

SLOVENSKI STANDARD

oSIST prEN 16005:2021

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Avtomatska vrata za prehod ljudi - Varnost pri uporabi - Zahteve in preskusne metode

Power operated pedestrian doorsets - Safety in use - Requirements and test methods

Kraftbetätigte Türen - Nutzungssicherheit - Anforderungen und Prüfverfahren

Blocs-portes motorisés pour piétons - Sécurité d'utilisation - Exigences et méthodes d'essai

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**Power operated pedestrian doorsets - Safety in use -
Requirements and test methods**

Blocs-portes motorisés pour piétons - Sécurité
d'utilisation - Exigences et méthodes d'essai

Kraftbetätigte Türen - 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
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 16005:2020) 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 will supersede EN 16005:2012.

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

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

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Introduction

This document is a type C standard as stated in EN ISO 12100:2010.

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.

1 Scope

This document specifies requirements regarding design and test methods for external and internal power operated pedestrian doorsets. Such doorset constructions may be operated electro-mechanically, electro-hydraulically or pneumatically.

This document covers safety in use of power operated pedestrian doorsets used for normal access as well as in emergency and escape routes and as fire resistance and/or smoke control doorsets.

The type of doorsets covered include power operated pedestrian sliding, swing and revolving doorsets, including balanced doorsets and folding doorsets with a horizontally moving leaf.

Power operated pass doorsets for which the main intended use is giving safe access for persons incorporated in other doors are covered by the scope of this document.

This document deals with all significant hazards, hazardous situations and events relevant to power operated doorsets when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Annex J).

All lifetime phases of the power operated pedestrian doorsets including transportation, assembly, dismantling, disabling and scrapping are considered by this document.

This document does not apply to:

- vertically moving doors;
- doors on lifts;
- doors on vehicles;
- power operated doors or gates mainly intended for vehicular traffic or access for goods;
- doors used in industrial processes;
- partition walls;
- doors outside the reach of people (such as crane gantry fences);
- turnstiles;
- platform doors.

This document does not cover special functions of doorsets, such as security in banks, airports, etc. or fire compartments, where conformity of the specific function with requirements of the application shall have the preference.

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

NOTE Noise emission of power operated pedestrian doorsets is not a significant hazard for the users of these products. It is a comfort aspect.

This document is not applicable to power operated pedestrian doorsets manufactured before the date of its publication.

This document does not cover operation in environments where there is a risk of explosion.

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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 ISO 13854:2019, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

EN ISO 13856-2:2013, *Safety of machinery — Pressure-sensitive protective devices — Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2:2013)*

EN 12150-1:2015+A1:2019, *Glass in building — Thermally toughened soda lime silicate safety glass — Part 1: Definition and description*

EN 12433-1:1999, *Industrial, commercial and garage doors and gates — Terminology — Part 1: Types of doors*

EN 12433-2:1999, *Industrial, commercial and garage doors and gates — Terminology — Part 2: Parts of doors*

EN 12519:2018, *Windows and pedestrian doors — Terminology*

EN 12978:2003+A1:2009, *Industrial, commercial and garage doors and gates — Safety devices for power operated doors and gates — Requirements and test methods*

EN 14351-1:2006+A2:2016, *Windows and doors — Product standard, performance characteristics — Part 1: Windows and external pedestrian doorsets*

EN 60335-2-103:2015, *Household and similar electrical appliances — Safety — Part 2-103: Particular requirements for drives for gates, doors and windows*

EN 60529:1991,¹ *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 ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010)*

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

EN ISO 12543-1:2011, *Glass in building — Laminated glass and laminated safety glass — Part 1: Definitions and description of component parts (ISO 12543-1:2011)*

EN ISO 12543-2:2011, *Glass in building — Laminated glass and laminated safety glass — Part 2: Laminated safety glass (ISO 12543-2:2011)*

¹ As impacted by EN 60529:1991/A1:2000 and EN 60529:1991/A2:2013.

