SLOVENSKI STANDARD
SIST EN 16005:2013

01-marec-2013

Avtomatska električna vhodna vrata - Varnost pri uporabi avtomatskih vhodnih vrat - Zahteve in preskusne metode

Powered pedestrian doors - Safety in use of power pedestrian doors - Requirements and test methods

Kraftbetätigte Türen - Nutzungssicherheit an kraftbetätigten Türen - Anforderungen und Prüfverfahren

Portes motorisées pour piétons - Utilisation sûre des portes motorisées pour piétons - Exigences et méthodes d'essai

Ta slovenski standard je istoveten z: **EN 16005:2012**

ICS:

91.060.50	Vrata in okna	Doors and windows
97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

SIST EN 16005:2013 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16005

October 2012

ICS 91.060.50

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 11 August 2012.

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Ref. No. EN 16005:2012: E

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Foreword

This document (EN 16005:2012) 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of an identical text or by endorsement, at the latest by April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

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

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.

This document is a supporting standard of the relevant product standard(s) for power operated pedestrian doorsets with or without fire resistance or smoke control characteristics.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

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

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 provisions of this type 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.

1 Scope

1.1 General

This European Standard 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 European Standard covers safety in use of power operated pedestrian doorsets used for normal access as well as in 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 incorporated in other doorsets for which the main intended use is giving safe access for persons are covered by the scope of this European Standard.

This European Standard 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).

1.2 Exclusions

This European Standard 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);

— traffic barriers;

— turnstiles;

— platform doors.

This European Standard 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 European Standard does not cover operation in environments where the electromagnetic disturbances are outside the range of those specified in EN 61000-6-3.

This European Standard does not cover the radio part of operating devices of doorsets. If a radio-operating device is used, the relevant ETSI standards should be applied in addition.

This European Standard does not contain any specific requirement regarding noise emitted by a power operated doorset in relation to the Machinery Directive as it is not considered to be a significant hazard.

This European Standard is not applicable to power operated pedestrian doorsets in use before the date of publication of this document by CEN.

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 1760-1, *Safety of machinery — Pressure sensitive protective devices — Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors*

EN 1760-2, *Safety of machinery — Pressure sensitive protective devices — Part 2: General principles for the design and testing of pressure sensitive edges and pressure sensitive bars*

EN 12150-1, *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 12519:2004, *Windows and pedestrian doors — Terminology*

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

EN 14351-1:2006+A1:2010, *Windows and doors — Product standard, performance characteristics — Part 1: Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics*

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

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

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, *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 13850, *Safety of machinery — Emergency stop — Principles for design (ISO 13850)*

EN ISO 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010, EN 12433-1:1999 (definitions from 2.1 to 3.11), EN 12433-2:1999, EN 12519:2004 and EN 14351-1:2006+A1:2010 and the following apply.

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 devices 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.

