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Avtomatska oprema za kontrolo vstopa - Varnost pri uporabi - Zahteve in preskusne metode

Power operated pedestrian entrance control equipment - Safety in use - Requirements and test methods

Kraftbetätigte Zugangskontrolleinrichtungen - Nutzungssicherheit - Anforderungen und Prüfverfahren

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EUROPEAN STANDARD
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Power operated pedestrian entrance control equipment - Safety in use - Requirements and test methods

Kraftbetätigte Zugangskontrolleinrichtungen -
Nutzungssicherheit - Anforderungen und
Prüfverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 33.

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COMITÉ EUROPÉEN DE NORMALISATION
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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prEN 17352:2019 (E)

European foreword

This document (prEN 17352:2019) has been prepared by Technical Committee CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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Introduction

This standard is a type C standard as stated in EN ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.)

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

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

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the provisions of this type-C standard.

prEN 17352:2019 (E)**1 Scope**

This document specifies requirements and test methods for power operated pedestrian entrance control equipment such as turnstiles, swing lanes and retractable lanes. Such products may be operated electro-mechanically or electro-hydraulically. They are usually used in order to allow authorized persons to switch from one zone to another zone one at the time.

This document covers safety in use of power operated pedestrian entrance control equipment used for normal access as well as in escape routes.

This document deals with all significant hazards, hazardous situations and events relevant to power operated pedestrian entrance control equipment when they are used as intended and under conditions of misuse which are reasonably foreseeable as identified in Clause 4.

All lifetime phases of the machinery including transportation, assembly, dismantling, disabling and scrapping are considered by this standard.

This document does not apply to:

- power operated pedestrian doors according to EN 16005 and EN 16361;
- external and internal pedestrian doors according to EN 14351-1 and EN 14351-2;
- mechanical turnstiles with electric/electronic unlocking system;
- vertically moving power operated pedestrian entrance control equipment;
- power operated pedestrian entrance control equipment used in industrial processes;
- power operated pedestrian entrance control equipment for people with special needs;
- platform doors for subway and railway.

This document does not deal with any specific requirements on noise emitted by a power operated pedestrian entrance control equipment as their noise emission is not considered to be a relevant hazard.

For power operated pedestrian entrance control equipment used in sports grounds and spectator facilities additional national requirements may apply.

This document is not applicable to power operated pedestrian entrance control equipment manufactured before the date of publication of the standard.

In general, this standard does not take into account:

- children playing with the equipment;
- the use of the equipment by children younger than 8 years without supervision;

It is recognized that very vulnerable people may have needs beyond the level addressed in this standard.

NOTE Vulnerable people are persons having reduced physical, sensory or mental capabilities (e.g. partially disabled, elderly having some reduction in their physical and mental capabilities), or lack of experience and knowledge (e.g. children between 8 years and 14 years).

When the term “power operated pedestrian entrance control equipment” is used throughout the document it identifies all the possible type and variation of the products covered by the scope of this document.

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 349, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body*

EN 12150-1, *Glass in building - Thermally toughened soda lime silicate safety glass - Part 1: Definition and description*

EN 12978, *Industrial, commercial and garage doors and gates — Safety devices for power operated doors and gates — Requirements and test methods*

EN 13637, *Building hardware - Electrically controlled exit systems for use on escape routes - Requirements and test methods*

EN 60335-1, *Safety of household and similar electrical appliances - Part 1: General requirements (IEC 60335-1)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

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

EN ISO 179-1, *Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test (ISO 179-1)*

EN ISO 4413, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413)*

EN ISO 4414, *Pneumatic fluid power - General rules and safety requirements for systems and their components (ISO 4414)*

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

EN ISO 12543-1, *Glass in building - Laminated glass and laminated safety glass - Part 1: Definitions and description of component parts (ISO 12543-1)*

EN ISO 12543-2, *Glass in building - Laminated glass and laminated safety glass - Part 2: Laminated safety glass (ISO 12543-2)*

EN ISO 13849-1, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1)*

EN ISO 13857, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857)*

EN ISO 14120, *Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120)*

3 Terms and definitions

For the purposes of this document, the terms of EN 12100 and the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

power operated pedestrian entrance control equipment

equipment operated by an external energy supply (e.g. electrical) instead of manual or stored mechanical energy that allows persons with granted access to switch from one zone to another zone one at the time

Note 1 to entry: often activation of the movement of the equipment is done with a badge, ticket, biometrics, etc.

Note 2 to entry: It includes drive, bars or leaves, protective devices and any components needed for its safe operation

3.2

vertically rotating turnstile

power operated pedestrian entrance control equipment rotated for an operating cycle around a vertical axis

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Note 1 to entry: There is a wide range of design variations in this product group. See examples in Annex F.1 (Figures F.1 – F.2).

3.3

turnstile rotating in an angle

power operated pedestrian entrance control equipment with one or more elements (e.g. straight bars, curved bars, glass elements etc.) rotated for an operating cycle in an angle of the horizontal axis

Note 1 to entry: There is a wide range of design variations in this product group. See examples in Annex F.1 (Figure F.3).

