



SLOVENSKI STANDARD

SIST EN 16586-1:2017

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Železniške naprave - Načrtovanje za osebe z omejenimi gibalnimi sposobnostmi - Dostop do železniških vozil - 1. del: Stopnice za vstop in izstop

Railway applications - Design for PRM Use - Accessibility of People with Reduced Mobility to rolling stock - Part 1: Steps for Egress and Access

Bahnanwendungen - Behindertengerechte Gestaltung- Barrierefreier Zugang - Teil 1: Stufen für Ein- und Ausstieg

Applications ferroviaires - Conception à l'usage des personnes à mobilité réduite - Accessibilité du matériel roulant aux personnes à mobilité réduite - Partie 1: Dispositions permettant l'accès et la sortie

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ICS:

11.180.01	Pripomočki za onesposobljene in hendikepirane osebe na splošno	Aids for disabled and handicapped persons in general
45.060.20	Železniški vagoni	Trailing stock

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EUROPEAN STANDARD

EN 16586-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2017

ICS 11.180.01; 45.060.20

English Version

Railway applications - Design for PRM use - Accessibility of persons with reduced mobility to rolling stock - Part 1: Steps for access and egress

Applications ferroviaires - Conception destinée à l'usage par les PMR - Accessibilité du matériel roulant aux personnes à mobilité réduite - Partie 1: Marches de sortie et d'accès

Bahnanwendungen - Gestaltung für die Nutzung durch PRM - Barrierefreier Zugang - Teil 1: Aus- und Einstiegsstufen

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European foreword

This document (EN 16586-1:2017) has been prepared by Technical Committee CEN/TC 256 "Railway applications", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by October 2017, and conflicting national standards shall be withdrawn at the latest by October 2017.

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 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 2008/57/EC.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 16586-1:2017 (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)
- 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 steps for access and egress and boarding aids. 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 vehicle is in the defined operating condition;
- Where minimum or maximum dimensions are quoted these are absolute NOT nominal

The 'Accessibility of persons with reduced mobility' standard is written in two parts:

- This document is Part 1 and contains:
 - Steps for access and egress
- Part 2 contains
 - Boarding aids.

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

EN 16584-3, *Railway Applications - Design for PRM Use - General Requirements - Part 3: Optical and Friction Characteristics*

EN 15273-1, *Railway applications - Gauges - Part 1: General - Common rules for infrastructure and rolling stock*

EN 15273-3, *Railway applications - Gauges - Part 3: Structure gauges*

EN 15663, *Railway applications - Definition of vehicle reference masses*

3 Terms and definitions

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

EN 16586-1:2017 (E)**3.1****boarding aid**

device (fixed or portable) that bridges the gap between rolling stock and platform to allow a PRM to board or alight from a train

Note 1 to entry: These include manual or automatic ramps, lifts and other devices.

3.2**bridging plate**

retractable device integrated into the vehicle as close as possible to the door threshold level that enables access for wheelchair users, fully automatic and activated/controlled in conjunction with the door opening/closing sequences or semi-automatic on demand from passenger or staff

Note 1 to entry: It retains its strength without support on the station platform when extended.

3.3**clear width****clear usable width**

unobstructed width of an open door or clearway to allow a PRM to pass through

3.4**doorway**

opening in the vehicle body side that allows access to and egress from that vehicle

3.5**effective clear width**

horizontal usable width of the surface of a boarding aid or entrance step

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3.6**first step**

step that is the first step for a passenger to use, to overcome a height change

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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 movable 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.

3.7**gap**

distance between a platform and the closest point on the rolling stock at the passenger door where passengers traverse from one to the other (both vertical and horizontal)

3.8**last step**

final step for an ascending passenger to use to overcome a height change, forming the edge of the walking floor

3.9**movable step**

retractable device integrated into the vehicle forming a step to the door threshold that enables access for passengers other than wheelchair users, fully automatic and activated/controlled in conjunction with the door opening/closing sequences (sliding, rotating, folding, etc.) to reduce the gap in width and height (if necessary to make the gap compliant) between vehicle and platform.

Note 1 to entry: It retains its strength without support on the station platform when deployed.

3.10**on board lift**

device integrated into the doorway of a vehicle that enables access for wheelchair users to overcome the maximum height difference between the vehicle floor and the station platform, where operated

3.11**on board ramp**

manual, semi-automatic or automatic device that enables access for wheelchair users, that is positioned between the vehicle door threshold and the platform

3.12**step nose**

intersection point of the projections of horizontal and vertical surfaces of a step

Note 1 to entry: This is illustrated in Annex B showing example step noses.

3.13**working order**

state in which a vehicle is equipped with all the consumables and occupied by all the staff which it requires in order to fulfil its function but empty of any payload (i.e. dead mass + consumables + staff)

4 Symbols and abbreviations**Table 1 — Abbreviations**

Abbreviation	Designation
EN	European Standard
PRM	Persons with disabilities and persons with reduced mobility
TSI	Technical Specification for Interoperability

Table 2 — Symbols

Symbol	Designation	Unit
mm	Length	millimetre
b_{q0}	Nominal horizontal distance from platform edge to track centreline	millimetre
δ_h	Horizontal stepping distance	millimetre
δ_{v+}	Vertical stepping distance (up)	millimetre
δ_{v-}	Vertical stepping distance (down)	millimetre

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5 Requirements and Assessment

5.1 General

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.