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850:2015)*

EN ISO 13856-2:2013, *Safety of machinery — Pressure-sensitive protective devices — Part 2: General principles for the design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2:2013)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 12433-1:1999, EN 12433-2:1999, EN 12519:2018 and EN 14351-1:2006+A2:2016 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 <https://www.iso.org/obp>

3.1

power operated pedestrian doorset

doorset for pedestrian passage only with one or more leaves that is moved, at least in one direction, by an external energy supply (e.g. electrically) instead of manual or stored mechanical energy

Note 1 to entry: It includes drive, leaves, protective equipment and any components needed for its safe operation.

3.2

revolving doorset

power operated pedestrian doorset with one or more leaves connected to a common vertical axis of rotation within an enclosure

Note 1 to entry: There is a wide range of design variations in this product group. See Figure 1 for examples.

Note 2 to entry: Figure 1 refers to any rotation. The shown anticlockwise rotation is only the more common one.

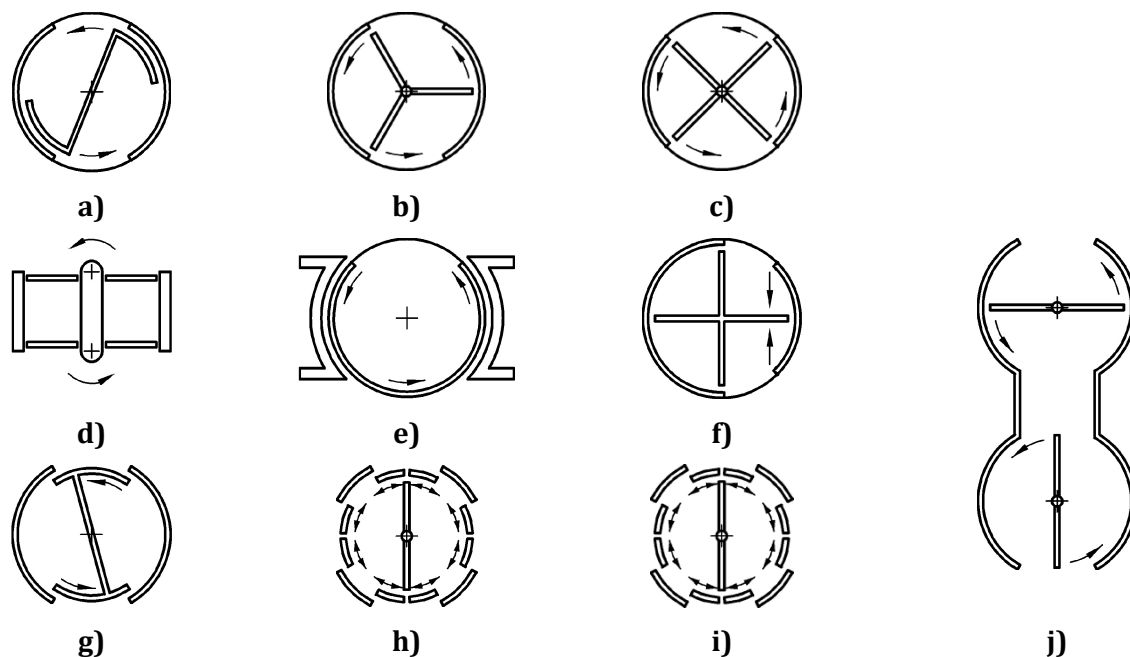


Figure 1 — Revolving doorsets

3.3 balanced doorset

power operated pedestrian doorset with a pivot point allowing the leaf/leaves to slide sideways whilst simultaneously rotating

3.4 swing doorset

power operated pedestrian doorset with a leaf or leaves hinged or pivoted at one side

3.5 folding doorset

doorset with two or more leaves hinged together with one side of the leaf hinged or pivoted at the doorset jamb

3.6 sliding doorset

power operated pedestrian doorset with one or more leaves, moving horizontally in its guides parallel to the adjacent structure

3.7 low energy power operated doorset

power operated pedestrian doorset with a limited kinetic energy

3.8 break-out

system whereby doorset leaves and side screens can be pushed open manually in the direction of escape

3.9**monitoring system**

system that checks and verifies the correct functioning of another system and in the event of any malfunctioning of that system switches the power operated doorset to a selected safe mode of operation

3.10**activator**

means by which the power operation of the doorset is started

3.11**cycle**

movement consisting of an opening and closing movement

Note 1 to entry: For sliding and swing doorsets, a cycle consists of a complete opening and closing movement. For revolving doorsets, a cycle means one passage.

