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**Železniške naprave - Zavore - Zahteve za zavorne sisteme potniških vagonov**

Railway applications - Braking - Requirements for the brake system of coaches

Bahnanwendungen - Bremsen - Anforderungen für die Bremsausrüstung von  
ReisezugwagenApplications ferroviaires - Freinage - Exigences concernant le système de freinage des  
voitures voyageurs**Ta slovenski standard je istoveten z: EN 15179:2007****ICS:**45.040      Materiali in deli za železniško      Materials and components  
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EUROPEAN STANDARD

EN 15179

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## Railway applications - Braking - Requirements for the brake system of coaches

Applications ferroviaires - Freinage - Exigences concernant le système de freinage des voitures voyageurs

Bahnwendungen - Bremsen - Anforderungen für die Bremsausrüstung von Reisezugwagen

This European Standard was approved by CEN on 3 August 2007.

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## Contents

Page

Foreword.....	4
Introduction .....	5
<b>1 Scope .....</b>	<b>6</b>
<b>2 Normative references .....</b>	<b>6</b>
<b>3 Terms and definitions .....</b>	<b>8</b>
<b>4 Symbols and abbreviations .....</b>	<b>10</b>
<b>5 Requirements .....</b>	<b>11</b>
5.1 General.....	11
5.2 Climatic conditions.....	11
5.3 Brake control.....	11
5.3.1 Basic principles .....	11
5.3.2 Components of the basic system .....	12
5.3.3 Additional braking devices .....	16
5.4 Thermal capacity.....	17
5.4.1 Principles.....	17
5.4.2 Disc brake.....	17
5.4.3 Tread brake.....	18
5.4.4 Dynamic brakes .....	18
5.5 Brake performance .....	18
5.5.1 General.....	18
5.5.2 Brake positions (basic system).....	18
5.5.3 Brake positions and additional brake system .....	19
5.6 Other brake components .....	19
5.6.1 Parking brake .....	19
5.6.2 Arrangement of components at the end of the coach .....	20
5.6.3 Brake inscriptions and braked weight inscriptions .....	20
5.7 Other specifications .....	21
5.7.1 Maintenance, accessibility.....	21
5.7.2 Fault finding .....	21
5.7.3 Operating conditions.....	21
5.7.4 Special requirements for multi-section coaches (modular passenger train).....	22
5.7.5 Requirements for equipment fitted at driving positions in driving trailers .....	22
5.8 Requirements for internal traffic in the United Kingdom .....	22
<b>Annex A (normative) Brake system of vehicles with UIC air brake .....</b>	<b>23</b>
<b>Annex B (normative) Common train configurations .....</b>	<b>25</b>
<b>Annex C (informative) Drainage devices, valves .....</b>	<b>26</b>
<b>Annex D (informative) Equipment fitted at driving positions in driving trailers .....</b>	<b>30</b>
<b>Annex E (normative) Requirements for internal traffic in the United Kingdom.....</b>	<b>32</b>
E.1 General.....	32
E.2 Normative references .....	32
E.3 Brake systems other than those covered by the requirements of UIC .....	32
E.4 Functions at train level.....	33
E.5 Functions at vehicle level .....	33
E.5.1 Brake command and control .....	33
E.5.2 Brake force application system.....	34
E.6 Braking performance.....	34

<b>E.6.1</b>	<b>General .....</b>	<b>34</b>
<b>E.6.2</b>	<b>Braking performance of trains operating on UK infrastructures .....</b>	<b>35</b>
<b>Annex F</b>	<b>(informative) Functional representation of the EBO system of the DB.....</b>	<b>36</b>
<b>F.1</b>	<b>Introduction.....</b>	<b>36</b>
<b>F.2</b>	<b>Design of the emergency brake override in conjunction with electro-pneumatic brake control.....</b>	<b>36</b>
<b>F.2.1</b>	<b>Electro-pneumatic brake control (ep).....</b>	<b>36</b>
<b>F.2.2</b>	<b>Emergency brake override (EBO) .....</b>	<b>36</b>
<b>F.3</b>	<b>Transmission systems for information and control commands in the DB system.....</b>	<b>37</b>
<b>Annex G</b>	<b>(informative) Emergency brake handles .....</b>	<b>40</b>
<b>Annex H</b>	<b>(informative) Basic arrangement of the brake system and arrangement of the brake pipes .....</b>	<b>41</b>
<b>Bibliography</b>	<b>.....</b>	<b>47</b>

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## Foreword

This document (EN 15179:2007) 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 March 2008, and conflicting national standards shall be withdrawn at the latest by March 2008.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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## Introduction

Currently, in the standard gauge area, there are EU regulations in the form of interoperability directives and the associated TSI that also contain specifications for the braking of railway vehicles. Before this time, brake engineering regulations only existed as internal railway documents in the form of UIC leaflets.

