SLOVENSKI STANDARD
SIST EN 14752:2006

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Železniške naprave – Vrata in zapiralni sistemi na železniških potniških vozilih

Railway applications - Bodyside entrance systems

Bahnanwendungen - Seiteneinstiegsysteme

Applications ferroviaires - Systemes d'acces latéraux

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Bahnanwendungen - Seiteneinstiegsysteme

This European Standard was approved by CEN on 14 November 2005.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard (EN 14752:2005) 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of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This European Standard 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 96/48.

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

Annex H refers to the agreement governing the exchange and use of coaches in international traffic (RIC).[1)]

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1) Can be purchased from: UIC, Bureau RIV RIC, Rue Jean Rey 16, F-75015 Paris.

Introduction

This European Standard specifies the minimum requirements for construction and operation of railway passenger access doors to ensure

— safe access and egress from passenger trains through bodyside doors,

— a minimum risk of injury to persons as a result of door operation,

— that the doors remain closed when the vehicle is in motion and

— safe maintenance of the door systems.

1 Scope

The requirements of this European Standard apply to passenger bodyside doors of all newly designed railway vehicles such as tram, metro, suburban, mainline and high-speed trains that carry passengers. The requirements of this European Standard also apply to existing vehicles undergoing refurbishment of the door equipment, as far as it is reasonably practicable.

This European Standard makes reference to manual and power operated doors. For manual doors clauses referring to power operation are not applicable.

This European Standard does not apply to doors for equipment access, inspection or maintenance purposes and for crew only use.

Doors or hatches specifically provided for escape of emergency conditions are excluded.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12663, *Railway applications – Structural requirements of railway vehicle bodies*

EN 13272, *Railway applications – Electrical lighting for rolling stock in public transport systems*

EN 14067 (all parts), *Railway applications – Aerodynamics*

prEN 45545 (parts 1, 2, 3, 4, 6 and 7), *Railway applications – Fire protection of railway vehicles*

EN 50121-3-2, *Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus*

EN 50125-1, *Railway applications – Environmental conditions for equipment – Part 1: Equipment on board rolling stock*

EN 50126, *Railways applications – The specification and demonstration of reliability, availability, maintainability and safety (RAMS)*

EN 50153, *Railway applications – Rolling stock – Protective provisions relating to electrical hazards*

EN 50155, *Railway applications – Electronic equipment used on rolling stock*

EN 50215, *Railway applications – Testing of rolling stock after completion of construction and before entry into service*

EN 60077-1:2002, *Railway applications – Electric equipment for rolling stock – Part 1: General service conditions and general rules (IEC 60077-1:1999, modified)*

EN ISO 140-3, *Acoustics – Measurement of sound insulation in buildings and of building elements – Part 3: Laboratory measurements of airborne sound insulation of building elements (ISO 140-3:1995)*

UIC 566:1990, *Loadings of coach bodies and their components*

UIC 660:2002, *Measures to ensure the technical compatibility of high-speed trains*

DIN 6164-1:1980-02, *DIN colour chart – System based on the 2° standard colorimetric observer*

DIN 6164-2:1980-02, *DIN colour chart – Specification of colour samples*

DIN 6164-3:1981-07, *DIN colour chart – System based on the 10° standard colorimetric observer*

3 Terms and definitions

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

3.1
door
bodyside panel or panels available for passenger access and egress, including its components

3.2
automatic closing
powered closing of the door without intervention by the passenger

3.3
local closing
powered closing by intervention of the passenger

3.4
door operation
all door operating sequences

3.5
door button
device to initiate door opening or closing command

3.6
enabled door
door released by the train crew or an automatic system to permit operation by the door button

3.7
locked door
closed door held closed by a mechanical device

3.8
isolated door
door which is locked and not available for use

3.9
unlocked door
door with mechanical door locking released

3.10
train crew
persons authorised to carry out the duties for door operation

3.11
routine test
test to which each door equipment is subjected during or after manufacturing

3.12
type test
test of one door system and its components to prove the design meets the standard and the relevant specification

3.13
contract
agreement between manufacturer of the door system and buyer of that door system

3.14
RIC-KEY
key according to the agreement on mutual use of vehicles for persons and goods in the international transport (RIC); see Annex H

