Guide for EN 16005

- Power operated pedestrian doorsets -
Safety in use

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Introduction

The main intended use of power operated pedestrian doors is to provide easy access, higher comfort and improved safety of pedestrians. This document provides information about the new European Standard EN 16005. Compliance with this document does not mean compliance with the actual EN 16005 nor to the Machinery Directive 2006/42/EC which are the official documents that must be applied.

EN 16005 states requirements regarding design and test methods for external and internal doorsets with emphasis on safety in use. Its consideration and application will further enhance the operating safety of power operated pedestrian doors. EN 16005 is effective in Europe from April 2013 and listed in the EU Official Journal as harmonized standard under the Machinery Directive.

Content of EN 16005

EN 16005 specifies requirements regarding design and test methods for external and internal power operated pedestrian doorsets. Such doorset constructions may be operated electromechanically, 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
- power operated balanced and folding doorsets with horizontally moving leaves

EN 16005 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.

Power operated pedestrian doorsets shall be designed so that hazards due to crushing, shearing, impact and drawingin during the opening and closing cycles are avoided or so that safeguards against such hazards are provided.

Important content of EN 16005:

- Requirements regarding design and test methods for power operated pedestrian doorsets
- Safety in use regulation of doorsets for normal access and escape routes / fire resistance
- Names significant hazards, hazardous situations and events relevant to power operated doors
- EN 16005 does not cover special functions of doors, like security in banks, airports, etc. or fire compartment

§ **Door closing cycle**
(EN 16005, 4.6.2.2)

The use of light barriers (photoelectric cells) is no longer permitted.

§ **Sliding door sets without break-out function** (EN 16005, 4.7.2.3)

Automatic sliding door sets without a break-out function may be installed and operated in emergency exits and escape routes provided that the opening of the door is assured by a failsafe system corresponding to Performance Level "D" per EN ISO 13849-1.

Basic safety requirements

Requirements for the doorset drive

- Constructed for safe movement and stopping under intended conditions of use
- Disconnection of a drive should be easily visible / recognized (EN 16005, 4.3.3)
- Electrical drives shall fulfill EN 60335-2-103

Constructive requirements for the doorset

- Safety related parts should comply to EN ISO 13849-1 Performance Level "C"
- For emergency and escape routes performance level "D" of EN ISO 13849-1 is required

The manufacturer shall provide information on operation, maintenance and inspection.

Basic safeguarding options

Safety distances

Sufficiently dimensioned safety distances to prevent crushing or drawing in are:

- ≤ 8 mm or ≥ 25 mm for fingers
- ≥ 200 mm for the head
- ≥ 500 mm for the body

Force limitation

The values of dynamic force generated by the doorset leaf when impacting a person or an obstacle shall be considered to be safe if the limits specified in EN 16005 are not exceeded, when measured according by EN 16005.

Low energy

The force required to prevent a stopped doorset from opening or closing any further - measured at the main closing edge in the direction of travel - shall not exceed 67 N at any point in the opening or closing cycle. The kinetic energy of a doorset in motion shall not exceed 1,69 J in the case of low energy movement doorsets without safety sensors.

Guards

Protective measures such as enclosures, covers, enclosing guards or fixed protection leaves shall be designed so that:

- persons cannot reach any danger point up to a height of 2.5 m above floor level
- they can only be removed or opened with the aid of a tool
- they do not cause additional hazards (e.g. shearing or drawing in)

§ **Low Energy Mode**
(EN 16005, 4.6.4)

Automatic door sets operating in the Low Energy Mode can be deployed without safety sensors for certain applications.

Danger points and protection of danger points

Danger points shall be safeguarded up to a height of 2.5 m above the floor with the following exception:

a) the guide slot in the drive cover, or drive arm or closing action at the top of the doorset below the lintel is not regarded as a danger point and a protective device need not be provided at this point as any contact with it requires an intentional action;

b) danger points between the leaf and frame presenting a fingertrap hazard can be protected up to only 2 m (e.g. fingerprotection).

Barriers

Barriers are intended to direct pedestrian traffic or to avoid pedestrians from entering non-safe zones. They shall be:

- designed so that children cannot easily climb over or crawl under them
- suitably secured
- able to withstand forces occurring in normal service
- a minimum of 900 mm high

Barriers, when used, shall not create new hazards.

Protective devices

Protective devices can be:

- Pressure-sensitive protective equipment (PSPE)
- Electro-sensitive protective equipment (ESPE)

Protective devices shall be designed so that, e. g.:

- after resetting them a functional check is carried out and normal operation of the doorset is started only if safety functions are in place
- the protective device complies with the requirements of EN 12978 (contains requirement of periodic testing the sensor once a cycle)

§ **Protective devices**
(EN 16005, 4.6.8 - 4.6.11)

Danger points must be rendered safe by appropriate protective devices, e. g.: Pressuresensitive sensors, sensortype safety edges, sensortype safety mats, mechanical barriers and guards, safety pocket screens, proximity (non-contacting) sensors, infrared sensors. Function of sensors shall be tested once per door cycle.

Maintenance

Routine maintenance instructions shall highlight that for safe operation, long term reliability and efficiency, a power operated pedestrian doorset (including protective devices and safety systems) shall be regularly maintained according to the manufacturer's specification.
This includes;

- frequency of maintenance to be carried out (including recommended frequency for checking the correct operation of safety systems being at least once a year)
- simple instructions for tasks that can be undertaken by the owner without any specific competence
- highlight any maintenance actions that should only be carried out by professionals

The maintenance instructions shall inform the owner about the importance of recording any maintenance activity.

§

Recommended frequency for checking the correct operation of safety function and devices is, at least, once a year.

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