

RAUDTEEALASED RAKENDUSED. VEEREMI KÜLGMISED
SISSEPÄÄSUSÜSTEEMID

Railway applications - Bodyside entrance systems for
rolling stock

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14752:2019 sisaldab Euroopa standardi EN 14752:2019 ingliskeelset teksti.	This Estonian standard EVS-EN 14752:2019 consists of the English text of the European standard EN 14752:2019.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.11.2019.	Date of Availability of the European standard is 13.11.2019.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 45.140

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Railway applications - Bodyside entrance systems for rolling stock

Applications ferroviaires - Systèmes d'accès latéraux pour matériel roulant

Bahnanwendungen - Seiteneinstiegssysteme für Schienenfahrzeuge

This European Standard was approved by CEN on 12 May 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword.....	5
Introduction	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	9
4 Constructional requirements	13
4.1 Door design	13
4.1.1 Door throughway design	13
4.1.2 Steps.....	15
4.1.3 Track level access.....	17
4.1.4 Relative position of the step edge	17
4.1.5 Train surfing.....	18
4.1.6 Door windows.....	18
4.1.7 Design of body side entrance doors used for accessing driver's cabs	19
4.1.8 Water drainage	19
4.2 Mechanical strength.....	19
4.2.1 Door mechanical strength.....	19
4.2.2 Step(s) mechanical strength	21
4.3 Local door control devices.....	22
4.3.1 Door buttons.....	22
4.3.2 Emergency egress device	23
4.3.3 Access device	24
4.4 Labels/warning signs	25
4.5 Interfaces with the vehicle.....	25
4.5.1 Electric and pneumatic power supplies.....	25
4.5.2 Mechanical interface with the vehicle	25
4.6 Other requirements	25
4.6.1 Fire protection	25
4.6.2 Insulation	25
4.7 Electronic equipment	26
4.7.1 Hardware	26
4.7.2 Software for electronic door control systems.....	26
4.8 Reliability, availability, maintainability, safety (RAMS)	26
4.9 Protection against electrical hazards	27
4.10 Environmental conditions	27
4.10.1 Weather	27
4.10.2 Water tightness.....	27
4.10.3 Pressure tightness	27
4.11 Manual and semi-automatic ramps, bridging plates.....	28
5 Operational requirements.....	28
5.1 Door control	28
5.1.1 General.....	28
5.1.2 Release doors and steps.....	28
5.1.3 Interlocking of released doors	28
5.1.4 Single point failure	28

5.1.5	Mechanical locking.....	28
5.1.6	Out-of-service devices.....	29
5.1.7	Isolation for maintenance purposes.....	30
5.2	Closing and opening conditions.....	31
5.2.1	Safety during closing	31
5.2.2	Entrance system closed proving.....	42
5.3	Opening conditions.....	42
5.3.1	Safety during opening.....	42
5.3.2	Limitation of opening.....	42
5.4	Moveable step obstacle detection.....	43
5.4.1	General	43
5.4.2	Steps outside the vehicle.....	43
5.4.3	Steps inside the vehicles	43
5.5	Emergency operation	43
5.5.1	Emergency egress.....	43
5.5.2	Emergency windows in access doors.....	46
5.5.3	Access device.....	46
5.5.4	Powering up.....	47
5.6	Other requirements.....	47
5.6.1	Passenger access door area illumination	47
5.6.2	Status indication	47
6	Categories of tests.....	47
6.1	General	47
6.2	Type tests.....	47
6.3	Routine tests during manufacture.....	48
6.4	Routine test on the fully assembled vehicle/train consist	48
7	Documentation related to installation and maintenance of the entrance system.....	48
Annex A	(normative) Passenger interface devices.....	49
A.1	Purpose	49
A.2	Design of door buttons.....	49
A.3	Labels on or near door buttons	50
A.4	Recommended emergency egress device	52
A.5	Sample of labels.....	52
Annex B	(normative) Water test procedure	53
B.1	Purpose	53
B.2	Test arrangement.....	53
B.3	Test procedure	54
B.4	Test decision.....	55
Annex C	(normative) Specification and testing of the pressure tightness of door.....	57
C.1	Purpose	57
C.2	Calculation – Flowchart	57
C.3	Example of pressure tightness requirement specification.....	57
C.4	Pressure tightness testing.....	58
C.4.1	General	58
C.4.2	Variable pressure measurement method.....	58
C.4.3	Variant: Constant pressure method of measurement.....	60
Annex D	(normative) Requirements for measuring the closing forces of power-operated doors.....	62
D.1	General	62
D.2	Terms and definitions.....	62