3.15
power operated door system
door system which operates doors in opening and closing direction by machine power

3.16
manual doors
doors the closing and/or opening of which is operated by hand power of crew or passengers

3.17
leading edge
edge of the door, leading during closing movement

3.18
emergency egress device
operating element for manual opening of the door from inside in case of emergency

3.19
access device
operating element for door opening from outside when the door is not available for normal operation

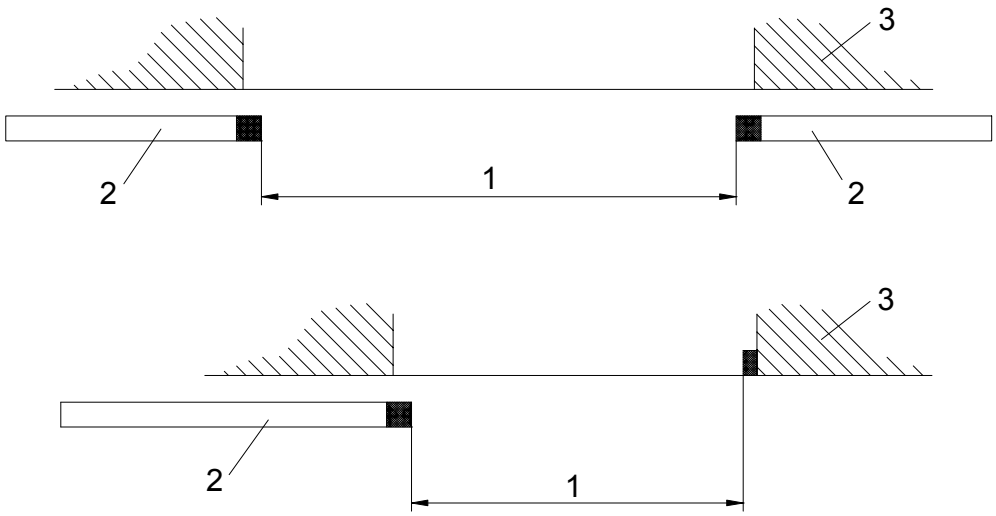
4 Constructional requirements

4.1 Doorway design

4.1.1 Door throughway design

4.1.1.1 Minimum width

Doors shall have an unrestricted passage width of 800 mm minimum to allow unimpeded access and egress of passengers (see Figure 1 as an example for the measuring method).



Key

1 passage width
2 door leaf
3 vehicle

Figure 1 — Minimum width

4.1.1.2 Minimum height

Doors shall have an unrestricted passage height of 1 900 mm minimum except where the infrastructure (gauge or car profile) does not allow this (see Figure 2 for the measuring method).

Dimensions in millimetres

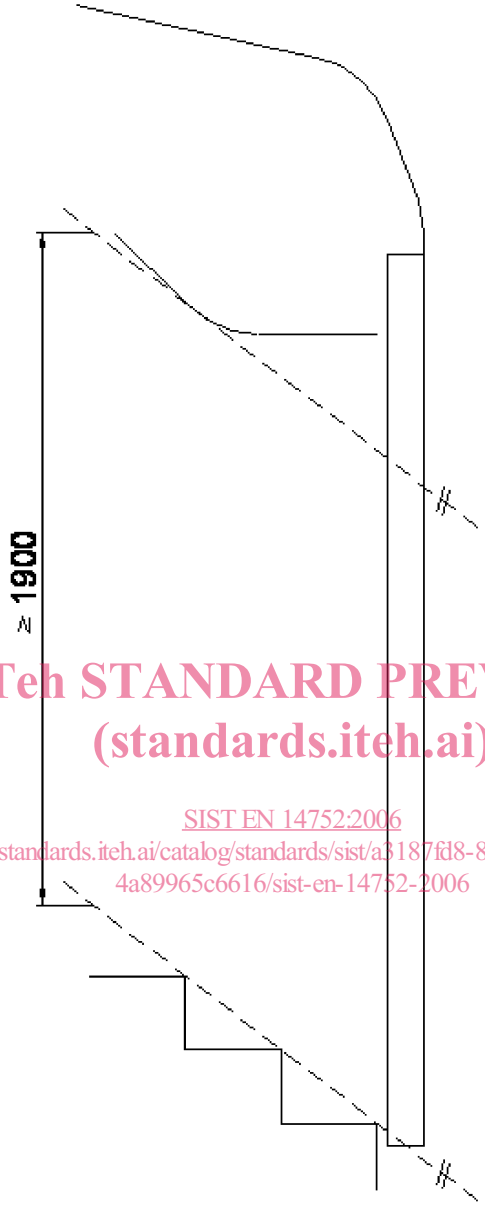


Figure 2 — Minimum height

4.1.1.3 Water drainage

A system shall be provided to divert water from the vehicle roof away from the door throughway.

