

SLOVENSKI STANDARD

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Železniške naprave - Načrtovanje opreme in sestavnih delov na železniških vozilih za osebe z omejenimi gibalnimi sposobnostmi - 1. del: Stranišča

Railway Applications - Design for PRM Use Equipment and Components onboard Rolling Stock - Part 1: Toilets

Bahnanwendungen - Gestaltung für mobilitätseingeschränkte Menschen - Ausrüstungen und Bauteile in Schienenfahrzeugen - Teil 1: Toiletten

Applications ferroviaires - Conception à l'usage des personnes à mobilité réduite - Équipements et éléments à bord du matériel roulant - Partie 1: Toilettes

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EUROPEAN STANDARD

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Supersedes CEN/TS 16635:2014

English Version

Railway applications - Design for PRM use - Equipment and components onboard rolling stock - Part 1: Toilets

Applications ferroviaires - Conception destinée à l'usage par les PMR - Equipements et éléments à bord du matériel roulant - Partie 1 : Toilettes

Bahnanwendungen - Gestaltung für die Nutzung durch PRM - Ausstattung und Bauteile in Schienenfahrzeugen - Teil 1: Toiletten

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European foreword

This document (EN 16585-1:2017) has been prepared by Technical Committee CEN/TC 256 "Railway applications", the secretariat of which is held by DIN.

This document supersedes CEN/TS 16635:2014.

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of an identical text or by endorsement, at the latest by July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

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For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

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EN 16585-1:2017 (E)**Introduction**

This document is part of a suite of four 'Design for PRM use' standards that have in total nine parts:

- EN 16584 is a standard that covers both infrastructure and rolling stock — Railway applications — Design for PRM use - General requirements:
 - Part 1: Contrast (EN 16584-1);
 - Part 2: Information (EN 16584-2);
 - Part 3: Optical and friction characteristics (EN 16584-3).
- EN 16585 is a standard that covers rolling stock - Railway applications - Design for PRM use - Equipment and components on board rolling stock:
 - Part 1: Toilets (EN 16585-1);
 - Part 2: Elements for sitting, standing and moving (EN 16585-2);
 - Part 3: Clearways and internal doors (EN 16585-3).
- EN 16586 is a standard that covers rolling stock — Railway applications — Design for PRM use - Accessibility of persons with reduced mobility to rolling stock:
 - Part 1: Steps for access and egress (EN 16586-1);
 - Part 2: Boarding aids (EN 16586-2). [SIST EN 16585-1:2017](https://standards.iteh.ai/catalog/standards/sist/05a51e36-4b02-4958-a139-12a251c01018/en-16586-2)
- EN 16587 is a standard that covers infrastructure — Railway applications — Design for PRM use - Requirements for obstacle free routes for infrastructure.

These standards aim to clarify the requirements (with clear and consistent terms and definitions) and to define the associated criteria and, where appropriate, methodologies to allow a clear pass/fail assessment.

1 Scope

This European Standard describes the specific 'Design for PRM use' requirements applying to rolling stock and the assessment of those requirements. The following applies to this standard:

- the definitions and requirements describe specific aspects of 'Design for PRM use' required by persons with disabilities and persons with reduced mobility as defined in the PRM TSI;
- this standard defines elements which are universally valid for obstacle free travelling including toilets, elements for sitting, standing and moving and clearways and internal doors. The definitions and requirements of this standard are to be used for rolling stock applications;
- this standard only refers to aspects of accessibility for PRM passengers. It does not define general requirements and general definitions;
- this standard assumes that the rolling stock is in its defined operating condition;
- where minimum or maximum dimensions are quoted these are absolute NOT nominal requirements.

The 'Equipment and Components' standard is written in three parts:

- this document is Part 1 and contains:

- toilets;

- part 2 contains:

- handholds;

- seats;

- wheelchair spaces;

- part 3 contains:

- clearways;

- internal doors.