3.12**lintel**

horizontal structural member spanning an opening at its head to carry a load above the opening

3.13**side screen**

side wall fixed or with a break out function that can be part of a power operated pedestrian doorset

3.14**track**

component or assembly designed to guide or support a doorset leaf when it moves

3.15**leading mullion**

doorset mullion at the first point at which a leaf of a power operated revolving doorset passes the curved screens

Note 1 to entry: See Annex A.

3.16**trailing mullion**

doorset mullion at the last point at which a leaf of a power operated revolving doorset passes the curved screens

Note 1 to entry: See Annex A.

3.17**fire doorset**

generic term used in this document for fire resistance doorsets and/or smoke control doorsets

3.18**main closing edge**

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

[SOURCE: EN 12433-2:1999, definition 3.1.1]

prEN 16005:2020 (E)**3.19****opposing closing edge**

edge formed by the main closing edge of a counter closing leaf, a fixed edge or a surface against which the doorset leaf is moving (e.g. frame, floor)

[SOURCE: EN 12433-2:1999, definition 3.1.2]

3.20**secondary closing edge**

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

[SOURCE: EN 12433-2:1999, definition 3.1.3]

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.

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

4.2 Hazards caused by inadequate functional safety

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 door.

4.3 Hazards caused by source of energy and power controls

The source of energy used by the drive 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, including safety devices such as protective equipment and control systems;
- e) unsafe restart after unintended power supply interruption.

4.4 Hazards caused by materials and shape of the leaves**4.4.1 Materials**

Hazards can exist if transparent elements in leaves do not remain secured and if they produce sharp splinters, cutting edges or other dangerous parts in case of breaking.

4.4.2 Shape of leaves

Hazards can exist if sharp edges of the door can be touched by persons using or in vicinity of the door.

Protruding parts of the door leaf may cause injuries.

4.5 Hazards caused by uncontrolled movement of the leaves

Hazards can exist if the door leaves do not safely stop at their travel terminal position.

4.6 Hazards caused by manual operation

Elements for manual operation may cause injuries.

Hazards can exist if the force to open and/or close the door is too high.

4.7 Hazards caused by activation of the movement of the leaf

Inappropriate or incorrect activation of the door leaf can create hazards.

4.8 Hazards which can cause crushing, impact, shearing and drawing-in

A hazard exists:

- between the main closing edge of any doorset leaf and an opposing edge, and between secondary closing edges and opposing edges;
- between closing edges and obstacles within the closing area of the doorset leaf;
- between doorset leaves passing each other;
- between doorset leaves and the perimeter of openings and fixed parts in the vicinity;
- at parts of the doorset leaf which protrude;
- at moving parts of the drive which are capable of causing injury;
- at gaps other than main closing gaps which vary in size and are accessible during the leaf movement.

The hazard can be present during the initial impact, the period after the impact and persist because a person can be held between the leaf and the surrounding fixed parts.

4.9 Hazards related to peripheral speed of revolving doors

Excessive peripheral speed of revolving doors can create hazards.

4.10 Hazards related to lighting of swept area of revolving doors

Insufficient illumination of swept area of revolving doors can create hazards.

4.11 Hazards related to entrapment in the passage area of revolving doors

Hazards can exist if it is necessary a high force to manually open or close a revolving door.

4.12 Hazards related to the use of the door in escape routes and emergency exits

Additional hazards for doors used in escape routes and emergency exits exist related to operating mode selectors, if any, and the capability of the door to open in emergency situations.