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**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 persons with reduced mobility to rolling stock - Part 2: Boarding aids

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

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

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EUROPEAN STANDARD  
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## 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

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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## European foreword

This document (prEN 16586-2:2022) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16586-2:2017.

In comparison with the previous edition, the following technical modifications have been made:

- The document template has been updated
- The document has been revised generally for document references and editorial issues with grammar
- Scope modified
- Normative references updated
- Terms and definitions revised
- 5.3.1 (6) assessment methodology updated
- 5.3.1 (9) (10) ‘tapered lip’ used in place of ‘upstand’
- 5.5 updated to align with the PRM TSI
- Annex A “EC verification - Interoperability constituents” removed
- Annex B “Summary of testing requirements” removed
- Annex C “Boarding aid visual examples” is now Annex A
- Annex ZA updated.
- Bibliography updated

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

**prEN 16586-2:2022 (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 onboard 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 document describes the specific 'Design for PRM use' requirements applying to rolling stock and the assessment of those requirements. The following applies to this document:

- 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 document 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 document are to be used for rolling stock applications.
- This document only refers to aspects of accessibility for PRM passengers; it does not define non-PRM related requirements and definitions.
- This document assumes that the rolling stock is in its defined operating condition.
- Where minimum or maximum dimensions are quoted these are absolute NOT nominal requirements.
- This document is not specifically intended for Urban Rail, however these standards or clauses from these standards can be adopted by Urban Rail projects should they choose to do so.

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 are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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, *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 15663, *Railway applications - Vehicle reference masses*

prEN 16584-1:2022, *Railway applications — Design for PRM use - General requirements — Part 1: Contrast*

prEN 16584-3:2022, *Railway applications — Design for PRM use - General requirements — Part 3: Optical and friction characteristics*

prEN 16585-1:2022, *Railway applications — Design for PRM use - Equipment and components onboard rolling stock — Part 1: Toilets*

prEN 16585-3:2022, *Railway applications — Design for PRM use — Equipment and components onboard rolling stock — Part 3: Clearways and internal doors*

**prEN 16586-2:2022 (E)**

prEN 16587:2022, *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.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

**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, semi-automatic 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 all passengers, including 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****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)



**3.7****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.

**3.8****onboard 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

**3.9****onboard ramp**

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

**3.10****semi-automatic door**

powered door which opens and/or closes following operation of a control device by a passenger

**3.11****station**

any form of infrastructure where a train operates and passengers can board or alight in normal operation

**3.12****wheelchair**

wheeled personal mobility device [oSIST prEN 16586-2:2022](https://standards.iteh.ai/catalog/standards/sist/07e358da-5d22-49ea-a109-faa106c99127/osist-pr-en-16586-2-2022)

Note 1 to entry: Wheelchair characteristics are defined in prEN 16585-1:2022, Annex A.

**3.13****wheelchair accessible doorway (or door)**

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

**3.14****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

For purposes of this document, the symbols and abbreviations in Table 1 and Table 2 apply.

**Table 1 — Abbreviations**

Abbreviation	Designation
EN	European Standard (Euronorm)
ISO	International Organization for Standardization
PRM	Persons with disabilities and persons with reduced mobility
TSI	Technical Specification for Interoperability

**Table 2 — Symbols**

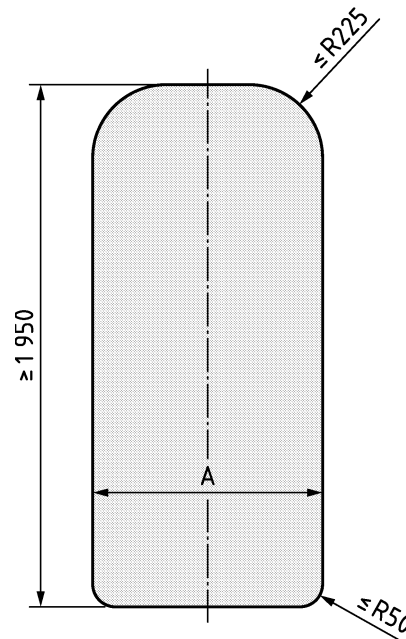
Symbols	Designation	Unit
°	Angle	degree
kg	Weight	kilogram
mm	Length	millimetre

## 5 Requirements and assessment

### 5.1 General

- 1) 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 which shall be 800 mm according to Figure 1.
    - Assessment: for wheelchair accessible doorways refer to prEN 16585-3:2022 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 which 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.