt	18
5.4	Drive unit	22
5.5	Balustrade	27
5.6	Handrail system	31
5.7	Landings	32
5.8	Machinery spaces, driving station and return stations	33
5.9	Fire protection.....	35
5.10	Transportation.....	35
5.11	Electric installations and appliances.....	42
5.12	Protection against electric faults - controls.....	46
6	Verification of the safety requirements and/or protective measures.....	53
6.1	General.....	53
6.2	Specific data, test reports and certificates	55
7	Information for use	56

7.1	General	56
7.2	Signals and warning devices	56
7.3	Inspection and test	57
7.4	Accompanying documents (in particular, instruction handbook)	58
7.5	Marking	61
Annex A	(normative) Building interfaces	62
Annex B	(normative) Electronic components - Failure exclusion	67
Annex C	(normative) Drafting and assessing fail safe circuits	72
Annex D	(normative) \square_{A1} Testing of fail safe circuits containing electronic components and/or programmable electronic systems (PESSRAE) \square_{A1}	73
Annex E	(informative) Design guide-line for safety circuits	76
Annex F	(informative) Examples of possible dynamic torsional tests for steps and pallets	77
Annex G	(normative) Safety signs for the user of escalators and moving walks	80
Annex H	(informative) Guidelines for selection and planning of escalators and moving walks	82
Annex I	(normative) Requirements on escalators and moving walks intended to transport shopping trolleys and baggage carts	83
Annex J	(informative) Determination of anti-slip properties of the tread surfaces of steps and pallets, of comb plates and cover plate	85
Annex K	(informative) Determination of sliding properties of footwear on balustrade skirting	87
Annex L	(informative) Interpretations of EN 115-1:2008	88
Annex ZA	(informative) \square_{A1} Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC \square_{A1}	91
	Bibliography	92

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.

An Interpretation Committee has been established to clarify, if necessary, the spirit in which the clauses of the standard have been drafted and to specify the requirements appropriate to particular cases. Interpretation Requests can be sent to the National Standard Bodies which will contact the responsible Technical Committee CEN/TC 10. The formats of an interpretation request and the interpretation are given in Annex L.

AUSTRALIAN STANDARD

Lifts, escalators and moving walks**Part 5:
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 as EN. 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.

A1 *deleted text* **A1**

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 non-alloy 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*