D.3	Measurements	63
D.3.1	Conditions of measurement	63
D.3.2	Measurement points	63
D.3.3	Measuring method	63
Annex E (normative)	Test plan	65
Annex F (normative)	Load requirements for doors due to aerodynamic loads on passenger trains	67
Annex G (informative)	Clauses in this European Standard requiring clarification in the technical specification	68
Annex H (normative)	RIC-KEY	70
Annex I (informative)	Calculation of kinetic energy	71
Annex J (informative)	Non-contact obstacle detection	77
J.1	General	77
J.2	Light barrier	77
J.3	Step sensors for external steps	77
J.4	Area monitoring systems	77
J.4.1	Arrangement of area monitoring system	77
J.4.2	Testing of area monitoring system	80
Annex ZA (informative)	Relationship between this European Standard and the Essential Requirements of EU Directive 2016/797 aimed to be covered	82
Bibliography		84

European foreword

This document (EN 14752:2019) 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 May 2020, and conflicting national standards shall be withdrawn at the latest by May 2020.

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 supersedes EN 14752:2015.

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 2016/797.

For relationship with EU Directive 2016/797, see informative Annex ZA, which is an integral part of this document.

EN 14752:2019 includes the following significant technical changes with respect to EN 14752:2015:

Subclause/paragraph/ table/figure	Change
General	Figures renumbered due to adding a figure to 4.1.6
Clause 2 Normative References	Some references updated and dated
3.2 Bridging plate	Reference to PRM standard
3.12 First step	Reference to PRM standard
3.19 Palm operated	Reference to PRM standard
3.25 Slip resistant	Reference to PRM standard
3.27 Technical Specification	Reworded
4.1.1.1 Minimum width	Reference to manual or semi-automatic ramps added
4.1.5 Train surfing	Reference to crew access needs added
4.1.6 Door windows	Details for step downwards added, Fig. enhanced
4.2.1.5 Vibration and shock	Design and testing separated
4.2.2 Step mechanical strength	Fig. improved
5.1.6.1 Door out of service	Operation from inside no more mandatory, defined in specification
5.2.1.3.1 Closing and opening signal - general	Amended to read: ...under the supervision of the train crew or in the case of:
5.2.1.3.2.3 Release/Opening door signal	Reference to obsolete TSI RST deleted
5.2.1.3.3.1 General	Provisions for LED strps added
5.2.1.3.3.2 Visual signal	Duration becomes mandatory (...shall...)

5.2.1.3.4 Visual signals of door buttons	Moved from 4.3.1.7.1 in former edition
5.2.1.4.1 Sensitivity of obstacle detection	Mode of inserting test bar modified
5.2.1.4.3 Obstacle removal force	Mode of inserting test bar modified
5.2.1.4.2.2 Closing force	Reference to “traffic regularity” added, peak force definition modified, see also Annex D
5.2.1.5 Anti drag	Figure 16, Diameter corrected to 20 mm Table 1 test 2 dynamic –pulling from outside added
5.2.2.2 Stepan and traction interlock system	In case of no interlock need for gauge infringement definition added
5.3.2 Limitation of opening	Disabling of opening in case of central closing added
5.5.1.8 Protection against accidental operation	Signal to train system after first action added
6.2 Type tests	Additional test at a cant of 3°
B.2 and B.3 Watertesting	Testing arrangement and procedure amended
D.2.4 Force graph and D.3.3 Measuring Method	Peak force definition amended
D.3.1 Condition of measurement	Reference to non contact detection added
D.3.3 Measuring Method	Reference to further attempts added
Annex F Load requirements	Order and wording changed due to TSi requirements
Annex K Migration Rule	Deleted
Annex ZA Relationship with TSI	Updated
Bibliography	Some references updated
NOTE The technical changes referred to include the significant technical changes from the EN revised but are not an exhaustive list of all modifications from the previous edition.	