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 12183, *Manual wheelchairs - Requirements and test methods*

EN 12221-1:2008+A1:2013, *Child use and care articles - Changing units for domestic use - Part 1: Safety requirements*

EN 12221-2:2008+A1:2013, *Child use and care articles - Changing units for domestic use - Part 2: Test methods*

EN 12790, *Child use and care articles - Reclined cradles*

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EN 16584-1, *Railway applications - Design for PRM use - General requirements - Part 1: Contrast*

EN 16584-2:2017, *Railway applications - Design for PRM use - General requirements - Part 2: Information*

EN 16585-2, *Railway applications — Design for PRM use — Equipment and components on board rolling stock - Part 2: Elements for sitting, standing and moving*

EN 16585-3, *Railway applications — Design for PRM use — Equipment and components on board rolling stock — Part 3: Clearways and internal doors*

3 Terms and definitions

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

- 3.1**
clear width
clear usable width
unobstructed width of an open door or clearway to allow passengers to pass through
- 3.2**
clearway
unobstructed space with defined widths and heights to allow movement within a vehicle
- 3.3**
first step
step that is the first step for a passenger to use, to overcome a height change
- Note 1 to entry: For the external access/egress steps this will normally be the step that is closest to the platform edge (it may be a fixed or a moveable step), therefore this is the first step when boarding and the last step when alighting.
- Note 2 to entry: In the context of steps for internal height changes (other than the external access/egress steps) this means the first usable step when ascending and the edge of the walking floor when descending.
- 3.4**
handrail
continuous element with round cross section for passengers to use to aid personal stability by gripping around
- 3.5**
last step
final step for an ascending passenger to use to overcome a height change, forming the edge of the walking floor
- 3.6**
manual door
unpowered door which the passenger has to physically open and/or close
- 3.7**
palm operable
operable by the palm or any part of the hand, not requiring fingers to be unclenched

Note 1 to entry: The design need is that passengers with painful conditions, which affect their joints such as arthritis, may be unable to (and are likely to experience discomfort or pain if they do) exert any force with the tip of a single finger. Many may not be able to unclench their fingers to do this or perform any pulling action.

3.8**proximity sensor**

sensor that can be used to control facilities without the control device being physically touched

3.9**sharp edge**

thin edge capable of cutting or an abrupt end or discontinuity of a surface which has the potential to injure a passenger in normal use

3.10**standard toilet**

toilet not designed to be accessible to a passenger in a wheelchair

3.11**universal toilet**

toilet designed to be used by all passengers including passengers in wheelchairs

3.12**usable width**

unobstructed width of an open door or passageway allowing for passengers to pass through

3.13**wheelchair**

wheeled personal mobility device

Note 1 to entry: Wheelchair characteristics are defined in Annex A.

3.14**wheelchair accessible doorway**

closest doorway to the wheelchair space (and wheelchair accessible sleeping accommodation, where fitted)

3.15**wheelchair space**

designated space in the passenger compartment for the wheelchair users and their wheelchairs

Note 1 to entry: Space can be designed for two wheelchairs, one beside the other (dual).

4 Symbols and abbreviations

Table 1 — Abbreviations

| Abbreviation | Designation |
|--------------|---|
| EN | European Standard (Euronorm) |
| PRM | Persons with disabilities and persons with reduced mobility |
| TSI | Technical Specification for Interoperability |

Table 2 — Symbols

| Symbol | Designation | Unit |
|--------|-----------------------|------------|
| %ile | Percentile | |
| kg | Weight | kilogram |
| mm | Length | millimetre |
| N | Force | Newton |
| ° | measurement of angles | Degree |

5 Requirements and assessment

5.1 General

- 1) Assessment of the requirements identified in Clause 5 shall be according to Annex C and Annex D. Where additional assessment criteria apply, these will be identified against the relevant clause.
<https://standards.iteh.ai/catalog/standards/sist/05a51e36-4b02-4958-a139-061181d94911/iso-16585-1-2017>
- 2) All dimensions in the figures are in millimetres (mm) unless otherwise stated.
- 3) When toilets are fitted in a train, a universal toilet shall be provided that is accessible from the wheelchair space and, if provided, the sleeping compartment.
- 4) The standard toilet shall be compliant with the requirements of 5.2 and 5.3.
- 5) The universal toilet shall be compliant with the requirements of 5.2 and 5.4.