3.4

swing lane

power operated pedestrian entrance control equipment with elements (e.g. straight bars, curved bars, glass elements etc.) rotated for an operating cycle around an axis

Note 1 to entry: There is a wide range of design variations in this product group. See examples in Annex F.2 (Figure F.4).

3.5

retractable lane

power operated pedestrian entrance control equipment with sliding elements moved for an operating cycle

Note 1 to entry: There is a wide range of design variations in this product group. See examples in Annex F.3 (Figure F.5).

3.6**operating cycle**

movement of the power operated pedestrian entrance control equipment to allow a person to go through. A cycle is one passage for turnstiles and a complete opening and closing movement for swing lanes and retractable lanes

3.7**leaf**

moving element of the power operated pedestrian entrance control equipment; it can be e.g. a bar, a number of bars fixed to a vertical post, a grid, a panel, etc

3.8**main closing edge**

edge of a leaf whose distance from the parallel opposing edge or surface determines the usable aperture

3.9**opposing closing edge**

edge formed by the main closing edge of the counter closing leaf, fixed edge or surface against which the leaf is moving (e.g. frame, wall, fixed support, etc.)

3.10**secondary closing edge**

any other closing edge of the leaf which is not the main closing edge or the opposing closing edge

3.11**drive**

motor and other components that control the movement of the moving parts

Note 1 to entry: Examples of components are gears, controls, brakes, components for power transmission from the drive to the leaf, entrapment protection systems

3.12**drive unit**

power operated mechanism, including controls, for moving, positioning and retaining the door leaf

Note 1 to entry: Drive units include controls to move the door leaf, except entrapment protection systems.

4 List of significant hazards**4.1 General**

This clause contains all the significant hazards, hazardous situations and events identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

A hazardous point is considered to exist up to a height of 2,5 m above the floor or any other permanent access level.

NOTE As the main function of a power operated pedestrian entrance control equipment is to allow people to switch from one zone into another, the actual movement of the equipment can produce hazardous situations for users and persons in the vicinity which by nature cannot all be avoided by design.

Annex H is giving the relationship between the hazards listed in this clause, the requirements given in Clause 5 and the test methods described in Clause 6.

prEN 17352:2019 (E)**4.2 Hazards caused by crushing, shearing and drawing-in**

A hazard exists:

- a) for vertically rotating turnstiles, turnstiles rotating in an angle, swing lanes and retractable lanes
 - between the main closing edge of any moving element and an opposing edge, and between secondary closing edges of moving elements and opposing edges;
 - at gaps other than main closing gaps which vary in size and are accessible during the movement;
 - between elements passing each other or between moving elements and fixed parts in the surrounding;
- b) for vertically rotating turnstiles, turnstiles rotating in an angle and swing lanes
 - between moving element and obstacles within the movement area.

4.3 Hazards caused by impact and trapping

This hazard is applicable to power operated pedestrian entrance equipment.

An impact hazard exists:

- between the leaf and a person going through the power operated pedestrian entrance equipment;
- and for turnstiles between the next person going through the turnstile and the reflected stopped leaf.

The hazard of being trapped by the power operated pedestrian entrance control equipment exists between the moving leaves edges or between the main closing edge and the opposing closing edge such that part of the body is held by the moving element preventing release.

4.4 Hazards caused by source of energy and power controls

This hazard is applicable to power operated pedestrian entrance equipment.

The source of energy used by the drive or drive unit for power operation can create hazards such as:

- a) electric shock;
- b) fire from overheating;
- c) bursting, due to hydraulic or pneumatic over pressure;
- d) failure of electrical, pneumatic and hydraulic equipment;
- e) unsafe restart after unintended power supply interruption.

4.5 Hazards caused by inadequate functional safety

This hazard is applicable to power operated pedestrian entrance equipment.

Inadequate functional safety of the protective equipment and of the safety related parts of the control system (SRP/CS) can lead to hazardous movement of the power operated pedestrian entrance control equipment.

4.6 Hazards caused by manual operation

This hazard is applicable to power operated pedestrian entrance equipment.

When manual operation is foreseen, a power operated pedestrian entrance control equipment shall be moved manually (e.g. in case of power supply failure), hazardous situations exist when:

- power operation can occur during manual operation;
- the necessary manual effort is not related to the capability of the human body;
- speed during manual operation can become uncontrolled.

4.7 Hazards caused by loss of stability

This hazard is applicable to power operated pedestrian entrance equipment.

Hazards exist if the power operated pedestrian entrance control equipment and its components, including its fixings for attachment to the building and fixing means of the moving elements, are damaged or permanently deformed (e.g. by climbing over).

Hazards exist if power operated pedestrian entrance control equipment is subject to elastic deformations under operational forces or torques.

4.8 Hazards caused by glazing material

This hazard is applicable to power operated pedestrian entrance equipment.