Agreements based on these govern the conditions for vehicle transfers between the individual railways. The relationship between the infrastructures and the minimum brake engineering requirements on trains and their individual vehicles is defined in EN 14198. This covers mainly generic vehicle regulations that should be assigned to individual vehicles by corresponding specifications.

With this European Standard, all suppliers will in future be able to offer in a Europe-wide tender invitation passenger coaches that have a defined basic brake engineering system and meet the minimum brake engineering requirements, taking into account the vehicle types

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**EN 15179:2007 (E)****1 Scope**

This European Standard defines basic requirements for the braking of passenger coaches in trains hauled by locomotives as described in EN 14198, using UIC air brakes (RIC traffic) operating on routes of the European railways and their infrastructure systems.

Normative Annex E is provided for passenger coaches limited to internal use in the UK.

This European Standard covers:

- all new vehicle designs of the passenger coach type of construction (day coaches, restaurant cars, sleeper coaches, driving trailers, baggage cars, couchette coaches);
- all new constructions of existing vehicle types;
- other vehicles (e.g. motorail vehicles) that may also be included in passenger trains;
- all major overhauls of the above-mentioned vehicles if they involve redesigning or extensive alteration to the brake system<sup>1</sup> of the vehicle concerned.

The vehicles meet the following technical criteria:

- inclusion in trains in accordance with EN 14198 in regular railway operation is possible (coupling capacity);
- the maximum speed is between 100 km/h and 200 km/h;
- the lower vehicle limitations of prEN 15273-1, prEN 15273-2, prEN 15273-3 are adhered to.

**2 Normative references**

The following referenced documents are indispensable for the application 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 286-3, *Simple unfired pressure vessels designed to contain air or nitrogen — Part 3: Steel pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock*

EN 286-4, *Simple unfired pressure vessels designed to contain air or nitrogen — Part 4: Aluminium alloy pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock*

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*

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<sup>1</sup> or alterations to the vehicle weight also.



- EN 14198:2004, *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 disks for railway rolling stock — Part 1: Brake discs pressed or shrunk onto the axle or drive shaft, dimensions and quality requirements*
- EN 14601, *Railway applications — Straight and angled end cocks for brake pipe and main reservoir pipe*
- prEN 15220-1, *Railway applications — Brake indicators — Part 1: Pneumatic operation brake indicators*
- prEN 15273-2, *Railway applications — Gauges — Part 2: Rolling stock gauge*
- prEN 15273-3, *Railway applications — Gauges — Part 3: Obstacle gauge*
- prEN 15327-1, *Railway applications — Passenger alarm subsystem — Part 1: General requirements and passenger interface for the passenger emergency brake system*
- prEN 15328, *Railway applications — Braking — Brake pads*
- prEN 15355, *Railway applications — Braking — Distributor valves*
- prEN 15595, *Railway applications — Braking — Wheel slip prevention equipment*
- prEN 15611, *Railway applications — Braking — Relay valves*
- prEN 15612, *Railway applications — Braking — Brake pipe accelerator valve*
- EN 50125-1, *Railway applications — Environmental conditions for equipment — Part 1: Equipment on board rolling stock*
- prEN 14535-2<sup>2</sup>, *Railway applications — Brake disks for railway rolling stock — Part 2: Brake discs mounted onto the wheel rim, wheel web or wheel hub, dimensions and quality requirements*
- UIC 541-1:2003<sup>3</sup>, *Brakes — Regulations concerning the construction of the various brake components*
- UIC 541-3:1984, *Brakes — Disc brakes and their application — General conditions for the approval of brake pads*
- UIC 541-5, *Brakes — Electro-pneumatic brake (ep-brake) — Electro-pneumatic emergency brake override (EBO)*
- UIC 541-06, *Brakes — Regulations concerning the construction of the various brake components — Magnetic brakes*
- UIC 544-1, *Brakes — Braking power*
- UIC 545:2003, *Brakes — Inscriptions, marks and signs*
- UIC 546, *Brakes — High-power brakes for passenger trains*
- UIC 550, *Power supply installations for passenger stock*

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<sup>2</sup> To be published.

<sup>3</sup> Available from: UIC Direction Générale, 16 rue Jean Rey, F-75015 Paris.

**EN 15179:2007 (E)****3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 14198:2004, EN 14478:2005 and the following apply.

**3.1****passenger coach**

vehicle without its own traction unit, for conveying people and comprising

- a body;
- running gear (e.g. 2 bogies);
- specific connectors at coach ends (coupling capacity);
- brake installation;
- service installations for passengers (air conditioning, catering, luggage transport etc.);
- a driving cab if the vehicle is a driving trailer.

