SLOVENSKI STANDARD
SIST EN 115-2:2021

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Nadomešča:
SIST EN 115-2:2010

Varnost tekočih stopnic in trakov (stez) za osebe - 2. del: Pravila za izboljšanje varnosti obstoječih tekočih stopnic in trakov za osebe

Safety of escalators and moving walks - Part 2: Rules for the improvement of safety of existing escalators and moving walks

Sicherheit von Fahrtreppen und Fahrsteigen - Teil 2: Regeln für die Erhöhung der Sicherheit bestehender Fahrtreppen und Fahrsteige

Sécurité des escaliers mécaniques et trottoirs roulants - Partie 2 : Règles pour l'amélioration de la sécurité des escaliers mécaniques et des trottoirs roulants existants

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91.140.90 Dvigala. Tekoče stopnice Lifts. Escalators

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EUROPEAN STANDARD
NORME EUROPÉENNE
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English Version

Safety of escalators and moving walks - Part 2: Rules for the improvement of safety of existing escalators and moving walks

Sécurité des escaliers mécaniques et trottoirs roulants - Partie 2 : Règles pour l'amélioration de la sécurité des escaliers mécaniques et des trottoirs roulants existants

Sicherheit von Fahrtreppen und Fahrsteigen - Teil 2: Regeln für die Erhöhung der Sicherheit bestehender Fahrtreppen und Fahrsteige

This European Standard was approved by CEN on 19 March 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 115-2:2021) 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 October 2021, and conflicting national standards shall be withdrawn at the latest by April 2023.

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

This document supersedes EN 115-2:2010.

The need for replacement was based on the following points:

a) EN 115-2:2010 was referring to EN 115-1:2008, which is superseded by EN 115-1:2017;

b) additional requirements based on EN 115-1:2017;

c) new structure for electric requirements with clauses for protective, safety and control devices and functions.

The EN 115 series of standards consists of the following parts, under the general title *Safety of escalators and moving walks*:

— *Part 1: Construction and installation*;

— *Part 2: Rules for the improvement of safety of existing escalators and moving walks*;

— *Part 3: Correlation between EN 115-1:2008+A1:2010 and EN 115-1:2017*;

— *Part 4: Interpretations related to EN 115 family of standards*.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Background of this document

More than 136 500 escalators and moving walks are in use today in the European Union (EU) and European free Trade Association (EFTA) and almost 50 % were installed more than 20 years ago. However, this document compares the safety level of escalators and moving walks installed after 1970 with those within EN 115-1:2017. This recognizes that the first attempt to have a common standard for escalators and moving walks was the CIRA Recommendation 28 [1]. Escalators and moving walks were installed to the safety level appropriate at that time. This level is less than today's state of the art for safety.

New technologies and social expectations have led to today's state of the art for safety. This has led to the situation today of different levels of safety across Europe causing accidents. However, users and authorized persons expect a common acceptable level of safety.

Furthermore, the life cycle of escalators and moving walks is longer than most other transportation systems and building equipment, which therefore means that the design, performance and safety can fall behind modern technologies. If all existing escalators and moving walks are not upgraded to today's state of the art of safety the number of injuries will increase (especially in areas which can be accessed by the general public, recognizing the change of behaviour and changing attitudes towards safety in general). If escalators or moving walks were installed before 1970 on the base of manufacturer's and national standards or were installed after 1970 but not in accordance with CIRA Recommendation 28, then they should be the subject of a separate risk assessment in addition to the recommendations of this document to determine whether a safety upgrade or a full replacement is appropriate.

Approach of this document

This document:

— categorizes various hazards and hazardous situations, each of which has been analysed by a risk assessment (see in particular Annex A);

— is intended to provide corrective actions to progressively and selectively improve, step by step, the safety of all existing escalators and moving walks towards today's state of the art for safety (see Clause 5);

— enables each escalator and moving walk to be audited and safety measures to be identified and implemented in a step by step and selective fashion according to the frequency and severity of any single risk (see Table B.2);

— lists the high, medium and low risks and corrective actions which can be applied in separate steps in order to mitigate the risks (see Table B.2).