5.2 Standard and universal toilets, common parameters

- 1) The centre of any door handle, lock or door control device on the exterior or interior of the toilet compartment shall be located at a minimum of 800 mm and a maximum of 1 100 mm above the toilet door threshold.
 - Assessment: this shall be measured vertically above the door threshold.
- 2) A visual and tactile (or audible) indication shall be given inside and outside the toilet to indicate when a door has been locked.
 - Assessment: tactile and audible information shall be according to EN 16584-2.
 - Assessment: Indication inside the toilet shall be provided by two distinct physical positions of the “lock” device and/or provision of audible indication.

NOTE 1 Current good practice and solutions are shown in EN 16584-2:2017, Annex O.

- 3) Any door control device and other equipment inside a toilet compartment (except for baby nappy change facilities and call for aid devices) shall be operable by exerting a force not exceeding 20 N.
 - Assessment of force required to operate a control device shall be by pulling or pushing the device depending on its normal mode of operation with e.g. a “force gauge” or “force meter” until the device or equipment is operated or activated.
 - This requirement does not refer to the force required to open or close a manual door itself (this is described in EN 16585-3).
- 4) Any control device, including flushing system, shall contrast to the background surface, and shall be identifiable by touch.
 - Assessment shall be according to EN 16584-1 and EN 16584-2.

NOTE 2 For systems that are operated by proximity sensors this requirement does not apply.

NOTE 3 For hygiene reasons it is good practice to have the flush control logically positioned that is close to the toilet so a blind or visually impaired passenger can locate it.

- 5) Clear, precise information for the operation of any control device shall be provided, making use of pictograms and shall be tactile.
 - Assessment shall be according to EN 16584-2.
- 6) The toilet seat and lid shall contrast with the background.
 - Assessment shall be according to EN 16584-1.
- 7) Handrails where provided shall:
 - i. contrast to the background surface.
 - Assessment shall be according to EN 16584-1.
 - ii. comply with the geometric requirements described in the relevant clauses of EN 16585-2.
- 8) In all areas of double-deck vehicles the minimum height of 1 950 mm shall be replaced by the relative ceiling height provided in those areas. In those areas, reduced ceiling height is only accepted as a consequence of structural constraints (gauge, physical space).

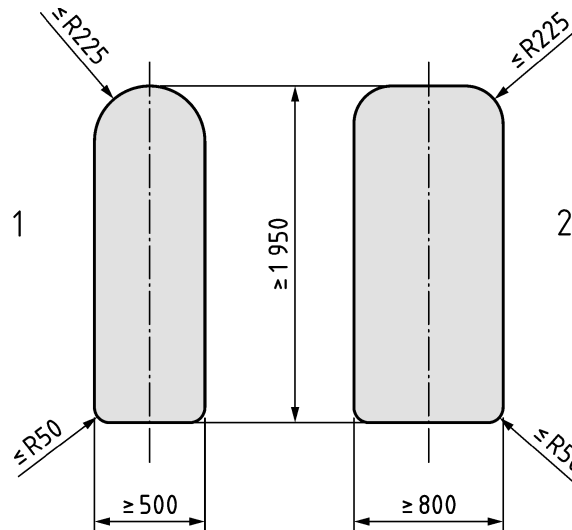
5.3 Standard toilet

- 1) A standard toilet is not designed to be accessible to a wheelchair user.
- 2) The minimum door usable width shall be 500 mm.
 - This shall be assessed according to Figures 1 and 2a;
 - There are to be no protrusions into the minimum usable width of 500 mm in its open position, such as handles or other features, from the floor up to a minimum of 1 950 mm as shown in Figures 1 and 2. (see also 5.2, (8));

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- Minimum door usable width of a manual hinged door includes the swept envelope and should ensure that no part of the door shall be in that area when open. See Figure 2a.