All dimensions are in millimetres (mm) unless otherwise stated.

5.2 Step position for vehicle access and egress

5.2.1 General requirements

- 1) Access steps of the vehicle shall be designed to meet the following requirements according to the type of platform where the Rolling Stock is intended to stop, in normal operation.
- 2) It shall be demonstrated that the point situated in the central position on the nose of the access step of each passenger access door on both sides of a vehicle, shall be located inside the area identified as “step location” in Annex A, Figure A.1.

This requirement shall be validated by calculation using the nominal values of the construction drawing of the vehicle and the nominal values of the relevant platform or platforms where the rolling stock is intended to stop according to Annex A.

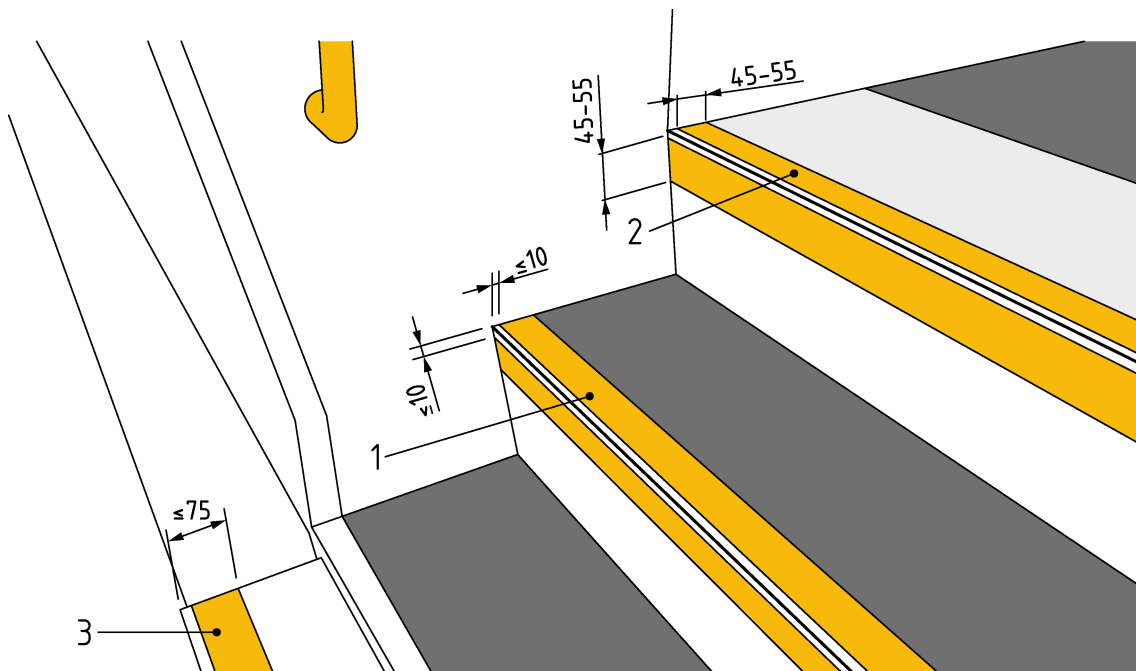
For assessment, the vehicle shall be in “working order” (the design mass in working order as defined in EN 15663) with new wheels standing centrally on the rails.

The outer end of the floor at the passenger access door shall be considered as a step and this shall be marked with contrasting bands according to EN 16584-1.

5.2.2 Access/egress steps

- 1) All steps for access and egress:
 - i. shall be slip resistant.
 - Assessment for the slip resistant properties of the steps for access and egress shall be according to EN 16584-3.
 - ii. shall have an effective clear width as large as the doorway width.
 - For assessment the step shall extend along the full doorway clear width and shall allow for production tolerances (i.e. minimum not nominal).

Dimensions in millimetres

**Key**

- 1 first step contrasting band
- 2 last step contrasting band
- 3 first step contrasting band when external step board or a movable step is defined as first step

Figure 1 — Example of steps for access and egress

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2) Internal steps for external access

- i. shall have a minimum depth of 240 mm between the vertical edges of the step.
 - For assessment the minimum depth of the step shall include all production tolerances (i.e. minimum not nominal) assessed horizontally from the step nose to the step nose over the effective clear width of the doorway.
- ii. shall have a maximum rising height of 200 mm.
 - For assessment the maximum rising height of the step shall include all production tolerances (i.e. maximum not nominal for a single step but where multiple steps are used see (3) below for permitted tolerances) assessed vertically from top edge to top edge of each step.
- iii. The height of each step may be increased to a maximum of 230 mm if it can be demonstrated that this achieves a reduction of one in the total number of steps required.

NOTE For example, if a vertical distance of 450 mm is to be traversed, using two steps of 225 mm rather than three steps of 150 mm, reduces the number of steps required from three to two.