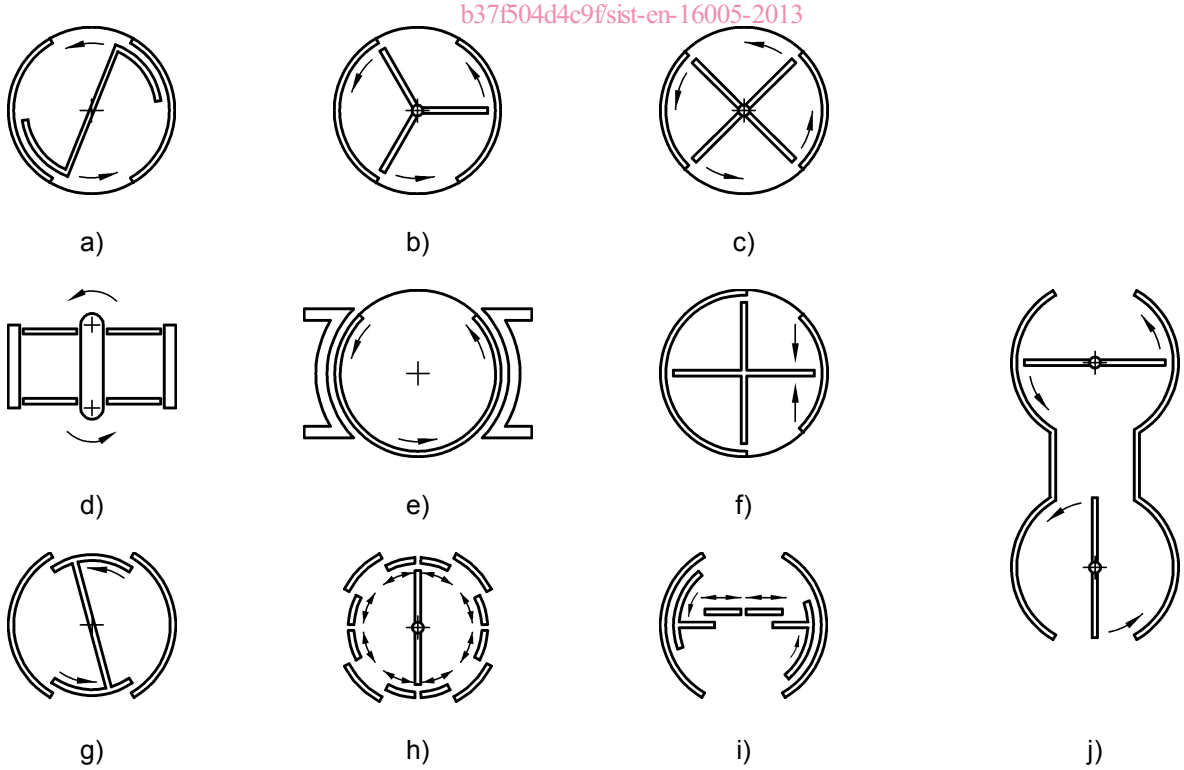

Figure 1 — Revolving doorsets

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 which is 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 European Standard for fire resistance doorsets and/or smoke control doorsets

Note 1 to entry: For a complete definition of Fire Resisting Doorset and Smoke Control Doorset see EN 14600.

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]

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 Safety requirements and protective measures

4.1 General

Power operated pedestrian doorsets shall comply with the safety requirements and/or protective 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.

Power operated pedestrian doorsets as specified in this European Standard, including conversion of manual doorsets to power operation, shall be designed, constructed, installed, operated and properly maintained to meet the requirements of this European Standard.

Warning signs shall be used to draw the users' attention to residual risks, if any.

Power operated pedestrian doorsets shall be designed and installed in such a way that they do not have any sharp edges that could result in injuries due to cuts or grazes.

Power operated pedestrian doorsets 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.

4.2 Information for use

4.2.1 General

The manufacturer shall provide with the machine an instruction handbook in accordance with EN ISO 12100:2010, 6.4. In particular, the following shall be included.

The manufacturer shall provide information on operation, maintenance and inspection. Documents with instructions on how to correctly install and dismantle the power operated pedestrian doorset shall be provided where appropriate.

Particular importance is attached to the description of danger points, the appropriate protective devices and residual risks.

All documentation relevant to the doorset, the installation, the maintenance requirements and any incorporated diagrams, shall be legible and written in a language acceptable in the country in which the product is to be installed.

Installation instructions to be used solely by the professional installer and which are not intended to be handed over to the owner, may be written in any official language used in Europe and agreed upon between manufacturer and purchaser.

The documentation shall include all the necessary warning, advisory or cautionary notices.

All symbols and diagrams incorporated into the documentation shall be in accordance with relevant European Standards.

The installation instructions shall detail all operations to be carried out to safely install or dismantle the doorset and shall clearly state when the specified procedure can be adequately completed by non-professionals. The installation instruction shall specify all verifications needed after installation of the doorset.

Proper operating instructions including routine maintenance instructions shall be provided to the final user after installation/upgrading of the doorset.

User instructions shall at least include the following, as far as applicable:

a) correct methods for operating the doorset;

b) operating conditions: e.g. operating hours per day, automatic/manual operation, indication of the operating mode(s);

c) explanation of the warning signs of the doorset;

d) information about the safe use of manual emergency and/or manual release;

e) range of intended environmental conditions (e.g. temperature, relative humidity, electromagnetic fields, and when applicable, warning against use in windy conditions);

f) restrictions of use.

Details of safety functions, list and location of protective devices shall also be provided.

The documentation shall also contain information on prohibited use such as dashing through a closing doorset.

Routine maintenance instructions shall highlight that to ensure safe operation, long term reliability and working efficiency, a power operated pedestrian doorset (including protective devices and safety systems) shall be regularly maintained according to the manufacturer's specification. They shall also detail frequency of maintenance to be carried out (recommended frequency for checking the correct operation of safety function and devices is, at least, once a year) and give simple general instructions for those that can be

undertaken by the owner without any specific competence, highlighting all other maintenance is to be carried out by professionals. The maintenance instructions shall inform the owner about the importance of recording any maintenance operation. Annex I describes the log book to be used.