Dimensions in millimetres



Key

- 1 clear width through the standard toilet door
- 2 clear width through the universal toilet door

Figure 1 — Toilet door clear usable width (standard and universal)

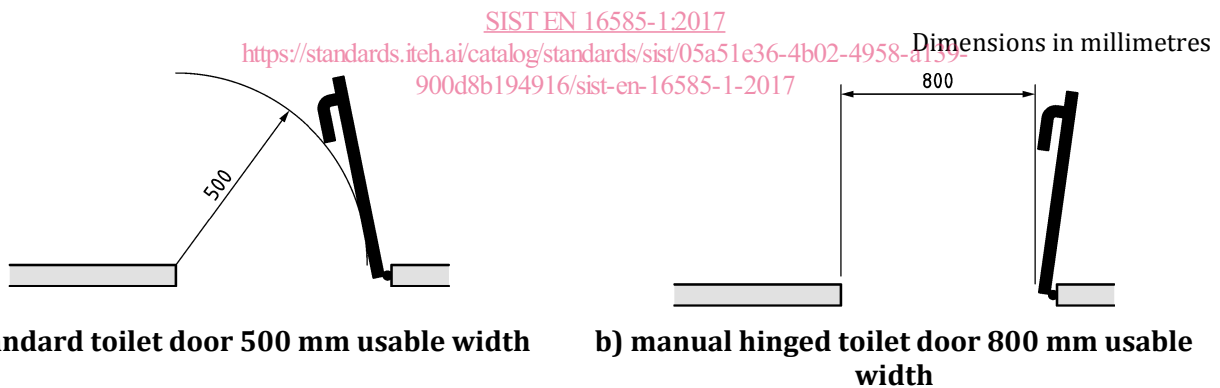


Figure 2 — Usable width of toilet doors

- 3) A fixed vertical and/or horizontal handrail shall be provided adjacent to the toilet seat and the wash basin.

- Assessment: the handrail shall be according to point 5.2 (7).

5.4 Universal toilet

- 1) A universal toilet is a toilet designed to be used by **ALL** passengers including **ALL** persons with disabilities and persons with reduced mobility.
- 2) The area of use of a universal toilet is defined by:

- i. Using 'method A' as described in Clause 6;
 - ii. However, where 'method A' cannot be used, it is permitted to use 'method B' described in the assessment methodologies in Clause 6. This alternative is only provided for the following cases:
 - (a) vehicles where the available floor width is narrower than 2 400 mm;
 - Assessment shall be between the interior trim panels at a height of 25 mm above the walking floor;
 - (b) existing rolling stock when it is renewed or upgraded;
- 3) The toilet access door shall provide a minimum clear usable width of 800 mm.
- This shall be assessed according to Figure 1 (see also 5.2 (8));
 - There are to be no protrusions into the minimum usable width of 800 mm in its open position, such as handles or other features, from the floor up to a minimum of 1 950 mm as shown in Figure 1 and Figure 2b).
- 4) Where the door is semi-automatic, it shall be possible to open it partially in order to allow a wheelchair user's assistant to leave and re-enter the toilet module.
- i. Allowing the wheelchair users assistant to activate the door open control, exit the toilet compartment and then press the door control to close the door without it having to finish a complete open cycle. (standards.iteh.ai)
 - ii. The assistant can then wait outside the closed but unlocked door until they are required to re-enter the compartment whereby they can partially open the door, enter and then close the door without it having to finish a complete open cycle.
- 5) The exterior of the door shall be marked with a sign.
- Assessment shall be according to EN 16584-2;
- 6) There shall be sufficient space inside the toilet compartment to enable a wheelchair as defined in Annex A to:
- i. Enter the toilet compartment.
 - Assessment shall be according to EN 16585-3.
 - ii. Manoeuvre to a position allowing a 'lateral or side' approach **AND** also to a position allowing a 'diagonal or frontal' transfer of the wheelchair occupant to the toilet seat. (see Figure 3 for the two required approaches, that position can be either to the left or the right of the toilet seat (and Figures E.1 and E.2 for examples));
 - Assessment shall be according to Clause 6.
 - iii. Exit the toilet compartment.
 - Assessment shall be according to EN 16585-3.