Use of this document

This document can be used as a guideline for:

a) national authorities to determine its own programme of implementation in a step by step process via a filtering process (see Annex A) in a reasonable and practicable[1] way based on the level of risk (e.g. high, medium, low) and social and economic considerations;

b) owners to follow their responsibilities according to existing regulations (e.g. use of Work Equipment Directive);

c) maintenance companies and/or inspection bodies to inform the owners on the safety level of their installations;

d) owners to upgrade the existing escalator or moving walk on a voluntary basis in accordance with c) if no regulations exist.

In making an audit of an existing escalator or moving walk installation Annex B can be used to identify the hazards and corrective actions in this document. However, where a hazardous situation is identified which is not covered in this document a separate risk assessment should be made. This risk assessment should be based on ISO 14798 [4].

The need for replacement was based on the revision of EN 115-1, which was published in 2017.

1 "Reasonable and practicable" is defined as follows: "In deciding what is reasonably practicable the seriousness of a risk to injury should be weighted against the difficulty and cost of removing or reducing that risk. Where the difficulty and costs are high, and a careful assessment of the risk shows it to be comparatively unimportant, action may not need to be taken. On the other hand where the risk is high, action should be taken at whatever cost.".

1 Scope

This document gives rules for improving the safety of existing escalators and moving walks with the aim of reaching an equivalent level of safety to that of a newly installed escalator and moving walk by the application of today's state of the art for safety.

NOTE Due to situations such as the existing machine or building designs, it might not be possible in all cases to reach today's state of the art for safety. Nevertheless, the objective is to improve the level of safety wherever possible.

This document includes the improvement of safety of existing escalators and moving walks for:

a) users;

b) maintenance and inspection personnel;

c) persons outside the escalator or moving walk (but in its immediate vicinity);

d) authorized persons.

This document is not applicable to:

1) safety during transport, installation, repairs and dismantling of escalators and moving walks;

2) spiral escalators;

3) accelerating moving walks.

However, this document can usefully be taken as a reference basis.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 115-1:2017, *Safety of escalators and moving walks — Part 1: Construction and installation*

EN 13015:2001+A1:2008, *Maintenance for lifts and escalators — Rules for maintenance instructions*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

EN ISO 12100:2010, *Safety of machinery — general principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 115-1:2017 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
authorized person
suitably trained person with authorization to access restricted areas of escalators and moving walks (e.g. machinery spaces, separate machine rooms) and to work there, for the purpose of inspection, testing and maintenance

3.2
existing escalator or moving walk
escalator or moving walk which is in service at the disposal of its owner

3.3
owner of the installation
natural or legal person who has the power of disposal of the installation and takes the responsibility for its operation and use

4 List of significant hazards

4.1 General

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this document, identified by risk assessments as significant for existing escalators and moving walks and which require action to eliminate or reduce the risk.

4.2 Significant hazards dealt with by this document

Table 1 below contains a list of significant hazards including their priority levels and relevant clauses of the present document.

Table 1 — List of significant hazards

Nr.	Hazard/hazardous situation	Priority level	Relevant clause of EN 115-2
1	Effect of harmful materials (e.g. asbestos)	H	5.1
2	Contact with moving machinery parts (e.g. driving unit, handrail drive, step or pallet) normally not accessible to the public	M	5.2.1, 5.4.1, 5.12.2, 5.13.2.1, 5.12.3.2
3	Fire inside the supporting structure and machinery spaces	M	5.2.2, 5.9
4	Slipping on steps/pallets/belt and landing areas	H	5.3.1, 5.7.1
5	Falling due to insufficient step demarcation	M	5.3.2
6	Trapping between skirting and steps	H	5.3.3, 5.5.3
7	Trapping between step and step or pallet and pallet	H	5.3.4
8	Missing steps or pallets	H	5.3.5
9	Collision between fixed and moving parts of the step/pallet/belt system	M	5.3.6
10	Uncontrolled movement or a failure to stop of the machine resulting from missing second independent main contactor	H	5.4.1, 5.4.2.1
11	Excessive speed and unintended reversal of direction	M	5.4.2.1.1, 5.4.2.1.2, 5.4.2.2
12	Effect of excessive stopping distance	L	5.4.2.1.4