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document specifies the minimum requirements for construction and operation of railway passenger access systems to ensure:

- safe access and egress from passenger trains through body side doors and steps;
- usability for persons with reduced mobility;
- a minimum risk of injury to persons as a result of door and step operation;
- that the doors and moveable steps, ramps, bridging plates remain closed when the vehicle is in motion; and
- safe maintenance of the entrance systems.

1 Scope

This document applies to passenger body side entrance systems of all newly designed railway vehicles such as tram, metro, suburban, mainline and high-speed trains that carry passengers. The requirements of this document also apply to existing vehicles undergoing refurbishment of the door equipment, as far as it is reasonably practicable.

This document also specifies the requirements for testing of entrance systems.

This document makes reference to manual and power operated entrance systems. For manual doors, clauses referring to power operation are not applicable.

This document does not apply to the following:

- entrance systems for equipment access, inspection or maintenance purposes and for crew only use;
- doors on freight wagons; and
- doors or hatches specifically provided for escape under emergency conditions.

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 12663-1:2010+A1:2014, *Railway applications — Structural requirements of railway vehicle bodies — Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)*

EN 13032-1:2004+A1:2012, *Light and lighting — Measurement and presentation of photometric data of lamps and luminaires — Part 1: Measurement and file format*

EN 13272:2012, *Railway applications — Electrical lighting for rolling stock in public transport systems*

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

EN 16116-1:2013, *Railway applications — Design requirements for steps, handrails and associated access for staff — Part 1: Passenger vehicles, luggage vans and locomotives*

EN 45545-2:2013+A1:2015, *Railway applications — Fire protection on railway vehicles — Part 2: Requirements for fire behaviour of materials and components*

EN 50121-3-2:2016, *Railway applications — Electromagnetic compatibility — Part 3-2: Rolling stock — Apparatus*

EN 50125-1:2014, *Railway applications — Environmental conditions for equipment — Part 1: Rolling stock and on-board equipment*

EN 50126 (all parts), *Railway applications — The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)*

EN 50153:2014, *Railway applications — Rolling stock — Protective provisions relating to electrical hazards*

EN 50155:2017, *Railway applications — Rolling stock — Electronic equipment*

EN 50215:2009, *Railway applications — Rolling stock — Testing of rolling stock on completion of construction and before entry into service*

EN 50657:2017, *Railways Applications — Rolling stock applications — Software on Board Rolling Stock*

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 61373:2010, *Railway applications — Rolling stock equipment — Shock and vibration tests (IEC 61373:2010)*

EN ISO 4762:2004, *Hexagon socket head cap screws (ISO 4762:2004)*

EN ISO 10140-2:2010, *Acoustics — Laboratory measurement of sound insulation of building elements — Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010)*

EN ISO 12567-1:2010, *Thermal performance of windows and doors — Determination of thermal transmittance by the hot-box method — Part 1: Complete windows and doors (ISO 12567-1:2010)*

DIN 5032-7:2017, *Photometry — Part 7: Classification of illuminance meters and luminance meters*

DIN 7340:2011, *Tubular rivets cut from the tube*

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

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

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:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

access device

operating element used to unlock a locked door in order to allow for door opening from outside when the door is not available for normal operation