Hazards exist if glazing elements in power operated pedestrian entrance equipment do not remain secured and if they produce sharp splinters, cutting edges or other dangerous parts in case of breaking.

Hazards also exist if transparent elements are not properly visible.

4.9 Hazards caused by modification of settings

This hazard is applicable to power operated pedestrian entrance equipment.

Hazards exist if settings (e.g. for limiting forces, or options for fitted protective devices, or speed) can easily be modified.

4.10 Hazards caused by imprisonment

This hazard is applicable to power operated pedestrian entrance equipment.

Hazards exist if a person can be imprisoned between two power operated pedestrian entrance control equipment and in addition for turnstiles also between two leaves and the surrounding part of the equipment.

4.11 Hazards caused by shape of the equipment

This hazard is applicable to power operated pedestrian entrance control equipment.

Shearing, cutting or abrasion hazards exist if a person can get in contact with rough surfaces or sharp edges of power operated pedestrian entrance control equipment.

5 Safety requirements and/or protective/risk reduction measures

5.1 General

Power operated pedestrian entrance control equipment shall comply with the safety requirements and/or protective/risk reduction measures of this clause. In addition, the machine shall be designed according to the principles of EN ISO 12100 for relevant but not significant hazards which are not dealt with by this document.

Safety requirements and/or protective/risk reduction measures shall be implemented up to a height of 2,5 m above the floor or any other permanent access level.

Power operated pedestrian entrance control equipment shall be designed in such a way that they can be installed, used, inspected, maintained and dismantled safely.

NOTE When used in this standard, the term “manufacturer” is intended as defined in the Machinery Directive.

5.2 Crushing, shearing and drawing-in

5.2.1 General

Hazards listed in 4.2 shall be avoided by design and construction. When this cannot be achieved they shall be safeguarded.

This can be achieved for 4.2 a) by one or a combination of the following measures:

- creating safety distances (see 5.2.2);
- installing guards such as enclosures, covers, enclosing guards, fixed protection leaves (see 5.2.3);
- low energy mode of operation (see 5.2.4);
- protecting the movement area with Electro-Sensitive Protective Equipment (ESPE) (see 5.2.5);
- limiting the forces generated by the leaf when meeting a person or an obstacle (see 5.7).

This can be achieved for 4.2 b) by one or a combination of the following measures:

- low energy mode of operation (see 5.2.3);
- limiting the forces generated by the leaf when meeting a person or an obstacle (see 5.7);
- protecting the movement area with Electro-Sensitive Protective Equipment (ESPE) (see 5.2.5).

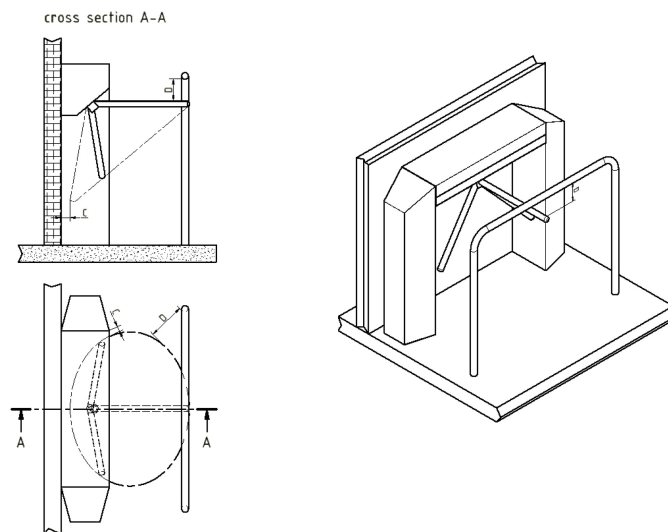
Low energy mode of operation by itself cannot be used to protect shearing hazard.

Non-hazardous movement, if any, of the leaves needs not be safeguarded (i.e. opening movement of retractable lanes).

5.2.2 Safety distances

Crushing, shearing and drawing-in points shall be avoided by design and construction by achieving safe gaps and distances, which are related to the endangered parts of the human body, in accordance with EN ISO 13857 and EN 349.

When safe gaps and distances are dependent on the installation and the site conditions, the installation instructions shall precisely describe the method of ensuring that the safe gaps and distances are effective after the installation is completed.

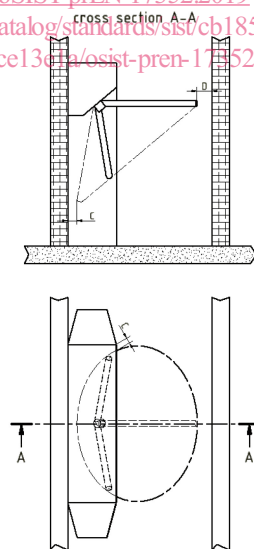


Key

Letter	Measure (mm)
C	≥ 25
D	≥ 50

Figure 1 — Turnstile rotating in an angle (with track divider)

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Key

Letter	Measure (mm)
C	≥ 25
D	≥ 50

Figure 2 — Turnstile rotating in an angle