SLOVENSKI STANDARD
SIST EN 16586-2:2017

01-junij-2017

Železniške naprave - Načrtovanje za osebe z omejenimi gibalnimi sposobnostmi - Dostop do železniških vozil - 2. del: Pripomočki pri vstopu in izstopu

Railway applications - Design for PRM Use - Accessibility of People with Reduced Mobility to rolling stock - Part 2: Boarding Aids

Bahnanwendungen - Behindertengerechte Gestaltung - Barrierefreier Zugang - Teil 2: Ein- und Ausstiegshilfen

Applications ferroviaires - Conception à l'usage des personnes à mobilité réduite - Accessibilité du matériel roulant aux personnes à mobilité réduite - Partie 2: Aides à l'embarquement et au débarquement

Ta slovenski standard je istoveten z: **EN 16586-2:2017**

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

SIST EN 16586-2:2017 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16586-2

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 2: Boarding aids

Applications ferroviaires - Conception destinée à l'usage par les PMR - Accessibilité du matériel roulant aux personnes à mobilité réduite - Partie 2 : Dispositifs d'aide à l'embarquement et au débarquement

Bahnanwendungen - Gestaltung für die Nutzung durch PRM - Barrierefreier Zugang - Teil 2: Einstiegshilfen

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European foreword

This document (EN 16586-2:2017) 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of an identical text or by endorsement, at the latest by October 2017, and conflicting national standards shall be withdrawn at the latest by October 2017.

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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.

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:

— Part 1 contains:

  — steps for access and egress.

— this document is Part 2 and contains:

  — boarding aids.

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 1756-2:2004+A1:2009, *Tail lifts - Platform lifts for mounting on wheeled vehicles - Safety requirements - Part 2: Tail lifts for passengers*

EN 14752, *Railway applications - Body side entrance systems for rolling stock*

EN 15273-2, *Railway applications - Gauges - Part 2: Rolling stock gauge*

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 16585-1:2017, *Railway applications — Design for PRM use — Equipment and components on board rolling stock — Part 1: Toilets*

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

EN 16587, *Railway applications — Design for PRM use — Requirements on obstacle free routes for infrastructure*

ISO 18738-1, *Measurement of ride quality -- Part 1: Lifts (elevators)*

3 Terms and definitions

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

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

3.6
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 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 EN 16586–1:2017, Annex B showing example step noses

3.13
working order
state in which a vehicle 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 (Euronorm)
PRM	Persons with disabilities and persons with reduced mobility
TSI	Technical Specification for Interoperability

Table 2 — Symbols

Symbol	Designation	Unit
°	Measurement of angle	degree
kg	Weight	kilogram
mm	Length	millimetre

5 Requirements and assessment

5.1 General

1) Assessment of the requirements identified in Clause 5 shall be according to Annex A and Annex B. Where additional assessment criteria apply, these will be identified against the relevant clause

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

3) 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 assessment shall be completed for the vehicle on level track, for both a 300 m curve and straight track.

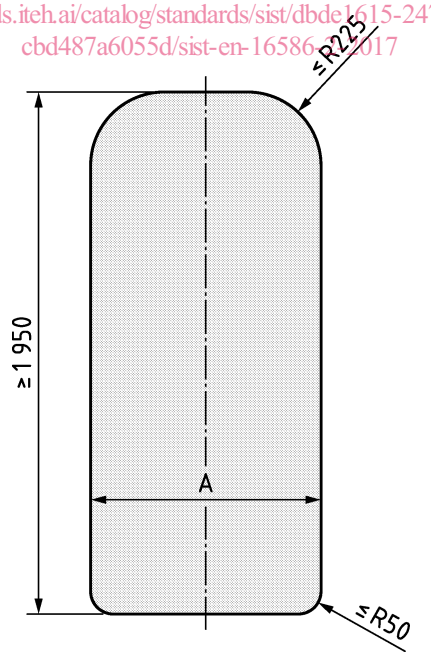
4) To provide PRM access:

   i. All exterior passenger doorways shall have a minimum clear usable width of 800 mm when open.

   — Assessment: the clear usable width shall be measured parallel to the door opening, there shall be no protrusions (for example door leading edge, grab-handles, handrails, wheelchair lifts in the stowed position) into the minimum width (the minimum width shall be 800 mm according to Figure 1).

   — Assessment: for wheelchair accessible doorways refer to EN 16585-3 for additional requirements.

Dimensions in millimetres



Key

A clear usable width

NOTE Minimum height of 1 950 mm is recommended.