4.1.2 Steps

4.1.2.1 Entrance area – General

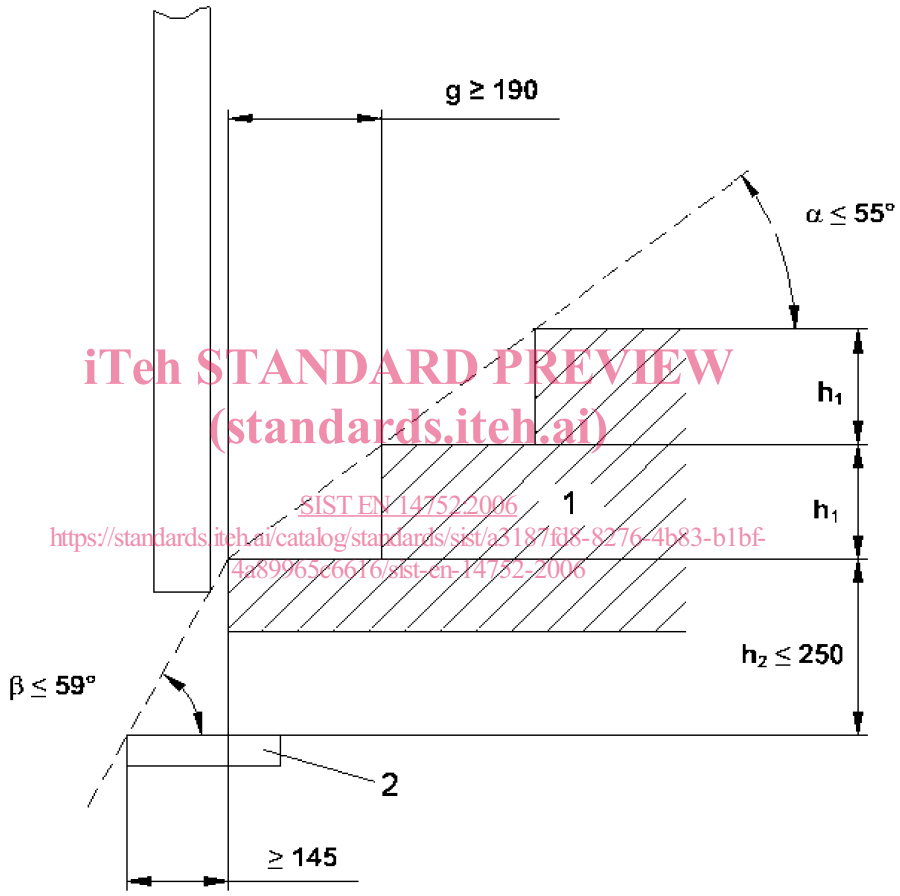
The external steps shall be at least the full door width and in line with the door throughway. The internal steps should be at least the full door width and in line with the door throughway.

4.1.2.2 Step dimensions

The step edge should be level with the vestibule floor. Where this cannot be achieved, the minimum depth of an internal step shall be 190 mm and the minimum depth of an external step shall be 145 mm to provide adequate foot hold. The depth of the external step may be smaller if the step is at a similar height to the floor level of the vehicle. The angle of the walking line shall not be greater than 55° (α) inside the car and 59° (β) outside. Angles of less than 50° are recommended for α and β (see Figure 3).

A ratio of $2 \times h + g$ = 640 mm should be achieved.

Dimensions in millimetres



Key

1 car
2 external fixed or moveable step

Figure 3 — Step dimensions

4.1.2.3 Step surface

Foot steps shall be provided with an anti-slip surface across the usable surface area.

