

MASINKASUTUSEGA UKSED. KASUTUSOHUTUS.
NÕUDED JA KATSEMEETODID

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 16005:2023 sisaldab Euroopa standardi EN 16005:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.12.2023.</p> <p>Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 16005:2023 consists of the English text of the European standard EN 16005:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 13.12.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
---	---

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 91.060.50

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis-ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis-ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation: Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

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 European Standard was approved by CEN on 20 November 2023.

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.

CEN members are the national standards bodies of 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, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	5
Introduction	6
1 Scope.....	7
2 Normative references.....	8
3 Terms and definitions	9
4 List of significant hazards	12
4.1 General.....	12
4.2 Hazards caused by inadequate functional safety	12
4.3 Hazards caused by source of energy and power controls	12
4.4 Hazards caused by materials and shape of the door leaves	12
4.4.1 Materials	12
4.4.2 Shape of door leaves	12
4.5 Hazards caused by uncontrolled movement of the door leaves	12
4.6 Hazards caused by manual operation	12
4.7 Hazards caused by activation of the movement of the door leaf	12
4.8 Hazards which can cause crushing, impact, shearing and drawing-in.....	13
4.9 Hazards related to peripheral speed of revolving doorsets.....	13
4.10 Hazards related to lighting of swept area of revolving doorsets.....	13
4.11 Hazards related to entrapment in the passage area of revolving doorsets.....	13
4.12 Hazards related to the use of the doorsets in escape routes and emergency exits	13
5 Safety requirements and/or protective/risk reduction measures	13
5.1 General.....	13
5.2 Functional safety	14
5.3 Source of energy and power controls	14
5.3.1 General.....	14
5.3.2 Emergency stop function for revolving doorsets	14
5.4 Material and shape of door leaves.....	15
5.4.1 Materials	15
5.4.2 Shape of door leaves	15
5.5 Movement of the door leaves.....	15
5.6 Manual operation.....	15
5.7 Activation of the movement of the door leaf.....	15
5.7.1 Automatic activation.....	15
5.7.2 Manual activation devices	16
5.7.3 Remote activation.....	16
5.8 Crushing, impact, shearing and drawing-in	16
5.8.1 General.....	16
5.8.2 Guards.....	17
5.8.3 Barriers	17
5.8.4 Power operated sliding doorsets	17
5.8.5 Power-operated swing doorsets	20
5.8.6 Power operated balanced doorsets	21
5.8.7 Power operated folding doorsets.....	21
5.8.8 Power operated revolving doorsets.....	22

5.8.9	Low energy movement	24
5.8.10	Limitation of impact forces	25
5.8.11	Protective device(s)	26
5.8.12	Safety distances	27
5.9	Additional requirements for doorsets in escape routes and emergency exits	27
5.9.1	Operating mode selection	27
5.9.2	Power operated doorsets with break-out function	27
5.9.3	Power operated sliding and folding doorsets without a break-out function	28
5.9.4	Power operated swing doorsets without a break-out function	28
5.9.5	Power operated revolving doors	28
5.10	Durability	30
6	Verification of the safety requirements and/or protective/risk reduction measures	30
6.1	General	30
6.1.1	General	30
6.1.2	Dynamic force measuring equipment	30
6.1.3	Field dynamic force measuring equipment	31
6.2	Functional safety	31
6.3	Source of energy and power controls	31
6.3.1	General	31
6.3.2	Emergency stop function for revolving doorsets	31
6.4	Material and shape of door leaves	31
6.4.1	Materials	31
6.4.2	Shape of door leaves	31
6.5	Movement of the door leaves	31
6.6	Manual operation	31
6.7	Activation of the movement of the door leaf	32
6.8	Crushing, impact, shearing and drawing-in	32
6.8.1	General	32
6.8.2	Guards	32
6.8.3	Barriers	32
6.8.4	Power operated sliding doorsets	32
6.8.5	Power-operated swing doorsets	32
6.8.6	Power operated balanced doorsets	32
6.8.7	Power operated folding doorsets	32
6.8.8	Power operated revolving doorsets	32
6.8.9	Low energy movement	32
6.8.10	Limitation of impact forces	32
6.8.11	Protective device(s)	32
6.8.12	Safety distances	33
6.9	Doorsets in escape routes and emergency exits	33
6.10	Durability test	33
6.10.1	General	33
6.10.2	Testing at ambient temperature	33
6.10.3	Testing at extreme temperature	33
6.10.4	Additional test for doorsets in escape routes and emergency exits with a break-out facility	33
6.10.5	Additional test for doorsets in escape routes and emergency exits without a break-out facility	34
7	Information for use	34
7.1	General	34
7.2	Instruction handbook	34
7.3	Marking	35

Annex A (informative) Illustration of some essential terms for various types of doorsets.....	37
Annex B (normative) Measuring points.....	38
Annex C (normative) Tests for protective device(s)	41
Annex D (informative) Graphical symbol for disabled or handicapped persons	52
Annex E (informative) Emergency break-out sign.....	53
Annex F (normative) Low energy doorsets	54
F.1 Speed settings for low energy power operated swing doorsets	54
F.2 Speed settings for low energy power operated sliding doorsets	55
Annex G (normative) Safeguarding of power operated swing doorsets.....	57
Annex H (informative) Danger points at revolving doorsets.....	60
Annex I (informative) Maintenance documentation.....	63
Annex ZA (informative) Relationship between this European standard and the Essential Requirements of Directive 2006/42/EC aimed to be covered	64
Bibliography	66

European foreword

This document (EN 16005:2023) 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 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 June 2023, and conflicting national standards shall be withdrawn at the latest by June 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 16005:2012.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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

Compared with EN 16005:2012, the following changes have been made:

- scope revised;
- normative references updated;
- Clause 4 added; following clauses renumbered accordingly;
- Clause 5 (former Clause 4) revised;
- Clause 6 (former Clause 5) revised;
- Annex C revised;
- Annex J deleted;
- Annex ZA revised;
- Bibliography revised;
- various figures updated and revised;
- editorially revised.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

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 power operated pedestrian doorsets. Examples of how the doorset constructions may be operated include: electro-mechanically, electro-hydraulically, electro-magnetically 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 door leaf.

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.

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;
- traffic barriers.

This document does not cover special functions of doorsets, such as security in banks, airports, etc. or fire and/or smoke compartmentation, where conformity of the specific function with requirements of the application is 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.

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 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 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 IEC 60664-1:2020,² *Insulation coordination for equipment within low-voltage supply systems — Part 1: Principles, requirements and tests (IEC 60664-1:2020)*

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 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 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 the design and testing of pressure-sensitive edges and pressure-sensitive bars (ISO 13856-2:2013)*

¹ As impacted by EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/A2:2013/AC:2019-02 and EN 60529:1991/AC:2016-12.

² As impacted by EN IEC 60664-1:2020/AC:2020-12.