4.2.2 Marking

The following information shall be included, as a minimum, in the rating plate of the machine:

a) business name and full address of the manufacturer and, where applicable, his authorised representative;

b) designation of the machinery;

c) mandatory marking[1)];

d) designation of series or type;

e) serial number, if any;

f) the year of construction, that is the year in which the manufacturing process was completed.

Marking shall be visible, legible and indelible.

4.3 Drive

4.3.1 General

The drive shall be constructed in such a way that it will move and stop the leaf (leaves) in a safe manner under intended conditions of use and reasonably foreseeable misuse. It shall provide connection facilities for all relevant start, stop and protective devices.

Electrical drives shall fulfil the requirements of EN 60335-2-103 for electrical safety.

4.3.2 Switching off the drive

When mains power of the drive is deactivated, either by the user or by a leaf travel-limiting device or by the interruption of the power supply, the leaf movement shall stop or reach a pre-determined safe position after one or more cycles and stop without endangering persons. A low-energy power operation mode complying with 4.6.4 is considered safe for persons. The pre-determined safety position can be reached using any kind of stored energy, e.g. batteries, mechanical, hydraulic, etc. The leaf shall remain stationary until the cause of deactivation has been eliminated or the power supply is restored.

In case of failure or interruption of the power supply during movement of the doorset, restart shall not lead to a hazardous situation.

NOTE This might not apply to fire doorsets and doorsets in emergency and escape routes as national regulations for these doorset types might differ.

4.3.3 Electrical equipment

Doorsets with electrical drives shall be equipped with a main switch or plug-in system with which all mains poles can be switched off. A main switch is not necessary if the electrical drive unit is connected via a plug-in system. The means of disconnection shall be designed so that it can be safeguarded against unintentional

1) For machines and their related products intended to be put on the market in the EEA, the mandatory marking is the CE marking as defined in the applicable European Directive(s), e.g. Machinery, Low voltage, Explosive Atmosphere, Gas appliances.

and unauthorised reactivation. If this is not possible, the means of disconnection shall be visible from the doorset.

4.3.4 Hydraulic drives

Hydraulic drives shall meet the requirements of EN ISO 4413.

4.3.5 Pneumatic drives

Pneumatic drives shall meet the requirements of EN ISO 4414.

4.4 Doorset

4.4.1 General

Safety related parts of the control system shall comply with EN ISO 13849-1 Performance Level “c”. Safety related parts of the control system used for escape route functionality shall comply with EN ISO 13849-1 Performance Level “d”.

4.4.2 Materials

There shall be no sharp edges and glazing shall not form sharp splinters if broken.

Toughened glass in accordance with EN 12150-1 and laminated glass in accordance with EN ISO 12543-1 and EN ISO 12543-2 are examples of suitable glazing materials. Plain float glass (silica-based glass) and wired glass are not suitable for this application due to the risk of serious injury upon breaking.

Transparent leaves or leaf surfaces shall be clearly recognisable, e.g. by permanent marking, suitable labels or by using coloured materials.

Measures shall be taken to prevent unintentional disengagement of components or parts during use. The deflection of doorset leaves or other parts due to forces or pressure occurring either during normal use or during foreseeable misuse shall not cause permanent deformations or create any risk of derailment.

4.4.3 Shape of leaves

Sharp edges that may cause injuries due to cutting or grazing shall be avoided. Parts projecting from or devices such as a letter box incorporated into the leaf shall not create potential hazards (e.g. drawing-in, shearing).

If power operated glass doorset leaves are not totally framed, (e.g. glazing is only supported at the top and bottom), there shall be no glass to hard materials contact during the operation of the doorset.

4.4.4 Leaf travel limiting device

The doorset leaf shall be stopped automatically at its terminal travel position by means of limiting devices or other means e.g. mechanical, electronic or electrical devices.

4.4.5 Manual operation

If the doorset can be operated manually the elements for manual operation, e.g. handles, grips, and grip plates, shall not constitute pinch, shear and drawing-in hazards in conjunction with fixed or movable elements in the immediate vicinity. It shall be possible to open or close the doorset leaf or leaves by means of a force as described in 4.7.1.6. The influence of wind or other environmental factors shall not be taken into account.