4.1.2.4 Protection against water

The steps shall be arranged to allow water to drain away from the anti-slip surface. The design shall prevent water accumulation.

4.1.2.5 Manual operation

If the deployed step exceeds the vehicle gauge, under power failure conditions the step shall be manually retractable to a stable closed position from the platform it was intended for.

The operation manuals shall include an instruction stating the step drive shall be isolated prior to manual operation, if this is necessary to avoid a possible injury due to the activation of the automatic drive.

It shall be specified in the contract if the steps are deployable under power failure. Under this condition a means of ensuring the stability of the open position and a facility for manual retraction shall be provided.

4.1.3 Track level access

If necessary, means shall be provided to ensure (e.g. of staff) safe access and egress to or from the track level. Details need to be clarified in the contract.

4.1.4 Gaps between vehicles and platforms

The relative position of the step edge in relation to the vehicle body shell and vehicle floor (see Figure 3) shall be defined in the contract. The gaps between threshold/steps and platforms shall be considered in order to provide safe conditions for persons during access and egress.

4.1.5 Train surfing

Step edges, ledges or handholds on the outside surface of the door system shall be avoided or designed so they are not accessible, when the doors are closed (so called "train surfing").

4.1.6 Handholds

A handhold shall be provided at each doorway in order to assist passengers.

The handhold shall be placed inside the vehicle

— adjacent to each door panel or

— at doorways with more than one step, handholds shall be placed on both sides of the doorway.

The handhold shall be capable of withstanding a force of 1,5 kN applied at any point over its length at any direction without causing any non-elastic deformation in it. Deformation on first loading shall not be considered during testing.

The handhold should be coloured so that it stands out from its surrounding. The handhold shall be designed to provide adequate grip.

4.1.7 Door windows

All door windows shall be fitted with safety glass. Where the distance of the lower edge of the door window is less than 800 mm above floor level, a means of protection shall be provided to prevent passengers falling through the window when broken.

NOTE Protection is given by the use of laminated glass with positive support (e.g. bonding), mechanical elements (e.g. a bar) or equivalent measures. If bars are used, they should be fitted such that they do not create hazards to passengers.

4.2 Mechanical strength

4.2.1 Door mechanical strength

4.2.1.1 Passenger retention

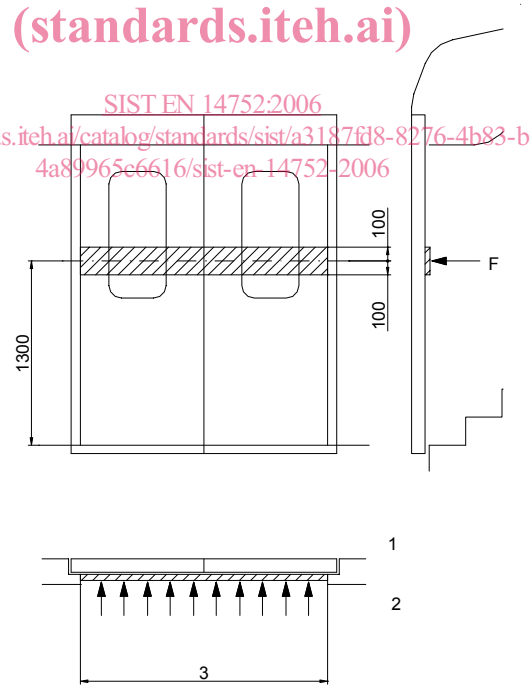
The door system shall be capable of withstanding the forces that occur when passengers are leaning or falling against the door panels without causing any non-elastic deformation or loss of operation (service force is repetitive). Deformation on first loading shall not be considered during testing.

For this purpose a closed and locked door panel including the glazing shall withstand a pushing force applied from inside the vehicle onto the door panel.

The load shall be represented by the application of a load distributed over a strip of 200 mm in height, positioned 1 300 mm above car floor level. The value of this force shall be 1 000 N per linear metre over the width of the exposed internal surface of the door (see also Figure 4). The locking system on sliding doors shall withstand a force in opening direction of 1 200 N.

NOTE This requirement is in accordance with 4.12.3 (Class GT1) of EN 50125-1 for transversal acceleration.

Dimensions in millimetres



Key

1 outside
2 inside
3 exposed internal surface

Figure 4 — Mechanical strength