Passenger coaches may also comprise two or more bodies with associated running gear (modules) forming a functional unit. The connectors (connections) between the modules may be individually designed. The end connectors of the functional unit should be suitable for the interchange conditions. Coaches for which special traction units are mandatory (ICE, TGV) are not considered to be passenger coaches

**3.2****automatic train brake**

brake at train level, the action of which is based on the fact that a break in the brake pipe (pipe for control commands) in the two parts of the train automatically leads to application of the brakes

**3.3****brake release device**

device operable from each side of the coach which, when operated, releases the brake

NOTE In UIC distributors, this equalizes the pressure in the control chamber to the value of the pressure in the brake pipe or below

**3.4****brake release**

device operable from each side of the coach which, when operated, releases the brake

**3.5****load-proportional brake**

control device for automatically matching the brake force to the specific vehicle load, whereby the adjustment may be in steps or continuous

**3.6****indicating and warning devices**

devices that show the status of the brake system or sub-systems. The information is given by windows, position of handles, analogue gauges, digital displays, lamps or buzzers

NOTE For indicating the status in service, a binary indication (on/off) is used. Analogue gauges (dials or digital displays) are for maintenance purposes

**3.7****end cock**

device according to EN 14601

**3.8****brake hose couplings**

flexible hose connections at the end of the coach with brake-hose coupling head to UIC 541-1, of different shapes for brake pipe and main reservoir pipe

NOTE A European Standard is in preparation for this (WI 00256241)

**3.9****auxiliary tread brake**

tread brake acting generally on one side of the wheels to support the power of the disc brake.

**3.10****release time**

on brake release, the time taken for the brake cylinder pressure to fall in accordance with prEN 15355

**3.11****maximum mass**

sum of the operating load of the coach and the maximum payload

NOTE 1 In contrast to the total mass, it takes into account extreme occupancy

NOTE 2 A European Standard is in preparation for this (WI 00256224).

**3.12****laden mass**

sum of the operating load of the coach and the nominal payload

NOTE A European Standard is in preparation for this (EN 00256224).

**3.13****constant mass assumption**

fictional value for the mass of the passengers in a coach. It is based on 100 % of seats occupied. The mandatory constant mass assumption is specified in UIC 410 for the different types of vehicles

NOTE A European Standard is in preparation for this (WI 00256224).

**EN 15179:2007 (E)****4 Symbols and abbreviations**

For the purposes of this European Standard, the following symbols and abbreviations apply in accordance with existing UIC leaflets:

BP: Air brake pipe

MRP: Main reservoir pipe

DBV: Driver's brake valve

ED: Electro-dynamic brake

EP: Electro-pneumatic brake

ep(UIC): Electro-pneumatic brake as specified in UIC 541-5

BA: Brake pipe accelerator

FRA Federal Railway Authority

RCOR Railways Construction and Operating Regulations

WSP: Wheel slide protection

HD: Hydro-dynamic brake

EP/EBO: Electro-pneumatic emergency brake override

Mg: Magnetic track brake

RGS Railway Group Standard

Wb Eddy-current brake

$\lambda$ : Effective braking power

R: Air reservoir

On/Off: Brake On/Off controller

G, P, R: Brake positions according to UIC

DV: Distributor valve

AL: Automatic load-proportional brake

SO Top edge of rail

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## 5 Requirements

### 5.1 General

The Railway Authorities shall include this European Standard as part of the requirements for the brake installation. The manufacturers shall indicate in the tender where the requirements of the standard are not met.

Vehicles as specified in this standard shall totally meet the relevant generic requirements described in EN 14198 for the train and the resulting requirements for the individual vehicles.

These requirements are defined for the individual vehicle in the clauses:

- brake control;
- thermal capacity;
- brake performance;
- other brake components.

The specific requirements are allocated in vehicle classes. The specific brake systems mandatory for the particular vehicle class are contained in Table A.1.

Each vehicle class is divided into subclasses for additional brake devices.

### 5.2 Climatic conditions

In general, the requirements of EN 50125-1 apply. The requirements listed below are minimum requirements. The temperature class according to EN 50125-1 shall be specified by the Railway Authority.

The functional ability of the brake shall be achieved under the following conditions unless deviations have been agreed for the associated vehicle:

- outside temperature – 25 °C to + 40 °C (in sunshine up to + 70 °C);
- altitude up to 1 370 m above sea level;
- relative humidity up to 100 %;
- snowfall, lying snow up to 300 mm above top edge of rail;
- rain, ice;
- gusts of wind up to 30 m/s

The special climatic conditions in tunnels (e.g. Simplon up to 27 °C and 100 % relative humidity in winter also) should be noted.

### 5.3 Brake control

#### 5.3.1 Basic principles

The brake installation for each vehicle shall meet the requirements of the UIC brake system.

The basic system arrangement is shown in Figure H.1.