Nr.	Hazard/hazardous situation	Priority level	Relevant clause of EN 115-2
13	Falling due to reduced stopping distance	H	5.4.2.1.4
14	Falling over the balustrade	M	5.5.2.1, 5.5.2.2
15	Falling resulting from sliding on the outside of the balustrade	L	5.5.2.3
16	Climbing on the outside of the balustrade or falling from the landing	H	5.5.2.3, 5.13.1.6
17	Falling due to handrail speed deviation	M	5.6.1
18	Crushing of fingers between handrail and balustrade	H	5.6.2
19	Drawing-in at handrail entry into the balustrade	H/M	5.6.3.1
20	Trapping at handrail entry (between handrail and floor)	M	5.6.3.2
21	Trapping between comb and step/pallet	H	5.7.2, 5.7.3
22	Trapping of users resulting from sagging of the step/pallet	H	5.7.4
23	Miscellaneous equipment in workers' area not related to the installation	M	5.8.1
24	Insufficient space in workers' area	H	5.8.2, 5.13.2.4, 5.13.2.5, 5.13.2.6
25	Injuries due to missing lifting equipment for heavy loads	M	5.8.3
26.1	Missing lighting in the workers' area and access to it	H	5.8.4
26.2	Inadequate lighting in the workers' area and access to it	M	5.8.4, 5.13.2.2, 5.13.2.3
27.1	Missing stop device (working area)	H	5.8.5
27.2	Inadequate stop device (working area)	L	5.8.5
28	Contact of persons with live parts – Insufficient isolation	H	5.11.1.2, 5.13.3
29	Contact of persons with live parts – Isolation failure	H	5.11.1.3, 5.11.1.4, 5.13.3
30.1	Unsafe working conditions due to missing main switch	H	5.11.2
30.2	Unsafe working conditions due to or inadequate main switch	M	5.11.2
31	Electrostatic discharge from moving components	L	5.12.1.3
32.1	Injuries due to missing stop devices for emergency situation	H	5.12.3.1
32.2	Injuries due to inadequate stop devices for emergency situation	M	5.12.3.1
32.3	Injuries due to being unable to locate the stop devices for emergency situation	H	5.12.3.1
33	Impact on bodies caused by collision with building structures (wall, roof, criss-cross arrangement)	H	5.13.1.1, 5.13.1.2, 5.13.1.3
34	Crushing due to restricted circulation areas	M	5.13.1.4
35	Crushing of persons resulting from traffic congestion on succeeding escalators or moving walks	L	5.13.1.5
36	Falling due to inadequate lighting at the landings	M	5.13.1.7

Nr.	Hazard/hazardous situation	Priority level	Relevant clause of EN 115-2
37	Missing safety signs	M	5.14
38.1	Missing devices resulting in misuse of escalators by transporting other items than persons (e.g. shopping trolleys or baggage carts)	H	5.15.1
38.2	Inadequate devices to prevent use of trolleys or baggage carts on escalators	M	5.15.1
39	Crushing due to incompatible trolleys on moving walks	L	5.15.2
Key H high, M medium, L low			

4.3 Significant hazards not dealt with by this document

— Environmental conditions including e.g. earthquake and flooding;

— electromagnetic interferences;

— shearing due to sharp edges on machinery;

— non-conformance with national building codes;

— fire in the building.

5 Safety requirements and/or protective measures

5.1 General

The following requirements and/or protective measures shall not be considered as the only possible solution. Alternatives are permitted, provided they lead to an equivalent safety level.

A risk assessment shall be made on a case by case basis to identify hazards or hazardous situations not covered in this document.

Where the requirements of this document cannot be met technically and a residual risk remains, or cannot be avoided, the level of risk shall be reduced as far as it is practicable. When residual risk remains the use of appropriate procedures such as signs, instructions and training should be considered.

Harmful materials such as asbestos in brake linings, contactor shields, cladding including machinery spaces and separate machine rooms or control cabinet locations, etc. shall be replaced by materials which ensure the same performance level.

These should be considered in relation to national requirements.

For specific requirements such as accessibility, the conditions in the building shall be assessed to determine what is practical to be applied for escalators and moving walks.

If an escalator or moving walk has been upgraded by one of the measures described in this document, the consequences to other parts of the escalator or moving walk shall be considered with special regard to EN 115-1:2017.