## BS EN 15734-2:2010+A1:2021

This is a preview of "BS EN 15734-2:2010+A...". Click here to purchase the full version from the ANSI store.



**BSI Standards Publication** 

# Railway applications — Braking systems of high speed trains

Part 2: Test methods



## National foreword

This British Standard is the UK implementation of EN 15734-2:2010+A1:2021, incorporating corrigendum December 2012. It supersedes BS EN 15734-2:2010, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by  $\boxed{A1}$ .

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by CEN corrigendum December 2012 is indicated in the text by  $\boxed{AC}$   $\boxed{AC}$ .

The UK participation in its preparation was entrusted to Technical Committee RAE/4/-/1, Railway applications - Braking.

A list of organizations represented on this committee can be obtained on request to its committee manager.

#### **Contractual and legal considerations**

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2022 Published by BSI Standards Limited 2022

ISBN 978 0 539 13902 0

ICS 45.060.01

# Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2010.

#### Amendments/corrigenda issued since publication

Date	Text affected
30 April 2013	Implementation of CEN corrigendum December 2012
31 January 2022	Implementation of CEN amendment A1:2021

#### 

#### EN 15721\_7.7010+11

This is a preview of "BS EN 15734-2:2010+A...". Click here to purchase the full version from the ANSI store.

## **EUROPÄISCHE NORM**

December 2021

ICS 45.060.01

Supersedes EN 15734-2:2010

**English Version** 

## Railway applications - Braking systems of high speed trains - Part 2: Test methods

Applications ferroviaires - Systèmes de freinage pour trains à grande vitesse - Partie 2 : Méthodes d'essai Bahnanwendungen - Bremssysteme für Hochgeschwindigkeitszüge - Teil 2: Prüfverfahren

This European Standard was approved by CEN on 23 October 2010 and includes Corrigendum 1 issued by CEN on 5 December 2012 and Amendment 1 approved by CEN on 4 October 2021.

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

Ref. No. EN 15734-2:2010+A1:2021 E

## BS EN 15734-2:2010+A1:2021 EN 15734-2:2010+A1:2021 (E)

This is a preview of "BS EN 15734-2:2010+A...". Click here to purchase the full version from the ANSI store.

## Contents

Foreword4		
1	Scope	5
2	Normative references	5
3	Terms and definitions	6
4	Symbols, units and abbreviations	6
5	Requirements	
5.1	General	7
5.2	Test procedure	8
5.2.1	General	8
5.2.2	Identification of the parts to be tested	8
5.2.3	General conditions for the tests	8
5.2.4	Specification of the test equipment	8
5.2.5	Test program	9
5.2.6	Reports	
5.2.7	Documentation	
5.3	Methodology	10
5.3.1	Measurement of the application time at the brake cylinder	
5.3.2	Measurement of the release time at the brake cylinder	
5.3.3	Measurement of the pressure drop time in the brake pipe or the equalising	
01010	reservoir of the driver's brake valve	10
5.3.4	Measurement of the pressure rise time in the brake pipe or the equalising reservoir	. 10
0.011	of the driver brake valve	. 10
5.3.5	Measurement of the dead time of the WSP dump valves	
5.3.6	Measurement of the exhaust time of the WSP dump valves	
5.3.7	Measurement of the fill time of the WSP dump valves	
5.3.8	Measurement of air tightness	
5.3.9	Measurement of lowering time of the MTB	
	Measurement of rising time of the MTB.	
	Measurement of application and release times of EP assist brake	
	Measurement of the contribution of the different brakes	
	Evaluation of the longitudinal brake force applied to the track by Magnetic Track	
5.5.15	Brake or Eddy Current Brake	12
6	Static tests programme	13
<b>6</b> .1	Test on vehicle (Level 1)	
6.2	Test on Single Unit (Level 2)	
6.3	Test on Multiple Unit maximum consist (Level 3)	
7	Dynamic tests programme	
7.1	General for dynamic tests	
7.1.1	Preconditions	
7.1.2	Test conditions	
7.1.3	Measured variables to be recorded	
7.1.4	Verification of deceleration and braking distance	
7.1.5	Definition of braked weight	46

	Test program	
7.2.1	Test on Single Unit (Level 2)	47
	Test on Multiple Unit maximum consist (Level 3)	
Annex	A (normative) Typical format for a test report for type or routine test	65
Annex	B (informative) Principle of the automatic function test	66
B.1	Purpose of the automatic function	66
B.2	Adjustment of the driver's brake valve feed choke to comply with the automatic	
	function	66
Bibliography		

## Foreword

This document (EN 15734-2:2010+A1:2021) 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 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

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 includes a Corrigendum, approved by CEN on 2012-12-05.

This document includes Amendment 1, approved by CEN on 2021-10-04.

This document supersedes A) EN 15734-2:2010 (A).

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags  $\boxed{\mathbb{AC}}$ .

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\square$   $\square$ 

#### $A_1$ Deleted paragraphs $\langle A_1 \rangle$

EN 15734, *Railway applications — Brake systems of high speed trains*, consists of the following parts:

- Part 1: Requirements and definitions
- Part 2: Test methods

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

## 1 Scope

This European Standard specifies test methods and acceptance criteria for a brake system for use in high speed trains as described in the TSI Rolling Stock, operating on routes of the trans-European high-speed rail system.

The tests defined in this document have the purpose of verifying that the braking performance and functions of the train's brake system comply at least with the respective requirements of EN 15734-1.

This European Standard is applicable to:

- new vehicles of high speed trains;
- new constructions of existing vehicle types;
- major overhauls of the above-mentioned vehicles if they involve redesigning or extensive alteration to the brake system of the vehicle concerned.

The functional testing requirements set out in this document assume the vehicles are fitted with a brake system architecture that follows the UIC air brake pipe control principles.

High Speed Rolling Stock can be fitted with alternative brake system architectures that do not employ brake pipe control. In these cases equivalent testing requirements will need to be generated to test the functional performance of brake system fitted.

#### 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 15220-1, Railway applications — Brake indicators — Part 1: Pneumatic operation brake indicators

EN 15327-1, Railway applications — Passenger alarm subsystem — Part 1: General requirements and passenger interface for the passenger emergency brake system

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

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, Railway applications - Braking systems of high speed trains - Part 1: Requirements and definitions

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

EN 50128, Railway applications - Communication, signalling and processing systems - Software for railway control and protection systems

UIC 544-1:2004, Brakes — Braking power