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Railway applications - Braking systems of multiple unit trains - Part 1: Requirements and definitions

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

See Eesti standard EVS-EN 16185-1:2015+A1:2020 sisaldab Euroopa standardi EN 16185-1:2014+A1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 16185-1:2015+A1:2020 consists of the English text of the European standard EN 16185-1:2014+A1:2020.
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 20.05.2020.	Date of Availability of the European standard is 20.05.2020.
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.

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Railway applications - Braking systems of multiple unit trains - Part 1: Requirements and definitions

Applications ferroviaires - Systèmes de freinage pour trains automoteurs - Partie 1 : Exigences et définitions

Bahnanwendungen - Bremssysteme für Triebzüge - Teil 1: Anforderungen und Definitionen

This European Standard was approved by CEN on 13 October 2014 and includes Amendment 1 approved by CEN on 6 April 2020.

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European foreword

This document (EN 16185-1:2014+A1:2020) has been prepared by Technical Committee CEN/TC 256 “Railway Applications”, the secretariat of which is held by DIN.

This document includes Amendment 1 approved by CEN on 4 April 2020.

This document supersedes ▌A1⟩ EN 16185-1:2014 ⟨A1▌.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1⟩ ⟨A1▌.

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of an identical text or by endorsement, at the latest by November 2020, and conflicting national standards shall be withdrawn at the latest by November 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] 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 2016/797/EU.

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

This series of European Standards *Railway applications — Braking systems of multiple unit trains* consists of:

— *Part 1: Requirements and definitions;*

— *Part 2: Test methods.*

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

[A1] This document describes the functionality, constraints, performance and operation of a brake system for use in self-propelling thermal and electric trains operating on routes of the European rail system network. [A1]

This European Standard covers:

— all new vehicle designs of self-propelling thermal and electric trains being operated at a maximum speed up to 200 km/h, in the following text simply called EMU/DMU;

— all major overhauls of the above-mentioned vehicles if they involve redesigning or extensive alteration to the brake system of the vehicle concerned.

This standard does not cover:

— locomotive hauled trains which are specified by EN 14198;

— mass transit rolling stock which is specified by EN 13452-1;

— high speed trains being operated at speeds greater than 200 km/h which are specified by EN 15734-1.

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 837-1:1996, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

EN 854, *Rubber hoses and hose assemblies — Textile reinforced hydraulic type — Specification*

EN 10220, *Seamless and welded steel tubes — Dimensions and masses per unit length*

EN 10305-4, *Steel tubes for precision applications — Technical delivery conditions — Part 4: Seamless cold drawn tubes for hydraulic and pneumatic power systems*

EN 10305-6, *Steel tubes for precision applications — Technical delivery conditions — Part 6: Welded cold drawn tubes for hydraulic and pneumatic power systems*

EN 13749, *Railway applications — Wheelsets and bogies — Method of specifying the structural requirements of bogie frames*

EN 14198, *Railway applications — Braking — Requirements for the brake system of trains hauled by a locomotive*

EN 14478:2005, *Railway applications — Braking — Generic vocabulary*

EN 14535-1, *Railway applications — Brake discs for railway rolling stock — Part 1: Brake discs pressed or shrunk onto the axle or drive shaft, dimensions and quality requirements*

EN 14535-2, *Railway applications — Brake discs for railway rolling stock — Part 2: Brake discs mounted onto the wheel, dimensions and quality requirements*

EN 15020, *Railway applications — Rescue coupler — Performance requirements, specific interface geometry and test methods*

EN 15179, *Railway applications — Braking — Requirements for the brake system of coaches*

EN 15220-1, *Railway applications — Brake indicators — Part 1: Pneumatically operated brake indicators*

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

EN 15355, *Railway applications — Braking — Distributor valves and distributor-isolating devices*

EN 15566, *Railway applications — Railway rolling stock — Draw gear and screw coupling*

EN 15595, *Railway applications — Braking — Wheel slide protection*

EN 15611, *Railway applications — Braking — Relay valves*

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

EN 15734-1:2010,[1] *Railway applications — Braking systems of high speed trains — Part 1: Requirements and definitions*

EN 16185-2, *Railway applications — Braking systems of multiple unit trains — Part 2: Test methods*

EN 16207, *Railway applications — Braking — Functional and performance criteria of Magnetic Track Brake systems for use in railway rolling stock*

EN 16334, *Railway applications — Passenger Alarm System — System requirements*

EN 45545 (all parts), *Railway applications — Fire protection on railway vehicles*

EN 50121-3-1, *Railway applications — Electromagnetic compatibility — Part 3-1: Rolling stock — Train and complete vehicle*

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: Rolling stock and on-board equipment*

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

EN 50163, *Railway applications — Supply voltages of traction systems*

EN 50553, *Railway applications — Requirements for running capability in case of fire on board of rolling stock*

UIC 541-1, Brakes — Regulations concerning the design of brake components

1) This document is currently impacted by the corrigendum EN 15734-1:2010/AC:2013.

UIC 541-3, Brakes — Disc brakes and their application — General conditions for the approval of brake pads

UIC 541-4, Brakes — Brakes with composite brake blocks — General conditions for certification of composite brake blocks

UIC 544-1, Brakes — Braking power

UIC 557, Diagnosis on passenger rolling stock

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14478 and the following apply.

3.1
active cab
single cab in a train consist which is used to control traction and service braking and which is normally the leading cab

3.2
brake blending
controlled merging of brake forces resulting from different brake force generating systems

3.3
brake weight percentage
brake performance in accordance with UIC 544-1

3.4
driver's vigilance device
dead man device
brake control interface through which a human driver is caused positively/voluntarily to communicate his vigilance

[SOURCE: EN 14478:2005, 4.9.3.1]

3.5
dynamic brake
brakes in which the brake force is produced by the movement of the vehicle or its functional elements, but not involving friction

3.6
emergency brake loop
EBL
dedicated safety loop used to initiate an emergency brake application

3.7
Ep assist
electrically commanded assist system to locally vent and feed the brake pipe

3.8
direct ep-brake
continuous brake system using electrical command signals to directly apply and release the brakes