Figure 1 — Clear usable width through an external door

ii. On trains with a design speed lower than 250 km/h, wheelchair access doors offering a level access according to 5.2 (1) shall have a minimum clear usable width of 1 000 mm when open.

— Assessment: the clear usable width shall be measured parallel to the door opening; there shall be no protrusions (for example door leading edge, grab-handles, handrails, wheelchair lifts in the stowed position) into the minimum width. (The minimum width shall be 1 000 mm according to Figure 1)

NOTE The increased width is required where level access is provided as, without the presence of a boarding device, the wheelchair is not necessarily presented perpendicular or centred to the opening. Therefore a bigger opening is required to ensure that the wheelchair or the user's hands etc are not trapped against, or strike, parts of the vehicle when boarding and alighting.

5.2 Boarding aids - General requirements

5.2.1 General

At the designated wheelchair accessible doorways access between the train and the platform, to allow a passenger in a wheelchair to board or alight, shall be provided according to either point 1 or point 2 below.

1) Level access is provided when the gap between the door sill of that doorway (or of the extended bridging plate of that doorway) and the platform does not exceed 75 mm measured horizontally and 50 mm measured vertically and the train has no internal step between the door sill and the vestibule.

— Assessment: shall be according to Figure 2 for a train that is intended to stop in normal operation, at a station platform that has obstacle free access routes (in accordance with EN 16587)

Dimensions in millimetres

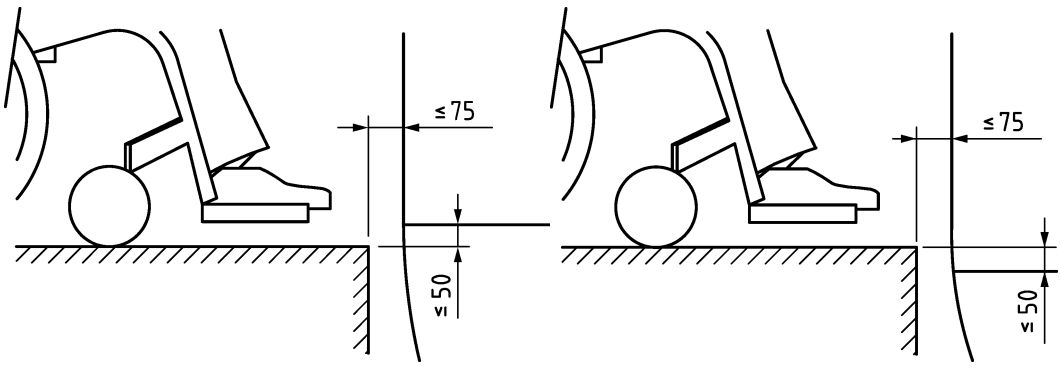


Figure 2 — Horizontal and vertical gap between platform and door sill

2) Where level access cannot be achieved a boarding aid shall be provided according to the following requirements.

5.2.2 Boarding aids stored on platforms

For boarding aids, including portable ramps, stored on a platform there shall be a secure storage method provided to ensure that those boarding aids do not cause an obstruction or pose any hazard to passengers.

5.2.3 Boarding aids stored on board rolling stock

1) A secure storage system shall be provided to ensure that boarding aids, including portable ramps, do not impinge on a passenger's wheelchair or mobility aid or pose any hazard to passengers in the event of a sudden stop.

   — Assessment of secure means a storage system that only authorized members of staff are able to access in order to deploy the device.

2) When a lift is in the stowed position the exterior passenger doorway shall have a minimum usable width of 800 mm when open.

   — Assessment shall be in accordance with Figure 1.

5.3 Boarding aids - Ramps

5.3.1 General requirements for ramps

1) Where ramps are provided, either on the platform or on board the rolling stock, to overcome the gap between the train and the platform that the train is designed to stop at, they shall comply with following general requirements and the additional requirements in 5.3.2 for on board ramps.

2) Ramps shall be designed and assessed for an area of use (length) defined by the maximum vertical gap they can overcome within a maximum slope of 18 % (10,2 degrees):

   — Assessment of the area of use of the ramp shall be derived from the maximum permitted angle and the resulting ramp length to the platform height that the train is designed to stop at.

   — When defining the wheelchair boarding aid operational zone (see Figure 4) combine the lengths of:

      a) the horizontal footprint on the platform of the ramp when fixed in place;

      b) the length on the platform that is required to allow the wheelchair to manoeuvre on and off the ramp (1 500 mm).

   — Assessment of the ramp angle shall be measured between the ramp usable surface and a horizontal plane, see Figure 3. 18 % (10,2 degrees) is the maximum permitted slope allowed to overcome the maximum height which shall include the worst case combination of tolerances.